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**An Ontological Framework for
Assisting People with Disabilities in
Organisations**

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Abstract

The aim of this thesis was to construct an ontological framework – the OntoCarer Ontological Framework, that is used in a software application to create an assistive social network for organisations and agents, which identifies the need for assistance for those with disabilities intending but unable to perform those actions, and searches for their assisters, and then directs and provides the relevant assistance to satisfy those intentions. This Ontological Framework was constructed using the languages of the Semantic Web including OWL and RDF. The agents involved were construed as BDI agents.

The reason for constructing such an ontological framework and software application was that there was a gap in existing BDI theory whereby agents were expected to implement their own intentions. In the case of persons with disabilities this may not be the case, for them disability can mean an impairment of agency that requires assistance if the intention is to be fulfilled. To fulfil the aims of the project and thesis meant extending BDI theory to include people with disabilities, and creating Semantic Web representations of BDI concepts and creating a BDI software agent – the Organisation Agent that could act as intermediary between the assisted and assisters in an organisation, communicating via mobile phones. The Organisation Agent is able to identify when an action becomes an intention and whether the action is impaired so needing assistance, and if it does need assistance to find the assisting actions from those available, then select the optimal assister and its agent and direct it to the assisted agent. This is the OntoCarer Assistance Lifecycle. To do this it depends upon the OntoCarer Ontological Framework which are seven top-level OWL ontologies: Agent, Social Action, Body Components, Body Abilities, Organisation, Buildings, and OntoCarer-Link-Ontology. The Framework is also compatible with the WHO ICF classifications. The OntoCarer-Link-Ontology is an ontology of properties used to link the assisted actions with the assister actions, and so create an assistive social network for an organisation. A methodology – the OntoCarer Ontological Framework Methodology was defined to construct the top-level ontologies, the domain ontology extensions for the Education domain, and an RDF model of a simulated college. A Java software application was created that implemented the Organisation Agent with a BDI architecture. Scenarios were run on the application to successfully test the execution of the OntoCarer Assistance Lifecycle on the college RDF model in order to validate the Framework.

Keywords: Ontologies, Ontological Framework, BDI Agents, Disability, Assistance, Social Networks, Semantic Web

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Chapter 1 - Introduction

1.1 Introduction

This thesis is concerned with constructing an ontological framework of ontologies that will provide the classifications necessary for constructing assistive social networks for organisations, each implemented in a software application that will: identify, find, and direct the personalised assistance needed for a person with disabilities in that organisation. This personalised assistance will be initiated by those with health conditions and disabilities via their mobile phones by communicating with the Organisation Agent - a software application that can identify the impairment, and then find and direct the optimal assistance to them.

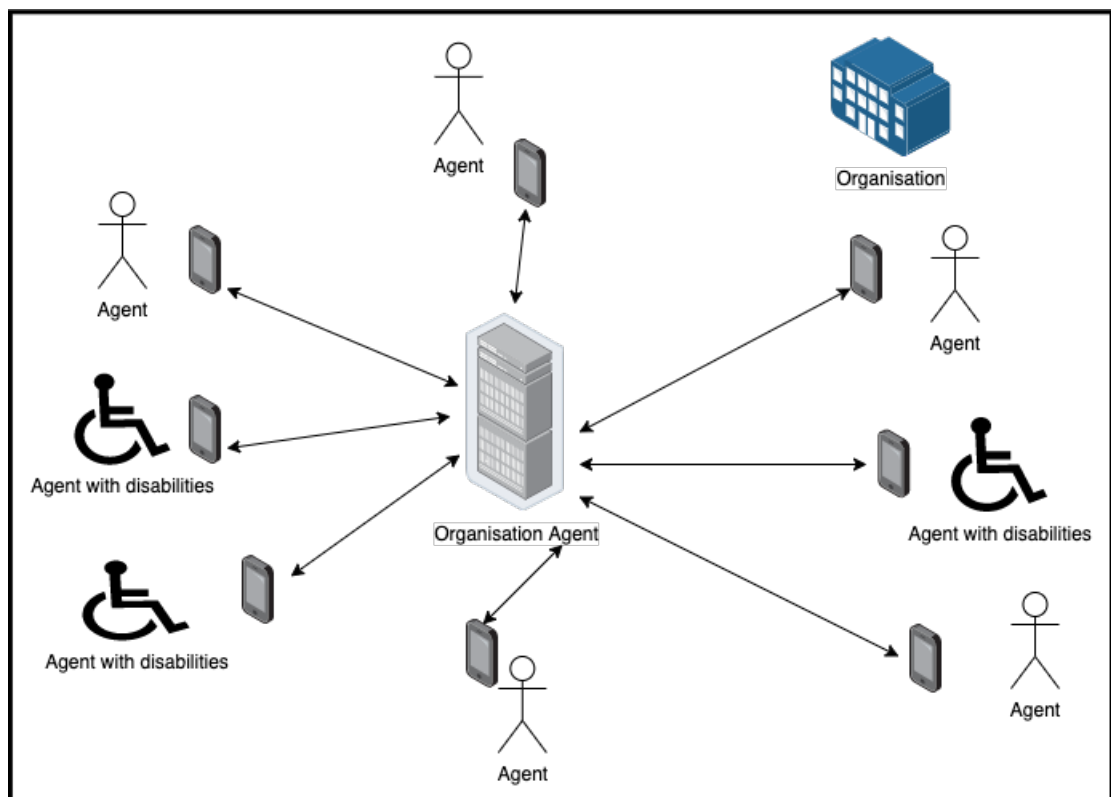


Figure 1.1 An assistive social network for an organisation

In Figure 1.1 the diagram illustrates in outline an assistive social network for an organisation. The organisation contains a number of human agents, some of which have disabilities. These agents can be a potential assisted person or assister person, or possibly both. The human agents interact with the Organisation Agent through their mobile phones, which also monitors their location within the organisation building. The human agents register with the organisation and create an agent profile. The agent profile uses the ontologies to classify the agent's roles and actions in the organisation and their body components and body abilities where there is disability to be recorded. The agents communicate their desires and intentions in relation to their organisational roles and their actions.

This process of identifying the need for assistance, finding and directing it until the original intention is satisfied can be described as the OntoCarer Assistance Lifecycle, which is depicted in Figure 1.2.

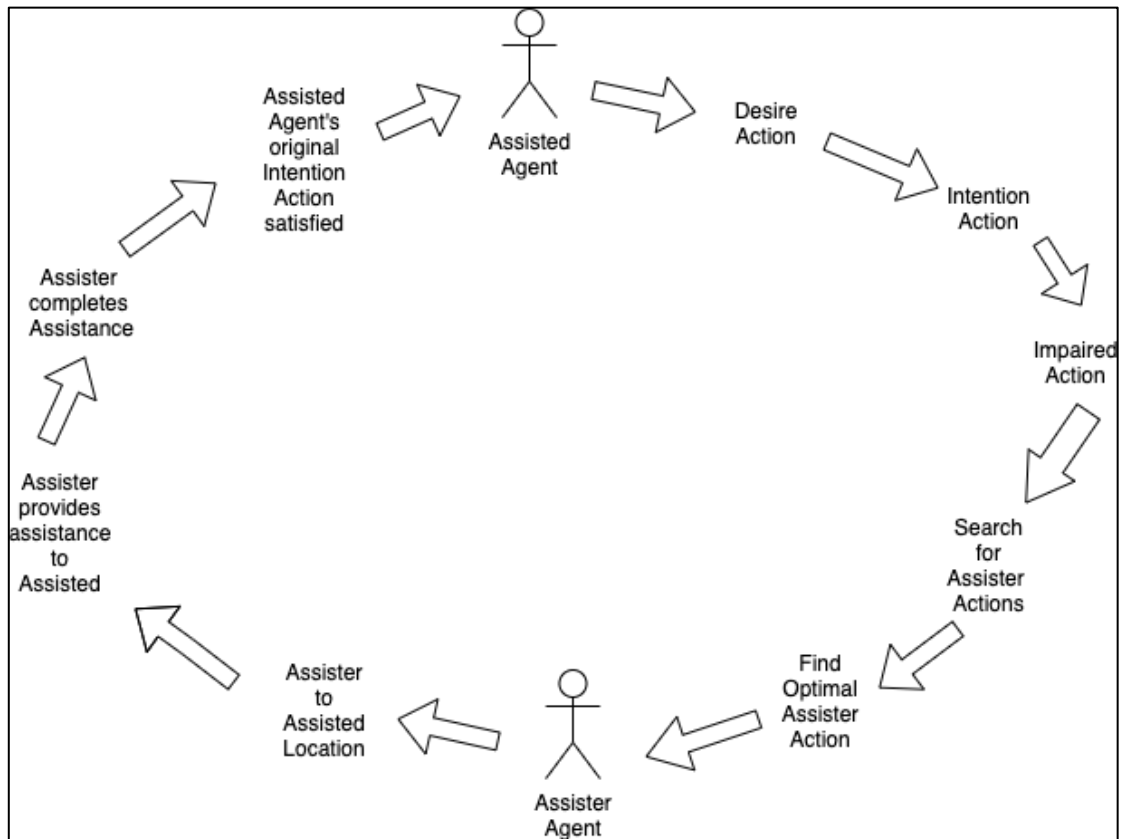


Figure 1.2 OntoCarer Assistance Lifecycle

Facilitating the assistance lifecycle is one of the main purposes of the classifications in the OntoCarer Ontological Framework. The assistance life cycle begins when a desire becomes an intention to perform an action. In this case of a desire becoming an intention, such as a student within a college organisation who intends to have drink of orange juice in the college café, but has a disability such as damaged hands that requires assistance to satisfy this intention, then this will trigger a search for assistance by the Organisation Agent. The Organisation Agent mediates between the assisted agents and the assister agents; it acts as the planner for providing assistance in the organisation. It identifies when an intention to perform an action is formed, and whether assistance is needed, and if it is it searches for the assisting actions for that social action. From those assisting social actions it selects the optimal assister, then directs the assisting agent, and monitors the assistance until the original intention is satisfied. When the original intention is satisfied the assistance life cycle for this particular action comes to an end. The OntoCarer ontologies need to contain the classes and properties to make this assistance lifecycle possible, linking the assisted agents and their roles and social actions with the related assister agents and their assister roles and assister actions, along with related classes and properties for identifying desires and intentions and impairments to actions. These related classes and properties form the Core OntoCarer Assistance Data Structure, a set of related classes and properties

that when implemented for a particular domain will facilitate the sequence of steps that makes up each assistance scenario. To carry out this life cycle a software application is used that contains a model of the organisation, its buildings, its agents and their profiles that are classified using the ontological framework and that implement the Core OntoCarer Assistance Data Structure facilitating a number of assistance scenarios.

The ontological framework is given the title – OntoCarer Ontological Framework. OntoCarer is the combination of ‘Onto’ denoting its ontological form and ‘Carer’ denoting its purpose, which is caring for and assisting of people with health conditions or disabilities.

1.2 Motivations

The motivations for conducting this research had both theoretical and practical goals as motivations.

The theoretical research aims stemmed from an interest in agents, their agency and its impairment, and its assistance, and the limitations of the existing research. Existing theories of agency needed to be explored to find out to what extent they could be used to model the situation of agency and its assistance and also how they might need to be extended. The existing theories of agents and agency are described in the literature survey in Chapter 2. The theory of agency adopted in this thesis and extended to incorporate assistance is that of BDI (belief-desire-intention) Theory.

BDI theory was first developed by Michael Bratman (Bratman, 1987) as a means to understanding the practical reasoning of human agents in order to achieve their goals. This theory was adopted by researchers in computer science and artificial intelligence as a model for how software agents reason and decide to act in their environment to achieve their goals, in particular by Michael Wooldridge (Wooldridge and Jennings, 1995), (Wooldridge, 1999), (Wooldridge, 2000) and by a number of other researchers too. Several software systems are described in the literature review in Chapter 2 that adopt a BDI architecture for their software agents. BDI theory had only been applied to software agents that are capable of perceiving their environment and reasoning with their beliefs, and then have the ability to put their own intentions into action. This limitation of existing BDI theory was that it only applied to agents capable of implementing their own intentions in their own actions, this provided the motivation in this research for extending the application of BDI theory to human agents with disabilities. Agents with disabilities that require assistance in order to carry out the actions that implement their intentions and the subsequent provision of that assistance by other assisting agents. This is done through a software agent, the Organisation Agent that has a BDI architecture that reasons with the representations of the agents in order to identify the need for assistance, find the optimal assistance and then direct it so that the assisting agent can satisfy the impaired agent’s intentions.

This leads on to another important motivation which was to find a suitable formal representation and classification of the agents and of the other elements involved (an ontological framework) in order for a software application that implements the Organisation Agent to be able to reason with these

representations to find and direct assistance to the impaired agents in the assistance lifecycle. The search for a suitable formal representation for the agents and other elements that form an assistive social network began with a literature survey of ontologies and ontology methodologies in Chapter 3, before going on to survey the Semantic Web and its OWL, RDFS and RDF languages which are chosen to construct the formal ontologies and their models. Then going on to specify the OntoCarer Ontological Framework Methodology in Chapter 4, which includes a lifecycle for constructing the OntoCarer ontologies and their verification and validation. The first elements of the formal representations are defined in Chapter 5, beginning with the OWL BDI representations of BDI concepts such as desire and intention and the representations of belief and belief revision. These are a core element of the OntoCarer ontologies. In Chapter 6 the OntoCarer Ontological Framework of OWL top-level ontologies are defined and described to include an integrated set of formal ontologies for providing assistance that includes: organisations, buildings, agents and their profiles including their roles, actions, body components, body abilities, disabilities and assisters. The creation of and defining of these top-level OWL OntoCarer ontologies was one of the main motivations of this research. In Chapter 7 these top-level ontologies are extended into the education domain that allows an RDF model of a typical college and its agents to be constructed. In Chapter 8 the college model and the software application that implements the Organisation Agent and its BDI architecture along with the execution of the assisting scenarios that use the assistive social network that was created are described, where the main motivation for creating them was to validate the OntoCarer Ontological Framework.

The practical motivations were to provide research that may have benefits in the field of assistive technologies, in this case by constructing a working assistive social network that provides assistance for people with disabilities.

Social networks (Borgatti, et al, 2018) have existed as long as human society, but in recent decades the development of computers, computer networks, mobile telephony, the World Wide Web and through that the development of web based social networks have made computerised assistive social networks a possibility. The World Wide Web itself led to the development of the Semantic Web (Berners-Lee, et al, 2001) – a machine readable web of data which uses the ontology languages of OWL, RDFS and RDF. The main practical motivation for the research for the OntoCarer Ontological Framework and its implementation in a software application is that it takes this Semantic Web technology further by creating a novel assistive social network using the languages of the Semantic Web, in order to aid people with disabilities in organisations. This practical research goal aims to further the goal of an assistive society, whereby the social barriers to the participation of people with disabilities are reduced through facilitating their active participation in society. This practical goal is in line with the social model of disability as described in Chapter 2 of this thesis.

Another practical goal was to make the OntoCarer Ontological Framework of ontologies compatible with the International Classification of Functioning, Disability and Health (World Health

Organisation, 2001). The ICF is described in detail in Chapter 2. It is a leading classification of bodily functioning and disability that has also been translated into an OWL ontology (World Health Organisation and The National Center for Biomedical Ontology, 2001) which makes it amenable to integration with the OntoCarer Ontological Framework ontologies, thus extending the functionality of both classifications for their use in assistive software applications.

1.3 Aim and Objectives

Aim

To construct an ontological framework, that is used in a software application to create an assistive social network for organisations and BDI agents, which identifies the need for assistance for those with disabilities intending to perform actions and searches for their assisters, and then directs and provides the relevant assistance to satisfy those intentions.

Objectives

1. Construct an ontological framework of interrelated top-level ontologies in OWL that can represent organisations, their buildings and agents. Where the agents have body components, body abilities, organisational roles and actions. The agents' disabilities and impairments are also to be represented along with their corresponding assisters. With the resulting ontologies to be compatible with the ICF (World Health Organisation, 2001) classifications.
2. To extend BDI (Belief Desire Intention) theory (Bratman, 1987) (Wooldridge and Jennings, 1995) to include people with disabilities and assisting agents, and to create Semantic Web representations of the BDI concepts involved.
3. Create domain extensions to the top-level ontologies in OWL for a well understood type of organisation that can represent its buildings and the roles and actions that are typical of such an organisation.
4. Create a representative model in RDF of an organisation and its agents belonging to the selected organisation domain to form a case study that can be used in a software application to provide assistance to those agents with disabilities and be used to validate the ontologies in the framework.
5. Create a software application that can use the RDF model of an organisation and its agents to perform an assistance lifecycle that involves: identifying the need for assistance, finding the relevant assisting agent and direct it to the assisted agent and monitor its progress until the assistance is successfully delivered. This software application will also be used to validate the ontological framework through its successful performance of the assistance lifecycle using the ontological framework.

1.4 Methodology

The methodology used in producing this research begins with a review of the literature of existing research in several areas relevant to aims of the research. The purpose of this was firstly to establish what existing knowledge there was in these areas. These areas of existing research were; the definitions and characteristics of agents, the differing agent architectures proposed for software agents, and in particular the BDI agent architecture. In addition to establishing the existing knowledge in these areas, the survey also provided a foundation for designing and representing agents in this project and also benchmarks for evaluating the architecture of the resulting agents.

The proposed research also depended upon the classification of: agents and their profiles, including their organisational roles and actions, their body components and body abilities, and any disabilities affecting them, along with their assisters too. The classifications were necessary for describing the organisations and their agents, and their buildings etc., and also for the identification of the; intentions, roles, actions, disabilities and their corresponding assistance. This need for classifications in the project led to a literature review of the research on ontologies and the Semantic Web. A review of ontologies was undertaken, because ontologies are the systematic construction of classifications for particular domains. As well as constructing classifications for organisations, agents and their profiles etc., it is also necessary to use these classifications in a software application, so the ontologies needed to be translated into a formal representation, that is one that is machine readable and that can be used in such a software application. The advent of the Semantic Web (Berners-Lee, 2001) offered the prospect of a universal, widely used formal representations for representing such ontologies and for using them in software applications. The Semantic Web and its ontology languages of RDF, RDFS, and OWL, offer this possibility of formal machine readable ontologies. They also offer the possibility of being able to construct models of real world domains that can be classified by those ontologies. Those models themselves containing statements in the form of triples that can make statements about the world that can be true or false.

The literature review in Chapter 3 reviews the literature on ontologies, the Semantic Web and its formal languages. Having decided on using ontologies and the formal languages of the Semantic Web (RDF, RDFS, OWL) to represent them, the next stage is to consider the existing ontology methodologies for designing and constructing ontologies and evaluate them against the needs of the OntoCarer project. A number of ontology methodologies were considered and evaluated. While these methodologies contained a number of useful elements and techniques overall none satisfied the needs of this project, in particular because what was needed was a methodology for designing and constructing an ontological framework. Where an ontological framework is an integrated set of disparate ontologies working together for a common purpose. As a consequence of this an ontology methodology was defined, and this OntoCarer Ontological Framework Methodology is described in detail in Chapter 4. The OntoCarer Ontological Framework Methodology consists of an iterative lifecycle of five phases. Those five phases are: 1. Initial, 2. Framework, 3. Conceptualisation, 4.

Implementation, 5. Evaluation & Documentation. Briefly, these are what each of these five phases consist of:

1. Initial phase: This phase starts with the initial project idea and then goes on to formulate a Goal Statement. Then decides on the use cases that characterise the project, what tools and languages are needed to construct and implement the project, and what constraints the project will be conducted under.
2. Framework phase: This phase determines the outline content and structure of the Ontological Framework, which means deciding what ontologies will be in the Framework and what their relationship to each other will be. It takes the initial Goal Statement and uses cases from phase 1 and then constructs the Model Categories for the project and an ontology candidate list for the Model Categories.
3. Conceptualisation phase: This phase is concerned with creating a conceptualisation of the ontologies, which involves specifying the conceptual hierarchies and properties of the ontologies. Both the top-level ontologies and domain extensions, and any domain model representation.
4. Implementation phase: This phase involves the translation of the ontologies and the specification of a domain model into a machine readable representation.
5. Evaluation & Documentation phase: This phase is concerned with the verification and validation of the ontologies. The verification involves checking that the ontologies meet their specifications. The validation involves checking that the ontologies represent the real world entities they are intended to represent, which in this project involves using a software application for a simulation. The software application that creates the assistive social network for a college along with the RDF model of a college are used as a simulation of a real college and its processes of assistance, in order to assess the functionality of the ontologies in the ontological framework ability to fulfil their purposes, which includes facilitating the OntoCarer Assistance Lifecycle in practice.
The documentation provides detailed descriptions and diagrams of the contents of the ontologies and the software applications that use them.

1.5 Scope and Limitations

This section outlines the scope and limitations of the main elements of the project. These elements are: the main project goals, the top-level ontologies, the domain level ontologies, the model, the software application, and of the computational and human elements of the modelled organisation.

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Scope and Limitations of the Top-level Ontologies	9
Scope and Limitations of the Domain Level Ontologies	12
Scope and Limitations of the Model	14
Scope and Limitations of the Software Application	15
Scope and Limitations of the Computational and Human aspects	16

Table 1.1 Scope and Limitations sub-headings

Scope and Limitations of the Main Project Goals

A main goal in this project is to provide an ontological framework for the successful execution of the OntoCarer Assistance Lifecycle in organisations. This involves providing an ontological framework for the planning of dynamic assistance for people with disabilities in the performance of their roles and their actions through directing assisting agents to provide corresponding assisting actions, in organisations. The scope of the classifications in this framework are determined by their potential to successfully classify the entities that can fulfil the sequence of actions in the OntoCarer Assistance Lifecycle. This Assistance Lifecycle should be capable of being implemented across a variety of organisations and for a broad scope of disabilities. The Assistance Lifecycle should be implemented within an assistive social network that involves multiple assisting scenarios with multiple agents that have differing organisational roles that include user and provider roles, assisted and assister roles.

Assister aids are included as they may mitigate the need for assistance, where for example a hearing aid mitigates a hearing impairment and so the need for other assistance where the hearing aid is effective. The dynamic provision of assister aids in an organisation is outside the scope of this project, though could be included in its further development.

The scope of the Assistance Lifecycle in this project is limited to dynamically providing assisting actions for a single domain – education and in a single simulated organisation – a college. The scope could in future be extended to such assistance as providing timetabled assistance in organisations, and the provision of assister aids, amongst other extensions which are discussed further in the final chapter of this thesis.

What is essential to the scope of the OntoCarer Ontological Framework is to providing the classifications necessary for the OntoCarer Assistance Lifecycle and it does not aim to have the generality and multipurpose scope of other disability and assistance related classifications such as the WHO ICF as described in Chapter 2.

Scope and Limitations of the Top-level Ontologies

The scope and limitations of the OntoCarer top-level ontologies are outlined below. For a more detailed description of the scope and limitations of these top-level ontologies the reader is referred to the detailed specifications of these ontologies in Chapter 6.

The scope of the top-level ontology classifications are relatively narrow. The top-level ontologies should contain sufficient classes and properties to be able to fulfil each step in the Assistance Lifecycle which means classes and properties should implement the Core OntoCarer Assistance Data Structure in the top-level ontologies, so that those classes and properties form an unbroken chain leading to the successful completion of the Lifecycle. Those top-level classes and properties should then be capable of being extended into corresponding sub-classes and sub-properties for particular organisational domains, so that the Assistance Lifecycle is also extended to the domain levels. These top-level ontologies also include additional classes and properties to enable the description of the organisation, its buildings, the agents bodies (components and abilities) that can provide additional information to the agents and OntoCarer software application. The top-level ontologies thus provide the skeleton upon which the body of each organisational domain ontology is constructed.

An outline of the scope and limitations of the seven OntoCarer top-level ontologies are:

Agent: The scope includes different types of: Agents, Roles and RoleAssisters including RoleAssisterRole. The properties facilitate the linking of individuals of these classes to link with individuals of classes in other ontologies, such as agents having body components and roles having social actions. The properties include those for linking to instances of the Body Function and Body Structure classes in the ICF ontology. These class and properties are limited to the most abstract categories to allow maximum scope for their extension into the domain ontologies without actually going into the particular classes and concepts of the domain ontologies.

Social Action: The scope includes SocialAction and SocialActionAssister including subclasses SocialActionAssisterAction and SocialActionAssisterAid. The scope is limited to these the most abstract of categories for social actions, allowing a wide scope for the specific social actions and related classes in the particular organisational domains. The object properties include those for relating a social action to its qualifier to indicate its level of impairment if any, and its desire-intention level. These are essential to defining a social action in the Core OntoCarer Assistance Data Structure, and so for the operation of the OntoCarer Assistance Lifecycle.

Body Components: Given that the number of potential body components is fixed regardless of the organisational domain it might be considered that the scope of the top-level ontology would encompass a comprehensive set of body component classes and properties. This would also render an expanded body components domain ontology unnecessary. If this option was chosen then the simplest solution and one in the spirit of the Semantic Web would be to reuse existing ontologies rather than duplicate them, by incorporating the WHO ICF Body Structures classifications, which have been

translated into an OWL ontology. An alternative would be to define a comprehensive set of body component classes and properties for the OntoCarer Body Components top-level ontology. Neither of these options was chosen for the Body Components ontology. The reason for this is that while the body components are fixed and do not vary according to domain, it is possible that the degree of descriptive detail for body components classes and properties needed can vary between domains. In much the same way that one can have maps that can depict the same area but vary in the level of detail mapped and that the most useful map is not necessarily the most detailed map possible. Similarly the most useful body component ontology is not necessarily always the most comprehensive and detailed ontology possible. The Body Components ontology is used to identify impairments to particular body components that the agent has, body impairments that result in impairments to social actions that then require assistance. The Body Components classes don't have a functional role in the Assistance Lifecycle except in the case where their assisters (such as assister aids) mitigate the need for assistance for social actions. They can have a supplementary information role (or possibly act as additional parameters to be used) to an assisting agent, in which case given the type of organisation and the knowledge of the assisting agent the level of detail that would be useful may vary, consequently a flexible approach to the scope of body components ontologies may be the optimal one, one which allows for more or less detailed body component ontologies and also allows for the incorporation of the ICF Body Structures classes as well, if necessary. It may be that in future use cases that go beyond the Assistance Lifecycle the body components classes could have a functional role that goes beyond an informational role. This flexible approach to the top-level and domain Body Components ontologies was the one that was chosen. This entailed having a skeleton top-level Body Components ontology, consisting of classes `BodyComponent` and `BodyComponentAssister`. The top-level data properties include `bodyComponentHasQualifier` which is used to indicate the level of impairment on a scale that is compatible with the ICF scale. This skeleton top-level ontology, provided maximum flexibility for defining Body Components domain ontologies, they could be as comprehensive and detailed as desired or alternately as small, simple and easily understood as wanted. It preserved the independence of the OntoCarer Body Components ontology from the ICF while giving it the option to incorporate the ICF OWL Body Structures classifications in part or whole if it was considered necessary or useful, as a supplement or incorporated alternative to the OntoCarer Body Components ontology.

Body Abilities: The same considerations with regard to the scope and limitations of the Body Components ontology apply to the Body Abilities ontology. Similarly the Body Abilities top-level ontology is a skeleton one, consisting of the classes `BodyAbility` and `BodyAbilityAssister`. The top-level data properties include `bodyComponentHasQualifier` which is used to indicate the level of impairment on a scale that is compatible with the ICF scale. This arrangement provides the maximum flexibility for defining the Body Abilities domain ontologies. The corollary of the Body Abilities ontology in the ICF is the ICF OWL Body Functions ontology, which can also be linked to and incorporated in part or whole as necessary, if needed. The Body Abilities ontology's classifications could play a potential informational role in the Assistance Lifecycle or through their assisters mitigate

the need for assistance to social actions in the Assistance Lifecycle. Other functional roles currently outside the scope of this project could be developed in future developments where the use cases involve the dynamic or timetabled delivery of Body Ability assister aids, which are not currently included in its scope.

Organisation: The scope and limitations of the Organisation top-level ontology involve creating a simple skeleton ontology consisting of an Organisation class and SituationActivity class. With object properties for linking to individuals of other ontologies, and data properties for providing information about the individuals of the ontology classes. This ontology provides the flexibility to define classes of different organisational types and different situation activities that take place in different organisations in the domain ontology subclasses.

Buildings: The Buildings top-level ontology is the most complex of the top-level ontologies. The Buildings ontology needs to provide a Location class for specifying the location of an agent, but it also needs to be able to classify the physical structure of buildings. The physical structure of buildings need to be defined so that agents can be tracked through them. The particular parts of buildings; rooms, corridors, stairs, lifts, have different physical characteristics which need to be negotiated by different disabilities so they need to be differentiated, and be capable of being used to construct a model of an actual building. The assisting features of buildings such as wheelchair ramps and handrails need to be identified. A few of these specific features are included in the top-level ontology, but more can be added in the domain ontologies.

These common generic building features are contained in the top-level ontology, while domain specific classes such as the types of room found in buildings of particular type of organisation such as a college or hospital are defined in the domain ontology subclasses.

While the Building ontology contains the Location class which can be used to refer to both locations within a building and also outside buildings but the rest of the classes are limited to describing buildings, so organisations that heavily depend upon other structures such as transport organisations with structures such as trains, ships, aeroplanes are outside the scope of this ontology.

OntoCarer-Link-Ontology: The scope of the OntoCarer-Link-Ontology is determined by what properties are needed to link the assisters with the assisted and co-operators with other co-operators. These links are included in the Core OntoCarer Assistance Data Structure and are crucial to facilitating the OntoCarer Assistance Lifecycle and the assistive social network by linking social actions that need assistance with their assisters. These are defined for the most top-level categories such as: social actions, roles, body components, and body abilities. With more specific properties linking the assisters with the assisted and co-operators with other co-operators defined in the sub-properties of the domain ontologies. With the extent of these determined by the existence of these specific assisted, assister and co-operator classes.

Scope and Limitations of the Domain Level Ontologies

There are many possible domain ontologies, as the domain ontologies are those belonging to different types of organisation. Organisations types such as education (colleges, schools, universities), medical (hospitals, surgeries), retail (shops, department stores), catering (cafes, restaurants), etc. Each with their own set of roles and social actions and building features, types of room, etc. It is not possible to define them all in this project for reason of time and resources, so it is limited to defining one domain which is the education domain and in particular the college domain. The defining of the education college domain itself is not exhaustive and is limited in its definitions by time and resources. The aim of such domain ontologies is a practical one of facilitating the provision of assistance in the type of organisation the domain represents. The boundary of such a set of domain ontologies is determined by whether they are sufficient to identify, plan and direct the assistance needed in the organisation rather than being an exhaustive and comprehensive representation. The aim is practical, rather as the level of representation in a map is determined by the use the map is put to and whether it meets this practical need, rather than being judged on whether it is exhaustive in its level of detail. An atlas or a tube map may be more useful in some circumstances than the most detailed ordnance survey map.

The domain level ontologies provide the depth to the scope of the ontological framework. The classifications of the top-level ontologies and classifications such as the Role class (in the Agent ontology) and SocialAction class (Social Action ontology) are extended to add subclasses belonging to the particular type of organisation being modelled e.g. education, hospital, cinema, restaurant etc. The scope of these for this prototype should be enough to provide proof of concept, which in this case means being able to create a representative model of an organisation and its agents that form an assistive social network and the successful execution of scenarios involving the model that includes variety of agents, roles, and disabilities that demonstrate the successful completion of the OntoCarer Assistance Lifecycle and the use of the Core OntoCarer Assistance Data Structure for the particular domain involved, which in this case is the education domain and specifically for a college. The scope of the organisational roles and their social action will have to be limited to a representative sample of what are considered to be the main roles involved e.g. for a college organisation in the education domain then roles such as: student, lecturer, and their most relevant social actions belonging to those roles. The education roles chosen were those most likely a user of the college i.e. a student would come into contact with, such as lecturer, registrar, bursar, library assistant, café assistant, security guard, etc. The list of roles is not exhaustive for a college, this is because other roles such as human resource personnel, managers, principal, etc. are less likely to interact with the students but also for practical reasons given the limited resources particularly that of time in producing a prototype for this project. The list of social actions belonging to the roles chosen is not exhaustive. Even outside this prototype an exhaustive list would neither be practical as it may involve multiple actions which were little used or needed, nor possible as social roles in organisations are not fixed and are constantly evolving, adding new actions to the organisational roles as the organisation and its purposes develop. An outline of the scope and limitations of the seven OntoCarer domain level ontologies are:

Agent: The main domain extensions are for the Role classes and the corresponding RoleAssisterRoles and RoleAssisterAids. These include the BasicFunctionRole such as eater and drinker roles and the particular college education organisational roles, such as lecturer, student, library assistant, registrar, etc. The scope of particular roles defined in the domain is not intended to be exhaustive, but is intended to be limited to being representative of the college domain and the ones a student user is most likely to encounter when participating in the college.

Social Action: The social actions defined in the domain ontology are the actions that belong to particular roles. They also include the corresponding SocialActionAssisterActions and SocialActionAssisterAids. These social actions are limited to roles defined in the Agent domain ontology. The list of social actions defined is not intended to be exhaustive, but rather limited to a representative sample of ones that may be considered the most relevant or important for that role, and useful to include for the purposes of assistance.

Body Components: The body components themselves are invariant between domains. This means we could have defined a comprehensive Body Components ontology in the top-level ontology, and used that for all domains. Alternatively, we could have imported by linking to it, using the relevant properties, to all the Body Structure classes in the OWL version of the WHO ICF. Instead a more flexible approach was adopted with a skeleton top-level Body Components ontology, which allows the domain ontology to be tailored in what it includes and the level of detail it has for the specific domain. There is still the option of including some or all classes from the WHO ICF Body Structure OWL classifications, if needed. In the case of the education college domain a simpler set of body components were defined which is not exhaustive and does not attempt to be the most detailed set of body components possible. Its aim being a possible though reasonable set of body components that may be useful when providing supplementary information about an impaired body part when providing assistance in a college environment.

Body Abilities: The same considerations that apply to the Body Components domain ontologies apply to the Body Abilities domain ontologies. A skeleton Body Abilities top-level ontology allows for flexibility in defining the domain ontologies. Again the WHO ICF Body Functions OWL classification can be linked to using `OntoCarer` properties and used in part or whole if needed. Also a specifically tailored simpler Body Abilities ontology can be defined that does not aim to be exhaustive or as detailed as possible, but aims to be useful when providing supplementary information about an impaired body ability when providing assistance in a college environment.

While dynamic or timetabled provision of body ability assister aids is outside the scope of this project, the Body Abilities assister aids can act as mitigations to body ability impairments which can mitigate the need for assistance for social actions that involve those body abilities. For example, an

impairment of hearing that is mitigated by a body assister aid such as a hearing aid so there is no functional disability, can mean that in social actions that involve hearing there is no impairment so no need for assistance for the social action. In this way the body abilities can have a functional impact on the Assistance Lifecycle and not just a potential informational role.

Organisation: The Organisation domain ontology has classes for different types of educational organisations such as college, university, and different types of schools such as primary school, secondary school, etc. The Organisation domain ontology has classes for different types of situation activities which may occur within a college organisation. These are activities such as a lecture situation, reading situation, eating meal situation, etc. The list aims to be representative of those activities that may take place in a college but it is not intended to be exhaustive.

Buildings: The scope of the Buildings domain ontology was to two fold. The first to provide classes for the different types of education buildings, such as CollegeBuilding, UniversityBuilding, etc. The second was to provide Room subclasses that would include all the necessary classes for specifying the different types of room in the CollegeModel which aims to represent the kind of rooms that might be included in a typical college. The limitations of the Building domain ontology are that it does not attempt to go beyond the remit of providing building classes for this typical college, so does include building classes that might be specific to other educational organisations such as a primary school or university.

OntoCarer-Link-Ontology: The scope of the OntoCarer-Link-Ontology domain ontology is to provide the specific sub-properties of the top-level properties:

- assistedAssistedByAssister
- assisterOfAssisted
- cooperatorCooperatesWithCooperator

for linking the domain classes of the Body Components, Body Abilities, Roles and Social Actions. Linking properties are limited to providing for linking all the relevant domain classes that have been defined in this project.

Scope and Limitations of the Model

From the top-level ontology and a domain ontology, a model is created of a particular organisation. In order to validate the classifications in the top-level ontology and the particular domain ontology the particular organisation should include: a variety of agents with differing roles in the organisation as providers and users, and assisted and assister, and some cases being both provider and user and assisted and assister. There should also be a variety of disabilities that are assisted in order to verify the scope of the assistance it can provide. This model should be capable of being used in a software application that creates an assistive social network and can successfully provide assistance by executing the OntoCarer Assistance Lifecycle for a number of varied scenarios that each implements

the necessary relationships between individuals to implement the Core OntoCarer Assistance Data Structure. The roles, social actions, disabilities, and scenarios are intended to be a small representative sample sufficient to provide proof of concept for the aims of the project, but they are not exhaustive of their categories as that was not feasible within the scope of the resources available for the project.

Ideally the organisation that is modelled should be a real organisation. A limitation on doing this is that this cannot be done in an actual organisation, for reasons of limitations of time, money, resources and the access to an organisation and its personnel. As a consequence of not being able to use an actual organisation for the validation of the ontological framework a simulation of an organisation is used. The simulated organisation chosen is that of a college in the education domain, as that is one that includes a variety of roles, and can include a variety of cases for assistance. A college is also familiar to the researcher so can be constructed without extensive additional research. It is also familiar to most people in society, so the simulation can be easily checked for its verisimilitude by others too.

A single model is used of an example college rather than multiple models. A major constraint and limitation is because of the size of the model and time limitations in constructing such a model. Fifteen agents representing different individuals in the college, with differing roles, some with varying disabilities, and some acting as assisters or assisted, or both. The CollegeModel though modelling a small college building and only fifteen agents with their profiles and assisters consists of hundreds of pages of RDF/XML code. Constructing other models of other educational organisations was not feasible with the time resources available.

Scope and Limitations of the Software Application

The scope of the software application in its function is to execute the Assistance Lifecycle by handling changes to the desire-intention level of a social action, identifying the need for assistance where a social action is impaired, finding assisters, selecting the optimal assister, directing and monitoring the assistance until completion and restoring the defaults so the cycle can begin again. This done on an RDF/XML model of a simulated college organisation which forms an assistive social network.

Seven different scenarios are executed that include a variety of different agents, with differing roles, differing disabilities, and agents who are assisted and assisters or both in different situations.

The software application has a number of limitations. It only models the actions of the Organisation Agent, the mobile phone apps are not created but their input is simulated through RDF/XML data input files that the mobile phone apps would transmit when updates were made to desire-intention levels and location changes. The Organisation Agent program consists of four java classes that creates its functionality, but it is not hosted on a server or server application such as a servlet.

The functionality of the program is limited to executing the Assistance Lifecycle. It does not handle other use cases such as the finding of co-operators. It does not cover the timetabling of assistance (rather than the dynamic finding of assistance which it does handle) as this needs dates and times which are not included in the program or in the ontologies defined. It does not handle the finding and directing of assister aids. These additional use cases were not included because of limitations of time. They could be added in future by extending the functionality of the software application and adding other ontologies such as date and time ontologies which have been defined by other ontologists.

Scope and Limitations of the Computational and Human aspects

In order for this broad scope of the OntoCarer Ontological Framework that includes a wide spectrum of disabilities to be feasible in this research project then the scope needs to be limited in other ways. The scope of the project and thesis is focused upon the computational aspects; which are the computational representations and their computational processing of the Assistance Lifecycle by the Organisation Agent. Where we are interested in both the declarative (the what) and the procedural (the how) of these computational aspects. Whereas the scope of the human aspects in this project and thesis, mainly only includes the declarative aspects – **what** the human agents do (or are capable of doing), or do not do (or are not capable of doing). With the procedural aspects – **how** the human agents actually or potentially perform the particularities of their actions being outside the scope of this project and thesis. For example, in the case of the action of dressing, it is only considered from the declarative point of view. Whether an agent can dress or if that action is impaired because of disability, not the specifics of how the action of dressing is performed. The same applies to its corresponding assistive action, whether the assisting agent has that assisting action is relevant not the specifics of how the assisting agent performs the dressing of the assisting agent. The relevant procedural aspect that is relevant to this example is the computational procedure in identifying the need for assistance in dressing for this agent, finding the dressing assistance, then directing and monitoring it until completion.

These functional computational aspects in particular are those processes performed by the Organisation Agent: the identification of human agents intentions to perform an action, identifying the capability of a human to perform that action, in the case of impairment then the finding of an action's relevant assisting actions, selecting the optimal assisting action, and the direction and monitoring of the assistance until the original action is satisfied. These Organisation Agent computational aspects are demonstrated in an algorithm that implements the OntoCarer Assistance Lifecycle and is implemented in the OntoCarer software application.

The optimal assisting action is found and the agent to which that action belongs is directed to the assisted agent action where it is monitored until the successful completion of the assisting action is performed thus satisfying the assisted agent's original intention. What are excluded from the project scope are the particularities of **how** the human agent's actions are performed, (or not performed).

As far as the computational aspects of assistance are concerned all the disabilities affecting actions can be treated uniformly. This is because the focus on finding, selecting, and directing assistance is on the actions involved, both the impaired action and the assisting action rather than the bodily disabilities directly. Disability is treated as an impairment of the performance of an intended action, with its assistance involving the finding and direction of the optimal corresponding assisting action. The particularities of the disability as to why an action is impaired are not relevant to the finding and direction of its assistance. An assisting action would only be registered and linked by an 'assistedBy' property with a corresponding action of an assisted agent were that assisting action and its assisting agent capable of providing such assistance. The vetting and guidance, and if necessary training would be done by the organisation with the proposed assisting agent prior to linking the assisting agent's assisting action with the assisted agent's action in an assisting relationship. The particular processes of vetting, guidance and training of assisting agents in organisations whilst important are also outside the scope of this project, as they are human and organisational processes rather than computational processes.

This focus on the agent's actions and the assisting actions is in the line with the social model of disability which is described in Chapter 2. This is not to deny the bodily causes (which forms part of the medical model of disability, also described in Chapter 2) of those disabilities which cause and impact the impairments to the performance of a human agent's actions. The human agent's body components and their impairments and their body abilities (seeing, hearing, etc) and their impairments are included in the agent's profile where there is impairment. Though, these body component and body abilities play no direct role in the computational process of finding, selecting the assisting action. These impaired body component and body abilities representations perform a secondary role as supplemental or contextual information to the assisting agent. Supplemental, in that they convey useful additional information to an assisting agent on their way to the assisted agent. It is also, supplemental in that the assisting agent would already have been assessed prior to their assisting action being linked with the action that is being assisted. Assessed for their capability to provide the relevant assistance to an agent with that impaired action and then found to be capable and so linked to provide assistance, so this supplemental information is not essential to providing the assistance.

Whilst some assisting actions may be the same regardless of the disability they are assisting, such as assisting actions *done for* the assisted person, for example actions such as; washing the dishes for someone, or uploading a student's assignment for them, other assisting actions will be tailored to the particular disability involved. For example, a library assistant in assisting the checking out of library books may respond differently in performing this assisting action depending upon the disability of the person she is assisting. A person in a wheelchair may need their books lifted up to the library checkout counter, a person without sight may need guiding to the checkout counter and where to place their books, a person without hearing might require any additional information at the checkout counter to be in a printed form instead of spoken, etc. Whilst the particulars of how the assistance for assisting actions is given, is outside the scope of this project as those particulars depend upon medical

and organisational knowledge particular to the situation and disability, the means of conveying such particular assisting information is not. Each type of social action has a ‘socialActionHasInformation’ property that links an individual instance of a social action with a string instance. That string instance can provide supplemental information not just about the particular disability that affects that social action but also information about that person’s individual personalised preferences for the assistance of that action. This information in the string can be passed as part of the directions to the assisting agent when that agent is selected as the optimal agent by the Organisation Agent. In addition each agent with disabilities has the body disabilities and their degree of impairment recorded in their profile for the impaired body component and the body abilities that are also impaired. The supplemental information about these impaired body components and body abilities can also potentially be passed as parameters by the Organisation Agent in the directions to the assisting agent, so that the assisting agent is prepared to give the particular type of assistance needed in relation to the social action that needs the assistance.

As a consequence of treating all disabilities uniformly, as far as the process of identifying the needs for assistance for social actions to finding that assistance, there is little or no difference in whether only one type of disability is tackled or the full spectrum of disabilities is covered by the OntoCarer Ontological Framework and its software application. The top-level ontologies and software application are the same regardless of the number of types of disabilities covered. The domain ontology extensions would be the same except for the body components and body abilities ontologies which could be chosen to be restricted to those affected by the particular disabilities involved. The body components and body abilities representations would only affect the supplemental information passed to assisting agents except in cases where the body component assister aids or body abilities assister aids mitigated the need for assistance, and not the computational process of finding, selecting and directing assistance as this is done at the level of agents and social actions.

1.6 OntoCarer Framework Stack

The OntoCarer Framework Stack below (Figure 1.3) shows the constituent elements of the OntoCarer Project including its implementation. Those layers that begin with ‘OntoCarer’ are organised from top to bottom in terms of their relative abstractness to the concrete in their implementations and from early to later in terms of the order in which they were constructed in the project. The other elements, those not beginning with ‘OntoCarer’ are external elements such as the ICF Classification, BDI Agency Theory & Architecture, Semantic Web Representations, and Jena class libraries. These are external elements that are used by the project, and are placed in the stack in the approximate order in time in which they were used in the project, with again the top of the stack being earlier and the bottom of the stack being later in the project.

Each of the layers is mapped in Figure 1.3 to the main sections in the thesis where the contents of the layers are covered.

1. OntoCarer Model Categories Agency, Body, Social, Disability & Assistance, Environmental
2. OntoCarer Top-level Ontologies Agent, Body Components, Body Abilities, Social Action, Buildings, Organisation OntoCarer-Link-Ontology
3. OntoCarer Domain Ontologies Education domain
4. ICF Classification Body Structures, Body Functions, Activities & Participation, Environmental Factors, Personal Factors
5. Belief–Desire-Intention (BDI) - Agency Theory & Architecture
6. Semantic Web Representations (RDF, RDFS, OWL)
7. OntoCarer Domain Model (CollegeModel)
8. Jena class libraries & SPARQL
9. OntoCarer Software Application - an assistive social network (OntoCarer CollegeModel application)

Figure 1.3 OntoCarer Framework Stack

OntoCarer Framework Stack Layers	Thesis Section
1. OntoCarer Model Categories	4.4.1, 6.2.1
2. OntoCarer Top-level Ontologies	4.4.1 to 4.4.3, 6.1 to 6.4, 8.6.2, 8.6.3, 9.1.4, Appendix D
3. OntoCarer Domain Ontologies	4.4.1 to 4.4.3, 7.1 to 7.11, Appendices D, H
4. ICF Classification	2.5.4, 4.4.2, 6.3.2, 6.3.3, 7.3, 7.4, 8.7, 9.13
5. Belief–Desire-Intention (BDI)	2.3.1, 2.3.2, 5.1 to 5.6, 8.6.6, 8.6.7, 9.1.1 to 9.1.3
6. Semantic Web Representations	3.2.2, 6.1 to 6.4, 7.1 to 7.11
7. OntoCarer Domain Model	8.5, 8.5.2, Appendices E, G
8. Jena class libraries & SPARQL	4.4.4, 8.6, 8.6.1
9. OntoCarer Software Application	4.4.4, 8.6 to 8.6.7, 9.1.2, 9.1.3, 9.2, Appendices A, B, C

Table 1.2 Mapping of OntoCarer Framework Stack Layers to Thesis Sections

OntoCarer Framework Stack

These are the layers of the OntoCarer Framework, starting from the top of the stack.

Layer 1 – OntoCarer Model Categories

The OntoCarer Model Categories constitute the most abstract constituents of the Ontological Framework which cover the five areas that need to be classified in the top-level ontologies, if those ontologies are to fulfil their purpose to be able to provide the classifications for a comprehensive application for planning assistance to disabled persons in organisations.

- i) **Agency Model Category** - which is concerned with modelling the individual agents and their actions, in the context of the BDI theory

- ii) **Body Model Category** - modelling the agent's: body components, body abilities
- iii) **Social Model Category** – involving the modelling of organisations, their personnel and users, and the roles and social actions they play in the organisation
- iv) **Disability & Assistance Model Category** – modelling the level of ability or disability in the agents' body, bodily actions and social actions and the process of identifying and planning relevant assistance.
- v) **Environmental Model Category** – modelling the buildings of the organisations in which the agents act

Layer 2 – OntoCarer Top-Level Ontologies

The OntoCarer Top-Level Ontologies constitute the implementation of the categories of the OntoCarer Models in seven top-level ontologies. The top-level ontologies are the most general ontologies in the framework, which may be extended further into particular domains. Those ontologies are: Agent, Body Components, Body Abilities, Social Action, Buildings, Organisation, and OntoCarer-Link-Ontology.

They are covered by the five OntoCarer Model Categories in the following way:

- **Agent Model Category** – Agent ontology
- **Body Model Category** – Body Components, Body Abilities ontologies
- **Social Model Category** – Organisation, Social Action ontologies
- **Disability & Assistance Model Category** - Agent, Social Action, Body Components, Body Abilities, Buildings, OntoCarer-Link-Ontology ontologies
- **Environmental Model Category** – Buildings ontology

Layer 3 – Domain Ontologies

Domain ontologies extend top-level ontologies into particular organisational domains, representing the classifications necessary to model the particular organisations, their agents, roles, social actions and buildings. In this project's case, it is the Education domain that is modelled.

The top three layers of the OntoCarer Framework stack constitute the OntoCarer Ontological Framework.

Layer 4 – The ICF Classification

The WHO International Classification of Functioning, Disability and Health (World Health Organisation, 2001) is a well-established health and functioning classification which includes body structures, body functioning and their disabilities. The ICF functions as an authoritative

source of knowledge on the body (its structures and functions) and its disabilities for the OntoCarer Framework.

The ICF also acts as a means of validation for the OntoCarer Body Component and Body Abilities ontologies, which are simpler and provide independence from the ICF classification.

The OntoCarer Framework Agent and Social Action ontologies provides an extension to the ICF in the area of roles and social actions in organisations, providing a more comprehensive and usable classification in an assistive software application than those of the ICF Activities & Participation categories.

The OntoCarer Framework is designed to be compatible with the ICF classification. This means that the ICF classification as an OWL ontology can be used as part of OntoCarer's assistive software application, if necessary.

Layer 5 - Belief-Desire-Intention (BDI) - Agency Theory & Architecture

The BDI (Belief Desire Intention) theory (Bratman, 1987) (Wooldridge and Jennings, 1995) is a theory of action and of deliberative practical planning for agents that can be used for modelling the actions of both human and computer agents in OntoCarer's mixed initiative planning system.

The OntoCarer Framework extends BDI theory to include disabled persons and assisting agents, creating OWL representations of the concepts and statements involved. OntoCarer's planning process fills the gap between the disabled person's intentions and their ability to perform the necessary actions to fulfil those intentions, by identifying and finding the necessary assistance that can carry out the actions. OntoCarer uses a BDI Agent Architecture (Wooldridge, 1999) for its application. The use of BDI theory and architecture in OntoCarer enables a seamless transition between the planning of assisted and assisting human agents and the automated planning of the Organisation Agent within the Framework.

Layer 6 - Semantic Web Representations (RDF, RDFS, OWL)

The Semantic Web (Berners-Lee et al, 2001) offers OntoCarer a machine readable representation for the conceptual model of its ontologies that is universal and widely adopted. The Semantic Web languages RDF, RDFS, and OWL are used to implement the OntoCarer Framework Ontologies.

Layer 7 - OntoCarer Domain Model

An OntoCarer Domain Model entails creating instances of the OntoCarer OWL Top-level and domain ontology classes, so that those individuals and their relations can represent a particular organisation in RDF. This is done by creating a College domain model using the ontologies of OntoCarer, for a model of a college organisation with its building, complete with rooms, corridors, staircases etc and agents – students, lecturers, library assistants, technicians, security guards, etc. with their profiles including their roles, actions, desires and intentions, and their body components and abilities. This

College model can then be used as a case study for the application of the OntoCarer Ontological Framework ontologies.

This simulated college; the CollegeModel microworld is then used in the OntoCarer software application to represent a college and to plan assistance for its disabled agents.

Layer 8 - Jena class libraries & SPARQL

The CollegeModel domain model is created in RDF. In order to use this data model in a software application it is necessary to be able to load this RDF data, along with the ontologies that classify it, into the application and process it. The Jena class libraries (Apache Software Foundation, 2017) provide a specialised library of Java classes that offer this facility. Enabling files of RDF statements to be read into a Java object oriented program and be processed by it. In addition this RDF data can be queried in the program, using the specialised query language for RDF statements which is SPARQL (SPARQL Protocol and Query Language) (W3C, 2008b).

Layer 9 - OntoCarer software application

The OntoCarer Software Application takes the CollegeModel domain model and creates a software application that implements scenarios whereby the process of initiating assistance is triggered by human agents through their mobile phones using a BDI model of action and communicated to a centralised Organisation Agent that plans and coordinates the delivery of personalised assistance by other assisting agents to their mobile phones.

The Organisation Agent embodies a BDI software architecture, to seamlessly implement the enactment of agency from the assisted agents through to the assisted agents, as an Intentional System (Dennett, 1971). The OntoCarer Software application creates an assistive social network of agents and their actions and assisting actions, that facilitates the distribution and identification of assistance, and its planned direction across the organisation.

The simulated reality of the CollegeModel microworld is used to validate the OntoCarer Ontological Framework.

1.7 The Structure of the Thesis

Chapter 1 Introduction

Introduces the thesis: the problems it attempts to solve, the research motivations, its methodology, its research aims and objectives, the scope and limitations of the research, the structure of the OntoCarer Framework along with the related representations and technologies, and the contributions to knowledge it makes.

Chapter 2 Literature Review of Agents & Disability

Reviews prior research on agents and agent systems, and on theories of disability and in particular the WHO ICF classifications.

Chapter 3 Literature Review of Ontologies & The Semantic Web

Reviews prior research on ontologies and ontology methodologies, and describes the Semantic Web and its representation languages.

Chapter 4 The OntoCarer Ontological Framework Methodology

Explains the need for an OntoCarer Methodology for developing the OntoCarer Ontological Framework and then goes on to define the OntoCarer Methodology and the constituents of its development lifecycle.

Chapter 5 The OntoCarer BDI Representations

Explains in detail the OntoCarer BDI Semantic Web representations, along with the options of available for doing this and why the particular representations of BDI concepts in the OntoCarer Framework were chosen.

Chapter 6 Developing the OntoCarer Ontological Framework – Top-Level Ontologies

Describes in detail the seven OntoCarer Ontological Framework Top-Level ontologies.

Chapter 7 OntoCarer Ontological Framework - Domain Ontology Extensions

Describes in detail the extension of the OntoCarer Top-Level ontologies into the Education domain for the purposes of validating the Ontological Framework through a college simulation and assistive software application.

Chapter 8 Evaluation – Verification & Validation of the OntoCarer Ontological Framework

Evaluating the OntoCarer Ontological Framework through a series of verification checks defined in the methodology and validation through a software application and data model that simulates a college organisation and its agents, along with seven scenarios of assistance that the assistive social network successfully provides assistance for. The OntoCarer Software Architecture is evaluated as a BDI Agent Architecture. The ICF is evaluated in relation to the OntoCarer ontologies.

Chapter 9 Discussions, Conclusions and Further Work

1.8 Originality and Contributions to Knowledge

The original contributions to knowledge made by this thesis are the following:

- An Ontological Framework consisting of number of OWL ontologies that are integrated with each other for the purpose of providing personalised assistance in organisations for the people with disabilities, and a Java software application that uses this Ontological Framework to provide such assistance through an assistive social network.
- The extension of BDI theory to incorporate disabled agents and their assistance. With the beliefs, desires and intentions of BDI theory translated into OWL Semantic Web representations. Where that BDI representation can be used within an assistive planning software application that uses a BDI software architecture and which is used to create an assistive social network.

- Developing an ontological framework of organisational assistance that is compatible with the WHO ICF and that can add to the functionality of ICF ontological classifications within the OntoCarer assistive software application.

1.9 Summary

This first chapter provides an introduction to the thesis. It begins with an outline of what the project aims to do, which is constructing an ontological framework of ontologies that will provide the classifications necessary for creating an assistive social network to find the personalised assistance need for people with health conditions and disabilities.

The chapter then goes on to discuss the motivations for conducting the research, both in theoretical areas and potential practical benefits of the research too.

The aim of the thesis is stated which includes constructing an ontological framework, that is used to create an assistive social network for organisations. Five objectives are also stated, which when carried out will implement the aims.

The methodology for conducting this research is summarised, with a more detailed exposition of the OntoCarer Ontology Framework Methodology is given in Chapter 4.

The scope of the research is expounded and the limitations under which it was conducted are also given.

The main elements of the project are illustrated in the OntoCarer Framework Stack. This shows the main elements arranged from top to bottom in their time order, and the order in which they were included in the project. These nine elements are then described.

The structure of the thesis is given by providing brief summaries of the contents of its nine chapters.

The chapter then concludes with the three original contributions to knowledge that the thesis makes.

Chapter 2

Literature Review of Agents & Disability Research

2.1 Introduction

In the chapter that follows the existing research on agents and disability is examined, in order to:

- Understand the prior research on agents and disability
- Provide a foundation for designing the elements of the OntoCarer Framework that model agents and disabilities
- Provide benchmarks for evaluating the models of agents and disabilities created within the OntoCarer Framework

2.2 Agents in OntoCarer

Human agents exercise their agency by implementing their intentions - that is by performing the actions that realise those intentions. In the case of human agents with disabilities, their disability can be represented as an impairment of this agency, as they are unable as a result of their disability to perform the actions that realise those intentions.

A secondary meaning of the term 'agent' is that of a person who acts on behalf of another in order to assist them. In the case of OntoCarer, human agents have roles that are comprised of their potential actions in the organisation. Those actions - which can realise their purposes, are the objects of desire and intention. In the case of a disability stymying the performance of those intended actions, then an assisting agent can act on behalf of the original agent. The assisting agent can be sought, which can then perform the assisting action that can fulfil the original agent's intended action.

Agents and agency take several forms in the OntoCarer system, through; agent *interaction*, agent *representations*, agent *reasoning* and an agent *architecture*.

Human agents *interact* with OntoCarer through mobile telephones to further their desires and intentions in an organisation. The human agents and their agency are represented in OntoCarer by representing agents in their roles and their actions including the *representations* of the agent's desires and intentions in relation to their actions'.

The OntoCarer Organisation Agent *reasons* with these agent representations and itself embodies a software *agent architecture*, to seamlessly process the *representations* of the agent - their desires and intentions, in order to find, and then direct the assisting actions of their agents, to provide the assistance needed.

2.2.1 Agent Definitions

A good starting point in a review of the research literature on agents, is to ask the question ‘What is an agent?’ The question of what constitutes an agent is raised in the article ‘Is it an Agent, or just a Program?: A Taxonomy for Autonomous Agents’

(Franklin and Graesser, 1997). This article considers the problem of distinguishing an agent from other types of programs. It looks at several definitions of agents and attempts to come up with a definition that will provide an answer to the question.

Here are some of the most relevant definitions that Franklin and Graesser refer to:

- “An agent is anything that can be viewed as perceiving its environment through sensors and acting upon that environment through effectors”
(Russell and Norvig, 1995)
- “Autonomous agents are computational systems that inhabit some complex dynamic environment, sense and act autonomously in this environment, and by doing so realize a set of goals or tasks for which they are designed.”
(Maes, 1995)
- “Intelligent agents continuously perform three functions: perception of dynamic conditions in the environment; action to affect conditions in the environment; and reasoning to interpret perceptions, solve problems, draw inferences, and determine actions.” (Hayes-Roth, 1995)
- “Intelligent agents are software entities that carry out set of operations on behalf of a user or another program with some degree of independence or autonomy, and in so doing, employ some knowledge or representation of the user’s goals or desires.” (‘The IBM Agent’ in Franklin and Graesser, 1997)

Franklin and Graesser conclude that these definitions derive from two common uses of the word agent. The first is “*one who acts or who can act*” and the second “*one who acts in place of another with permission*” with the second definition dependent upon the first.

The definition of an agent that Franklin and Graesser come to is:

“an autonomous agent is a system situated within and part of an environment that senses that environment and acts on it, over time, in pursuit of its own agenda and so as to effect what it senses in the future.”

Other definitions of agents are provided by Wooldridge, and Dickinson.

Michael Wooldridge gives this as a “core definition of agency”

An agent is a computer system that is situated in some environment, and that is capable of autonomous action in this environment in order to meet its design objectives. (Wooldridge, 2002)

Dickinson in the PhD thesis BDI Agents and the Semantic Web (Dickinson, 2006) gives the definition:

“An agent is a computer system that is situated in some environment, and that is capable of autonomous action in this environment in order to meet its design objectives, and which is capable of interactions about its current state, goals, actions, or mental attitudes.”

2.2.2 Agent Characteristics

As well as definitions of what an agent is, agents are described as having other characteristics too.

These are some of them:

Wooldridge and Jennings describe agents as having the following characteristics - “a hardware or (more usually) software-based computer system that enjoys the following properties:

- *autonomy*: agents operate without the direct intervention of humans or others, and have some kind of control over their actions and internal state;
- *social ability*: agents interact with other agents (and possibly humans) via some kind of agent-communication language;
- *reactivity*: agents perceive their environment, (which may be the physical world, a user via a graphical user interface, a collection of other agents, the internet, or perhaps all of these combined), and respond in a timely fashion to changes that occur in it;
- *pro-activeness*: agents do not simply act in response to their environment, they are able to exhibit goal-directed behaviour by taking the initiative.”

(Wooldridge and Jennings, 1995)

Dickinson in the PhD thesis BDI Agents and the Semantic Web (Dickinson, 2006) collects together the following set of characteristics of agents from different authors:

- *Rationality*: for each possible sequence of percepts, a rational agent should select an action that is expected to maximise its performance measure (Russell and Norvig, 1995)
- *Communicative*: interlocutors (agents or agents and humans) share enough understanding of the domain of discourse – they have a shared ontology – to enable meaningful discourse (Hendler, 2003)
- *Capable*: distinguishes an agent that can act in the world from advisors that only supply information (Hendler, 2003)
- *Adaptive*: an agent should be able to alter its behaviour based on past history, user feedback and environmental factors (Hendler, 2003)
- *Problem solving* – suggesting that the problems the agent is asked to solve are only partially specified (Luck, McBurney & Priest, 2003)
- *Temporal continuity*: an agent is not just a one-shot behaviour, mapping input to output and then terminating (Etzoi and Weld, 1995)

This is the list of agent features:

- *Situated* in an environment
- *Acting* in an environment
- *Perceiving* the environment

- *Reactivity* to environment - respond to changes in the environment
- *Autonomous* – able to deliberate about its states and actions independently of the environment
- *Proactive* - have Goals and Tasks that it can initiate action to achieve
- *Reasoning* - to interpret perceptions, solve problems, draw inferences, and determine actions
- *Rationality* – act to maximise its performance measure
- *Communicative* - with a social ability

From the above agent definitions and agent characteristics we can derive and compose a list of agent features from which we can later use to evaluate OntoCarer as an agent system, in Chapter 8.

2.3 Agent Architectures

This section will consider the different software agent architectures. Where an agent architecture describes its functional components and how they interact with each other to produce the required outputs. Beginning with the Belief-Desire-Intention (BDI) Agents, as it is this architecture that is of prime importance for the present project.

The main Agent Architectures are:

- Belief-Desire-Intention agents
- Logic based agents
- Reactive agents
- Hybrid or Layered Architectures (Wooldridge , 1999)

2.3.1 Belief-Desire-Intention Agents

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GRATE	33
NUIN	33

Table 2.1 Table mapping BDI Agents sub-headings to pages

Belief-Desire-Intention agents are also known as practical reasoning agents.

Practical reasoning is concerned with deciding what actions to do in order to achieve our goals.

Practical reasoning involves two processes, deliberation - deciding what goals we want to achieve and means-ends reasoning - how we are going to achieve those goals.

“Means-end reasoning is the process of deciding how to achieve an end (i.e. an intention that you have) using the available means (i.e. the actions that you can perform). Means-ends reasoning is perhaps better known in the AI community as planning” (Wooldridge, 2002). Wooldridge then goes on to define what ‘planning’ means in this context:

“Planning is essentially automatic programming. A planner is a system that takes as input representations of the following.

- (1) A goal, intention or a task. This is something that the agent wants to achieve, or a state of affairs that the agent wants to maintain or avoid.
- (2) The current state of the environment – the agent’s beliefs.
- (3) The actions available to the agent.

As, output, a planning algorithm generates a plan. This is a course of action – a ‘recipe’. If the planning algorithm does its job correctly, then if the agent executes this plan (‘follows this recipe’) from a state in which the world is as described in (2), then once the plan has been completely executed, the goal, intention or task described in (1) will be carried out.”

(Wooldridge, 2002)

The BDI model of agent architecture is used to define agent-based practical reasoning. The BDI model of agent architectures was developed by Michael Bratman (Bratman, 1987). This treats automated agents as being analogous to human agents by ascribing beliefs, desires and intentions to them, in order to explain, predict and reason about their behaviour.

The belief, desire and intention each play different roles in relation to understanding and modelling an agent’s behaviour. These are explained by George Kiss (Kiss, 1992) as having the following three aspects. *Belief*, relates to the cognition of an agent, it is an epistemic state concerning the beliefs of the agent about the world. *Desire* is an affective state, and relates to the motivations of the agent, the set of goals and preferences it has the states of affairs the agent would like to bring about. *Intention* is concerned with the actions of an agent, and relate to the desires that the agent has committed to achieving through its plans.

Eric Werner (Werner, 1996) has proposed using less anthropomorphic terms than ‘belief’, ‘desire’ and ‘intention’ as part of his ICE Architecture (Information, Intentions, Communications, Cooperation, Evaluation, Empowerment) where the BDI model is regarded as a special case of ICE. Here Werner suggests using ‘information state’ instead of ‘belief’, ‘evaluations’ rather than ‘desire’, with ‘plan state’ and ‘intentional state’ adopted instead of ‘intention’.

Using the BDI concepts to describe agents means adopting what Dennett (Dennett, 1971) (Dennett, 1981) calls the ‘Intentional Stance’ towards these agents. It does not assert as to whether such things as computers or other machines, (or plants and animals for that matter), really have such states as beliefs and desires, but rather ask if it is pragmatically useful to treat them as having them, when

interpreting their behaviour. In the case of Dennett the use of the term ‘intentional’ in ‘intentional systems’ means that they can be ascribed intentional states. That is states such as belief, desire, hope, fear, etc, are states which are about something else, they are propositional attitudes, they relate the agent to a statement with semantic content. In so doing it posits not merely a reactor to an external event, but an interpreter of semantic content. A rational agent, one whose actions are consistent with its beliefs and desires in order to achieve its goals.

There are a number of advantages of viewing agents as intentional systems, as identified by (Singh, 1994)

- Viewing agents as intentional systems is ‘natural to us’, it is how we understand each other and other animals as agents.
- The use of such concepts provides succinct descriptions of complex systems that enable us to understand and explain their behaviours.
- The use of such concepts enable us to understand the regularities and patterns of behaviour independently of their physical implementation.
- These intentional concepts can also be used by other agents in the system to reason about other agents and to communicate with them.

These reasons are relevant to the OntoCarer system:

- In the case of the OntoCarer system the agent is not merely ‘reactive’, the agent is ‘deliberative’ an agent that reasons about its beliefs, in the context of pursuing its desires.
- Semantic Web representations are used in the form of RDF (W3C, 2004b) and OWL (W3C, 2012) which have semantic content that can be interpreted and reasoned about by human agents as well as computer agents, so it as a rational agent and an intentional system is appropriate, in a way in which it would not be if they were based upon neural networks for example.
- OntoCarer is a ‘Mixed Initiative’ agent system (Veloso, 1996) where a centralised computer agent communicates through apps hosted on mobile telephones and these act in cooperation and communicate with human agents as assisters and assisted, and not a self enclosed software agent system.
- The BDI model provides a common conceptual framework that easily allows computer agents and human agents to communicate with each other, about states of affairs such as locations, times, agent profiles including abilities, disabilities and actions, and by using human intentional notions such as belief, desire, and intention makes this the optimal agent architecture for the implementation of the OntoCarer framework.

BDI Agent Architecture

Ian Wooldridge in the article 'Intelligent Agents' (Wooldridge, 1999) identifies seven main components to a BDI agent. The architecture is illustrated in the diagram - Figure 2.1, below:

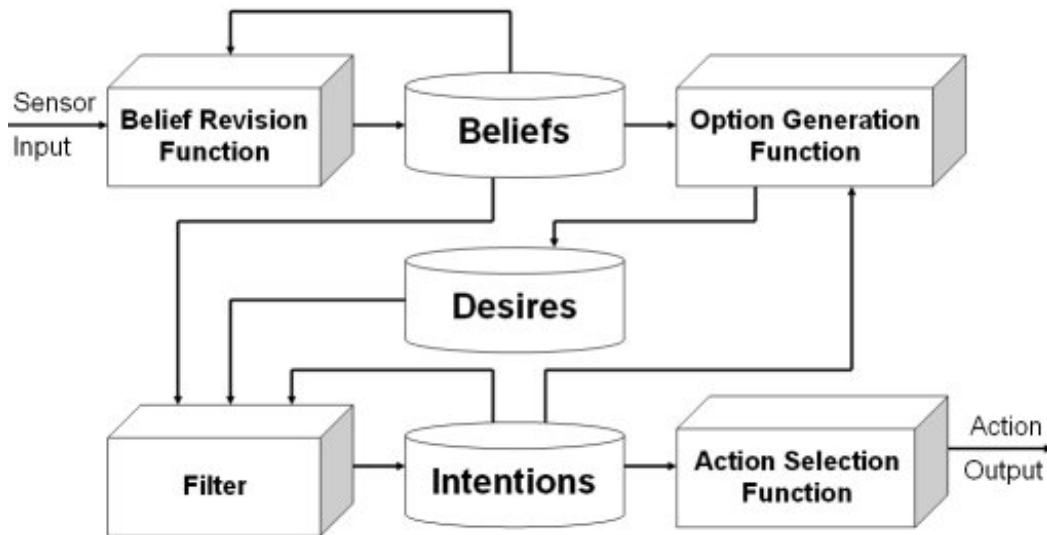


Figure 2.1 BDI Agent Architecture (Wooldridge, 1999)

Wooldridge's BDI agent is an individual agent, which receives sensory input that changes its beliefs about the environment and then decides on its actions based upon deliberation about its beliefs, desires, and intentions.

These are the seven main BDI agent components:

1. A set of current **beliefs**, representing information the agent has about its current environment;
2. A **belief revision function**, (br f), which takes a perceptual input and the agent's current beliefs, and on the basis of these, determines a new set of beliefs;
3. An **option generation function** generation function, (options), which determines the options available to the agent (its desires), on the basis of its current beliefs about its current intentions;
4. A set of **current options**, representing possible courses of actions available to the agent;
5. A **filter function** (filter), which represents the agent's deliberation process, and which determines the agent's intentions on the basis of its current beliefs, desires, and intentions;
6. A set of **current intentions**, representing the agent's current focus – those states of affairs that it has committed to trying to bring about;
7. An **action selection** function (execute), which determines an action to perform on the basis of current intentions.

These seven BDI components and their interaction will be used to compare the with the OntoCarer Agent Architecture in Chapter 8 in order to determine how far the OntoCarer software architecture is a BDI Agent Architecture.

Examples of BDI Architectures

There have been a number of previous systems based upon a ‘Belief, Desire, Intention Agent Architecture’ and are described in (Haddadi and Sundermeyer, 1996) These include IRMA (Intelligent Resource-Bounded Machine Architecture), PRS (Procedural Reasoning System), COSY, GRATE, and Nuin.

IRMA

IRMA (Bratman et al, 1988) is based upon Bratman’s theory of practical reasoning (Bratman, 1987) (Bratman, 1990). The IRMA architecture consists of ‘Information Stores’ and ‘Processes’. The Information Stores consists of Beliefs, Desires, and a Plan Library. The Processes consists of a Reasoner, Deliberation, and a Means-End Reasoner, amongst others.

The steps in forming plans in the system consist of the following. First an intention is formed. Intentions are structured into plans. The Means-End Reasoner for existing partial plans is used to propose sub-plans that complete the plans. The Opportunity Analyzer takes changes in the environment (which affect beliefs) in order to identify opportunities to satisfy desires and avoid threats. The Compatibility Filter checks if the options identified are compatible with existing intentions. Those options that survive the filtering process go to a Deliberation process that chooses between the options and updates the intentions being pursued. The new intentions are then structured into plans and the sequence begins again.

PRS

PRS (Procedural Reasoning System) (Georgeff and Ingrand, 1989), (Georgeff, Lansky, 1987) reasons about performing tasks in dynamic environments. The PRS architecture consists of a database of beliefs, a set of desires and a Knowledge Area of plans, which contains the steps of the procedures and the conditions for invoking the procedures. The Knowledge Area is divided into a metalevel Knowledge Area which is domain independent and is used for choosing the domain dependent plans from the sub Knowledge Area. An Interpreter acts as a reasoner within the system.

COSY

The COSY system (Burmeister and Sundermeyer 1992) consists of the following modules. Sensors, Actuators (for performing actions), Communications, Intentions (for strategic intentions where intentions are tasks to be executed), and Cognition. The Cognition module consists of tactical intentions; it evaluates perceptual knowledge, and prepares for action by checking the intentions.

The main components of the Cognition module are a Knowledge Base, a Script Execution Component – where Scripts are a stereotyped recipe or plan for a specific task, a Reasoning, Deciding and Reacting Component and a Protocol Execution Component that is used for the management of dialogues in communication.

GRATE

The GRATE system (Jennings, 1993) operates in a similar fashion to other BDI systems. It monitors events to establish new objectives. It uses means end analysis in order to find a plan in the recipe library to achieve the objectives. Any inconsistencies are then resolved, and other agents are sought in order collaborate on the goals.

NUIN

Nuin Agent Architecture (Dickinson and Wooldridge 2003) is an example of a BDI Agent architecture for agents in Semantic Web applications.

Nuin is based on the AgentSpeak(L) . An AgentSpeak(L) agent consists of a set of beliefs, constructed from an alphabet of first-order terms, and a set of plans.

Plans are constructed from a set of action symbols, together with connectives for serial action sequences, tests achieving a goal and raising an event.

The belief, desire and intention sentences do not include these modal operators, they are rather partitioned into blocks with their implicit labels marking them as such.

Beliefs are modelled as sets of first-order sentences.

Desires are modelled as collections of first-order sentences that represent characteristics of the world that an agent wishes to bring about or the agent's general preferences.

Intentions model the agent's current commitment to a course of action.

Events are structured as two ordered lists of events. The first models the agent's sensing of the world: all perceptions are delivered as events. The second models the agent's memory of recent percepts.

Each agent has one interpreter that will process the events from the agent's environment, and in conjunction with the agent's plans and other mental states determine the agent's behaviour.

The Nuin agent architecture is developed further and implemented in Ian Dickinson's thesis 'BDI Agents and the Semantic Web: Developing User-Facing Autonomous Applications' 2006 (Dickinson, 2006)

2.3.2 Other (non-BDI) Agent Architectures

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Table 2.2 Non-BDI Agent Architectures sub-headings mapped to pages

Logic-Based Architectures

Logic based agents, are also known as deliberate agents. In such agents the internal state is a database of formulae of classical first-order predicate logic. (Wooldridge, 2002) An agent's decision making strategy is encoded as a logical theory where selecting an action is the result of applying logical rules to the formulae to deduce theorems. (Wooldridge, 1999) But, logic based approaches have a number of disadvantages. Principally, the computational complexity of theorem proving, which makes them impractical for time, constrained situations where timely decision making is important. These problems are magnified in complex, dynamic, physical environments.

Reactive Agent Architectures

Reactive agent architectures aim to overcome the problems in Logic based architectures by avoiding the complexities of symbolic representations of the world and logical reasoning about such a world in order to decide which actions to take.

A reactive agent is one that responds to changes in the environment. Decision making is implemented in some form of direct mapping from situation to action. (Wooldridge, 1999) A purely reactive agent does not perform any kind of deduction, and so its behaviour is easier to predict, i.e. it should always act in the same way in response to events. (Walton, 2007)

An example of such a reactive architecture is Rodney Brooks subsumption architecture which is layered hierarchy of task-accomplishing behaviours, with lower layers containing more primitive behaviours (such as avoiding obstacles) which have precedence over layers further up the hierarchy. (Wooldridge and Jennings, 1995)

Hybrid Architectures

A Hybrid agent system aims to combine and utilise the benefits of different types of decision making process into one system. Such as reactive and proactive processes. A reactive subsystem may be used to react to environmental events and a proactive goal setting subsystem may be used when the agent needs to generate its own plans and actions. Such subsystems are organised into a hierarchy of interacting layers (Walton, 2007).

2.3.3 Agent Architectures Conclusions

Several agent architectures are considered above; the BDI, Logic, Reactive, and Hybrid agent architectures. The BDI architecture is the agent architecture chosen for the OntoCarer system. There are several reasons for choosing the BDI agent architecture for the OntoCarer system. OntoCarer is a mixed initiative system with human agents interacting with a computer system. Those human agents are represented in OntoCarer's ontologies and its model of the organisation. The human agent's desires, intentions and actions are represented. The shared beliefs of the human agents and the Organisation Agent about the organisation and its agents are represented in the RDF/XML model of the organisation. The representations are in the forms of statements with semantic content, that are

held to be true or false. A process of belief revision takes place within the Organisation Agent whereby changes in the organisation are reflected in the statements held to be true by the Organisation Agent. The Organisation Agent reasons with the statements held to be true and mediates between human agents as assisted agents and assister agents. The BDI model provides a common conceptual framework for understanding the actions of the human agents and their interaction with the Organisation Agent and its reasoning and communication processes. As the Organisation Agent mediates between human agents, and reasoning with statements, it is easier to design and understand this process if an intentional stance is taken to it to treat it as an intentional system and consequently as a BDI agent.

2.4 Disability

The conception of disability as expressed at the start of this chapter, is one of *impairment of agency*; an agent forms the intention to perform an action but is unable to execute the action because of disability and so requires assistance to have their intentions fulfilled. We will now consider this conception of disability in the wider context of existing disability theory in particular the medical model of disability and the social model of disability, and of existing disability classifications including the work of the WHO in classifying disabilities, so that a more comprehensive view of disability and assistance can be considered and potentially be incorporated in the OntoCarer Framework.

2.4.1 Medical Model of Disability

The medical model 'views disability as a problem of the person' (World Health Organisation, 2001). The medical model of disability concentrates on the individual human body and its component parts as the locus of the causes for disabilities, where those causes may be through such things as disease, genetic abnormality, physical trauma, and are diagnosed as such by medical experts. The result of these bodily impairments is to impair the functioning of these body components and affect in a negative way the corresponding body abilities such as seeing, hearing, walking etc. For the medical model the remedy for these bodily malfunctions lies in medical treatment in order to return the body to a state of normality or to use a prescribed treatment to manage and ameliorate the condition, along with the use of medical aids that can assist the functioning of the body such as wheelchairs, hearing aids, prosthetics, etc.

From the medical model we can derive that the root causes of disability lie in the body of the person affected and that this should be reflected in the OntoCarer ontologies with categories for body components and body abilities along with the assisters such as the disability aids that are provided for at this level.

2.4.2 Social Model of Disability

The social model of disability defines disability as ‘a social creation – a relationship between people with impairment and a disabling society’ (Shakespeare, 2006). Where the emphasis is on societal change rather than changing the disabled individual, so that there is the removal of barriers to the full participation and integration of disabled people in society (World Health Organisation, 2001). Those barriers include societal attitudes and policies, as well as removing physical barriers to the wider participation of the disabled in society. As the Union of the Physically Impaired Against Segregation states it:

“In our view, it is society which disables physically impaired people. Disability is something imposed on top of our impairments, by the way we are unnecessarily isolated from full participation in society” (UPIAS, 1975)

From the social model we can draw the idea, that it is the social organisation and everyone who participates in it can be involved in enabling the full participation of disabled people in the activities of the organisation. Everyone in an organisation, whatever their roles is potentially an assisted person and also potentially an assister too. An aim of this OntoCarer project is to create a prototype assistive social network to enable those in an organisation to both provide assistance and receive assistance where they are able, and so make possible an assistive organisation, as part of an assistive society.

The World Health Organisation aims to integrate these two models, the medical model and the social model, into a “biopsychosocial” approach as described in the World Health Organisation International Classification of Functioning, Disability, and Health (ICF) (World Health Organisation, 2001) which is described in detail below.

The World Health Organisation thus defines disability in these terms which aims to integrate the different models:

"Disabilities is an umbrella term, covering impairments, activity limitations, and participation restrictions. An impairment is a problem in body function or structure; an activity limitation is a difficulty encountered by an individual in executing a task or action; while a participation restriction is a problem experienced by an individual in involvement in life situations. Disability is thus not just a health problem. It is a complex phenomenon, reflecting the interaction between features of a person’s body and features of the society in which he or she lives." (World Health Organisation, (accessed) 2020)

2.5 Disability Classifications & Models

There are a number of existing classifications and models of disabilities and health impairments. These existing classifications and models include: HAAT (Human Activities Assistive Technology model) (Cook and Hussey, 2002), CAT (Comprehensive Assistive Technology model) (Hersh and Johnson, 2008), the ISO9999 Assistive products for persons with disability terminology standard (ISO, 2016), and the World Health Organisation International Classification of Functioning, Disability, and Health (ICF) (World Health Organisation, 2001). These disability classifications and

models are surveyed here. The reasons for surveying the existing disability classifications are to find out what classifications already exist so as to not ‘reinvent the wheel’ and also to discover what is missing in these classifications as far as the goals of the OntoCarer project are concerned, in particular whether they are able to classify the elements of the assistance lifecycle. The existing classifications may, where they are useful; be incorporated into the OntoCarer classifications - possibly as an existing OWL ontology, or provide the basis for the design of some elements of the OntoCarer ontologies, such as specific categories, classes, or impairment metrics. The existing classifications where they have been validated may also be a source of validation for the related classifications in the OntoCarer ontologies.

2.5.1 Human Activities Assistive Technology model

The Human Activities Assistive Technology model (HAAT) (Cook and Hussey, 2002) consists of the following four factors: Human Person, Activity, Assistive Technology, and Context.

The Human Person is the human agent that has sensory inputs, cognitive abilities, and motor capabilities. The Activity consists of the procedure, operation or task the human agent aims to achieve. The Assistive Technology component defines the assistive device that is used to overcome the disability in the face of the environmental context in which the person operates. The Context consists of the social and physical environment in which the person their activities, and the assistive technologies take place and in which they operate.

The HAAT model is an expansion of a pre-existing human performance framework (Bailey, 1989) for studying humans doing technological task consisting of the three elements: humans, activities, and context, to which Cook and Hussey added the assistive technology element. These four elements find similar correlates in the OntoCarer Framework of ontologies. The Human Person corresponds to human agents and their representations in OntoCarer. Activities correspond to the intended social actions in OntoCarer. The Context corresponds to the organisations and in particular their buildings in OntoCarer. The Assistive Technology element corresponds to the assister aids in OntoCarer. Whilst HAAT has these correlates with these OntoCarer elements it lacks a correlate to the Organisation Agent which identifies the need for assistance and plans and coordinates that assistance between human agents. HAAT only provides ‘a basic outline structure’ (Hersh and Johnson, 2008) and does not have detailed classifications of its elements, or a metric of disability, consequently HAAT as a model is too simple for its use to add significant input to the OntoCarer project.

2.5.2 Comprehensive Assistive Technology model (CAT)

The CAT (Comprehensive Assistive Technology model) (Hersh and Johnson, 2008) by Hersh and Johnson developed out of the HAAT model. The CAT model has a tree structure and can be presented as a series of tree diagrams. The top level contains four elements like the HAAT model. They are Person, Context, Activities, and Assistive Technology.

Each of these elements is decomposed further through layers of attributes of these four elements. Here is a diagram (Figure 2.2) of the Person component and its attributes.

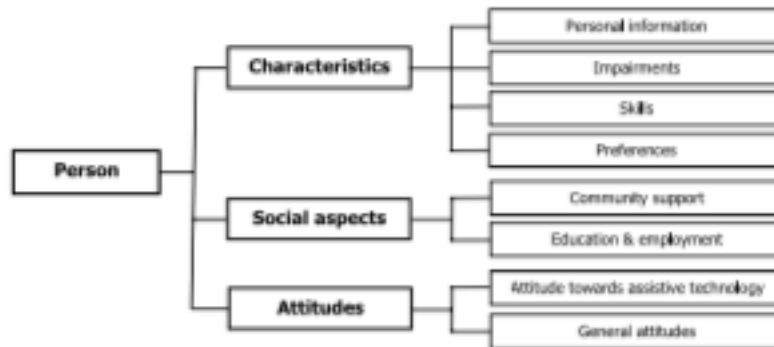


Figure 2.2 Person component and its attributes in the CAT model (Hersh and Johnson, 2008)

The Context component and its attributes in the Cat model are shown below (Figure 2.3)



Figure 2.3 Context component and its attributes in the CAT model (Hersh and Johnson, 2008)

Below is the Activities component and the top level of its attributes (Figure 2.4)



Figure 2.4 Activities component and its attributes in the CAT model (Hersh and Johnson, 2008)

Each of the six Activities attributes has their own set of attributes that are in the CAT model. For example the attributes for the Daily Living, Cognitive Activities, and Education and Employment attributes are displayed below (Figures 2.5, 2.6, 2.7)



Figure 2.5 Daily Living activity and its attributes in the CAT model (Hersh and Johnson, 2008)

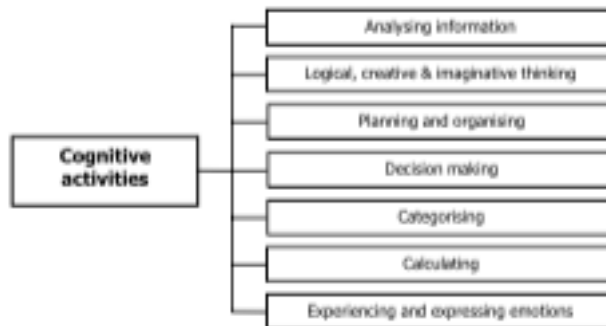


Figure 2.6 Cognitive activities and its attributes in the CAT model (Hersh and Johnson, 2008)



Figure 2.7 Education and Employment activity and its attributes in the CAT model (Hersh and Johnson, 2008)

The other of the four top-level components of the CAT model is the Assistive Technology component, and is displayed below with its attributes (Figure 2.8).

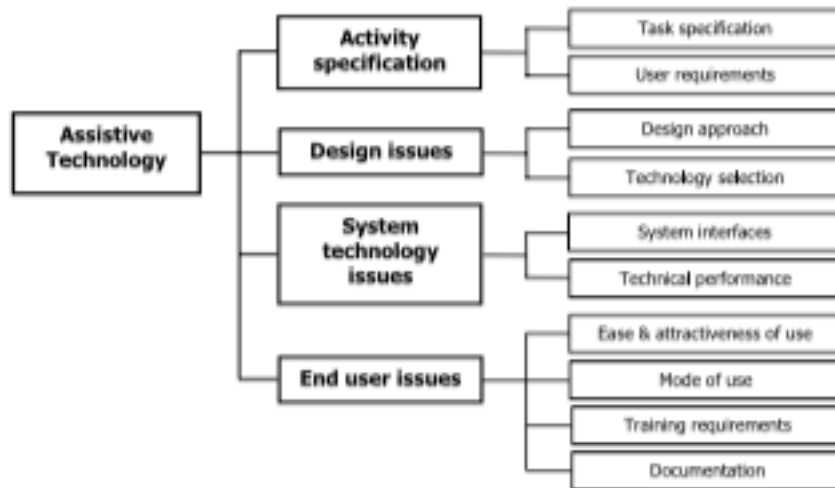


Figure 2.8 Assistive Technology component and its attributes in the CAT model (Hersh and Johnson, 2008)

The CAT model expands the HAAT model to produce a more detailed system of classifications for each of the four components. These classifications include a number of categories that may be considered when designing a system to provide dynamic assistance to persons in organisations in performing their roles and actions. They include the identification of the Person and their Characteristics which are their Personal information, Impairments, Skills and Preferences. The Context including the Infrastructure, the Assistive technology context, and the Location and environment.

The Activities and the attributes relating to Mobility, Daily living, Communication, Cognitive activities, Education and Employment. The Assistive technology and its attributes of Activity specification, Design issues, System technology issues, and End user issues. All these components have some relevance to the design of the OntoCarer Framework and application as considerations to be borne in mind. They could function as a possible checklist of items, but the classifications are not useful as they are still too general and as a model they are not organised around the organisation and the roles the person plays in the organisation. The CAT classifications are insufficient for facilitating the OntoCarer Assistance Lifecycle for social actions. Specifically they do not include organisational roles and their actions and their related assisters. They also do not specify in detail the body components and body abilities. They do not include detailed classifications for the buildings in their 'Infrastructure' and 'Location and environment' classifications. There is no metric for impairment for body components and abilities, roles and their actions that can be used to identify the impairments for processing in a software application. For these reasons the CAT classifications are not adopted by the OntoCarer project.

2.5.3 ISO9999 Assistive products for persons with disability terminology

The ISO9999 Assistive products for persons with disability terminology standard (ISO, 2016), classifies assistive products including software. The classification consists of three hierarchical levels, which are: classes, subclasses and divisions. Each of the constituents of the three levels consists of a code, a title and may be supplemented by an explanatory note and reference to other parts of the classification. The code consists of three pairs of digits. The first pair indicates a class, the second a subclass, and the third pair indicates a division. The code determines their position in relation to each of these three elements.

The ISO9999 is a standard that has a narrow scope focusing upon types of assistive products based upon their function in providing assistance. Within that narrow scope it provides detailed classifications for many different types of assistive products.

The ISO9999 specifically excludes ‘personal assistance’ from the Standard. The identification, selection and direction of personal assistance to persons with disabilities in an organisation is a key function of the OntoCarer ontologies and software application, consequently the ISO9999 standard is unable to play a significant role in the OntoCarer project. Though ISO9999 could play a peripheral role in relation to the identification of assister aids in a possible extension to the OntoCarer ontologies. The assister aids in the OntoCarer ontologies are identified in relation to the body component, body ability, or social action they are assisting as an assister or assister aid. By adding a property such as ‘assisterHasISO9999code’ an assister could be linked to an ISO9999 code that classifies that assister. That ISO9999 code could in its turn be linked by a property ‘iso9999HasProduct’ which linked the ISO code to specific products that fell under that ISO9999 classification so identifying a specific product in the world that could fulfil that assister or assister aid function.

2.5.4 The International Classification of Functioning, Disability and Health

The ICF is the International Classification of Functioning, Disability and Health (World Health Organisation, 2001). The ICF was developed by the World Health Organisation. The aim of the ICF classification is "to provide a unified and standard language for the description of health-related states". The focus of the ICF is on the functioning of the person, and that includes healthy aspects as much as disabilities. The ICF classification is not concerned with medical aspects of diagnosis that is left to other WHO classifications such as the ICD-10 (World Health Organisation, 1994).

The ICF sub-headings	Page
The purpose of the ICF	42
The structure of the ICF	42
Functioning & Disability: Body Structures & Body Functions	43
Activities & Participation: Participation & Activity	44
Contextual Factors: Environmental Factors & Personal Factors	45
ICF Qualifiers	45
The ICF and OntoCarer	46

Table 2.3 Table mapping the ICF sub-headings to pages

The purpose of the ICF

The ICF is a multipurpose classification. The aims of the ICF include the following. To provide a scientific basis for understanding and studying health, outcomes and determinants. To establish a common language for describing health and health related states. To permit comparison of data across disciplines, services, countries, and times. Its applications include; use as a clinical tool, in needs assessment, matching treatments with specific conditions, vocational assessment and rehabilitation. As a statistical tool for the recording of data. As a research tool to measure outcomes. As a social policy tool, and also as an educational tool. (World Health Organisation, 2001) Because of this broad spectrum of aims and applications not all of the ICF's aspects may be relevant for use within the OntoCarer project.

The structure of the ICF

The ICF is organised into two parts each with two components. Part 1 is Functioning and Disability and its components are Body functions and Structures, and Activities and Participation. Part 2 is Contextual Factors and consists of Environmental Factors and Personal Factors. The components themselves consist of a number of domains which in turn contain categories. To each of these categories is added a qualifier which specifies the degree of functioning. (World Health Organisation, 2001)

	Part 1: Functioning & Disability		Part 2: Contextual Factors	
Components	Body Functions and Structures	Activities and Participation	Environmental Factors	Personal Factors
Domains	Body functions Body structures	Life areas (tasks, actions)	External influences on functioning and disability	Internal influences on functioning and disability
Constructs	Change in body functions (physiological) Change in body structures (anatomical)	Capacity Executing tasks in a standard environment Performance Executing tasks in the current environment	Facilitating or hindering impact of features of the physical, social, and attitudinal world	Impact of attributes of the person
Positive aspect	Functional and structural integrity	Activities Participation	Facilitators	not applicable
Negative aspect	Functioning Impairment Disability	Functioning Activity limitation Participation restriction Disability	Barriers / hindrances	not applicable

Table 2.4 International Classification of Functioning, Disability and Health structure ((World Health Organisation, 2001)

Functioning & Disability: Body Structures & Body Functions

The Functioning and Disability component Body Structures is concerned with the anatomical parts of the body such as organs, limbs and their components. An example would be the structures of the eyeball.

Body Functions are the physiological functions of body functions including psychological functions. These body functions are then classified in a hierarchy from the more general to the more specific functions. Examples of this are; 'seeing functions' sub-classified into 'visual acuity functions' then

onto 'binocular acuity of distant vision' or sub-classified into 'quality of vision' then onto 'light sensitivity'.

Activities & Participation: Participation & Activity

The Activities & Participation part has two components Participation and Activity. Participation and Activity are used for comparison with each other, reflecting how tasks are carried out by the person in their current environment (Participation) as compared with a standard environment (Activity), such as a laboratory environment. As Activity and Participation tasks are used for comparison with each other the task list is the same for each component. Participation is involvement in a life situation. The Participation qualifier is Performance. Activity is the execution of a task or action by an individual. Capacity is the Activity qualifier.

These definitions are given for the terms:

- Activity is the execution of a task or action by an individual.
- Participation is the involvement in a life situation.
- Activity limitations are difficulties an individual may have in executing activities.
- Participation restrictions are problems an individual may experience in involvement in life situations.

(World Health Organisation, 2001)

These are the Activities & Participation domains/life areas into which tasks and actions are grouped:

- Learning & applying knowledge
- General tasks and demands
- Communication
- Mobility
- Self-Care
- Domestic Life
- Interpersonal interactions and relationships
- Major life areas
- Community, social and civic life

(World Health Organisation, 2001)

Examples of hierarchical classifications (general to particular) within these life areas are the following:

- Learning and applying knowledge - purposeful sensory experiences - listening
- Learning and applying knowledge - applying knowledge - writing
- Communication - communicating - producing - speaking
- Communication - communicating - conversation and use of communication devices and techniques - conversation - starting a conversation
- Mobility - walking and moving - walking short distances
- Mobility - walking and moving - walking on different surfaces

- Self-care - washing oneself - washing whole body
- Domestic life - household tasks - doing housework - cleaning living area

Contextual Factors: Environmental Factors & Personal Factors

The Contextual Factors consists of Environmental Factors and Personal Factors. Environmental Factors make up the physical, social and attitudinal environment in which people live and conduct their lives. The qualifier for this indicates the extent to which the environment is a facilitator or barrier to the person described.

The domains for Environmental factors are:

- Products and Technology
- Natural environment and human made changes to environment
- Support and relationships
- Attitudes
- Services, systems and policies

Examples of Products and Technology are food, products for daily living, assistive products.

Examples of Natural environment and human made changes to environment are land forms, climate, light, air quality. Examples of Support and relationships are family, friends, personal care providers.

Personal Factors are not defined in the ICF, but are left to the user of the classification to define their own categories.

In the classificatory system for the ICF, each component starts with a letter:

b – Body Functions

s – Body Structures

d - Activities (a) & Participation (p)

e – Environmental Factors

These letters are then followed by the categories (chapter + levels) which are 2 numerals for the short ICF version or up to 4 numerals for the full version.

Example, category d4500 ‘walking short distances’

ICF Qualifiers

In order to indicate the degree of functioning for each category in the ICF a qualifier is used. In the case of written documents the qualifier is one, two or more numbers after a point. The first qualifier for each component (b,s,d,e) describes the extent of the problems, where:

xxx.0 is No problems, xxx.1 is Mild, xxx.2 is Moderate, xxx.3 is Severe xxx.4 is Complete, xxx.8 is Not specified, xxx.9 is Not applicable.

Example d4500.0 for ‘walking short distances’ with no problems.

In the case of Activities & Participation there are two qualifiers. For Participation the qualifier is Performance, which is concerned with performance in the current environment. For Activities the qualifier is Capacity which is concerned with performance in a “standardized” environment, either actual or assumed.

These can be used to add up four qualifier digits to each ICF component. These four qualifiers are:

- 1) Performance qualifier with assistance
- 2) Capacity qualifier without assistance
- 3) Capacity qualifier with assistance
- 4) Performance qualifier without assistance

Where ‘assistance’ refers to aids that mitigate the disability.

The ICF and OntoCarer

The World Health Organisation International Classification of Functioning, Disability, and Health (ICF) (World Health Organisation, 2001) disability classifications are used by OntoCarer where the:

- ICF is an authoritative source of knowledge on the body structures and functions and disability, for constructing the domain Body Component and Body Abilities ontologies and also for validating them. The ICF provides detailed classifications of Body Structures and Body Functions, and not just an outline set of categories that other classifications such as HAAT and Cat provide.
- ICF as well as providing a classification of functioning, disability and health, it has also been translated into an OWL ontology (World Health Organisation and The National Center for Biomedical Ontology, 2001) that can be integrated with the OntoCarer Framework, and which OntoCarer has been designed with this compatibility in mind. That the ICF is also an OWL ontology is a significant advantage it has over other classifications, for its compatibility and use with the OntoCarer OWL ontologies.
- ICF is an OWL ontology that can be supplemented by the OntoCarer Ontological Framework to provide a representation for roles and social actions within organisations.
- ICF is an OWL ontology whose functionality can be extended by the OntoCarer Ontological Framework and OntoCarer software application for planning assistance for the disabled in organisations.
- ICF includes a metric (ICF performance qualifiers) for assessing the degree of impairment of an individual such as an ICF Body Structure or Body Function individual and this metric can be adopted by the OntoCarer ontologies for its individuals of such types as body components, body abilities, roles and social actions. This common impairment metric facilitates the compatibility of the ICF and OntoCarer ontologies.

At an early stage in the OntoCarer project it was considered that the ICF classifications could be the foundation for the OntoCarer ontologies and directly incorporated into the OntoCarer ontologies. This was because the ICF included detailed ontologies for Body Structures, Body Functions and also

Activities & Participation ontologies which may be considered candidates for representing roles and actions in organisations. The Body Structures and Body Functions classifications were authoritative and had been validated by the WHO. In addition the ICF classifications had already been translated into an OWL ontology (World Health Organisation and The National Center for Biomedical Ontology, 2001) which meant the painstaking work doing a translation into OWL had already been done and the ontologies could be incorporated into OntoCarer without difficulty. Upon further investigation into the needs of OntoCarer to represent human agents and their roles and actions in organisations the ICF Activities & Participation classifications were considered to be inadequate to represent the specific roles and their actions that belong to organisations. In addition the ICF Body Structures and Body Functions classifications while comprehensive and authoritative it was considered better if OntoCarer had its own top-level Body Components and Body Abilities ontologies. These top level ontologies would give the OntoCarer Ontological Framework independence from the ICF and give it flexibility to have the Body Components and Body Abilities ontologies as small or large, or as general or specific as was appropriate for the domain. In addition by the OntoCarer ontologies adding properties that linked to the ICF ontology classes the ICF ontologies could still be incorporated and used by OntoCarer applications if necessary. The ICF Qualifier metric for measuring the degree of impairment was adopted by OntoCarer in a compatible form to enable the continuing compatibility of the ICF and OntoCarer classifications. These aspects of the use of the ICF classification are evaluated in more detail in Chapter 8.

2.6 Assistive Technologies

There is a very large research literature on assistive technologies, so rather than attempt a broad survey of it, in this section we will focus on previous research on those assistive technologies that are related to the current project. These are assistive technologies that involve either, creating assistive social networks or involve using ontologies and the Semantic Web to provide assistance for the disabled.

The article ‘Using Multi-Agent Systems to mediate in an assistive social network for elder population’ (Barrue, Cortis, et al, 2015) describes a medical social network where persons play a single role in the social network as a patient, doctor, relative, or caregiver. They are connected by a multi agent systems connected to assistive devices such as rollator walkers, where the agents uses embedded sensors to monitor and send messages on the activity of the patient. This information is relayed to doctors and care givers to monitor the patient and as a basis for prescribing treatment. The network uses the Python programming language for its software and http as its communication protocol.

This assistive social network differs very much from that of the OntoCarer assistive social network. The Barrue et al. network is principally one of providing information from assistive devices to those individuals caring for the patient. OntoCarer uses ontologies and Semantic Web representations to classify the roles, actions, bodies and abilities of agents along with the buildings in the organisations

to identify the specific disabilities of these and the specific assistance that can be provided, and then identifying and directing the assistance to the assisted agent.

The article ‘Personalisation in Smart Homes for Disabled People’ (Kadouche, Mokhtari, et al., 2009) describes a Semantic Matching Framework (SMF) which provides a middleware to help to provide personalised assistive services for disabled users in dealing with the physical environment in the home. The SMF is based on semantic matching (using OWL ontologies) between a user model and an environmental model. The user model covers the user’s name, preferences and capacities. The environmental model describes specific devices in the home such as doors, windows, sensors, etc., which are called “effectors”. Where each effector contains a set of characteristic defined as the environment’s attributes such as the required force needed to turn on a tap, door size, etc. The SMF analyses the user’s capabilities and the environment characteristics to infer the Handicap Situation, in order to prescribe personalised services. OntoCarer uses a capability qualifier in order to identify disability in body components and abilities, and the roles and actions the user performs, whereas SMF is limited to assessing the user’s capability just in relation to features of the physical environment. Unlike OntoCarer the SMF does not detail what the assistive services would be provided to ameliorate the Handicap situation.

The article ‘A Human-centred Semantic Navigation for Indoor Environments’ (Tsetsos, Anagnostopoulos, et al., 2005) describes an indoor navigation system that uses ontologies to provide a semantic description of users, and the constituent elements of navigation paths through buildings using the Indoor Navigation Ontology (INO). It contains a Geometric Path Computation Service (GEO) which computes all the paths from the current location to the destination and the results are sent to the Semantic Path Selection Service (SEM). The Semantic Path Selection Service selects the best traversable navigation path, where this is one that matches the capabilities and preferences of the user. This is a sophisticated personalised navigation system that uses ontologies. It focuses on a narrow area of disability assistance and one that is compatible with OntoCarer as it covers an area - personalised navigation that OntoCarer does not currently attempt to automate.

Agents research and its relation to the OntoCarer research

Agent Research topic	OntoCarer significance	OntoCarer elements	Thesis sections
Agent definitions, characteristics, & features	To give an understanding of prior research. A basis for the design of agents and agency in OntoCarer and the interaction of human agents with the OntoCarer system. For the evaluation of agents and agency in OntoCarer.	Agent ontology, Agent individuals and representations of human agents and their profiles in the College model. Organisation Agent. Agent evaluations.	5.1 to 5.6, 6.3, 6.3.4, 7.2, 7.5 8.6.2, 8.6.3 9.1, 9.1.4 V2.C
BDI model & the intentional stance. OntoCarer as an intentional system.	Provides a common conceptual framework for the semantic representations and for communication between the human and computer agents.	Human agents interacting with OntoCarer via mobile phones. Agent representations in OntoCarer. The Organisation Agent reasoning with semantic representations.	5.1 to 5.6 6.3.1, 7.2 8.6 to 8.6.3 8.6.6, 8.6.7
Belief-Desire-Intention concepts and model	OWL representations of desire, intention, beliefs, and belief revision.	Agent ontology. Social Action ontology. Organisation Agent.	5.1 to 5.6 8.6 to 8.6.3
BDI Agent Architecture	Design of the Organisation Agent and OntoCarer software application. Evaluation of the Organisation Agent and software application as having a BDI Agent Architecture.	Organisation Agent. OntoCarer software application.	8.6 to 8.6.3 8.6.6, 8.6.7

Table 2.5 Agents research and its relation to the OntoCarer research

Disabilities research and its relation to the OntoCarer research

Research topic	OntoCarer significance	OntoCarer elements	Thesis sections
Medical Model	The root causes of disability lie in the body of the person affected and that this should be reflected in the OntoCarer ontologies with categories for body components and body abilities along with the assisters such as the disability aids that are provided for at this level.	Body Components ontology. Body Abilities ontology. OntoCarer-Link-Ontology properties linking Body Components and Body Abilities with their assisters. Agent individuals and their profiles in the College model.	6.3.2, 6.3.3, 6.3.7, 7.3, 7.4, 7.8 8.5.2 V2.C
Social Model	The social organisation can act as a barrier to the full participation of people with disabilities in the activities of society. The social organisation and everyone who participates in it can be involved in enabling the full participation of disabled people in the activities of the organisation through providing assistance to them. This is done though the OntoCarer assistive social network.	OntoCarer Framework Ontologies: Agent, Social Action, Organisation, Buildings, OntoCarer-Link-Ontology. Organisation Agent. The College model of the organisation, its buildings, and the agent individuals and their profiles. The OntoCarer software application and the assistive social network it creates.	6.1 to 6.4 7.1 to 7.10 8.4 to 8.6.6
Disability Classification: Human Activities Assistive Technology model (HAAT)	A pre-existing classification of disability, which consists of the following four factors: Human Person, Activity, Assistive Technology, and Context. HAAT lacks the relevant classifications and complexity to fulfil those need for the OntoCarer assistance life cycle,	OntoCarer Framework Ontologies and their domain extensions	6.1 to 6.4 7.1 to 7.10
Disability Classification: Comprehensive Assistive Technology model	A pre-existing classification of disability considered for its use within OntoCarer. The CAT model expands the HAAT model to produce a more detailed system of classifications for each of the four components. The classifications are not useful as they are still too general and as a model they are not organised around the 'assistive life cycle', the organisation and the roles the person plays in the organisation.	OntoCarer Framework Ontologies and their domain extensions	6.1 to 6.4 7.1 to 7.10

(CAT)			
Disability Classification: ISO9999 Assistive products for persons with disability terminology standard	The ISO9999 is a standard that has a narrow scope focusing upon types of assistive products based upon their function in providing assistance. It specifically excludes 'personal assistance'. The ISO9999 is too narrow a classification to be of value to the OntoCarer project, but could be of use in an extension to it for linking OntoCarer aids to specific assister aid products.	AssisterAids in the Body Components, Body Abilities, Social Actions ontologies.	6.3.2 6.3.3 6.3.4 7.3 7.4 7.5
Disability Classification: World Health Organisation International Classification of Functioning, Disability, and Health (ICF)	ICF is an authoritative source of knowledge on the body structures and functions and disability, for constructing the domain Body Component and Body Abilities ontologies and also for validating them. ICF has been translated into an OWL ontology which facilitates its integration with the OntoCarer ontologies in a software application, through OntoCarer properties. The ICF Qualifier metric for measuring the degree of impairment was adopted by OntoCarer in a compatible form to enable the continuing compatibility of the ICF and OntoCarer classifications.	Body Components, Body Abilities, Social Actions ontologies.	6.3.2 6.3.3 6.3.4 7.3 7.4 7.5

Table 2.6 Disabilities research and its relation to the OntoCarer research

2.7 Summary

This chapter examines existing research on disability and agents for the purposes of understanding the prior research in these areas, for its use in designing elements of the OntoCarer Framework that models agents and disabilities, and to use as benchmarks for evaluating the models of agents and disabilities created within the OntoCarer Framework.

The topic of ‘Agents in OntoCarer’ is discussed with disability considered as an impairment of agency, and one aspect of the term ‘agent’ is as one who acts for another which in this case is one of providing assistance to people with disabilities to fulfil their intentions which they are unable to fulfil unaided. The multiple forms that agents and agency take in the OntoCarer system are identified, as; agent *interaction*, agent *representations*, agent *reasoning* and an agent *architecture*, and are discussed.

The research literature is then explored looking at different agent definitions and characteristics. Different agent architectures are described including the BDI agent architecture, the Logic based agent architecture, Reactive agent architecture, and Hybrid architecture, before selecting the BDI agent architecture for OntoCarer along with the reasons for doing so.

The research literature on disability is then examined. Beginning with the two main models of disability which are the Medical Model and the Social Model, which are both described. From the medical model we derive the idea that causes of disability lie in the bodily impairments and these are reflected in OntoCarer’s Body Components and Body Abilities ontologies and how these two ontologies are used to describe the impairments affecting agents, in their agent profiles. From the Social Model we derive the idea that it is the social organisation and everyone who participates in it can be involved in enabling the full participation of disabled people in the activities of the organisation, and this is reflected in the creation of OntoCarer’s assistive social network.

In the social model, the social organisation and everyone who participates in it can be involved in enabling the full participation of disabled people in the activities of the organisation. Everyone in an organisation, whatever their roles is potentially an assisted person and also potentially an assister too. An aim of this OntoCarer project is to create a prototype assistive social network to enable those in an organisation to both provide assistance and receive assistance where they are able, and so make possible an assistive organisation, as part of an assistive society.

Several existing disability classifications and models are surveyed. These are HAAT (Human Activities Assistive Technology model) (Cook and Hussey, 2002), CAT (Comprehensive Assistive Technology model) (Hersh and Johnson, 2008), the ISO9999 Assistive products for persons with disability terminology standard (ISO, 2016), and the World Health Organisation International Classification of Functioning, Disability, and Health (ICF) (World Health

Organisation, 2001). Each is assessed as to what it may contribute to OntoCarer's goals and its limitations in that respect also.

Some examples of assistive technologies that that involve either, creating assistive social networks or involve using ontologies and the Semantic Web to provide assistance for the disabled are also examined and discussed in relation to the OntoCarer project.

Chapter 3 Literature Review of Ontologies & the Semantic Web

3.1 Ontologies

OntoCarer includes an integrated set of ontologies that form the OntoCarer Ontological Framework. Before going on to describe the specifics of OntoCarer Ontological Framework in later chapters, we need to consider some questions about ontologies. What is an ontology? What are the constituent elements of ontologies? Before going on to consider the form these ontologies take, which is one that uses the representations of the Semantic Web to represent them, and to consider the methodologies available for designing their construction.

3.1.1 What is an Ontology?

‘What is an Ontology?’ Here is a simple definition of an ontology:

“An ontology defines the basic terms and relations comprising the vocabulary of a topic area as well as the rules for combining terms and relations to define extensions to the vocabulary” (Neeches et al, 1991)

Looking deeper in to the term ‘ontology’, we find there are two main meanings of the term. These are the philosophical meaning and the computational meaning.

The philosophical meaning of ‘ontology’ goes back to the philosopher Aristotle who in the *Metaphysics* referred to the science of “being qua being” (Guarino, Oberle, and Staab, 2009), which is concerned with the fundamental categories of existence, of what it is for something to exist, and what are the essential properties of things.

Computational ontologies differ from philosophical ones in that they are more pragmatic; they are concerned with constructing a conceptual representation of the entities and relationships within a system, for particular computational purposes. As Guarino et al, express it “Computational ontologies are a means to formally model the structure of a system, i.e. the relevant entities and relations that emerge from its observation, and which are useful to our purposes” (Guarino, Oberle, and Staab, 2009).

Conceptualization, is an important part of these ontology definitions. Genesereth and Nilsson give this definition of conceptualization: “A conceptualization is an abstract, simplified view of the world that we wish to represent for some purpose.” (Genesereth and Nilsson, 1987)

Other definitions expand on the idea of an ontology being a conceptualization. Studer et al states that “An ontology is a formal, explicit specification of a shared conceptualization.” (Studer, Benjamins, and Fensel, 1998). This definition of ontology is explicated by Bermejo-Alonso et al. as meaning – “*conceptualization* is defined as an abstract model of some phenomenon in the world by having identified the relevant concepts of that phenomenon; *explicit* refers to explicitly defining concepts and constraints; *formal* implies that the ontology should be machine-readable, and *shared* specifies that an ontology captures knowledge accepted by a group. This group may be just a collection of software

agents, or more generally, a collection of knowledge-based agents (human and computational) that use this shared knowledge” (Bermejo-Alonso and Sanz, 2006).

In talking of conceptualization they are more concerned with representing in a systematic and logical way a shared vocabulary of concepts in a particular domain. These concepts are usually organised into a hierarchy, i.e. taxonomy. Where the systematisation and formality make it suitable for computer processing, for a particular purpose. The purpose of ontologies in computer science is pragmatic, rather than a philosophical concern with the truth and reality of the representations. As Barry Smith puts it, “it is a strictly pragmatic enterprise. It starts with conceptualizations, and goes from there to the description of corresponding domains of objects (also called ‘concepts’ or ‘classes’), but the latter are nothing more than nodes in or elements of data models with specific practical purposes in mind.” (Smith, 2003)

Though, computing ontologies may be more pragmatic in their intent; abstracting, simplifying, and formalising, the concepts in their vocabularies. In order to function effectively they must still represent in their concepts, the reality of their domains in the world.

Ontologies give us a vocabulary of concepts by which we may classify objects, in a domain of interest. Those categories along with properties give us the means to make statements about the objects, to make inferences from them, and judgements about their truth. The formalisation of these ontologies can make these ontologies computable. Computable ontologies in software applications offer the possibility of automating the process of; classification, inference, judgement, and planning actions, for the world that the ontology models.

3.1.2 Ontology Components

Ontology Components sub-headings	Pages
Classes	55
Properties	56
Individuals	56
Rules	56

Table 3.1 Table mapping Ontology Components sub-headings onto pages

Classes

Classes represent concepts, where a concept is a classification of individuals marking them as having some feature in common. Concepts such as Person, Organisation, Building, Room, etc.

These concepts or classes can be organised in hierarchies of classes and subclasses, such as types of building where Building is the superclass and buildings such as College, Cinema, Restaurant, Shop, are subclasses of Building.

Properties

Properties, which are also known as ‘relations’ represent associations between instances of classes. These relations in ontologies are usually binary relations, where the domain represents the first argument of the relation and the range represents the second argument. In the case of the statement: ‘person enrolls on course’ the concept Person represents the domain of individuals, the relation is ‘enrolls on’ and the concept Course represents the range of individuals. The statement ‘agent1 enrolls on course101’ is an example of a property relating two individuals.

Attributes are relations between an individual in the domain and representative of a datatype such as integer, real, string, etc in the range, such as ‘agent1 is aged 21’.

In OWL there are two types of property ObjectProperties and DatatypeProperties. ObjectProperties represent relations, and DatatypeProperties represent attributes.

Individuals

Individuals are the particular things that are classified by the classes of the ontology. Each individual may become an instance of one or more classes and may be related in one or more properties. Where for example, agent1 is an individual that is instance of the class Person.

Rules

Rules provide a means of performing inferences based upon *If Then* conditions between concepts.

3.2 The Semantic Web & its Ontological Modelling Languages

This section describes the Semantic Web and the ontological modelling languages to be used in the OntoCarer project.

The reasons for using the Semantic Web representations and technologies in this project are:

- The OntoCarer project is a project that involves individuals interacting with different organisations. Semantic Web representations offer a universal scheme of representation (RDF, RDFS, OWL) that facilitates this.
- The Semantic Web also allows data from different sources to be linked together, so it is not just universal but can be used to join other data (linked-data) from different organisations to generate new facts (Berners-Lee, 2006).
- The OntoCarer project involves personalisation. To do this personal profiles need to be created for the disabled persons and then matched with the services provided. Personal profiles that involve classifying: the body components, body functions, the roles within organisations and their actions, desires and intentions. A sufficiently rich vocabulary of concepts (classes) and relations (properties) is needed to create these classifications and be computable. The Semantic Web languages of RDF, RDFS, and OWL provide the vocabularies for creating these ontologies. In addition using Semantic Web representations, in particular RDF, allows us to make statements (triples) about the individuals in our organisations, and to perform computations on them.

- The World Health Organisation's International Classification of Functioning, Disability and Health (ICF) (World Health Organisation, 2001) provides a widely accepted universal scheme for describing disabilities which has been translated into OWL (World Health Organisation and The National Center for Biomedical Ontology, 2001) and can potentially be integrated into the OntoCarer Framework, at least in part.

3.2.1 The Semantic Web

The Semantic Web (Berners-Lee et al, 2001) is a set of representations and technologies that provide an extension to the World Wide Web.

The World Wide Web is an extension to the Internet of which it forms a part, and consists of a set of documents called 'web pages' that are connected through hypertext links. The web pages are coded in HTML (Hypertext Markup Language) (W3C, 2017), this provides a set of tags based upon a subset of SGML (Standard Generalised Markup Language) (ISO, 1986) which allows for the structuring and formatting of the text within the page.

The HTTP protocol (Hypertext Transfer Protocol) provides a set of commands for communicating through a client browser with web servers that store web pages, in order to send data to and retrieve web pages from the servers. To identify the location of the web page, in order to retrieve it, a URL (Uniform Resource Locator) is used. A URL provides a unique identifier that identifies the location where a document can be retrieved from on the Web. A URL consists of three parts, first the protocol to use in order to access the document - typically HTTP, then the server location given by its domain name, and finally the path on the server to the document, which also includes the document name at the end of the URL.

The World Wide Web is a web of documents for people to read. The machine readable content of those documents is mainly confined to the structure and formatting of the documents by a browser program for display to the users. This limits what the programs can do with the data contained in the documents. The data in the web pages is in a natural language such as English, and processing relies upon the syntactic form of the data, often through pattern matching, so the semantic content is only available to the human reader of the pages. There is structured data stored in databases, which are connected to the web and whose content is accessible through it. The semantic content of this database data, which is normally in relational form, is limited in the inferences that can be drawn from it. The database data though connected to the web is also isolated from other data on the web, in that it cannot be linked to other data (in the same way that web pages can be linked) in order to form a seamless web of data. The Semantic Web, its representations and its technologies aim to overcome this problem. The Semantic Web aims to construct a web of data, structured so that it can represent the semantic content of the data so that the semantic content can be processed by machines rather than humans (Berners-Lee, 2000).

3.2.2 The Semantic Web Modelling Languages: RDF, RDFS, OWL

The Semantic Web Modelling Languages – sub-headings	Page
RDF: Resource Description Framework	58
RDF serialization	59
RDFS: Resource Description Framework Schema	59
OWL – Web Ontology Language	59

Table 3.2 Table mapping Semantic Web Languages sub-headings onto pages

RDF: Resource Description Framework

OntoCarer will need to be able to make statements that represent states of affairs in the world. Those statements will need to represent; the states of the disabled, the carers, the organisations, the buildings, and the environment, etc. RDF is a Semantic Web, data model that is capable of making statements about states of affairs in the world.

The Resource Description Framework (RDF) (W3C, 2004a) (W3C, 2004b) is based upon a subset of predicate logic. RDF statements have a *subject predicate object*, grammatical structure, and for this reason are also known as triples. An example of this grammatical form is ‘Shakespeare wrote Hamlet’, where the resource Shakespeare is the subject about which it is asserted that he wrote Hamlet, where ‘wrote’ is the predicate and ‘Hamlet’ the object. The object can also be a literal instead of a resource, where literals are data values, such as numbers or a string. (Allemang, and Hendler 2008)

RDF statements can be represented as a directed graph that is a set of nodes linked by directed edges, where the subject and object nodes are each connected by arrows representing the relations between them. A resource can be an individual or relation. (W3C, 2004b)

A resource is identified and individuated by a URI. URI’s are Uniform Resource Identifiers. They are unique identifiers for naming resources, in that the same URI cannot refer to different resources. Though the same resource may have different URIs referring to it. URIs are the glue that holds the Semantic Web together. URIs ensure that we are referring to the same things (whether they be individuals or concepts) when using the same URIs in different statements. They allow us to make determinate statements without ambiguity. URLs are often used as URIs. In addition to providing a unique reference URLs may also return additional information about the referent but this is optional. URLs are specialisations of URIs. URIs that are not URLs are called Uniform Resource Names (URNs).

Though not every resource has a URI, these can still be referred to in RDF through blank nodes. Blank nodes operate like pronouns in natural languages, allowing us to refer to things without them having a proper name or in this case a URI. Blank nodes can be empty, or they can have an identifier associated with them so we know when a reoccurring blank node is pointing to the same resource.

RDF serialization

The primary representation of RDF is the directed graph. In order to be able to use the RDF representations in a computer project such as the OntoCarer project they have to be serialized as character strings. There are a number of syntaxes for serializing RDF including: Triples (W3C, 2014c), Notation 3 (W3C, 2011), N-Triples (W3C, 2001), Turtle (W3C, 2008), and RDF/XML (W3C, 2014a).

RDFS: Resource Description Framework Schema

RDFS includes classes and properties, which are used for constructing and describing a schema for a vocabulary. The purpose of this goes beyond that of simply producing a classification for producing well formed statements of RDF. RDFS allows the construction of simple ontologies, whereby the terms of the vocabularies are put into semantic relationships such as putting classes into hierarchies of classes and subclasses, that then allows inferences to be made about resources that are classified according to the ontology constructed.

(W3C, 2004c) (W3C, 2014b)

OWL – Web Ontology Language

RDFS is a very simple ontology language, which allows for the defining of classes with subclasses, relations with sub properties and having a domain and a range. It does not provide sufficient resources to express the ontologies needed in the OntoCarer project. OWL (Web Ontology Language) (W3C, 2012) provides additional expressive power for the construction of ontologies over those of RDFS.

These are some of the additional features that OWL provides two types of properties: ObjectProperty and DatatypeProperty. Object properties are used to define relations between individuals and datatype properties to give a value to an individual, where the value is an XML datatype, such as string or Integer.

OWL Property relationships can be given specific characteristics which allow particular inferences to be drawn about the use of that property. These include making a property transitive (TransitiveProperty), symmetric (SymmetricProperty), functional (FunctionalProperty), inverse (inverseOf), and both inverse and functional (inverseFunctional).

OWL properties can also constrain the range of their properties, through the use of property restrictions. These include owl:allValuesFrom where we can specify that all the values in the range of a property must come from a particular class. owl:someValuesFrom where we can specify that at least one value should come from the class in the range. Other restrictions include owl: cardinality which allow the specific number in the range of values to be specified for a property.

Equivalences and differences between elements can be expressed in OWL.

Equivalences between different classes and properties can be expressed by equivalentClass and equivalentProperty, which are useful for mapping elements from one ontology to another. Similarly, individuals can be identified as being the same by sameAs. While, individuals can also be

distinguished as being different by `differentFrom`, and `AllDifferent`. Classes that are disjoint, where a member of one class cannot be a member of a disjoint class is expressed using `owl:disjointWith`.

OWL also provides resources for constructing complex classes from other classes. This can be done by using set operations: union (`owl:unionOf`), intersection (`owl:intersectionOf`), complement (`owl:complementOf`). The members of a class can be explicitly specified by enumerating them, using `owl:one of`.

There are three versions of OWL. These are OWL-Lite, OWL-DL, and OWL_Full. Each version of the language is of increasing expressibility, and encompasses the simpler versions. There is a trade off between expressibility and the ability to reason efficiently with the representations in a computer program. OWL-Full is undecidable, and only suited to being used as a description language rather than for reasoning with. For this reason the OntoCarer project will confine its representations to using OWL-Lite and OWL-DL. (Hitzler, Krötzsch, Rudolph, 2009)

3.3 Ontology Methodologies

An ontology is a structured vocabulary of terms, that classifies in a logical and systematic way, a domain of interest. How do we arrive at this representative set of terms for an ontology for a particular domain, that will serve our purposes?

A suitable methodology for constructing an ontology is desirable. Where a methodology is a “comprehensive, integrated series of techniques or methods” (IEEE, 1990) for transforming its inputs into the desired output, which in this case the output is an ontology for the domain. Methodologies state “what”, “who” and “when” a given activity shall be performed.

A methodology offers a tried and tested set of procedures, and tools for creating an ontology. Methodologies are often organised by a lifecycle model, which is composed of a series of stages that a project must pass through from the start to the completion of the project. With the stages of a methodology being made up of methods, processes, activities, and tasks that act to model the domain, often diagrammatically, and transform it through a series of processes to produce the ontology in its final form.

There are a number of methodologies for constructing ontologies available, which are reviewed briefly below, particularly as to what aspects may be useful for the OntoCarer project. These and other ontology methodologies are described and analysed in ‘Ontological Engineering’ by (Gomez-Perez et al, 2004), and in Corcho et al (Corcho et al, 2003)

3.3.1 Uschold & King methodology

The first method for building ontologies was proposed by Uschold and King (1995). This method grew from developing the Enterprise Ontology, which was intended to model concepts of relevance to businesses.

Uschold & King's methodology is made up of four processes. The first process, is identifying the purpose and scope of the ontology, then the other processes are to build, evaluate, and document the ontology.

In building the ontology there are three sub-processes; capture, coding and integrating.

Uschold & King identify three strategies for the capture of concepts for the ontology, which are also relevant for OntoCarer. These are: bottom-up, top-down, and middle-out.

The bottom-up strategy starts by identifying the most specific concepts first, then using generalisation to construct more abstract concepts for the ontology. This approach gives a high level of detail, but makes finding commonality between concepts difficult, which can lead to re-working and wasted effort (Gomez-Perez et al, 2004).

The top-down strategy starts by identifying the most abstract concepts first, then specializing these to construct more specific concepts for the domain. Whilst offering "better control of the level of detail", it can "result in choosing ...arbitrary and possibly not needed high level categories" (Gomez-Perez et al, 2004).

The middle-out strategy works by identifying the 'core of basic terms' first, which are the most important ones, and then working out from these to specialize or generalise these concepts as required. This strategy allows higher level concepts to "arise naturally" so they are likely to be more stable, with less re-work, similarly for more specialised concepts (Gomez-Perez et al, 2004).

The coding sub-process involves turning the concepts into the categories of the representation language used and the integration sub-process involves integrating the new ontologies with existing ontologies that would be useful for the project.

The evaluation process uses a frame of reference, such as requirements specification, or the real world against which the ontology and associated software and documentation is judged. The final process is concerned with documentation.

The limitations of Uschold & King methodology are that the processes lacked techniques, methods, and principles for each of the four stages according to Uschold and Gruninger (1996), and these would be necessary to make it a methodology. Uschold & King's method also lacked the creation of a conceptual model prior to implementation in code. What is useful to us in the methodology is the distinguishing of the three strategies for capturing concepts and their assessment.

3.3.2 Gruninger and Fox's methodology

Gruninger and Fox's methodology (Gruninger and Fox, 1995) was created in 1995 from the TOVE (TOronto Virtual Enterprise) ontologies. The methodology consists of six processes. These involve identifying motivating scenarios, producing competency questions. Then using the questions and answers to specify a terminology in first order logic. The competency questions and axioms are

specified in first order logic. Finally, the logical expressions are used to specify the completeness theorems for the ontology.

What is useful in this methodology are that it does not just rely on a static representation of the domain to produce the ontology. It uses dynamic scenarios to identify the uses of the ontology. Then produces competency questions that could be used to query the ontology. The competency questions are used test whether the ontology meets its requirements. Scenarios and competency questions are both useful additions to constructing ontologies.

The next two methodologies involve the reuse of ontologies, though in different ways.

3.3.4 KACTUS methodology

KACTUS (Bernaras et al., 1996) is a methodology that is based upon three processes. One of its main objects is the reuse of knowledge by means of ontologies in the continued development of complex technical systems. The first process is the specification of the application, and it produces a list of terms and tasks for the components the application aims to model. The second process is preliminary design and is based on relevant top-level ontological categories, using the terms and tasks for creating a global model. KACTUS uses existing ontologies for re-use, which are then searched to see if they can be re-used, refined and extended in the current project. The final process is then one of ontology refinement and structuring.

3.3.5 SENSUS-based method

The SENSUS-based method is based upon the SENSUS ontology (Swartout et al, 1997). The SENSUS ontology is a large ontology, intended to provide a conceptual base for machine translation. As such it provides a very broad range of commonly encountered conceptual elements for objects, entities, qualities, and relations.

A new ontology is created by finding domain specific terms and then linking them to the terms in the SENSUS ontology, and then pruning out the irrelevant terms in SENSUS, leaving us with the skeleton of the new ontology. SENSUS has five processes for building a new ontology. Firstly, seed terms which are key terms belonging to the domain of the new ontology. Then link manually the seed terms to SENSUS by including them as subclasses. Adding the paths from the seed terms to the root of the SENSUS ontology. New domain terms are added, and then linked to the SENSUS ontology by again linking them as subclasses and adding the paths to the root. The final step is to add complete subtrees to the ontology, where a node has many links to it and it is considered useful to include its subtree to the ontology.

Where KACTUS looks to reuse many existing ontologies by incorporating them into new ontologies, SENSUS focuses its reuse on extending a single base ontology.

SENSUS has the advantages of re-using an existing ontology, thus saving time and resources. Reusing the same base ontology for creating new ones also offers the benefits of interoperability for

multiple ontologies as they share the same base concepts and trees. SENSUS' strategy for reuse of extending base ontology for interoperability is of more relevance to OntoCarer which uses a core of upper ontologies and then adds and links different organisational domain ontologies to them, than that of KACTUS.

3.3.6 METHONTOLOGY methodology

METHONTOLOGY (Fernandez-Lopez et al., 1997; Gomez-Perez, 1998; Fernandez-Lopez et al., 1999) is based on the software development process (IEEE, 1996) and knowledge engineering methodologies (Gomez-Perez et al., 1997; Waterman, 1986). The methodology includes an ontology development process and life cycle, based on evolving prototypes, and techniques for the activities in the life cycle.

The Development lifecycle is one of: Specification, Conceptualization, Formalization, Implementation, and Maintenance.

Simultaneous with these lifecycle activities are the Support activities. The Support activities are: Knowledge acquisition, Integration, Evaluation, Documentation, and Configuration Management. The methodology also includes Management activities of Control, and Quality Assurance, which are also exerted throughout the project.

The Development lifecycle is repeated throughout the project as the project proceeds through developing evolving prototypes. Adding, changing, and deleting items from the prototype, during each iteration.

The most important activity is that of Conceptualization, as "it determines the rest of the ontology construction" (Gomez-Perez et al, 2004). This activity is composed of eleven tasks which are detailed below:

Tasks:

1. Build glossary-definitions identifying the set of terms including their definitions and synonyms.
2. Build concept taxonomies that classify the concepts.
3. Build binary relation diagrams to identify relationships between concepts in the ontology and with other ontologies.
4. Build the concept dictionary – which includes their concept instances – instance and class attributes, and relationships.

Tasks 5,6,7,8, add detailed descriptions by creating tables for each type: where those types are: binary relations, instance attributes, class attributes, and constants.

Tasks 9, 10 and 11 are:

9. To define formal axioms in a table
10. To define rules in a rules table
11. To define instances in a table

METHONTOLOGY has been called “The most mature of the approaches” (Corcho et al., 2003). METHONTOLOGY is also the most comprehensive of the methodologies, it includes project management including scheduling, control and quality assurance. It also includes support activities such as evaluation and configuration management. Of particular usefulness are the detailed descriptions of what is to be included in the documentation of the ontology elements in the diagrams and tables for the Conceptualization.

3.3.7 UPON methodology

Unified Process for Ontology Building (UPON) (De Nicola et al., 2005) is based on the Unified Process methodology for software development and Unified Modelling Language (UML).

UPON development is made of cycles, in which a new prototype of the ontology is constructed during each cycle. Each cycle consists of four phases of iterations: Inception, Elaboration, Construction, and Transition. Each phase is divided into iterations, with each iteration made up of five workflows. The workflows are: Requirements, Analysis, Design, Implementation, and Test.

The Requirements workflow determines the objectives and scope of the ontology. This consists in defining the domain of interest and the motivating scenario. Storyboarding the scenario, producing use-cases and identifying competency questions are part of this workflow.

The Analysis workflow involves refining and structuring the ontology requirements through adding activity diagrams and class diagrams, and building a glossary of concepts.

The Design Workflow refines entities, actors and processes from the analysis workflow, and adds relationships. The outcome is a class diagram that now includes the relationships between the concepts.

The Implementation workflow encodes the concepts typically in OWL ontology language.

The Test workflow verifies that the ontology meets the requirements by getting the domain expert to review it and by testing that the competency questions can be answered using the ontology concepts.

The main advantages of UPON is its familiarity for those knowing UML and Unified Process, and that it can use the diagrams and diagramming tools available for UML, too. (De Nicola et al., 2005). The use of use-cases and competency questions are useful for broadening the requirements gathering process and testing the usefulness of the concepts in the ontology. It also has the advantages of flexibility and incrementalism provided by an iterative prototyping approach to ontology development.

3.3.8 Evaluation of the Ontology Methodologies

The evaluation of these ontology methodologies is from the point of view of creating the OntoCarer Ontological Framework, which is a framework of multiple disparate ontologies for providing assistance to the disabled in organisations through a software application. The above methodologies

do not fully provide for the development of such an ontological framework, being primarily focused upon the specification, design and development of individual ontologies, and as a consequence an OntoCarer Ontological Framework Development Methodology was created and its justification and content is described in the following chapter.

Though any of these ontology methodologies is insufficient in itself for our purposes, they do contain a number of processes, and techniques, including diagrammatic techniques that can be used within the OntoCarer Ontological Framework Development Methodology, and these are also referred to and described in the following chapter.

Methodology	Advantages	Limitations
Uschold & King	Identifies methods of concept capture: bottom-up, top-down, middle-out for constructing taxonomies.	Only provides a ‘skeleton’ for a methodology. It lacks techniques, methods and principles for its four stages. Lacks a conceptual model. Lacks detailed evaluation and documentation criteria. Lacks methods for creating an ontological framework of disparate integrated ontologies.
Gruninger and Fox	Uses dynamic scenarios to identify the uses of the ontology. Competency questions that could be used to query the ontology, to test whether the ontology meets its requirements. A formal approach for transforming scenarios into ontologies, using first order logic. Includes an evaluation process.	Relies heavily on formalization. Lacks methods for creating an ontological framework of disparate integrated ontologies.
KACTUS	KAKTUS uses existing ontologies for re-use, which are then searched to see if they can be re-used, refined and extended in the current project. Has some methods for reusing and integrating ontologies.	Dependence upon existing ontologies that can be successfully reused in creating new ontologies, which is not always possible. Lacks detailed evaluation and documentation criteria.
SENSUS	Makes use of extensive reuse in building new ontologies by linking and building on a large existing ontology and extending it. Uses a conceptual model. Provides a base ontology which facilitates the linking of disparate ontologies.	Dependency upon the existing base ontology for concepts in creating new ontologies, which may not always be feasible. Lacks detailed evaluation and documentation criteria.
METHONTOLOGY	Comprehensive methodology with the lifecycle defined and development through iterative prototypes. Includes reuse of existing ontologies. Includes detailed evaluation criteria and documentation specifications. Includes a conceptual model and glossary definitions.	Lacks use of UML diagrams. Lacks methods for creating an ontological framework of disparate integrated ontologies.
UPON	Based upon Unified Process and UML. Contains scenarios, use cases, class diagrams and a glossary. Has an iterative lifecycle to produce evolving prototypes.	Limited evaluation criteria. Lacks project management processes Lacks methods for creating an ontological framework of disparate integrated ontologies

Table 3.3 Table Evaluating Ontology Methodologies – their advantages and limitations

Research topic	OntoCarer significance	OntoCarer elements	Thesis sections
Ontologies: What is an ontology?	Explains the significance of ontologies for OntoCarer’s purposes of providing a vocabulary of concepts for classifying objects, which in OntoCarer is of organisations and for assisting people with disabilities in them. Where the formalisation of ontologies which makes them computable, which in a software application offers the possibility of automating the process of; classification, inference, judgement, and planning actions. Which is done in OntoCarer’s software application to process the assistance lifecycle to provide assistance in organisations.	OntoCarer’s top level ontologies: Agent, Social Action, Body Components, Body Abilities, Organisation, Buildings, OntoCarer-Link-Ontology and their domain ontology extensions.	6.1 to 6.4 7.1 to 7.11
Ontologies: Ontology Components	Describes the main ontology components of: classes ,properties, individuals from which OntoCarer’s ontologies and domain model are constructed.	OntoCarer’s ontologies and domain model.	6.1 to 6.4 7.1 to 7.11 8.4 to 8.5.2
Semantic Web	The Semantic Web provides the platform for OntoCarer in the form of a set of universal representations that are an extension of the World Wide Web and its standards.	OntoCarer’s ontologies and domain model.	6.1 to 6.4 7.1 to 7.11 8.4 to 8.5.2
Semantic Web Languages	The Semantic Web languages of OWL, RDFS, RDF provide the specific ontology languages and their standards for constructing the formalisation of OntoCarer ontologies and domain models.	The formalisation of OntoCarer’s ontologies and domain model.	6.1 to 6.4 7.1 to 7.11 8.4 to 8.5.2
Ontology Methodologies	Evaluation of existing ontology methodologies and their elements for the purpose of constructing the OntoCarer Ontological Framework.	Constructing the OntoCarer Ontological Framework Methodology and incorporating elements from a number of the existing methodologies that were surveyed.	4.1 to 4.5

Table 3.4 Table mapping the Ontologies & Semantic Web Literature Review to OntoCarer – significance & OntoCarer elements

3.4 Summary

This chapter starts with an examination of what ontologies are. Beginning with a simple definition of the term ‘ontology’, it then identifies two meanings of ontology, the philosophical meaning and the computational meaning. Other concepts that are involved in the definition of ‘ontologies’, which are ‘conceptualization’ and ‘taxonomy’ are also discussed. The section then concludes by describing what ontologies and their formalisation are capable of being used for in a software application, which is automating the process of; classification, inference, judgement, and planning actions, for the world that the ontology models.

The next section describes the main components of ontologies which are: classes, properties, individuals and rules.

The Semantic Web is described which is an extension of the World Wide Web to create a web of data, which the ontologies classify. This classification is done using the Semantic Web ontology languages of OWL and RDFS which are used to create ontologies. The Semantic Web language RDF is described. The domain models which consist of statements about individuals in triple form (subject, predicate, object) are created using the Semantic Web language RDF.

Finally, several ontology methodologies are described and their advantages and limitations are assessed, before concluding that while many of them contain elements that will be useful in creating the OntoCarer Ontological Framework, none is wholly satisfactory for this purpose, hence the defining of the OntoCarer Ontological Framework Methodology in the following chapter.

Chapter 4 - The OntoCarer Ontological Framework Methodology

4.1 Introduction

This chapter defines an OntoCarer Ontological Framework Methodology. Starting with a definition of the phrase ‘Ontological Framework’, before going on to depict and define the OntoCarer Development Lifecycle, and the Phases of the Lifecycle including detailed descriptions of these phases including their inputs and outputs.

4.2 What is an Ontological Framework?

The phrase ‘Ontological Framework’ is found in the title of numerous articles, such as (Bandara, Payne, de Roure, Clemo, 2004) or (Jung, 2007) or (Saravan, Ravindran, Raman, 2009) etc., but there is no shared agreed definition between them, and the meaning of the phrase is usually left implicit. Here, we will provide a definition of ‘Ontological Framework’ for the purposes of this thesis in order that it is clear what is being discussed and proposed.

When we are talking about ‘Ontological Framework’ we are describing a set of ontologies with the following characteristics:

- Multiple ontologies rather than a single ontology.
- Top-level ontologies, for the most part, formed of general concepts that can be extended and applied to different contexts to form lower level domain ontologies.
- Multiple ontologies that are not isolated from each other, but integrated, to work together towards some common purpose.
- They form a framework in a similar way to the concept of ‘software frameworks’ in that they provide a supporting structure which can be applied and extended in different contexts in order to build software applications. In this context the OntoCarer Ontological Framework is an integrated supporting structure, which can be applied to different organisations and extended to provide domain ontologies that are used to deliver planned personalised assistance for agents within those organisations.

An ontological framework of ontologies consists of multiple disparate ontologies that work together, in an integrated way, which in the case of the OntoCarer Ontological Framework is for the purpose of providing personalised assistance for the disabled in organisations. The ontology methodologies described in the previous chapter were for the development of single ontologies not an ontological framework of ontologies. As such though they contained elements and techniques that can be used in the OntoCarer Ontological Framework Methodology none of them are sufficient in themselves to provide a methodology for such a purpose. Consequently an OntoCarer Ontological Framework Methodology must be defined before being used to create the OntoCarer Ontological Framework.

4.3 OntoCarer Ontological Framework Methodology

The OntoCarer Methodology uses a project lifecycle based upon the PMBOK (Project Management Body of Knowledge) (Project Management Institute, 2008) lifecycle, and also its application to ontologies in the SQA Ontology Development Methodology (Bajnaid, 2013), which is used to develop a Software Quality Assurance ontology.

The PMBOK project lifecycle consists of three phases: Initial, Intermediate and Final, with the inputs to and outputs from each phase shown.

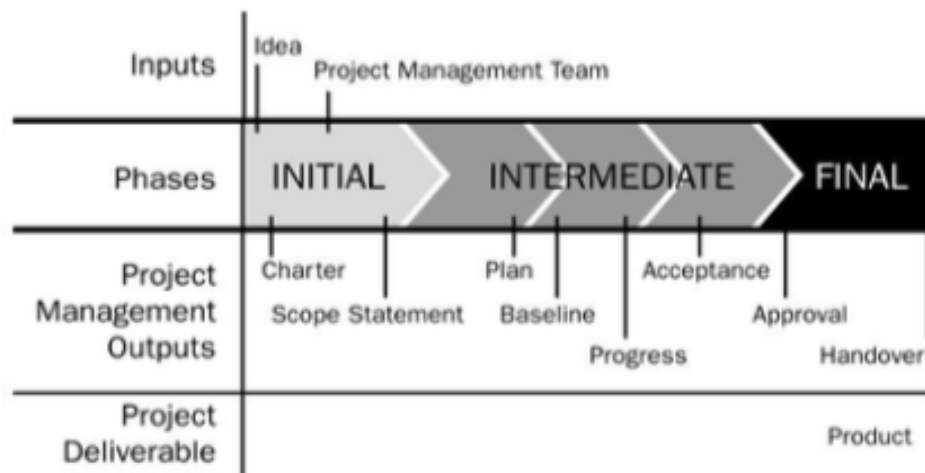


Figure 4.1 PMBOK Project Lifecycle (Project Management Institute, 2008) (Bajnaid, 2013)

The SQA (Software Quality Assurance) lifecycle model consists of four phases: Scoping, Conceptualization, Implementation, and Evaluation and Documentation.

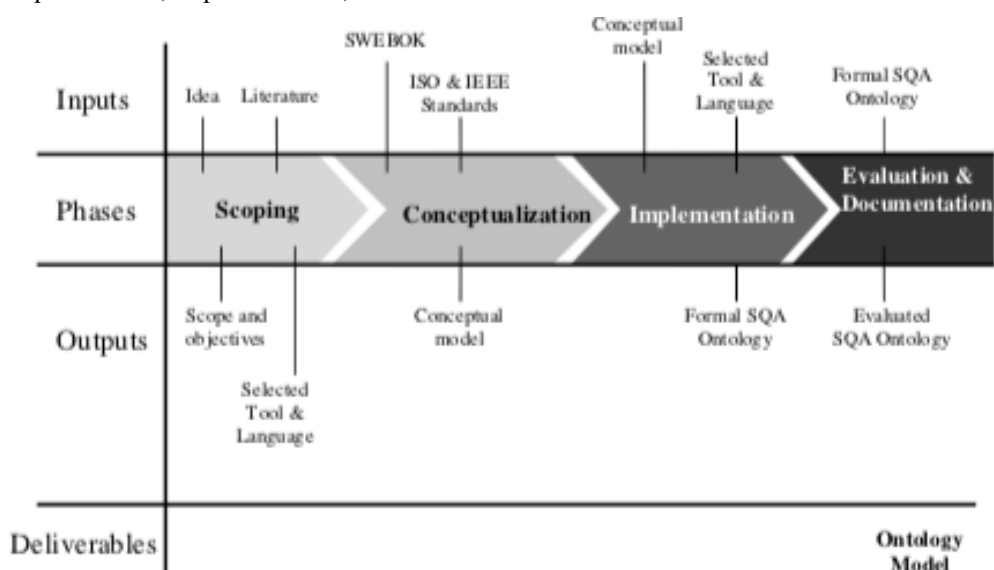


Figure 4.2 SQA Lifecycle model (Bajnaid, 2013)

The OntoCarer Development Lifecycle as depicted in Figure 4.3 below, is the result of the limitations of the PMBOK lifecycle model and that of the SQA lifecycle model in relation to the needs of the OntoCarer project. In particular the SQA lifecycle model is for the creation of a very small single ontology concerned with software quality, whereas the OntoCarer Ontological Framework consists of multiple integrated ontologies. The OntoCarer Development Lifecycle is specifically designed and created for the purpose of developing the OntoCarer Ontological Framework and drawing upon constituent elements from a number of ontology methodologies where they can be usefully incorporated into it.

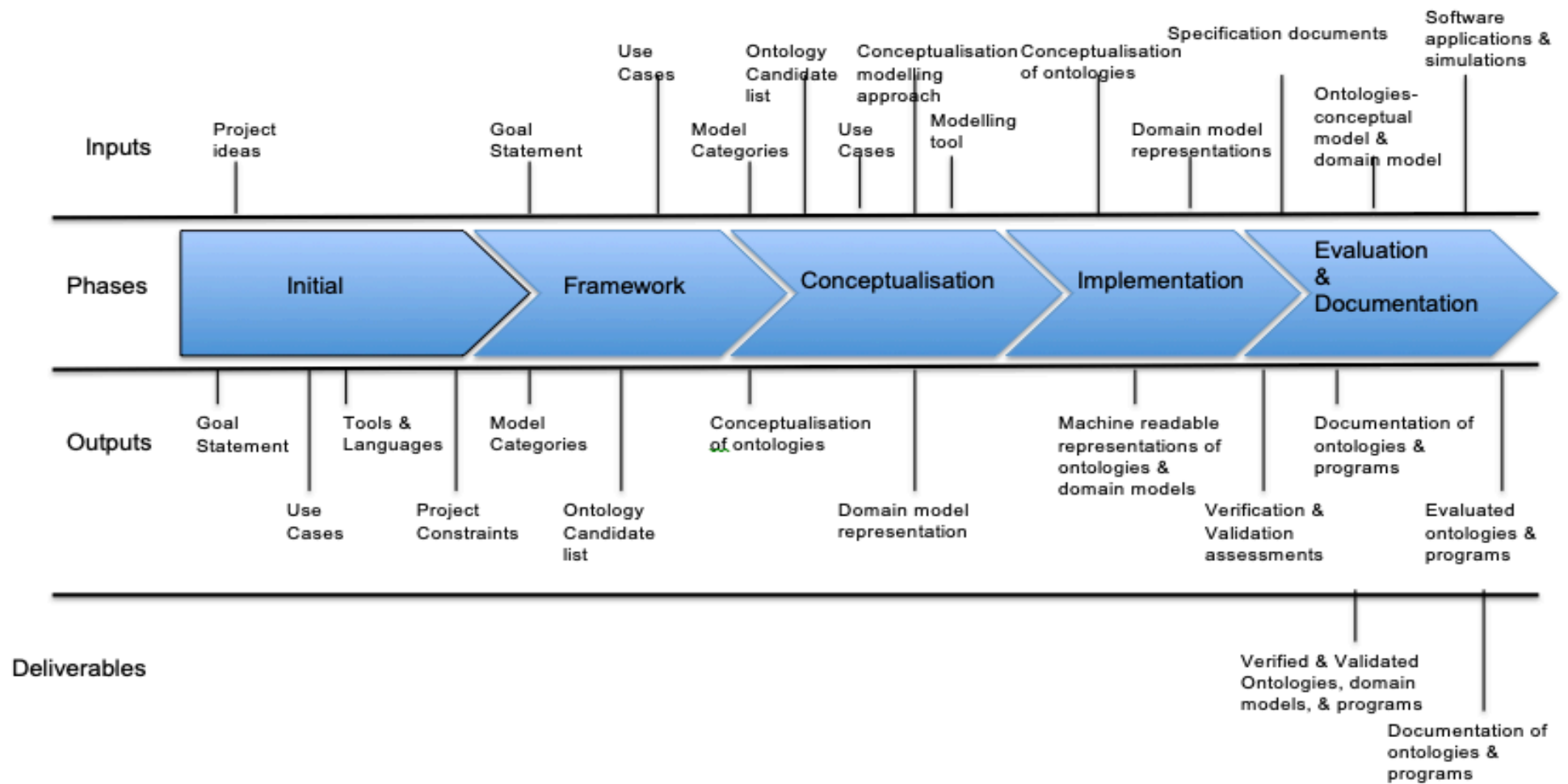


Figure 4.3 OntoCarer Development Lifecycle

OntoCarer Development Lifecycle Phases & Components	Pages
Initial Phase 1	73 – 74
Goal Statement – including its scope, aims and outcomes	73 – 74
Literature survey of existing research	73 – 74
Use case diagrams, and scenarios for the use cases	73 – 74
Tools & Languages Selection	73 – 74
Project Constraints	73 – 74
Framework Phase 2	74 - 75
Model Categories	74 – 75
Candidate list of top-level ontologies and potential domain ontologies	74 – 75
Conceptualisation Phase 3	75 – 76
Conceptualisations of top level ontologies	75 – 76
Conceptualisation relevant domain ontologies.	75 – 76
Implementation of ontologies in an ontology editor	75 – 76
A domain model representation	75 – 76
Implementation Phase 4	76 – 77
Conceptual model and domain model in machine readable code	76 – 77
Domain model in machine readable code	76 – 77
Evaluation and Documentation Phase 5.	77 – 86
Verification and Validation assessments and modifications	77 – 85
Documentation of ontologies and programs	85 – 86
Evaluated ontologies and programs	85 – 86

Table 4.1 Table mapping OntoCarer Development Lifecycle Phases onto pages

4.4 OntoCarer Development Lifecycle and Methodology

The OntoCarer Development Lifecycle consists of five phases. These are: Initial, Framework, Conceptualisation, Implementation, Evaluation and Documentation.

Each of which has a set of inputs, tasks, and outputs.

4.4.1 Initial Phase 1.

The Initial phase of the project identifies the initial goal of the project, and determines the scope of many of the initial; resources, parameters and constraints for the project.

The Initial phase takes as input, the idea for the project. From this it develops a goal statement and a survey of the existing literature on the topic. The Goal Statement sets the initial goal of the project, its scope, what it aims to achieve, and what the product outcomes will be. The survey of the existing literature covers previous research on the subject matter of the project.

The Initial phase will take the Goal Statement and clarify the scope and the uses that the ontologies will be put to, through developing a use case diagram, and scenarios for the use cases. They should also provide indicators to what the specific ontologies and their conceptual content may be.

The tools and languages will be selected. These include such elements as; ontology editors, CASE design tools, and the IDE programming development environment and class libraries for using the ontologies in a software application. Most importantly amongst these choices will be the ontology language in which the ontology conceptual model will be implemented in. Where the choice of ontology language has implications for the ontologies forms and their eventual use.

The Initial Phase also includes the project constraints under which the project will operate. This concerns issues, such as time, resources, and expertise, that will affect the scope of the project and impose limitations upon its aims.

Initial Phase: Inputs

Idea for the project

Initial Phase: Outputs

Goal Statement – including its scope, aims and outcomes

Literature survey of existing research

Use case diagrams, and scenarios for the use cases

Tools & Languages Selection

Project Constraints

4.4.2 Framework Phase 2.

The Framework phase of the project determines the outline content and structure of the Ontological Framework, which means deciding what ontologies will be in the Framework and what their relationship to each other will be.

To decide what ontologies are in the Framework; the Goal Statement, the use case diagrams, and the scenarios will be used as input to this phase.

In addition any theoretical perspectives that may be incorporated in the Framework will also be considered and formulated. Such as theories of agency and the BDI theory (Bratman, 1987) for practical planning and communication between agents.

Another factor to be considered is the use of external ontologies and classifications and their influence, such as the ICF (World Health Organisation, 2001). How these external ontologies fit into the project, needs to be considered. Will they be used directly, wholly or partially? Will they be used as a source of knowledge, or as a source of justification for the project's own ontologies?

To help formulate a list of candidate ontologies and how they will work together, and also to refine the list of ontologies, a set of Model Categories are formulated. The Model Categories are an

abstraction of the main categories that are needed to fulfill the purposes of the ontologies in their interaction with each other in the Ontological Framework. The Model Categories determine the broad categories of the type of ontologies that are needed to reach the goals of the Ontological Framework.

A set of Model Categories are formulated for the project along with an explanation for how these categories interact to produce the intended outcomes of the project. The formulation of the Model Categories is an intermediate stage in determining what ontologies are needed for the Ontological Framework and how they work together to fulfill its purposes. The Model Categories can then be further refined to decide what specific ontologies are required for each Category and how they are partitioned. The candidate list of ontologies will consist of top-level ontologies. Having decided on the candidate ontologies, these may also be used to refine or expand the Model Categories. The influence of the Model Categories on the ontologies can work in both directions.

Framework Phase: Inputs

Goal Statement – including its scope, aims and outcomes

Use case diagrams, scenarios

Literature survey

Framework Phase: Outputs

Model Categories - their justification and explanation of how they function together

Candidate list of top-level ontologies and potential domain ontologies

4.4.3 Conceptualisation Phase 3.

The Conceptualisation phase involves deciding what the constituent elements of each of the ontologies in the Ontological Framework will be. That is the classes, properties (relations) and their domains, ranges and cardinalities, that belong to each ontology.

A decision needs to be made upon the knowledge gathering methods needed for deciding upon the concepts and relationships of each ontology. This is to determine that the sources of knowledge are valid ones. Does the development ontology require: knowledge from the users of the domain, or the knowledge of an expert, or is the subject matter common knowledge? Is the knowledge acquisition process a manual or an automatic one?

A decision needs to be made on the Conceptualisation modelling approach. Whether to opt for a top-down, bottom-up, or middle-out method (Uschold & King, 1995) for the development of the taxonomies in each ontology.

The Conceptualisation modelling process initially consists of creating a list of concepts and properties for each ontology. Taking these lists and creating a glossary of concepts, with a definition for each concept. Then organising the concepts and properties into taxonomic hierarchies, which are then diagrammed.

The taxonomies of concepts and properties can then be entered into an ontology editor such as Protégé. Where they can be easily input, graphically represented, checked and later translated into machine readable code.

In addition axioms (statements whose truth is assumed and from which inferences may be drawn) and rules may be added to the ontology.

Each ontology's concepts and properties will then be checked for their ability to integrate with each other, when employed in the use cases and scenarios, to ensure that they satisfy their goals. This will identify any gaps that will need to be filled with additional concepts and properties, and any redundancies that are found can also be eliminated.

There also may need to be a vertical integration with the choice of ontology implementation language. The structure of the ontology language, such as the triple structure of OWL and RDF statements, may also influence how the real world concepts and relations are represented.

Having created the conceptual model of the ontologies of both the top-level and the domain ontologies, then a domain model of individuals (instances of the classes) and their relationships may be created, which represents a particular model of a situation and its individuals in the world, that is classified by the ontologies.

Conceptualisation Phase: Inputs

Model Categories

Candidate list of top-level ontologies and potential domain ontologies

Use case diagrams and scenarios

Conceptualization modelling approach – top-down, bottom-up, middle-out

Knowledge gathering methods and sources – options

Selected modelling tool

Conceptualisation Phase: Outputs

Conceptualisations of top-level ontologies and relevant domain ontologies.

Conceptualisations to include glossary of concepts, diagrams of taxonomic hierarchies

Implementation of ontologies in an ontology editor

A domain model representation, including instances of the ontology classes with their relationships.

4.4.4 Implementation Phase 4.

This phase involves taking the conceptual representation of the ontologies and creating a machine readable representation of the ontologies and domain models.

In the case of a development tool such as the ontology editor Protégé, the generation of this code in a language such as RDF/XML can be done automatically from the conceptual model.

Implementation Phase: Inputs

Conceptual model and domain model representations

Implementation Phase: Output

Conceptual model and domain model in machine readable code

4.4.5 Evaluation and Documentation Phase 5.

Evaluation and Documentation sub-headings	Pages
Evaluation Phase	77
Validation Process	80
Vaildation by Sources	80
Validation by Correspondences and Comparisons	81
Validation by Functionality	81
Validation by Simulations	81

Table 4.2 Table of Evaluation Validation subheadings and page locations

Evaluation Phase

The Evaluation Phase is concerned with assessing the quality of ontologies. This is done by assessing the ontologies “with respect to a frame of reference” (Gomez-Perez et al., 2004). This frame of reference acts as a set of standards by which the ontologies are judged, and where they fall short they can then be modified and improved. The frame of reference can include such as elements as the goals, functions, and representativeness of the ontologies, as well as more specific quality criteria and checks on them.

Evaluation of software products, including ontologies can be divided into to two aspects – verification and validation. Where this difference between the two is expressed by Boehm (1979) as the difference between the answers to these two questions:

Verification asks “Are we building the product right?”, whereas Validation asks “Are we building the right product?”

Gomez-Perez et al. (2004) goes on to define ontology verification and ontology validation thus:

Ontology Verification refers to building the ontology correctly, that is, ensuring that its defintions implement correctly the ontology requirements and competency questions, or function correctly in the real world (Gomez-Perez et al., 2004).

Ontology Validation refers to whether the ontology definitions really model in the real world for which the ontology was created. The goal is to prove that the world model (if it exists and is known) is compliant with the world modelled formally (Gomez-Perez et al., 2004).

In a structured methodology such as SSADM (Downs, Clare, Coe, 1988) the development process is a linear one, where the requirements are defined completely at the beginning of the project, and the rest

of project involves implementing those requirements. The verification process checks whether the requirements as defined at the start of the project matches the project product outcomes.

The OntoCarer development process is an iterative one, with the ontologies and their modelling going through many iterations before completion.

The OntoCarer verification process itself is an ongoing process, performed on each iteration of the prototype. As part of this process the results of the verification at each iteration feeds back into the next iteration of the development cycle in order to refine and improve the ontologies.

Before going on to define OntoCarer's Evaluation Process, it may be useful to consider the evaluation techniques, evaluation levels and evaluation criteria that exists in the research literature, that can be drawn upon in defining OntoCarer's evaluation process.

In surveying different ontology evaluation techniques Brank et al (2005) identifies four different evaluation approaches and six levels of evaluation.

The four evaluation approaches that Brank et al identifies are:

- Those based on comparing the ontology to a “golden standard” (Maedche, A., Staab, S., 2002)
In the case of Maedche et al they propose a set of ontology similarity measures for this purpose.
- Those based on using the ontology in an application and evaluating the results (Porzel, R., Malaka, R., 2004)
This done by plugging in the ontology to the application and then judging the effect of this on the results of the application. In the case of Porzel et al an ontology is used in a speech recognition application with the ontology is used to determine how closely the meaning of two concepts are.
- Those involving comparisons with a source of data (Brewster, C. et al, 2004). In the case of Brewster et al, domain specific terms are extracted from a corpus of documents and the overlap between these terms and those in the ontology is used to measure the fit between the data and the ontology.
- Those where evaluation is done by humans who try to assess how well the ontology meets a set of predefined criteria, standards, requirements, etc.
There are several examples of such approaches, including those of Burton-Jones et al, (2004), Fox et al (1998) and Lozano-Tello and Gomez-Perez (2004). The Burton et al approach proposes ten simple criteria, including consistency, comprehensiveness, accuracy, relevance, etc. Fox et al propose a set of criteria geared towards manual assessment. While Lozano-Tello et al propose a set of 117 criteria in a three-level framework.

In selecting the evaluation approaches for OntoCarer a number of these approaches identified by Brank et al are useful for specific aspects of its evaluation process.

- The approach of comparing the ontology to a “golden standard” can be used in the validation of the Body Components and Body Abilities domain ontologies, by using the ‘golden standard’ of the World Health Organisation’s ICF ontologies. In particular the WHO ICF Body Structures and Body Functions ontologies can be used to find correspondences with the OntoCarer Body Components and Body Abilities domain ontologies, and so to validate them.

OntoCarer in its ontological framework and its software application aims at implementing the BDI theory of agency in its representations and the processing of its agent based assistance. The BDI theory (Bratman, 1987) can then be used to compare and validate its implementation in the ontologies, and the BDI architecture (Wooldridge, 1999) can also be used to compare with the system architecture of the OntoCarer software application, and to validate it, too.

- The approach of ‘using the ontology in an application and evaluating the results’, is crucial to the OntoCarer project. A prime purpose of the OntoCarer ontological framework is the use of the ontologies in a software application to provide assistance to disabled people in an organisation through the OntoCarer Assistance Lifecycle, so a software application is essential for verifying the functionality of the ontologies in the framework to work together for this purpose. In addition the software application can also be used to validate the ontologies in a simulation, where its use in a real world situation is not feasible.
- Evaluation through comparing with a source of data is not used in the OntoCarer project
- Evaluation ‘done by humans to assess how well the ontology meets a set of predefined criteria, standards, requirements, etc’ is important for the evaluation of OntoCarer by the human developer of the ontological framework to ensure that the ontologies meet their goals and requirements, including their standards, functionality and validity. The details of what that involves for OntoCarer is set out below in the OntoCarer Evaluation Process.

The six levels of evaluation identified by Brank et al, are:

- Lexical, vocabulary , or data layer, which focuses on the vocabulary used to represent these concepts
- Hierarchy or taxonomy, which focuses on the evaluation of the hierarchy of is-relations in the ontologies
- Other semantic relations, than the is-a hierarchies in the ontologies
- Context or application level, which refers to an ontology as part of a larger collection of ontologies, or the application where the ontology is to be used
- Syntactic level, which involves evaluating the construction of an ontology against the formal syntactic requirements of an ontology language.

- Structure, architecture, design which refers to the use of pre-defined design principles and criteria.

All of these levels, except for the ‘other semantic relations’ level are relevant to the Ontocarer evaluation process and the role they play is detailed below.

The ontology evaluation criteria referred to in the last level of the six levels of evaluation are identified by Gomez-Perez (1999) (1995) as: consistency, completeness, conciseness, expandability and sensitiveness.

Consistency – the ontology does not contain contradictions or allow for them to be inferred from the ontology. Gomez-Perez, also rules out contradiction with the real world.

Completeness – all that is intended to be represented in the ontology and is essential to it is contained in it, or can be inferred from it.

Conciseness – the ontology does not contain redundancies or irrelevant definitions.

Expandability – is how much effort is needed to accommodate new definitions to the ontology.

Sensitiveness – relates to how small changes in a definition alter the set of well-defined properties that are already guaranteed.

Gomez-Perez (1999) also details potential inconsistency, incompleteness and redundancy errors and specifies how they can be detected.

Of these five evaluation criteria, consistency, completeness, and conciseness are important for evaluation of the OntoCarer Framework and how they are used is described below. The checks for details of potential inconsistency, incompleteness and redundancy errors, are also relevant and are included in the OntoCarer Evaluation Process, below.

Validation Process

The validation process involves deciding whether the ontologies model accurately the entities in the world that they are intended to model, and whether the ontologies can function as intended in the world.

Validation can involve examining one or more of the following: the sources of knowledge for the ontology, ontology correspondences to the real world, the functionality of the ontologies in the real world, user and expert evaluation of the ontologies, and using a simulation of the real world to validate the ontologies.

Validation by Sources

The validity of the ontologies may be justified by the relevance and reliability of the original sources of knowledge for constructing the ontologies. By trying to answer the following questions. What is

the epistemological status of that knowledge source? Does the ontology require commonsense knowledge? Where “Common sense knowledge is the set of knowledge which is assumed that every human has” (Andrich et al., 2009). That is, does it require knowledge that most people have because it is the kind of knowledge everyone acquires as part of maturation as a person. Does the ontology require everyday knowledge? That is, is it the kind of knowledge everyone in modern society acquires as a part of participating in everyday life, such as knowledge of: schools, shops, transport, cinema, television, entertainment, etc. Does it require knowledge of a particular specialist domain? That is, is it knowledge of an area of life that most people do not encounter, though not necessarily requiring technical expertise. Does it require expert knowledge? That is, knowledge requiring a technical or scholarly knowledge of an area that few are qualified for. Experts can provide a source of knowledge, that can be relied upon. That expert knowledge can also be embodied in documentation or other ontologies that are the result of expertise and have already been validated such as the WHO ICF ontologies.

The appropriate uses of these sources of knowledge lends credibility to the constructed ontologies, and the relevant references to these sources of knowledge can be used to validate the ontologies.

Validation by Correspondences and Comparisons

An ontology can be validated by comparing it with the real world objects that it claims to represent. Both the abstract classifications of classes and properties, and particular models created from the ontologies representing particular situations in the real world.

In making the comparisons, this can be done the developers or by using user and expert evaluations where appropriate and necessary. Whereby users of the software application can be surveyed to evaluate the ontologies and those applications that incorporate them as to whether they satisfy their requirements. Experts can also be surveyed as to the extent the ontologies match their claims to represent their domains.

Validation by Functionality

Ontologies are created for use in the real world. Using the ontologies to represent situations in the real world, in a software application in the real world can then be used to validate the ontologies by evaluating how effective those applications are at functioning for their intended purposes.

Validation by Simulations

The above situation of using the ontologies and their application in a real world situation for which they are intended is an ideal, but it is not always possible to validate the ontologies in a real world situation. The reasons for this may be practical ones of time, cost, resources, accessibility, or ethical constraints. In such cases, an alternative possibility is to use a simulation of the real world situation. The simulation is used to represent that situation for a typical set of domain individuals for each ontology and to simulate the environment and relevant behaviours as they interact with the software

application that uses the ontologies. The results of this simulation can then be used in order to assess and validate the functionality of the ontologies in a real world situation.

The validity of the simulation of a real world situation may in turn be validated by the knowledge of that type of situation. That knowledge may be; commonsense knowledge, everyday knowledge (as defined above), or depend upon specialised or expert knowledge, or a combination of these different types of knowledge.

OntoCarer Evaluation Process

The subheadings for the OntoCarer Verification and Validation processes are listed in Table 4.3 below along with their corresponding page numbers.

OntoCarer Evaluation sub-headings	Pages
OntoCarer Verification Process	82
Goals	83
1. Categories Level	83
2. Vocabulary Level	83
Partition errors	83
Vocabulary Incompleteness Errors	83
Vocabulary Redundancy Errors	83
3. Taxonomy Level	83
Taxonomy Inconsistency Errors	84
Circularity Errors	84
Partition Errors	84
Semantic Inconsistency Errors	84
Taxonomy Incompleteness Errors	84
Partition Errors	84
Taxonomy Redundancy Errors	84
4. Syntactic Level	84
5. Framework Level	84
6. Application Level	85
OntoCarer Validation Process	85
Documentation	85

Table 4.3 Table OntoCarer Verification & Validation Process subheadings

OntoCarer Verification Process

The OntoCarer Verification Process can be described as consisting of a number of levels. Outside of these levels are the Goals, which has primacy as it acts as a guide and measure for the levels by setting the main purposes of the project. There are six levels from the Categories Level at the bottom to the Application level, which are used to define the levels at which verification takes place.

Goals

The Goals defines the goals, objectives and purposes of the ontological framework, and as such it acts as an overall guide for checking the form and content of the other level. The content of Goals level can include: goal statement, use cases, scenarios, and other diagrams or descriptions that clarify the goals and purposes of the project.

The elements of the Goals themselves should be checked for completeness, consistency, and conciseness.

1. Categories Level

Categories Level – this layer contains the Model Categories and the candidate ontologies list. The elements of the Categories Level should be checked for completeness, consistency, and conciseness, and being in accordance with the aims of the Goals.

2. Vocabulary Level

Vocabulary Level – defines the content of the ontology in terms of its classes, properties and their domains and ranges.

The verification checks on the Vocabulary Level should check for the correct level of precision and extension in the definition of the classes, properties and their domains and ranges. In addition the Vocabulary Level should be checked for completeness of each of these elements, and the consistency and conciseness of their definitions, and the elements in the ontology being in accordance with the aims of the Goals.

Check that the naming conventions for the classes, properties and their domains and ranges are followed in naming these elements.

Partition errors

Check that each class is marked as disjoint from every other class that it should be.

The verification checks on these vocabularies can in addition be checked by looking for the following; incompleteness errors and redundancy errors, as identified by Gomez-Perez (1999).

Vocabulary Incompleteness Errors

Incomplete Concept Classification - missing out concepts that belong to an ontology

Vocabulary Redundancy Errors

Identical formal definitions – where there are two or more classes or two or more instances with the same formal definitions

3. Taxonomy Level

Taxonomy Level – defines the hierarchy of is-a relations in the ontology, which includes the subclass and superclass relations between classes, and between subproperty and superproperty relations between properties.

The hierarchy of relations in the ontology should be checked for completeness, consistency, and conciseness and for being in accordance with the aims of the Goals.

The verification checks on these hierarchies of class and properties can in addition be checked by looking for the following; inconsistency errors, incompleteness errors and redundancy errors, as described by Gomez-Perez (1999).

Taxonomy Inconsistency Errors

Circularity Errors

Where a class is defined as a specialisation or generalisation of itself.

Partition Errors

- Disjoint classes – but then having a common instance or a common subclass
- Exhaustive subclass partition – having external instances, so is not exhaustive

Semantic Inconsistency Errors – where a class is made a subclass of a concept to which it does not belong.

Taxonomy Incompleteness Errors

Partition Errors

- Subclass partition omission – omits that a set of subclasses are disjoint
- Exhaustive subclass partition omission – omits that the set of subclasses are complete

Taxonomy Redundancy Errors

Taxonomy Redundancy Errors – where there are redundancies in the hierarchy of relations between classes, or between instances and classes

4. Syntactic Level

Syntactic Level – where the translation of the Conceptual model into the syntactic requirements of the ontology implementation language such as OWL and its machine readable implementation, such as RDF/XML, is evaluated for correctness. The correctness of these translations may be ensured by the use of an ontology editor such as Protégé, with its automated translation and syntax checking capabilities.

5. Framework Level

Framework Level – where an ontology is evaluated in the context of the other ontologies in the ontological framework. It is evaluated for its integration with the other ontologies in the framework for its ability to fulfill the goals and purposes of the ontological framework.

To do this the scenarios are employed, which include the use of the ontologies. The scenarios are used to check an ontology's functioning in its interaction with the other ontologies in the framework, to achieve the goals of the scenario.

6. Application Level

Application Level – where the ontologies in the framework are evaluated in the context of their performance in a software application. This is an extension of the Framework Level, where the scenarios are implemented in a software application, and the framework ontologies are judged on their ability to function together with the software application and contribute effectively to the goals of the software application.

Finally, each of the levels should be checked for the consistency of its elements and its documentation with those elements and documentation belonging to the other levels.

OntoCarer Validation Process

The OntoCarer Validation Process for the OntoCarer Ontological Framework involves checking that the ontologies accurately represent the real world entities that they claim to represent and that the ontologies can be used to represent a real world situation and function effectively together in a software application in such a real world situation to achieve the purposes of the software application.

The process involves one or more of these methods of validation as appropriate, as described above:

- Sources
- Correspondences and Comparisons
- Functionality
- Simulations

The depth of justification required for validating the ontology is likely to depend upon its distance from commonsense and everyday knowledge, with the ontologies depending upon specialist and expert knowledge requiring more justification. To use Popper's metaphor in *The Logic of Scientific Discovery* (1959) the 'piles in the swamp' must be driven down deep enough to support the knowledge claims made, rather than aiming to reach some foundational bedrock of epistemic certainty (Kleindorfer et al, 1998). It is a matter of debate and discussion as to how far those piles need to be driven down to provide the validation needed, and they may be driven down further, if after debate, it is decided to be justifiable.

Documentation

The documentation provides detailed descriptions and diagrams of the contents of the ontologies and the software applications that use them.

The specific contents and format can use the detailed templates for ontology documentation, such as that given in the METHONTOLOGY methodology (Fernandez-Lopez, Gomez-Perez, et al, 1997) with tables for each ontology for their classes and properties, and the instances of the models.

In addition the software application is to be documented with comments and accompanied by a set of UML diagrams explaining its functionality.

Evaluation and Documentation Phase: Inputs

- Specification documents – including Goal Statement, use cases, scenarios
- Conceptual model domain model and machine readable versions
- Software applications and simulations
- Ontology tools for verification checking
- Sources of validation knowledge

Evaluation and Documentation Phase: Outputs

- Verification and Validation assessments and modifications
- Documentation of ontologies and programs
- Evaluated ontologies and programs

The table below (Table 4.4.) lists the OntoCarer Development Cycles Phases and Components along with the corresponding pages where these phases and components are applied.

OntoCarer Development Cycle Phases & Components applied:	Pages & Appendices
Initial Phase 1	
Goal Statement – including its scope, aims and outcomes	15-18, 101
Literature survey of existing research	25 - 53. 54 – 68
Use case diagrams, and scenarios for the use cases	103 – 104, 269, 279 – 294
Tools & Languages Selection	104, 110
Project Constraints	7 – 18, 105
Framework Phase 2	
Model Categories	106 – 107
Candidate list of top-level ontologies and potential domain ontologies	108 – 109
Conceptualisation Phase 3	
Conceptualisations of top level ontologies	111 – 160
Conceptualisation relevant domain ontologies.	164 -229, Appendix H
Implementation of ontologies in an ontology editor	124, 129, 140, 149, 154, 160, 172, 179, 185, 194, 200, 207, 209 111 - 160, Appendix D
A domain model representation	258 – 267. Appendix E
Implementation Phase 4	
Conceptual model in machine readable code	Appendix D
Domain model in machine readable code	Appendix D, E, F
Evaluation and Documentation Phase 5.	
Verification and Validation assessments and modifications	233 – 328
Documentation of ontologies and programs	111 – 160, 164 -229, Appendices A, B, C, G, H
Evaluated ontologies and programs	Appendices C, D, E, F

Table 4.4 Table mapping OntoCarer Development Lifecycle to the pages it is applied

4.5 Summary

Chapter 4 defines an OntoCarer Ontological Framework Methodology. It starts with a definition of ‘Ontological Framework’, it then goes on to depict and define the OntoCarer Development Lifecycle, and the Phases of the Lifecycle.

The OntoCarer Development Lifecycle is depicted in Figure 4.3 and is the result of the limitations of the PMBOK lifecycle model and that of the SQA lifecycle model in relation to the needs of the OntoCarer project.

The OntoCarer Development Lifecycle is then defined in detail. It consists of five phases. These are: Initial Phase, Framework Phase, Conceptualisation Phase, Implementation Phase, Evaluation and Documentation Phase, and are described in detail. The Evaluation phase consists of verification and validation assessments and modifications if necessary. The verification assessments evaluates the ontologies against the Goals of the project and through six levels.

Those six levels are:

1. Categories Level
2. Vocabularly Level
3. Taxonomy Level
4. Syntactic Level
5. Framework Level
6. Application Level

Each phase of these five phases has a set of inputs, tasks, and outputs.

Chapter 5 The OntoCarer BDI Representations

5.1 The Semantic Web representations of BDI concepts in OntoCarer

This chapter considers the Belief, Desire, and Intention concepts of the BDI theory and how best to represent them in the Semantic Web representations of the OntoCarer Ontological Framework and its BDI software architecture.

The BDI theory is a theory of practical reasoning for achieving the agent's goals, where the agent's beliefs offer a representation of the world; a world which provides the means for achieving the agent's goals. The agent's desires are those goals that the agent would like to bring about, and its intentions are those desires it is committed to achieving.

Before going on to consider how to represent beliefs, desires and intentions in OntoCarer we will consider the differing functions of belief, desire and intention, in order to understand what functions their representations may need to perform.

5.2 The Functions of Belief

A belief is a relationship between an agent and a proposition that represents a state of affairs. The functions of belief can be broadly characterised of two types, which are the representational and the epistemic.

5.2.1 Representational Functions of Belief

1. Representational Content - A belief has representational content, a proposition that is capable of representing a fact, a state of affairs in the world. (Guttenplan, 1994)
2. Asserting Truth - An assertion of a statement is a commitment to the truth of its propositional content. (Skorupski, 1997)
3. Asserting Belief - An assertion of a statement includes a commitment to a belief in the asserted proposition. (Guttenplan, 1994)
4. Objectivity of the truth of a belief - The believed proposition is the bearer of a truth value (true or false). It is true or false, independently of a belief in the proposition. (Guttenplan, 1994)

5.2.2 Epistemic Functions of Belief

The epistemic functions of belief are concerned with the agent's knowledge states in relation to its beliefs. These are some of the epistemic features of belief:

1. **Belief as Knowledge** – When an agent’s beliefs are true and justified then they can represent knowledge of the world that the agent possesses. An agent’s knowledge of how the world is has the practical effect of making those true beliefs useful for taking action in order to realise its desires and intentions through its plans and its actions.
(Guttenplan, 1994)

Partial Knowledge - That knowledge an agent has, may be qualified as being partial knowledge of the world.

This partial knowledge may be either positive or negative.

The positive partial knowledge is where the agent has some useful knowledge, which may be knowledge that other agents do not have, giving it an advantage in realising its goals, or in being able to use its expertise to assist other agents.

The negative partial knowledge is where an agent lacks skills or knowledge of relevant facts. As a consequence, its actions to realise its intentions may not be optimal or it may come to rely upon the superior knowledge of others to assist it in the achievement of those plans.

2. **Belief Revision** – As the world changes an agent should be capable of revising their beliefs about it. Beliefs that were true become false as the facts change so should now be held to be false, and other beliefs reflecting the new facts about the situation should now come to be held true in their place. (Gardenfors, 1992)
3. **Fallibility of Belief** – an agent’s beliefs are independent from the world, allowing for the possibility of false beliefs as well as true beliefs. (Guttenplan, 1994)

5.2.3 Ascribing Beliefs to Others

Another feature of belief is being able to ascribe beliefs to others. This allows us to draw an epistemic distinction between what another agent holds to be true i.e. what they believe, and what is actually true. It can also explain the continuing rationality of an agent’s actions, when some of their beliefs about the world are false.

Ascribing beliefs to others also, along with ascribing desires and intentions, enables us to understand and predict other agent’s behaviour independently of knowledge of the underlying physical mechanisms. It allows us to take a design or functional perspective to understanding another agent, as part of what Dennett calls an ‘Intentional Stance’ (Dennett, 1971)

5.3 The Functions of Desires and Intentions

5.3.1 Desire - Identifying Value

Desires function to select those elements that are of value to the agent. In the OntoCarer context these valued items are principally the roles and actions the agent wishes to perform in the organisation.

Giving them a rating according to the degree of desire can further differentiate the desired actions.

5.3.2 Intention – Commitment to Action

An intention selects from the desired actions and commits to carrying it out.

Intentions themselves may be rated in terms of the degree of intention, and also ranked as to their order of priority.

To be able to commit to an action depends upon the situation permitting the action. Identifying a suitable situation for action depends upon how an agent's beliefs represent the world.

5.4 Form of Semantic Web representations in OntoCarer

OntoCarer uses Semantic Web languages to store and process representations of the organisations and their agents, including of BDI belief, desire and intention representations. OntoCarer stores these representations in the form of RDF and OWL triples. The question to be decided is what is the best way to represent BDI concepts in the triple form in order that they can fulfil their BDI functions and also be efficiently processed in the OntoCarer software application. We will consider first, a possible solution involving *reification*, evaluating its merits in relation to the functions of the BDI concepts and the efficiency of its implementation. Before going on to describe the OntoCarer solution to the implementation of the BDI concepts and how this solution offers an improved way of representing these concepts in OntoCarer.

5.4.1 Propositional Attitudes

Belief, desire and intention are examples of what are called propositional attitudes (Baker, L. R., 1994) where an agent holds an attitude (such as belief, desire, intention, etc) towards a proposition.

Where a proposition can be described as the meaning of a sentence.

Propositional attitudes are ascribed to agents by sentences of the form:

'agent β that p ' – where:

agent names the agent to which the propositional attitude is ascribed.

β is the particular attitude such as 'believes', 'desires', 'intends', but could include others such as 'hopes', 'fears', etc.

p is the particular proposition to which the attitude is expressed. This could be some declarative sentence such as 'Snow is white'.

A particular example of a sentence expressing a propositional attitude is:

Smith believes that snow is white.

5.4.2 Reification of BDI statements

A natural first thought in representing the BDI concepts in OntoCarer would be to try to mirror the expression of these propositional attitudes in the OntoCarer semantic representation. This can be done by using a feature of RDF called reification. This was the form that was first proposed for the Semantic Web representation of BDI concepts in the OntoCarer project in the conference paper

(Vassilev, V., Ulman, M. et al, 2013), and is now analysed, and a better alternative is proposed below. Reification provides the resources to make a statement about a statement, in the same way as ascribing a propositional attitude to a statement, makes a statement about a statement.

Reification statements also have the same feature as propositional attitude statements in that they are not truth functional. The truth of the whole statement does not depend upon the truth of the reified statement, just as the truth of a propositional attitude statement does not depend upon the truth of the constituent proposition to which the attitude is held.

A reified statement functions through being able to refer to an RDF statement as a resource with an identifier, which can be used as the object in an RDF triple. For example the English statement: ‘John Smith believes that John Smith has the action to feed oneself’ and could be translated into an RDF graph of the reified statement of the following form:

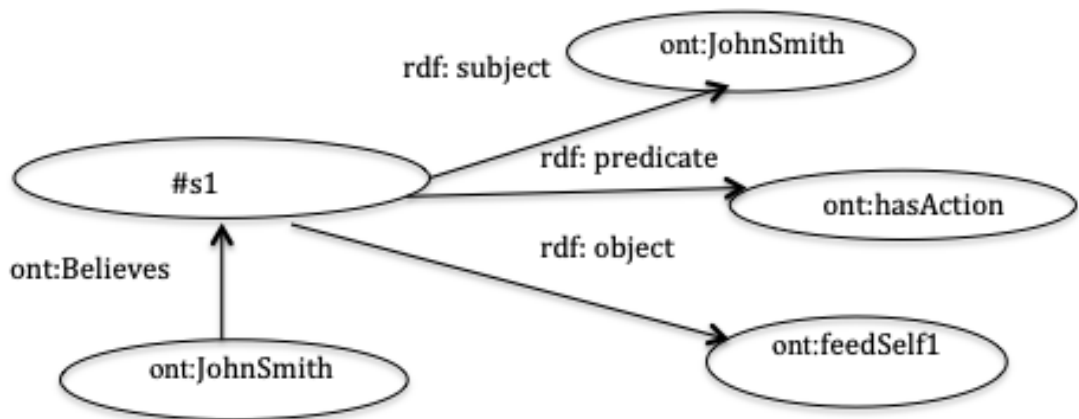


Figure 5.1 RDF graph of reified ‘Believes’ statement

Which is represented by the following RDF/XML statement:

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:ont="http://OntoCarer.com/ont#"
  xml:base="http://OntoCarer.com/>

  <rdf:Description rdf:about="#s1">
    <rdf:subject rdf:resource=ont:JohnSmith />
    <rdf:predicate rdf:resource=ont:hasAction />
    <rdf:object rdf:resource= ont:feedSelf1 />
  <rdf:type rdf:resource="http://www.w3.org/1999/02/22-rdf-syntax-ns#Statement" />
  </rdf:Description>

  <rdf:Description rdf:about=ont:JohnSmith>
    <ont:Believes rdf:resource="#s1" />
  </rdf:Description>
</rdf:RDF>
```

In this case a separate resource for the statement to be reified is #s1 is named and defined first, which is then used in the following statement about the reified statement #s1

As most beliefs are not necessarily true, as well as the attribution of the belief to the agent there is also the fact of the matter which the proposition in the belief aims to represent, which may be expressed, in a separate statement. In the above example this would be the statement ‘JohnSmith hasAction feedSelf’ which is a statement that would form part of the agent John Smith’s organisational profile, which includes the facts about the social actions an agent has i.e. can perform, as part of its roles in the organisation and which can be represented by the triple:

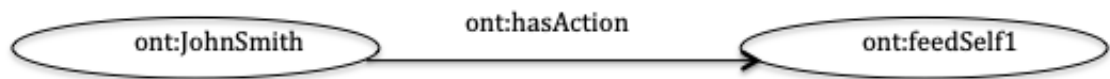


Figure 5.2 RDF triple representing an agent profile fact about an agent in an organisation

The URL’s in the RDF/XML code above and in the rest of this chapter represent URI’s which are Uniform Resource Identifiers. These are unique identifiers for naming resources, such as classes, properties and individuals. These are explained in more detail in section 3.2.2. in Chapter 3.

5.4.3 Reification of Desire and Intention statements

Reification can also be used to express the desires and intentions of an agent. The desires and intentions in OntoCarer are principally directed at Social Actions, which are actions that have a purpose and belong to a role. Those roles are usually specific to a type of organisation such as the student role, but some roles may exist in several organisations while not being specific to one of them, such as the ‘eater role’.

The form that such statements would take would be
‘agent desires agent performs action’ such as:
‘John Smith desires John Smith performs action feed self’

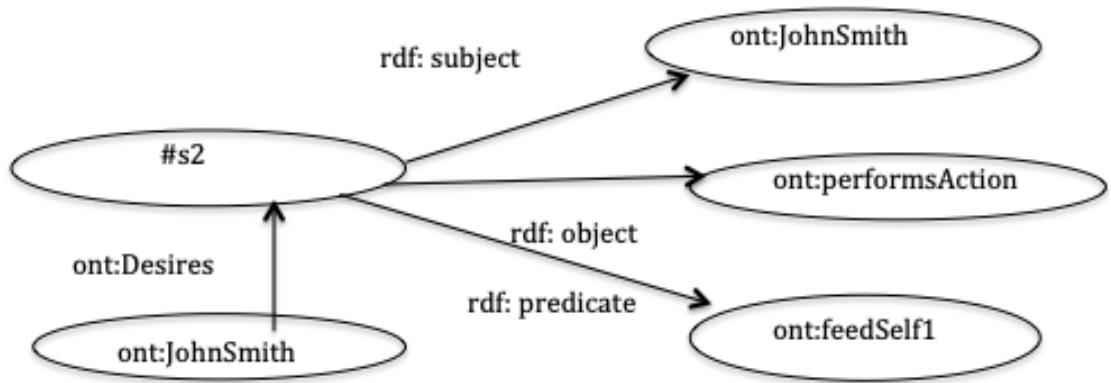


Figure 5.3 RDF graph of reified 'Desires' statement

Similarly, for intention - which commits the agent to perform the action in the desire statement. Intention statements have the form 'agent Intends agent performs action' such as 'John Smith intends John Smith performs action feed self'

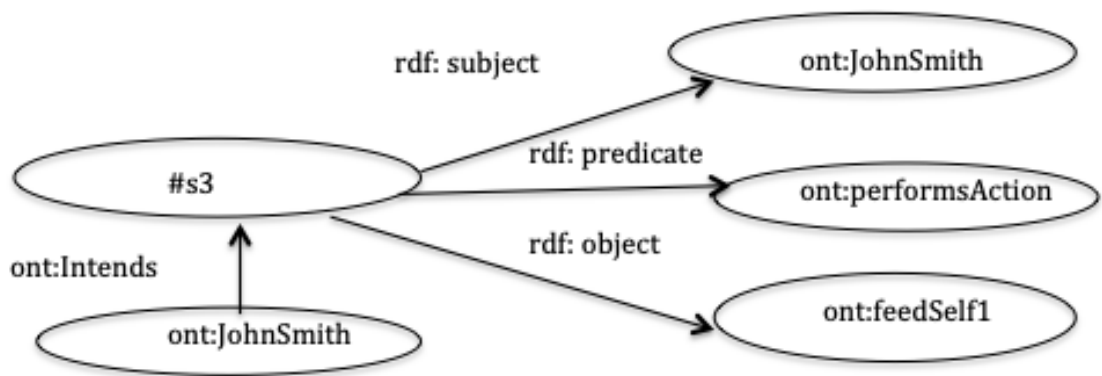


Figure 5.4 RDF graph of a reified 'Intends' statement

The outcome of such a successful intention would be the performance of the action resulting in the independent fact referred to in the reified statement:

'John Smith performsAction feedself'

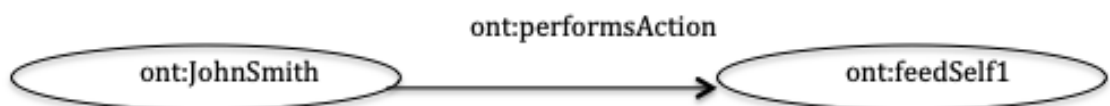


Figure 5.5 RDF triple representing a fact about the performance of an action by an agent

The degrees of desire could be included through a data property link (desireDegree) and a data node giving an integer value for the degree of intensity of the desire. With the link attached to the action node. This could be handled in a similar fashion for the degrees of intensity of the intention.

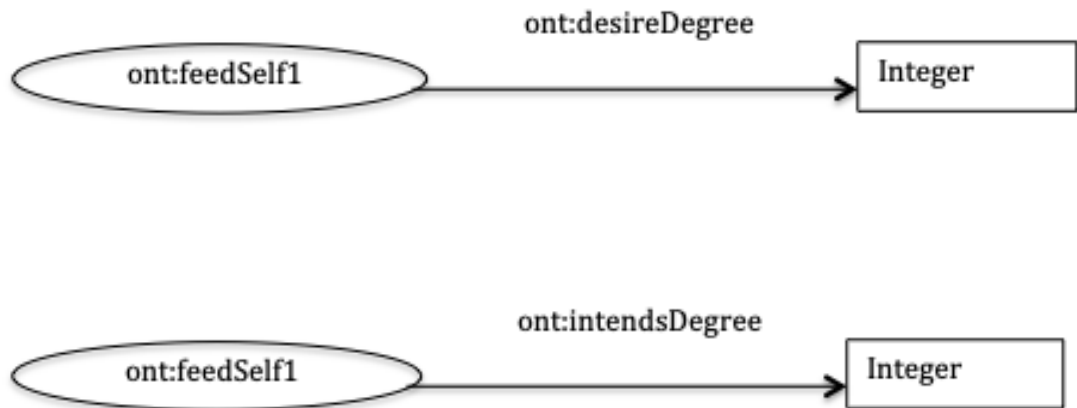


Figure 5.6 RDF triples separately representing degree of desire and degree of intention

5.4.4 Evaluation of Reification solution

Before going on to put forward the OntoCarer solution to the problem of representing the BDI concepts, we will evaluate this proposed solution and describe its limitations.

The main feature of the Reification solution is that it includes explicit attributions of the beliefs, desires and intentions to the named human agents involved, mirroring the form of statements such as ‘Smith believes that Smith has action feed self’.

An advantage of the attributing of intentional attitudes such as belief to agents is that it allows us to make an epistemological distinction between the beliefs of the agent and the actual facts of the matter in the world, so allowing us to attribute false beliefs to the agent if necessary in contrast to the actual facts of the case. In the case of OntoCarer this distinction between the beliefs of the agent and the actual facts of the matter would not be available, because of how the representations of the beliefs are acquired. The OntoCarer Organisation Agent which is the centralised planning agent and which holds the representations of the organisation and its agents, derives its knowledge of the human agent profiles from the human agents themselves through the mobile app when they register and complete their profiles. As the human agents are the source of the agent profiles held by the Organisation Agent this means the representations of the agent beliefs and the facts would not differ. It is also unlikely that there would be an actual discrepancy between the beliefs and the facts about the agents, as the human agents can be held to be a reliable source of facts about themselves. The result would be an element of duplication and redundancy where the representation of the agent profiles and the content of the beliefs about them would always be the same.

If the separate factual profiles were dispensed with and only the reified beliefs were used as a representation then this would incur problems with SPARQL queries on the reified statements and a processing overhead to extract the factual statements from the reified statements.

The reification of desire and intention has the advantage that the reified statements that are desired and intended are not asserted, as they have yet to be enacted.

A disadvantage of the reification of the desire and intention is the complexity of the multiple representations involved in the stages that go into performing an action.

The series starts with a statement of the agent having the action to be performed as part of the agent's profile:

ont: JohnSmith ont: hasAction ont: feedSelf1

Then there is a reified statement of the desire to perform the action:

ont:JohnSmith ont:Desires {ont: JohnSmith ont: performsAction ont: feedSelf1 }

Followed by a reified statement of the intention to perform the action:

ont:JohnSmith ont:Intends {ont: JohnSmith ont: performsAction ont: feedSelf1 }

With the result that when the intention is acted upon, the reified statement becomes an independent fact:

ont: JohnSmith ont: performsAction ont: feedSelf1

In addition to these statements, there are two kinds of statement for asserting the degree of desire and intention for the action, when desire and intention exist on a continuum from desire to intention. It may be that this form of representation can also be simplified.

As this process of performing the action takes place there will be changes in the world which should be reflected in truth values of the statements that are believed (held true) by the Organisation Agent. An efficient means of handling belief revision for these statements needs to be found, to update the truth value of statements and add new facts to the set of beliefs held.

The table below, Table 5.1 lists the sub-headings for the sub-sections of the querying of and processing of reified statements in SPARQL and Jena.

Reification sub-headings	Page
Reification - SPARQL Queries & Jena methods	96
Querying Reification in SPARQL	96
Processing Reified Statements in Jena	96

Table 5.1 Table of Reification sub headings

Reification - SPARQL Queries & Jena methods

The belief statement ‘JohnSmith believes JohnSmith hasAction feedSelf’ which has the RDF N3 form:

```
#prefix rdf: < http://www.w3.org/1999/02/22-rdf-syntax-ns# > .  
#prefix ont: <http://OntoCarer/ont#>.
```

```
#s1 rdf:subject ont:JohnSmith  
#s1 rdf:predicate ont: hasAction  
#s1 rdf: object ont: feedSelf  
ont:JohnSmith ont:Believes #s1
```

Querying Reification in SPARQL

The reified statement is described without being asserted in the graph. If we queried the statement, trying to find who ont:hasAction as in the following query, it will return nothing, as there are no triples in the graph with ont: hasAction in the property position, as it appears in the object position.

```
PREFIX ont: <http://OntoCarer/ont#>.
```

```
SELECT ?agent ?action  
WHERE  
{ ?agent ont:hasAction ?action }
```

would return nothing.

A SPARQL query can be used to find the description of statements that ont:JohnSmith ont:Believes which contains ont:hasAction, in the query form:

```
PREFIX ont: <http://OntoCarer/ont#>.
```

```
SELECT ?agent ?action  
WHERE  
{?b rdf:subject ?agent .  
 ?b rdf:predicate ont: hasAction .  
 ?b rdf: object ?action .  
 ont:Johnsmith ont:Believes ?b.  
}
```

which returns the agent:

<http://OntoCarer/ont#JohnSmith>

and the action:

<http://OntoCarer/ont#feedSelf>

(W3C, 2008b)

Processing Reified Statements in Jena

Jena (Apache Software Foundation, 2017) does provide resources to manipulate reified statements including the method ReifiedStatement:getStatement() which when applied to a reified statement, returns the statement that the resource is reifying.

If reified statements are used to represent BDI concepts, this means that to query, access and process reified statements adds a significant element of complexity and processing overhead to the use of the representations, with little or no benefit from doing so.

5.5 OntoCarer solution for representing BDI concepts

The OntoCarer solution for representing the BDI concepts aims to take the functions of the BDI concepts and represent them in a Semantic Web representation, and also to make these representations computationally efficient, as well.

5.5.1 Representing Beliefs in OntoCarer

The starting point of the OntoCarer representation of the BDI concepts are the RDF statements which are asserted by the Organisation Agent. Such as the triple below, which asserts of the agent `ont:JohnSmith` that it has the social action instance `ont:feedSelf1`, as part of the agent `ont:JohnSmith`'s organisation profile.

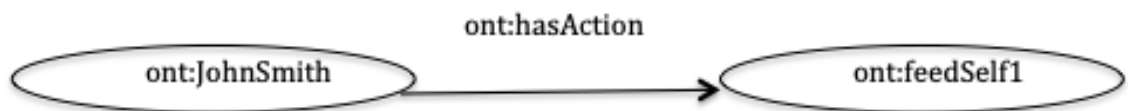


Figure 5.7 RDF triple representing a fact about an agent contained in its profile

The assertion of these statements by the Organisation Agent means that we may infer from the assertion that they are also held true by the Organisation Agent and so are believed by the Organisation Agent too.

Representing the Organisation Agent 'beliefs' in the form of these simple RDF statements means they can be queried using SPARQL and processed by Jena without any of the additional complexity and processing overhead that reification entails.

The Organisation Agent holds the user and provider profiles. An agent's profile contains statements linking the agent through its URI with its Roles, Social Actions, Body Components, Body Abilities, location and personal data.

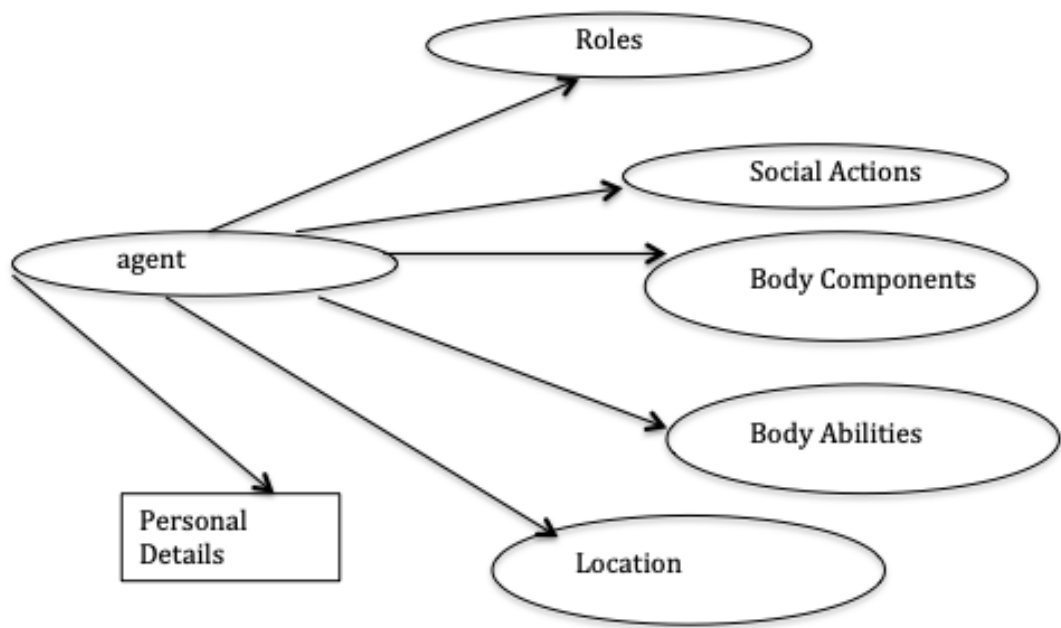


Figure 5.8 A graph depicting the types of information held in an agent's profile

These user and provider profile statements are asserted and held by the Organisation Agent. The Organisation Agent also asserts and holds statements about the organisation, its buildings and the assistance property links between assister and assisted social actions. These statements form the Organisation Agent's beliefs.

The Organisation Agent has knowledge about all the agents in the organisation, both the agents with assisted roles and the agents with assister roles. As well as knowledge of the individual profiles of both of these types of agent, it also knows about the relationships of assistance between their actions. The Organisation Agent can make use of these sets of partial knowledge in the individual profiles of the two kinds of agent and use them with the knowledge of the relationships between the assisted and assisting actions to plan assistance in the organisation.

Belief Revision

The Organisation Agent's beliefs change over time as the world changes. The process of belief revision is managed independently of the semantic representations in the OntoCarer software application. In order to manage this process of belief revision the RDF statements held by the Organisation Agent are assigned a truth value, initially this is the value True but when a new statement is adopted that contradicts an old one its value is changed to False. The RDF statement and the associated boolean value are held in an object – an instance of an inner class CurrentStatement, and these objects are held in an arraylist. These CurrentStatement's can be filtered to extract the

statements with an associated true value, before performing queries on the statements so that only those statements held to be true are used.

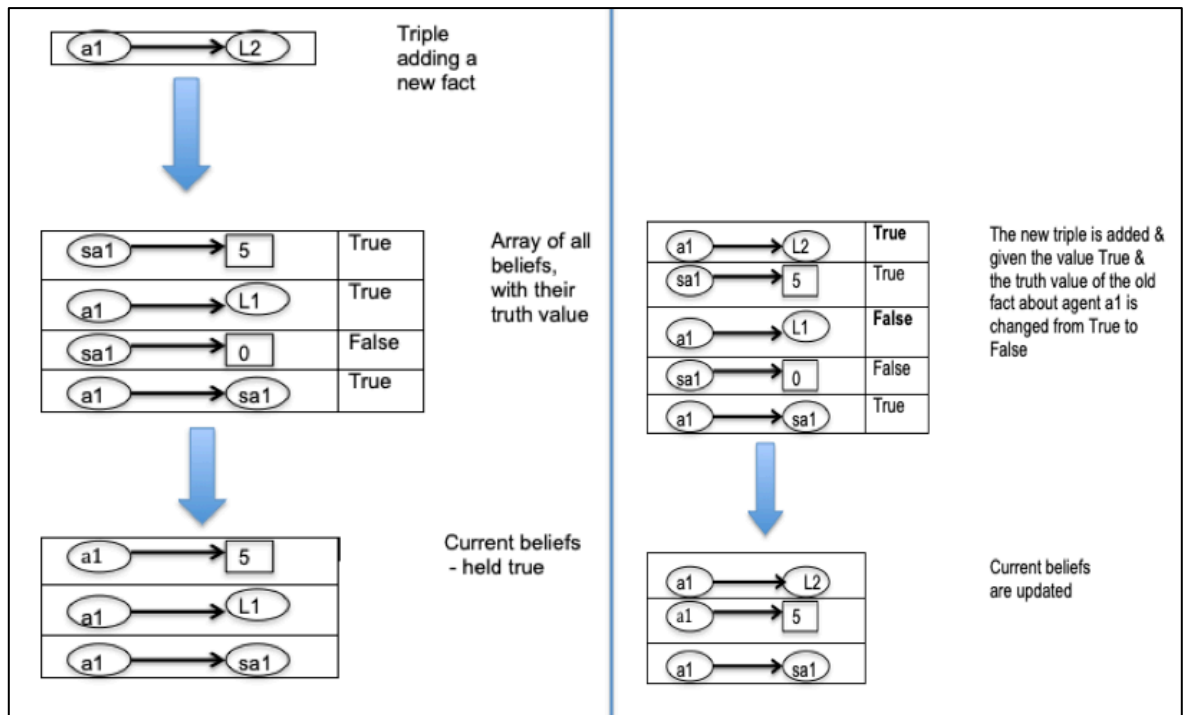


Figure 5.9 Triples in the Organisation Agent representing beliefs & handling belief revision

In the above diagram is an example showing how belief and belief revision is handled in OntoCarer's Organisation Agent. In this diagram a1 represents an agent, sa1 is a social action, L1 and L2 are locations, and the integers 0 and 5 represent levels of desire-intention for the social action sa1.

In the first diagram a new triple representing a new fact is about to be added to the array of beliefs in the middle of the diagram. That array contains current beliefs held true and old beliefs, which have become false due to changes in the world. The bottom set are a filtered set of beliefs currently held true, which are used as the basis for queries.

In the second diagram, on the right, the new triple representing the agent as being at location L2 has been added to the set of beliefs and given the value True. As an agent can only be in one location at a time, the triple representing the a1's previous location L1 is changed to False. The filtered set of current beliefs is updated to reflect this change.

5.5.2 Representing Desire and Intention in OntoCarer

The concepts of desire and intention, their degree and their satisfaction are represented by a single form of statement in OntoCarer. The concepts of desire and intention are explicitly referenced in the form, unlike that of belief, but without needing to use the complications of reification to do this.

The concepts of desire and intention exist on a continuum from desire to intention, and this is taken advantage of in their representation. A desire leads to an intention and the intention is also a desire.

Desire and intention are represented by using a data property for ‘`desireIntentionHasLevel`’ where the subject is the bearer of the desire or intention and the data value in the object position is an integer indicating the level or degree of desire-intention. Typically, it is a social action – which is an action with a purpose that is the subject of the desire-intention statement. The levels of desire-intention range from 0 to 10. With level 0 indicating ‘no desire’.

Levels 1 to 4 indicate increasing levels of desire and levels 5 to 9 denote increasing levels of intention. Level 10 indicates the satisfaction of the intention, which may be as the result of the agent’s actions or as a result of the assistance it has received from another agent where this is provided.

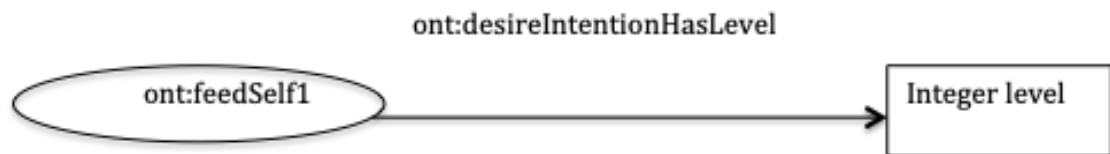


Figure 5.10 RDF triple representing the desire-intention level of a social action

5. 6 Summary

Chapter 5 is concerned with the Belief, Desire, and Intention concepts of the BDI theory. The concepts of Belief, Desire, and Intention are first analysed in terms of their function in order to understand what functions their representations may need to perform in the context of the OntoCarer Ontological Framework.

Then it is considered how best to represent Belief, Desire, and Intention in the Semantic Web languages of OWL and RDF, so that they fulfill their functions and be efficiently processed. Belief, Desire, and Intention are propositional attitudes and the first solution considered is one that involves *reification* that may be considered that best preserves this aspect of these concepts. The reification solution is explained and then evaluated. The reification solution is rejected as to query, access and process reified statements adds a significant element of complexity and processing overhead to the use of the representations, with little or no benefit from doing so. The OntoCarer solution to the Semantic Web representation of Belief, Desire and Intention is then put forward. The representation of Beliefs by triples is explained. The problem of Belief Revision is explained and a solution given. Belief Revision is concerned with how to handle the changes to belief over time as the facts change. Belief Revision is handled by the Organisation Agent in the software application that updates and revises which beliefs are held true and false.

How Desires and Intentions are represented by triples is explained in relation to social actions that are their object and also how the representation of the level of desire and intention is represented on a single integer scale.

Chapter 6 – Developing The OntoCarer Ontological Framework – The Top-Level Ontologies

6.1 Introduction

This chapter describes the application of the OntoCarer Ontological Framework Methodology through the first three Phases of the Methodology, which are the Initial Phase, the Framework Phase and the Conceptualisation Phase. The outcome of these will be the OntoCarer Top-Level ontologies. The Top-Level OntoCarer ontologies are then given domain ontology extensions for an Education domain, which are described in the following chapter.

6.2 Developing the OntoCarer Ontological Framework

The OntoCarer Ontological Framework is constructed through the iterative application of the phases of the OntoCarer Methodology, as described in Chapter Four. Progressively modifying and constructing an evolving prototype through each iteration of the sequence of the phases of the methodology.

6.2.1 OntoCarer Methodology : Intial Phase 1.

OntoCarer Methodology: Intial Phase 1 sub-headings	Pages
Goal Statement	101
Survey of existing research literature	102
Use Case diagrams, Use Cases & Scenarios	102
Ontology Languages, Tools and Class Libraries	104
Project Constraints	105

Table 6.1 Table of sub-headings for OntoCarer Methodology: Initial Phase 1.

Goal Statement

The initial idea for the project was for a personalised planning agent system, utilising ontologies for this purpose. After some considerations on the particulars of the personalisation involved, this developed into an idea for a personalised planning agent system using ontologies, for the disabled, in their interactions with organisations.

The intial goal statement can be characterised as:

To produce an ontological framework to plan personalised assistance for disabled agents in their interactions within organisations, and implemented in a software application and mobile phone apps.

Survey of existing research literature

The survey of the existing research literature covers previous research on the subject matter of the project, and is covered in chapter two and three of this thesis. This literature review covers the following areas:

- Agents including agent architectures and BDI theory
- Disabilities and the ICF classification
- Ontologies - their definition, and ontology development methodologies
- Semantic Web including Semantic Web languages, tools, and class libraries

Use Case diagrams, Use Cases & Scenarios

Having formulated an initial goal statement, in order to further clarify the scope and content of the project and its ontologies, use case diagrams were created with a representative set of use cases and a selected set of scenarios that described cases of assistance provided for particular disabilities in organisations.



Figure 6.1 Use Case diagram of types of organisations that may provide assistance to the disabled

The use case diagram in figure 6.1 includes a variety of services from these types of organisation: Medical, Education, Transport, Retail, Recreation, and Public Services.

These selected use case descriptions and scenarios includes : attending a lecture, navigating to a teaching room, shopping in a supermarket, travelling by bus, visiting a cinema, booking a table at a restaurant, and eating at a restaurant .

The initial use cases also included those for providing personalised assistance in the domestic environment through a social services organisation providing 'home help'. These cases were later eliminated from the scope of the project. The reasons for dropping them from the project were because the cases were limited mostly to providing assistance to a passive disabled person in the home environment with little differentiation on the basis of the particular disability. As well as being less representative as cases of organisational assistance, these cases were also removed from the scope of the project for reasons of time and resources, preferring to focus the project on the activities of the disabled within organisations outside the home.

Ontology Languages, Tools and Class Libraries

The project is to be a Semantic Web project with the ontologies to be implemented in the Semantic Web languages of OWL, RDF and RDFS . The reason for choosing these languages was that the Semantic Web offered a widely adopted universal representation that could be used across many different organisations in society. Allowing an individual human agent to compatibly register with many different organisations and use their assisting services. The semantic data from these organisations could also be shared between organisations and if necessary linked together (Berners-Lee, 2006) . RDF, RDFS, and OWL provides a sufficiently rich structure to define the OntoCarer ontologies and the domain models created from them. In the case of OWL it provides for defining class and property hierarchies, with object properties and data properties, along with their domains and ranges. Property characteristics can also be specified, such as transitive, reflexive, asymmetric etc. The triple form (subject, predicate, object) of RDF statements allows assertions of fact to be made. With statements involving assertions about two individuals (subject and object, which are instances of classes) and their relationship, or an individual and its relationship to a data value, to be made.

Having decided on using Semantic Web languages to create the ontologies, a suitable editing tool needed to be chosen. The Protégé ontology editor was chosen. Protégé (Musen, M.A. , 2015) is a widely used ontology editor, with documentation, tutorials and ongoing development support. It is a visual editor that allows for the conceptual model to be created in an integrated environment. The classes, object properties, data properties and their hierarchies can be easily created visually and also modified and changed. Syntax checking and consistency checks can be performed on the ontologies. Domain models of class individuals and their relationships can also be created from the ontologies within Protege. All of these can then be seamlessly and automatically translated into the implementation format of choice, including RDF/XML, Turtle, etc.

Having created the ontologies and domain models in order to use these ontologies in a software application appropriate class libraries will be needed to read in the ontologies and domain models into

a program. In order to draw inferences from them, to query them using SPARQL queries, and to process and manipulate the statements they contain. The Apache Jena class libraries (Apache Software Foundation, 2017) can perform all these functions in conjunction with the Java programming language, and for that reason it has been selected to use for this project.

Project Constraints

The aims of the ontological framework are that it should aim to be a universal framework of ontologies, in that it should potentially be able to cover every type of disability and every type of organisation, and be open to expansion. The implementation of such a framework should be potentially capable of implementation in software applications and mobile phone apps in actual organisations, with agents of the organisation including users and providers, some of whom will be disabled. It is not within the resources of this project to fully realise such a prospectus. It would require more resources in terms of time, money, personnel, access, and expertise in many different areas to be feasible in a research project of limited scope. As a consequence, a more limited prototype is aimed for, and simulation used instead of an actual organisation and its components. The aim being, to prototype the core of the top-level ontologies and a domain ontology, with the domain ontology chosen for its accessibility, and knowledge of by the researcher. Hence, the domain chosen is that of education, with the organisation being modelled is that of a college organisation. The OntoCarer software application that uses the ontologies, is then used to simulate a college organisation and its agents, and to test the functionality of the ontological framework (through implementing a use case scenario), and so to validate the ontological framework.

The project limitations are described in more detail in Chapter 1.

Mapping of Phase 1 elements to Phase 1 Methodology in Chapter 4	Pages
Goal Statement	73 - 74
Survey of existing research literature	73 - 74
Use Case diagrams, Use Cases & Scenarios	73 - 74
Ontology Languages, Tools and Class Libraries	73 - 74
Project Constraints	73 - 74

Table 6.2 Table of mappings for OntoCarer Methodology: Initial Phase 1 to Chapter 4

6.2.2 OntoCarer Methodology: Framework Phase 2.

The Framework Phase is concerned with specifying the OntoCarer Ontological Framework, deciding what the candidate ontologies are and how they will work together for the purpose of the Framework, which is for planning personalised assistance for the people with disabilities within organisations. To facilitate this we start from the Model Categories which provide a top down design technique of starting from a simplified and abstract approach to the constituents of the Ontological Framework and how they might work together to provide assistance. The Model Categories can also act to cohere the Framework and act as guide on any future expansion of the ontologies.

As part of this process of deciding how the elements of the Framework work together, it will be considered whether adopting a particular theoretical perspective, which is that of the BDI theory (Bratman, 1987) is useful for structuring the elements of the Framework to model the processes of agent action and planning in organisations.

In addition, the question of whether there are external ontologies (the ICF classification and ontology) or other sources of knowledge that need to either be directly incorporated or indirectly used in the Framework, will be considered.

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Table 6.3 Table of sub-headings for OntoCarer Methodology: Framework Phase 2.

Model Categories

The Model Categories are derived from the situation. That assisting situation can be described as follows:

Human agents have desires and intentions, which they put into action to realise their goals. Human agents perform actions, these can be bodily actions and social actions. Bodily actions, include such actions as; walking, talking, eating, drinking, seeing, hearing, etc. Within organisations, agents perform social actions which belong to the roles they play within those organisations. Roles such as: customer, student, passenger, etc. In the case of disability, where they have impairments in their body components (arms, legs, eyes, etc) and body abilities (seeing, hearing, walking, etc) , these impairments can also impact negatively the performance of the roles and their social actions. Within the organisations the users use there are other human agents that act as providers and assisters. These providers and assister have roles and social actions. To provide assistance they may modify their social actions or perform assisting actions which directly relate to the assistance needed to help the disabled with their social actions in the organisation.

Organisations exist in a environment, which is usually one of buildings, but can include outdoor environments too. These buildings provide locations for the agents, they have rooms which have particular functions (restaurant, toilets, classroom, etc) in which activities take place, and they also have physical features which must be negotiated, such as stairs, lifts, etc.

The five Model Categories derived from the assisting situation, described above are:

1. **Agency Model Category** - which is concerned with modelling of the individual agents and their actions.

Human agents have desires, intentions and plans of action. Human agents perform actions including social actions as part of their roles within organisations. These agents are users and providers in the organisation. They can also be assisted and assisters in the case of disability.

2. Body Model Category - modelling the agents' body components and body abilities

The human agents have bodies, consisting of the body components and their ability to perform actions – their body abilities. Upon these rest their ability to perform actions, and where these are impaired then they are the source of their disabilities and need for assistance.

3. Social Model Category - involving the modelling of organisations, their personnel and users, and the roles and social actions they play in the organisation, and the organisational functions of the spaces within their buildings.

The agents are more than their bodies and bodily actions. They are social beings that function as part of organisations. The organisation's purposes are facilitated by a complex web of roles and social actions that take place in functional spaces designed to further those purposes.

4. Disability & Assistance Model Category – involves modelling the level of ability or disability in the agents body components, bodily actions, roles and social actions and the process of identifying and planning relevant assistance.

In order to provide assistance for a disability then the disability must first be identified and its degree of impairment determined. This applies to the body components, body actions, roles and the social actions. The corresponding assisting actions and aids also need to be identified, along with a process for planning their assistance.

5. Environmental Model Category – involves modelling the physical and functional environment within which the actions and assistance take place.

The agents and organisations are located in a physical environment, which includes the organisation's buildings. This physical environment has locations, usually rooms which have functions that determine the kind of actions that take place in those locations. The physical environment is also a source of obstacles and barriers for the disabled, which must be taken account of and negotiated, if necessary through assistance.

Theoretical input - BDI theory

The BDI theory (Bratman, 1987) of agency and practical planning plays an important role in the OntoCarer Ontological Framework. The Belief-Desire-Intention theory as described in the literature survey provides a theory of how rational agents act and plan actions. Rational agents have beliefs about the world and they have desires on that world, which depending upon the situation can become intentions to act, and those intentions can become plans of action. In the OntoCarer Framework there are agents which are users and providers, assisted and assisters. The users and assisted have desires

and intentions which the providers and assisters help them to fulfill. These agents have actions which are constituents of the roles they adopt in the organisation. The BDI theory provides a way of taking those aspects of the human agents and representing it in the OntoCarer ontologies and domain models. In addition the BDI theory can be used to provide a BDI agent architecture for the Organisation Agent (Chapter 8) which mediates between the users and assisted agents and the providers and assister agents, and handles the processing of the beliefs, desires and intentions and planning of the assistance, so that the planning process using the OntoCarer ontologies and Organisation Agent BDI architecture forms a seamless whole.

External ontologies

The OntoCarer Framework involves modelling the disabilities of the human agents involved in order to provide the relevant assistance. To be able to do this accurately and effectively an authoritative expert source of knowledge on the classification of body structures and body functions and disabilities is required. One that preferably is in widespread if not universal use that can form the basis for OntoCarer providing a universal assisting service. This is provided by the World Health Organisation's International Classification of Functioning, Disability and Health (ICF) (World Health Organisation, 2001). This classification has been translated into an OWL ontology (World Health Organisation and The National Centre for Biomedical Ontology, 2001) so can be used with the OntoCarer ontologies.

The top-level Body Components and Body Abilities ontologies allows for the use and integration of the ICF Body Structures and ICF Body Functions ontologies to be integrated into the OntoCarer Framework. In addition these two OntoCarer top-level ontologies allow for other domain body ontologies to be used. These may be more specialised body ontologies, or simpler body ontologies than the ICF ones. These OntoCarer Body Structures and Body Abilities top-level and domain ontologies also have the advantage that they make the OntoCarer ontologies an independent and integrated whole, and free from concerns about intellectual property rights that using the ICF ontologies may involve. By keeping the ICF classifications separate from OntoCarer, they can also now be used as an authoritative source of knowledge for constructing the body domain ontologies and as a source of validation for the relevant OntoCarer body ontologies too.

The ICF also includes some classifications relating to actions in social situations, which are called Activities and Participations. Though, there are limitations in the scope of the ICF Activities & Participation classifications, which the more comprehensive OntoCarer Social Actions ontology overcomes.

The final outcome of the selection of the ontologies for the Framework were these ontologies:

- Agent ontology
- Body Components ontology
- Body Abilities ontology
- Social Action ontology

- Organisation ontology
- Buildings ontology
- OntoCarer-Link-Ontology

There are no separate domain ontologies as such, rather that these top-level ontologies can be extended for different situations to include sub-classes and sub-properties that describe the particular categories for those situations. With those different situations usually being different types of organisation.

The domain model for the software application will be created for a college organisation, as that provides a well known and understood domain, that of education, that can be used for the validation of the Framework.

Relationship of Model Categories to ontologies

The seven ontologies correspond approximately to the five models above in this way:

1. Agency model: Agent ontology
2. Body model: Body Components, Body Abilities ontologies
3. Social model: Organisation, Social Action ontologies
4. Disability & Assistance model: Body Components, Body Abilities, Social Action, Agent ontologies, OntoCarer-Link-Ontology
5. Environmental model: Buildings ontology

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Table 6.4 Table of mappings for OntoCarer Methodology: Framework Phase 2 to Chapter 4

6.2.3 OntoCarer Methodology: Conceptualisation Phase 3.

Having decided on the Model Categories and the seven ontologies, the next phase is the Conceptualisation of the ontologies.

The Conceptualisation phase is concerned with determining the particular constituent elements of the ontologies, that is their classes and properties. Before deciding on the elements of each ontology it is necessary to decide on the knowledge gathering approach for each ontology, and the conceptualisation modelling approach (top down, middle out, bottom up). Then to decide on the conceptualisation modelling process for creating the conceptual model.

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Table 6.5 Table of Conceptualisation Phase 3 section sub-headings

Knowledge Gathering Approach

Before going on to specify the conceptual models for each of the ontologies, we need to determine what knowledge is needed to construct these ontologies.

The knowledge perspective for these ontologies with the exception of the Body Components and Body Abilities ontologies is that of the ordinary user of the organisation involved in their everyday interactions with the organisation and its personnel. Where the organisations are those one might encounter in everyday life; a supermarket, a cinema, a restaurant, a doctor's surgery, a college. Including, the everyday knowledge of the organisation's roles and their actions, and of the buildings along with the functions of its rooms. For this reason there was no need for expert knowledge on these ontologies, at least as far as the example organisations used in this project's ontologies. Also the college domain chosen for the model, is one of education which this researcher has extensive knowledge of as a user and a provider. It is possible in other circumstances, that the top-level ontologies could be extended to other more specialised organisations, which would require specialist or expert knowledge.

In the case of the domain extensions to the top-level Body Components and Body Abilities ontologies, these do rely upon some specialist knowledge, and for that reason the use of the ICF for sourcing and validation was used.

Expert knowledge of disabilities and the difficulties the disabled encounter when negotiating organisations in everyday life and the assistance that they need, was sought from a reliable and informed source. This expert knowledge and advice was provided by Mr Richard Boyd from the charity Disability Essex which hosts The Centre for Disability Studies.

A functional approach to specifying the assistance provided in the case of impairment or disability in performing an action is adopted. This means that the specifics of how the assistance is provided is not specified in most cases, only that the specified assistance is identified and provided.

Conceptual Modelling Tool

It was decided to use the graphical ontology editor Protégé to implement the conceptual model. The Protégé tool has the advantages of being able to easily create and modify complex ontology models, which can be viewed from different perspectives, versioned and checked for syntax and consistency and from which domain models can be created, and then translated into an RDF/XML implementation for processing.

Conceptualisation Modelling Approach

The conceptualisation modelling approach is derived from Uschold & King's (Uschold & King, 1995) three strategies for capturing the concepts of an ontology, which are top-down, middle-out, and bottom-up and are described in chapter two of this thesis.

The middle-out modelling approach is adopted for the conceptualisation of the OntoCarer ontologies. The middle-out strategy is more reliable, focusing on the most important terms first and avoiding the weaknesses of the top-down and bottom-up strategies (as described in Chapter 2) .

Conceptualisation Modelling Process

The conceptualisation modelling process is concerned with how the conceptual model is created. The conceptualisation modelling approach initially involves creating a glossary of the concepts involved and their definitions, to clarify what terms are involved, and what those terms mean. A taxonomy of these concepts is created by placing them in class hierarchies. The concepts are placed in superclass and subclass hierarchies. The same is done for the properties, placing them in super-property and subproperty hierarchies. These concepts, properties, definitions and diagrams provide a basis for creating a computerised model and implementation.

The conceptualisation process is also an iterative process, as each ontology does not exist in isolation but is part of an 'Ontological Framework' where the ontologies are integrated, to work together towards some common purpose. Consequently, the concepts and properties of each ontology need to be adjusted and modified to fit in with the other ontologies in the framework, so that they can work together effectively. This process of integration is also one of vertical integration, whereby the modelling of the concepts and properties is constrained by the choice of ontology languages used for implementing the concepts and properties. In this case the choice of using the Semantic Web languages of OWL, RDFS and RDF, and their triple structure constrains the structure of the OntoCarer ontologies.

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Table 6.6 Table of mappings for Methodology: Conceptualisation Phase 3 to Chapter 4

6.3 Conceptualisation of the OntoCarer Ontologies

The conceptualisation of the OntoCarer ontologies is concerned with deciding what the constituent elements of each ontology are. What the classes, properties and their domain, ranges and cardinalities are, and the reasons for choosing these. We shall take each of the seven ontologies in turn and describe their conceptualisation.

6.3.1 Agent ontology

The Agent ontology classifies agents and agency within organisations, and their assistance.

Classifying agents both human agents and artificial agents and how they exercise their agency through the varying roles they play within the organisation. The Agent concepts classify those different types of agents and roles. While the Agent properties provide the links between the agents and their profiles. The agent profiles describe the agents, which include their roles in the organisation and those roles' social actions, their body components, their body abilities, and the location of the agent in the organisation's buildings.

An Agent performs actions, and can also act on behalf of another. Agents can be human, or artificial. Artificial agents can include both robot and software agents.

A Role is how an agent, exercises its agency within an organisation. When an agent registers with an organisation, it will be offered a menu of roles it can play in the organisation. Each role will have a set of related Social Actions, defining the actions that can be performed when playing that role.

The Agent ontology is located within the framework of BDI theory. The human agents have beliefs, desires and intentions. These beliefs, desires, and intentions are mirrored in the OWL and RDF agent profiles held on their mobile telephones and in the centralised Organisation Agent. The agent's beliefs are those statements that the agent believes true about the world. Only a small subset of a human agent's beliefs are relevant to the OntoCarer Framework. These are facts about the agent's body components, body abilities, and roles and their social actions, and their location. Also relevant to planning assistance is the degree of disability found in the body and action elements of an agent. These facts contained in the agent profiles, are shared as statements with the Organisation Agent, which in turn plans and coordinates assistance, and directs the assisting agents. The desires and intentions which are for the performance of the social actions (within the roles), are also communicated to the Organisation agent by the human agents through their mobile phones. The intentions to perform the actions prompt the Organisation Agent to plan and direct assistance in the case where disability prevents the human agent from carrying those actions out.

The facts about the location of the agents both assisted and assisters are communicated automatically via the agents' mobile telephones to the Organisation Agent.

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Table 6.7 Table of Agent ontology section sub-headings

Agent Concepts

The Agent ontology concepts are those classes describing the different types of Agent and Roles represented in the OntoCarer Framework, and their assistance in the form of RoleAssister. There is in addition a Goal concept in the Agent ontology.

The Agent ontology is an OWL ontology. In the Agent ontology the top of the class hierarchy is the OWL class owl:Thing. All the Agent ontology classes are subclasses of owl:Thing and all the individuals of the Agent ontology are also instances of owl:Thing.

There are four OntoCarer classes at the top of the Agent ontology, these are Agent, Role, RoleAssister and Goal.

The Agent class has two direct subclasses which are Person and Automata. This divides agents between those that are human – Person and those that are artificial - Automata; either physical robots – RobotAutomata or software agents – SoftwareAutomata. SoftwareAutomata has the subclasses MobileAutomata and OrganisationAgent. MobileAutomata are software agents that are hosted on a mobile telephone. An OrganisationAgent is a software agent that coordinates assistance between agents in an organisation.

The Role class has the following six subclasses: AssistedRole, ProviderRole, UserRole, BasicFunctionRole, CooperatorRole, and AssisterRole. These Role subclasses designate different types of roles that human agents can play within organisations.

An AssistedRole is a role that a disabled person has by virtue of their disability, such as someone that has blindness or is a paraplegic. AssistedRoles, if used would principally be used as a source of inference to other categories and their effects on them. Such as, making inferences from an agent's AssistedRole to the qualifiers of that agent's UserRole's SocialAction's, in order to qualify those actions as being impaired as a result of the disability identified in the AssistedRole.

A ProviderRole is a role that designates someone who provides the services that the organisation is dedicated to offering. These are principally the roles that are client facing, but can include support staff as well. These are roles such as; teacher, lecturer, doctor, nurse, waiter, shop assistant, mechanic, dentist, etc.

A BasicFunctionRole is a role that involves the kind of actions that everyone performs, whether they are a provider or a user. These include roles such as, eater, drinker, washer, etc.

A CooperatorRole is a role which depends up the cooperation of another role in order to function. For example, a signer using sign language to communicate also requires another signer with which to communicate for this role to be effective.

A RoleAssister provides assistance to a role. A RoleAssister can be another role performed by a person which is an AssisterRole or it could be some other form of assistance such as a hardware device or software app, each of which is a RoleAssisterAid.

An AssisterRole is a subclass of Role and RoleAssister. It is a role which provides assistance. A care worker role is an example of an AssisterRole.

AssisterRole has the subclass RoleAssisterRole which designates those roles that correspond to a particular role such as StudentRole and assist with that role, the corresponding RoleAssisterRole in this case would be StudentRoleAssisterRole.

The role that is assisted would typically be a UserRole, of someone using the organisation's services and who needs assistance in carrying out that role's social actions, but because of disability needs assistance to perform those actions. UserRoles include roles such as student, patient, customer, etc. But an AssisterRole and RoleAssisterRole could be for any role, including a ProviderRole where a disabled person needs assistance in order to carry out their actions, so it could be a lecturer who because of blindness or difficulty in walking requires additional assistance to carry out their duties.

A RoleAssisterAid is a subclass of RoleAssister that is used to classify (non-human) aids for the disabled, such as: prosthetics, drugs, software aids, hardware devices or other physical aids for the disabled.

The Goal class is used to designate the aim of an agent's desire-intention. Though, this case is only used primarily for goals that are not covered by cases where a Role or a Social Action is the subject of a desire-intention. This may be the case for goals where the path to satisfying the goal is more complex than satisfying a single Social Action or the set of Social Actions that comprise a Role.

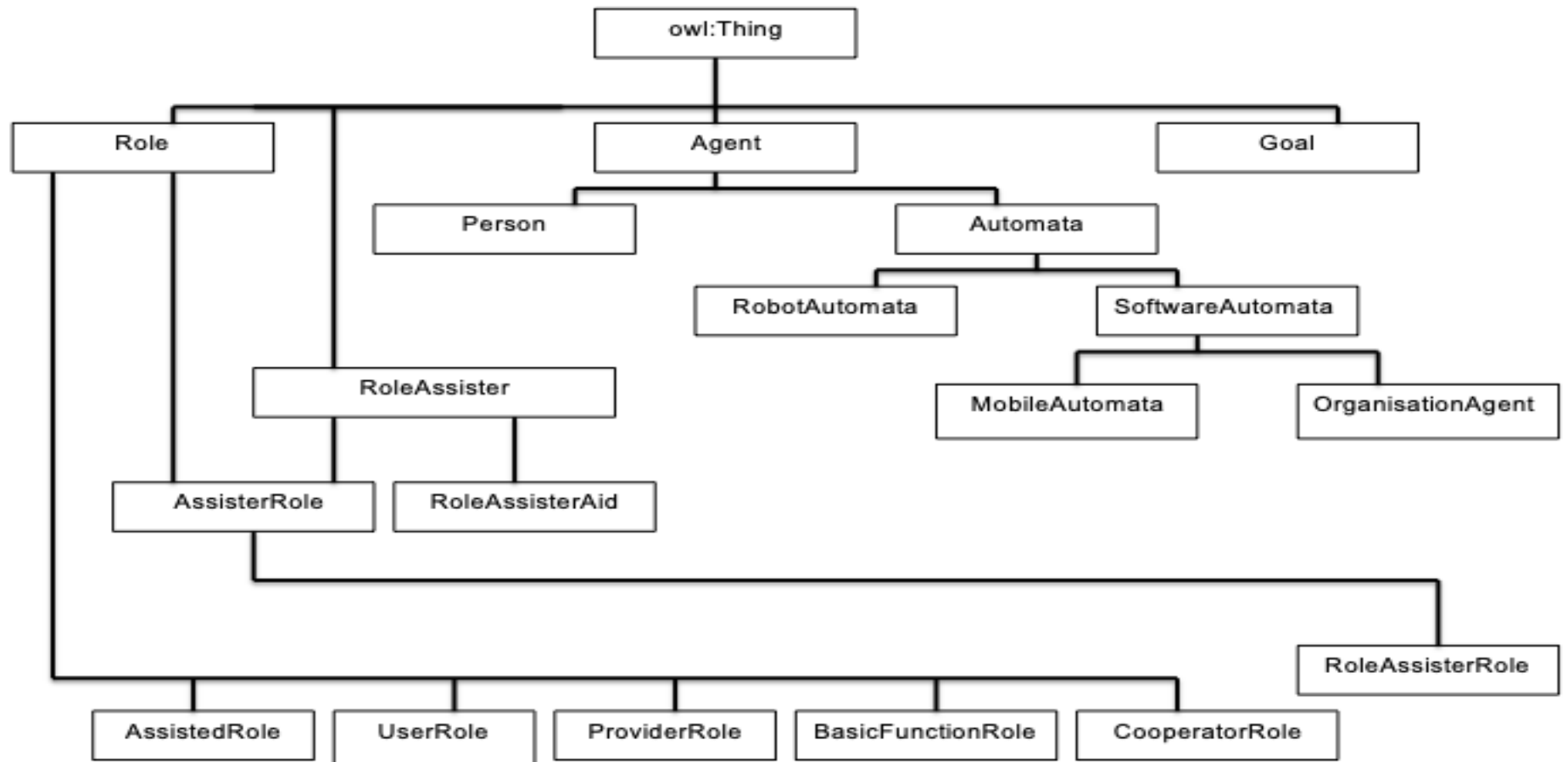


Figure 6.2 Agent ontology – class diagram

Agent Concepts Glossary

Concepts	Super-Concept	Definition
Agent	owl:Thing	An Agent is an actor that performs actions towards a goal
Automata	Agent	An Automata is an artificial agent
RobotAutomata	Automata	A RobotAutomata is a physically embodied artificial agent
SoftwareAutomata	Automata	A SoftwareAutomata is an artificial agent that is a computer program
MobileAutomata	SoftwareAutomata	A MobileAutomata is an artificial software agent that is hosted on a mobile device such as a mobile phone
OrganisationAgent	SoftwareAutomata	An OrganisationAgent is an artificial software agent that acts to coordinate agents in order to plan assistance in an organisation
Person	Agent	A Person is a human agent
Role	owl:Thing	A Role is adopted or assigned to an agent, in an organisation, in order for the agent to be able to perform the group of related actions that belong to that role
AssistedRole	Role	An AssistedRole is a role that a person has that signifies their disability, such as paraplegic or someone who has blindness
ProviderRole	Role	A ProviderRole is a role within an organisation that provides the services of the organisation. These would typically be ones providing services to the users of the organisation, such as; lecturer, waiter, shop assistant
UserRole	Role	A UserRole is the role played by a typical user of some service of an organisation, such as a student, customer, patient, passenger, etc
BasicFunctionRole	Role	A BasicFunctionRole are roles that are independent of an organisation, that involve basic human functions that all humans perform, such as eating, drinking, and washing.
CooperatorRole	Role	A CooperatorRole is a role that involves cooperating with others in order for it to function, such as a SignerCooperatorRole.
RoleAssister	owl:Thing	A RoleAssister is something that provides assistance to a corresponding role.
AssisterRole	Role, RoleAssister	A role that is an assister, but that does not necessarily correspond to the role that it is assisting.
RoleAssisterRole	AssisterRole	An AssisterRole that provides assistance to a corresponding role
RoleAssisterAid	RoleAssister	A RoleAssisterAid is something that provides an aid to the disabled, that is not by a person. such as a prosthetic, hardware device, software application, etc
Goal	Owl:Thing	A Goal is the aim of a complex desire-intention and is used where a SocialAction or Role as desire-intention will not suffice.

Table 6.8 Agent ontology - concepts glossary

Agent Object Properties

The Agent Object Properties consist of properties to principally link the Agent and Role instances with other instances of other classes. The Agent properties with an Agent as subject are used to create a profile for the agent. That profile will tell us about the agent's body; what Body Component's and Body Abilities it has, what organisational Role's the agent has, and the Organisations it belongs to, and what Social Actions the agent can perform. The profile also tells us where the agent is currently located. In which Building and BuildingSpace, and whether it is in a Room, or Stairs, or Corridor, or other Location.

There are also properties that link to the ICF ontology OWL classes. These properties allow the ICF classifications to be used with the OntoCarer Ontological Framework, if that option is chosen.

Properties are included for linking to the

ICF BodyStructure:(agentHasBodyStructure), ICF BodyFunction: (agentHasBodyFunction), and ICF Participation: (agentHasParticipation) classes. Additional sub-properties such as those having a domain of Person as distinct from Agent could be added to the ontology if they are needed.

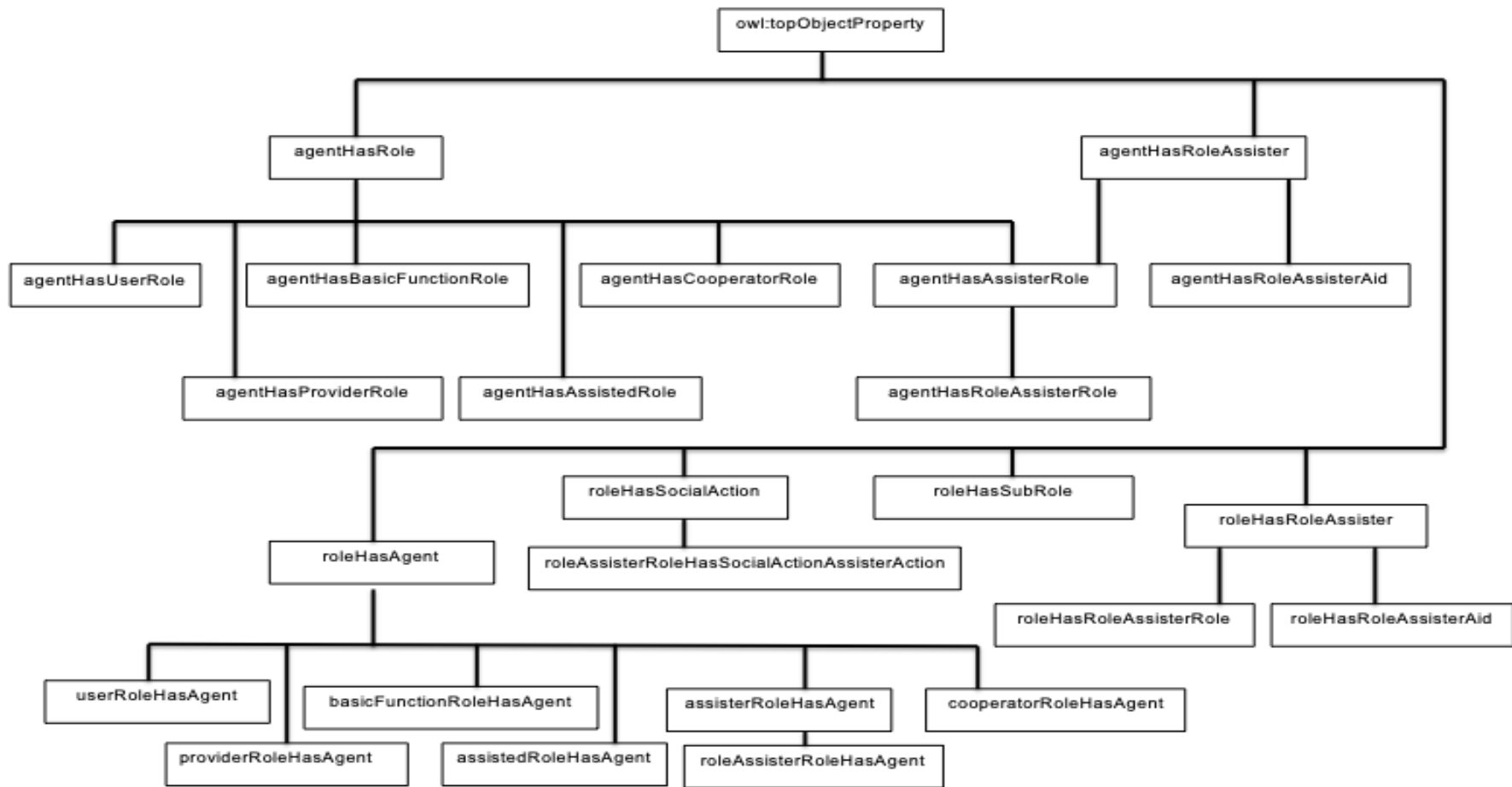


Figure 6.3 Agent ontology - object properties diagram

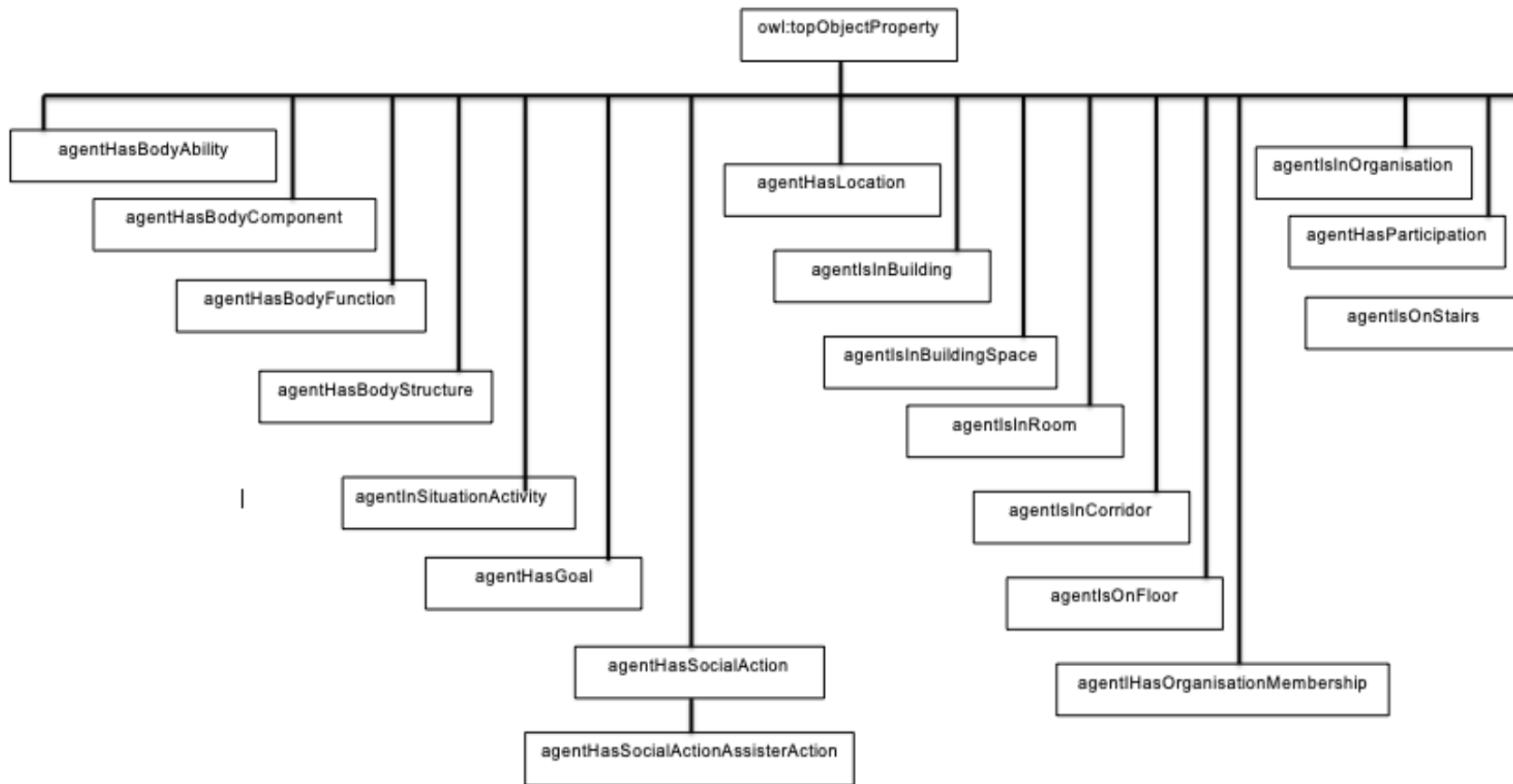


Figure 6.4 Agent ontology - object properties diagram

Agent object properties

Property	Domain	Range	Cardinality
agentInSituationActivity	Agent	SituationActivity	1:*
agentHasBodyAbility	Agent	BodyAbility	1:*
agentHasBodyComponent	Agent	BodyComponent	1:*
agentHasBodyFunction	Agent	icf:BodyFunction	1:*
agentHasBodyStructure	Agent	icf:BodyStructure	1:*
agentHasGoal	Agent	Goal	1:*
agentHasLocation	Agent	Location	*:1
agentIsInOrganisation	Agent	Organisation	1:*
agentHasOrganisationMembership	Agent	Organisation	1:*
agentHasParticipation	Agent	icf:Participation	1:*
agentHasRole	Agent	Role	1:*
agentHasRoleAssister	Agent	RoleAssister	1:*
agentHasAssisterRole	Agent	AssisterRole	1:*
agentHasRoleAssisterRole	Agent	RoleAssisterRole	1:*
agentHasRoleAssisterAid	Agent	RoleAssisterAid	1:*
agentHasAssistedRole	Agent	AssistedRole	1:*
agentHasUserRole	Agent	UserRole	1:*
agentHasProviderRole	Agent	ProviderRole	1:*
agentHasBasicFunctionRole	Agent	BasicFunctionRole	1:*
agentHasCooperatorRole	Agent	CooperatorRole	1:*
agentHasSocialAction	Agent	SocialAction	1:*
agentHasSocialActionAssisterAction	Agent	SocialActionAssisterAction	1:*
agentIsInBuilding	Agent	Building	*:1
agentIsInBuildingSpace	Agent	BuildingSpace	1:1
agentIsInCorridor	Agent	Corridor	*:1
agentIsOnFloor	Agent	Floor	*:1
agentIsInOrganisation	Agent	Organisation	*:1
agentIsInRoom	Agent	Room	*:1
agentIsOnStairs	Agent	Stairs	*:1
roleHasSubRole	Role	Role	1:*
roleHasParticipation	Role	icf:Participation	1:*
roleHasRoleAssister	Role	RoleAssister	1:*
roleHasRoleAssisterRole	Role	roleHasRoleAssisterAid	1:*
roleHasSocialAction	Role	SocialAction	1:*

Agent object properties (continued)

Property	Domain	Range	*
roleHasAgent	Role	Agent	*:1
assisterRoleHasAgent	AssisterRole	Agent	*:1
assistedRoleHasAgent	AssistedRole	Agent	*:1
basicFunctionRoleHasAgent	BasicFunctionRole	Agent	*:1
providerRoleHasAgent	ProviderRole	Agent	*:1
userRoleHasAgent	UserRole	Agent	*:1
cooperatorRoleHasAgent	CooperatorRole	Agent	*:1
roleAssisterRoleHasAgent	RoleAssisterRole	Agent	*:1
roleAssisterRoleHasSocialActionAssisterAction	RoleAssisterRole	SocialActionAssisterAction	*:1

Table 6.9 Agent ontology - object properties table

Agent data properties

The Agent data properties are used for setting the level of desire-intention for a Goal or Role. Desire-Intentions are assigned a level from 0 to 10, where 0 indicates ‘no desire’, 1 to 4 indicates a rising level of desire, 5 to 9 indicates a rising level of intention, and 10 indicates that the intention is satisfied. Where a Role is assigned a desire-intention level then the associated Social Actions would have the same level of desire-intention.

The 0 level of ‘no desire’ can be used for roles that belong to other organisations which are not available in the current organisation, and for roles that are not currently available in the present organisation. Upon reaching level 10 – ‘satisfaction’, the level of desire could then revert back to level 1.

The ranking value for a Goal or a Role, is to indicate the priority that competing intentions for assistance are given, with 1 being the highest priority.

The Agent data properties are also used for adding personal details to the Agent profile. This is in the form of strings giving such personal details as an agent’s first and last names.

Agent data properties

Property	Domain	Range	Cardinality
personHasFirstName	Person	String	1:*
personHasLastName	Person	String	1:1
goalHasDesireIntentionLevel	Goal	Integer	1:1
goalHasRanking	Goal	Integer	1:1
roleHasDesireIntentionLevel	Role	Integer	1:1
roleHasRanking	Role	Integer	1:1

Table 6.10 Agent ontology data properties table

Agent Information data properties

The Agent data properties also include these Information properties. The Information data properties can provide specific information about the form the instance of the particular Agent ontology class takes and which can be used to provide information about it to human agents through a software application.

Property	Domain	Range	Cardinality
agentHasInformation	Agent	string	1:1
assisterRoleHasInformation	AssisterRole	string	1:1
assistedRoleHasInformation	AssistedRole	string	1:1
automataHasInformation	Automata	string	1:1
robotAutomataHasInformation	RobotAutomata	string	1:1
softwareAutomataHasInformation	SoftwareAutomata	string	1:1
mobileAutomataHasInformation	MobileAutomata	string	1:1
organisationAgentHasInformation	OrganisationAgent	string	1:1
personHasInformation	Person	string	1:1
roleHasInformation	Role	string	1:1
roleAssisterRoleHasInformation	RoleAssisterRole	string	1:1
assistedRoleHasInformation	AssistedRole	string	1:1
userRoleHasInformation	UserRole	string	1:1
providerRoleHasInformation	ProviderRole	string	1:1
basicFunctionRoleHasInformation	BasicFunctionRole	string	1:1
cooperatorRoleHasInformation	CooperatorRole	string	1:1
roleAssisterHasInformation	RoleAssister	string	1:1
roleAssisterAidHasInformation	RoleAssisterAid	string	1:1
goalHasInformation	Goal	string	1:1

Table 6.11 Agent ontology – Information data properties table

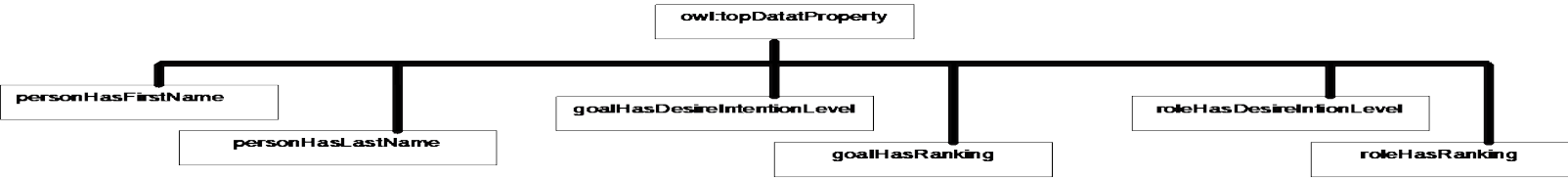


Figure 6.5 Agent ontology - data properties diagram

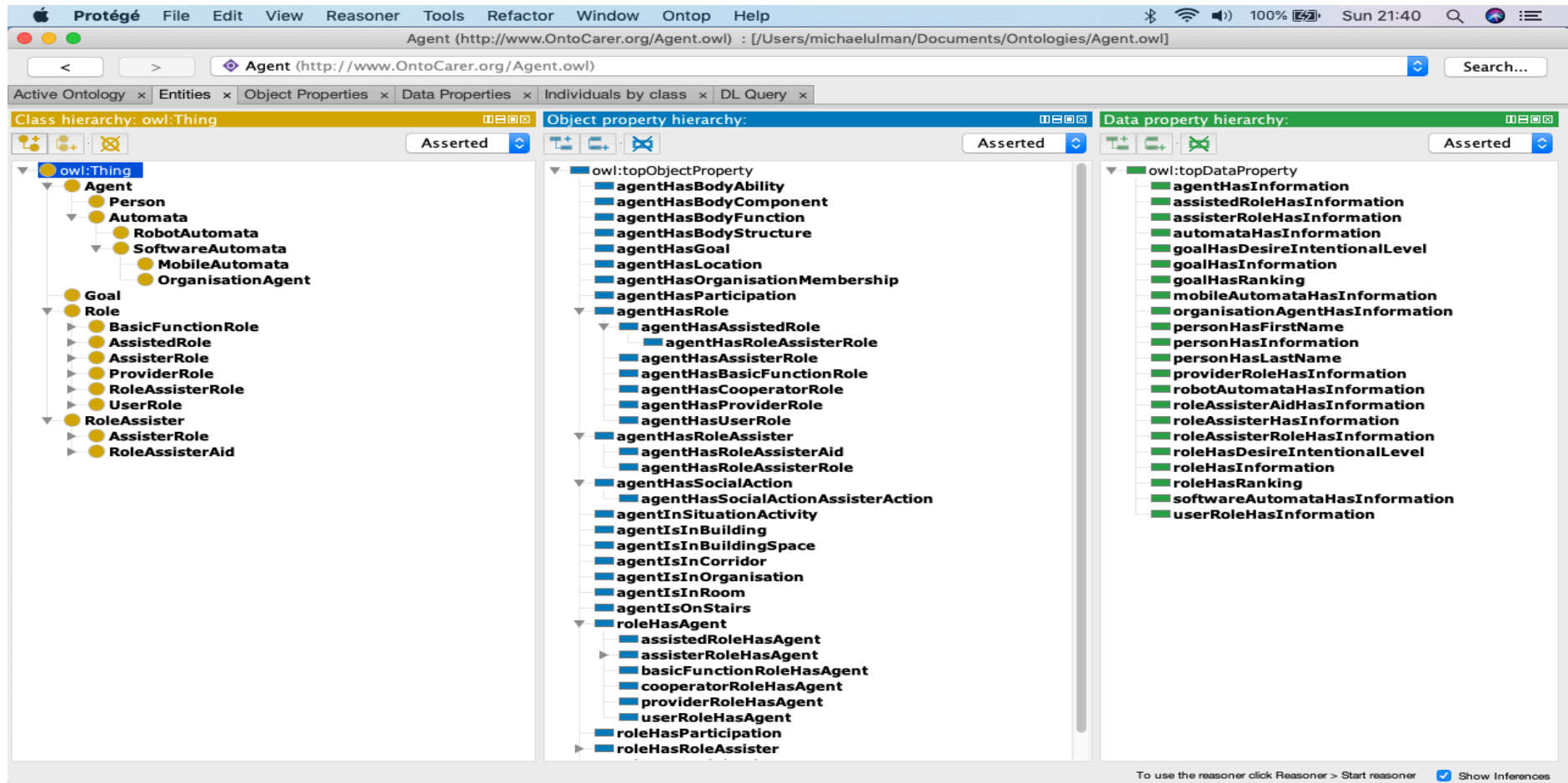


Figure 6.6 Agent ontology – implemented in Protégé

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Table 6.12 Table mapping Conceptualisation Phase 3 (Agent) to Chapter 4

6.3.2 Body Components ontology

The Body Components ontology classifies component parts of the human body and corresponding assistance for those body parts, in the case of disability. The Body Components ontology also provides properties for linking the body component to the person it belongs to and also a property with a qualifier to indicate the degree of disability in the body component.

The root of particular disabilities ultimately lies in the human body and its component parts. The Body Components ontology classifications can be used to identify disabilities in parts of the human body that belong to particular human agents. The Body Components ontology can also be used to justify the existence of disabilities identified in body abilities and social actions, and also to infer the existence of disabilities in body abilities and social actions when these are not independently known.

The range and classification of the qualifiers is compatible with those of the ICF, allowing for the integration of the WHO ICF Body Structures classes in the OntoCarer Framework if necessary. The ICF classifications have been translated into an OWL ontology (World Health Organisation and The National Center for Biomedical Ontology, 2001) . The Body Components ontology is intended to correspond in category to the ICF Body Structures classifications. The ICF Body Structures classes are also used to validate the OntoCarer Body Components domain classes in Chapter Eight.

The Body Components top-level ontology contains two classes, which are BodyComponent and BodyComponentAssister. Their subclasses are defined in the Body Components domain ontology that extends the top-level ontology. The Body Components domain ontology, unlike other domain ontologies is not defined by the type of organisation it provides classes and properties for. The Body Components domain ontologies can vary in size, content and level of detail for the body components they classify, according to the purposes that they serve.

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Table 6.13 Table of Body Components ontology section sub-headings

Body Components Concepts

The Body Components ontology concepts are those classes describing the different types of Body Components and BodyComponentAssisters represented in the OntoCarer Framework.

The Body Components is an OWL ontology. In the Body Components ontology the top of the class hierarchy is the OWL class owl:Thing. All the Body Component ontology classes are subclasses of owl:thing and all the individuals of this ontology are also instances of owl:Thing.

There are two OntoCarer classes at the top of the Body Component top-level ontology, these are BodyComponent and BodyComponentAssister. The BodyComponent class subclasses are contained in the Body Component domain ontologies, and may typically feature the main external body parts and organs, with the contents depending upon the needs and purpose of the domain ontology.

The BodyComponentAssister class subclasses are also contained in the Body Component domain ontologies. The BodyComponentAssister subclass classes each correspond to the relevant BodyComponent subclass. They are used to indicate the assistance that could be provided to facilitate the functioning of that body part in the case of it having a degree of disability. The assistance provided for the body part by the BodyComponentAssister is intended to be functional, and does not imply how that assistance is to be provided, and could be provided in different ways.

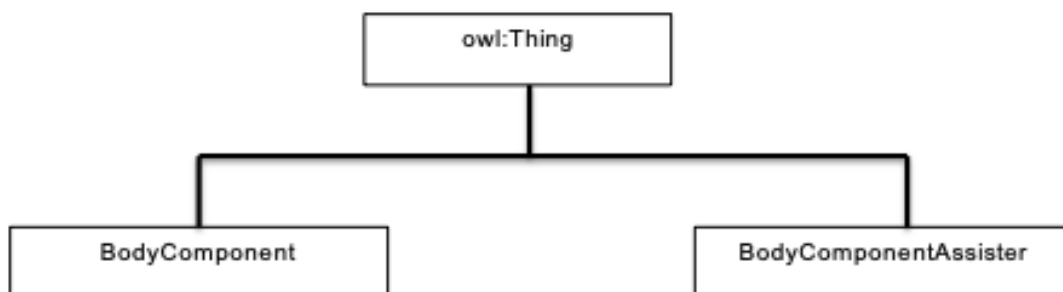


Figure 6.7 Body Components ontology - class diagram

Body Components ontology - concepts glossary

Concept	Super-Concept	Description
BodyComponent	owl:Thing	A physical body part of a human body
BodyComponentAssister	owl:Thing	Provides assistance to a body component

Table 6.14 Body Components ontology - concepts glossary

Body Components Object Properties

The Body Components top-level ontology has a two object properties, that is ‘bodyComponentHasPerson’ and ‘bodyComponentAssisterHasAgent’.

The property ‘bodyComponentHasPerson’ is used to link a particular instance of a BodyComponent class with an instance of a Person agent, so it can be used to link a person with all their body components. Though, it is most likely that only a person’s components that are impaired or disabled will be included in a person’s profile, with the rest assumed to be fully functional by default.

The property ‘bodyComponentAssisterHasAgent’ is used to link a particular instance of a BodyComponentAssister with an agent that can provide this assister. A BodyComponentAssister may take a number of different forms, it may be a human action, a piece of hardware or software. The agent it is related to may be a human or an artificial agent. It may not be automatically associated with a particular agent at all, and will have to be connected with a provider agent to provide assistance where it is needed.

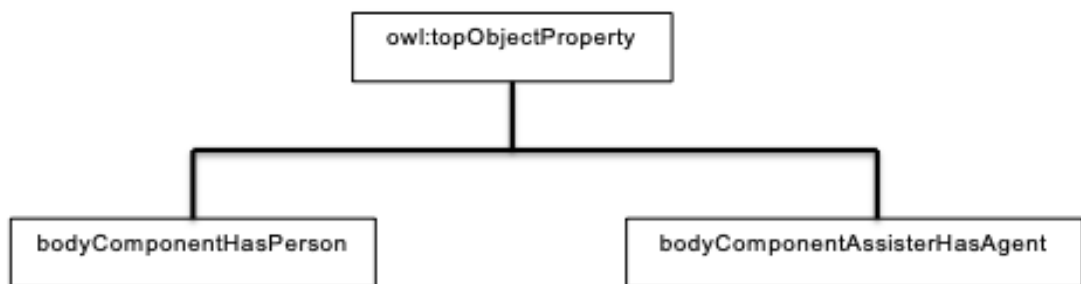


Figure 6.8 Body Components ontology – object properties diagram

Property	Domain	Range	Cardinality
bodyComponentHasPerson	BodyComponent	Person	*:1
bodyComponentAssisterHasAgent	BodyComponentAssister	Agent	1:1

Table 6.15 Body Components ontology – object properties glossary

The Body Components ontology may also be extended to contain an object property for linking to an instance of the ICF Body Structure classes, should it be needed.

Property	Domain	Range	Cardinality
bodyStructureHasPerson	icf:BodyStructure	Person	*:1

Table 6.16 Body Components ontology extensions – object properties to link to ICF

Body Component Data Properties

The Body Components ontology has the data property, that is ‘bodyComponentHasQualifier’. This property is used to indicate the degree of functioning of the component.

The classification of Body Component impairment is done on this scale:
 0 is No problems, 1 is Mild, 2 is Moderate, 3 is Severe, 4 is Complete,

8 is Not specified, 9 is Not applicable.

This scale is deliberately compatible with that of the WHO ICF (World Health Organisation, 2001) for classifying impairment. The only difference is that for each BodyComponent integer value the WHO ICF value is the same digit after the decimal point, so 0 corresponds to ICF value xxx.0, 1 corresponds to ICF value xxx.1, and so on. The classifications of each integer have the same interpretation as the ICF values.

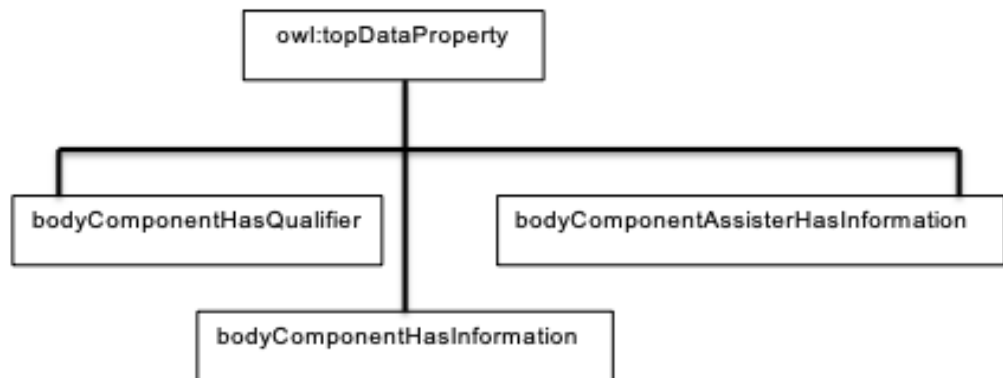


Figure 6.9 Body Components ontology – data properties diagram

Property	Domain	Range	Cardinality
bodyComponentHasQualifier	BodyComponent	integer	1:1
bodyComponentHasInformation	BodyComponent	String	1:1
bodyComponentAssisterHasInformation	BodyComponentAssister	String	1:1

Table 6.17 Body Components ontology – data properties table

The Body Component ontology may also be extended to contain data properties for linking to an instance of the ICF Body Structure classes, should it be needed.

Property	Domain	Range	Cardinality
bodyStructureHasQualifier	icf:BodyStructure	integer	1:1
bodyStructureHasInformation	icf:BodyStructure	String	1:1

Table 6.18 Body Components ontology extensions – data properties to link to ICF

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Table 6.19 Table mapping Phase 3 (Body Components) elements to Methodology Chapter 4

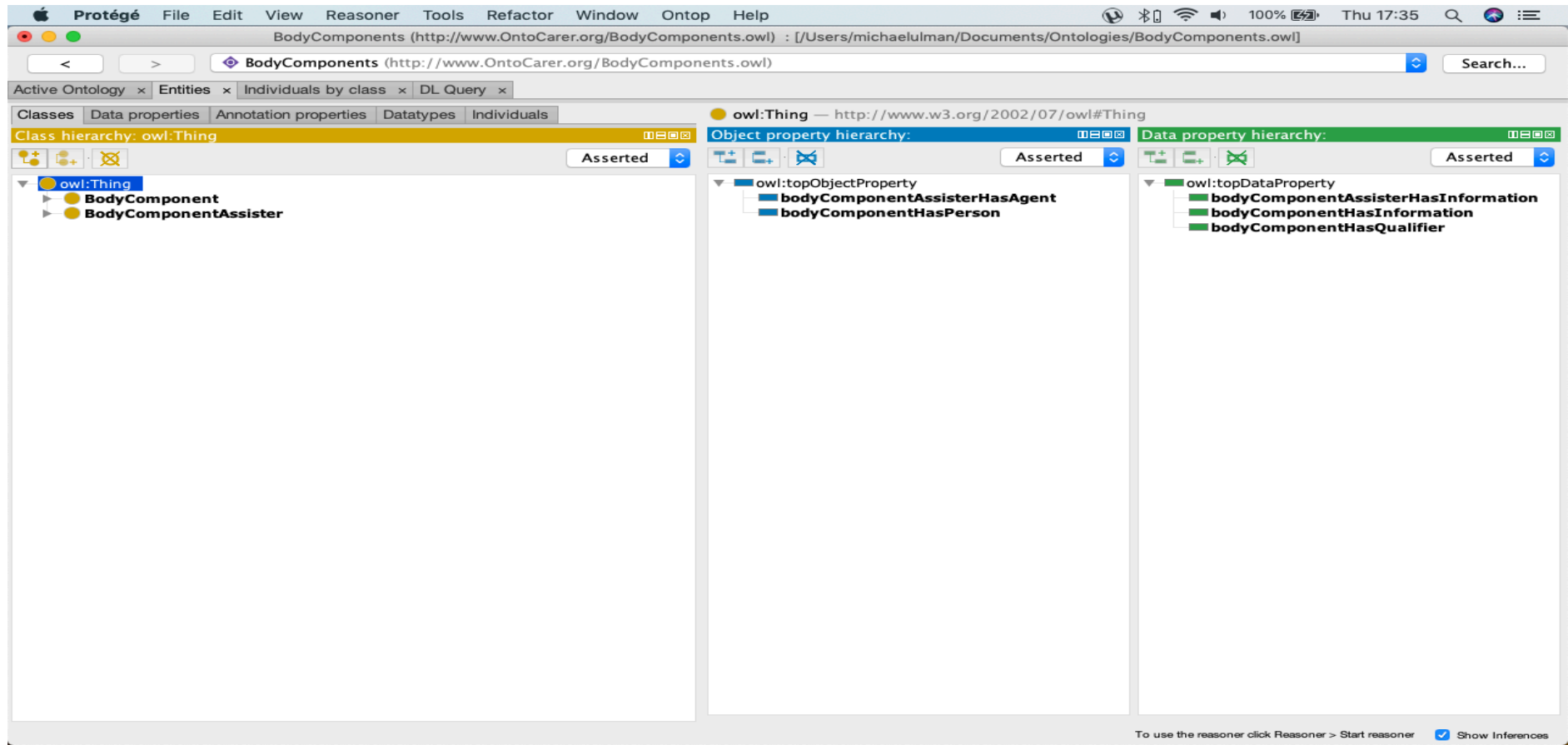


Figure 6.10 Body Components ontology – implemented in Protege

6.3.3 Body Abilities ontology

The Body Abilities ontology classifies particular abilities of the human body and the corresponding assistance for those abilities, in the case of disability. The focus is on the functioning of the body, the actions of the body, what the body can do. The Body Abilities top level ontology contains two classes; BodyAbility and BodyAbilityAssister. The subclasses of these classes form part of the domain ontology extensions to the top-level ontology. The Body Abilities ontology provides a property for connecting the body ability with the human agent that has that ability, and a property for indicating the degree of disability in a particular body ability.

The Body Abilities ontology classifications can be used to identify the abilities and their level of functioning in a human agent. These can be a source of justification for attributing disabilities to related body components and social actions, and also for inferring such disabilities where there is no direct knowledge of such disabilities.

The Body Abilities are more primitive skills than the social actions, based upon the body's functioning, rather than the learned skills of the social actions. As such they are also organisation independent unlike social actions which are more likely to depend upon an organisational context.

The BodyAbilityAssisters provide functional assistance to the impaired body ability. This assistance can take different forms, it may be through the assistance of a human or artificial agent, or some hardware device or piece of software, etc.

The range and classification of the Body Ability qualifiers which rate the level of functioning of the abilities, is like those of the Body Components, also compatible with those of the ICF, so also allowing for the integration of the WHO ICF Body Functions classes in the OntoCarer Framework, if necessary. The Body Abilities ontology is intended to correspond in kind to the ICF Body Functions classifications. Though, the WHO ICF Body Functions classifications are more complex and detailed. As an authoritative source of knowledge on body functioning the ICF Body Functioning classes are used to validate the Body Abilities domain classes in Chapter 8.

Body Abilities ontology section sub-headings	Page
Body Abilities Concepts	130
Body Abilities Concepts Glossary	131
Body Abilities Object Properties	131
Body Abilities Data properties	132

Table 6.20 Table of Body Abilities ontology section sub-headings

BodyAbilities concepts

The Body Abilities ontology concepts designate the different types of BodyAbilities and BodyAbilitiesAssisters in the OntoCarer Framework.

The Body Abilities is an OWL ontology. In the Body Abilities ontology the top of the class hierarchy is the OWL class owl:Thing. All the BodyAbilities ontology classes are subclasses of owl:Thing and all the individuals of the ontology are instances of owl:Thing also.

The two classes at the top of the BodyAbilities top-level ontology are BodyAbility and BodyAbilityAssister. The BodyAbility subclasses belong to the domain ontology extensions to the top-level ontology. The BodyAbility subclasses designate the main body functions, the performative aspects of the body components. The BodyAbilityAssister subclasses correspond to each of the BodyAbility subclasses. The BodyAbilityAssister subclasses are used to designate the specific type of assistance that could be provided to the corresponding body ability, in the case where it is impaired by disability and needs assistance. The assistance provided is functional, and may be provided in different ways.

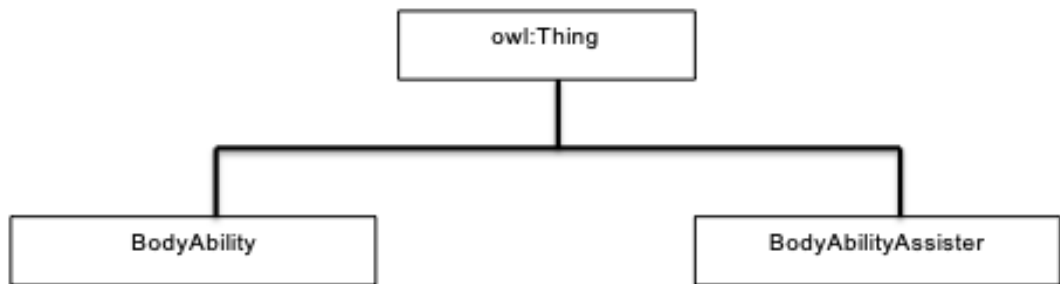


Figure 6.11 Body Abilities ontology – class diagram

Body Abilities ontology – Concepts glossary

Concept	Super-Concept	Definition
BodyAbility	owl:Thing	A functional ability of a body part
BodyAbilityAssister	owl:Thing	Functional assister to a body ability

Table 6.21 Body Abilities ontology – concepts glossary

Body Abilities Object Properties

The Body Abilities ontology has two object properties, which are ‘bodyAbilityHasPerson’ and ‘bodyAbilityAssisterHasAgent’.

The property ‘bodyAbilityHasPerson’ is used to connect a particular instance of a BodyAbility subclass with the person that has that body ability. Though, all of a person’s body abilities could be included in their profile, it may only be necessary to include those that are impaired and so need assistance, with the others assumed to be fully able by default.

The property ‘bodyAbilityAssisterHasAgent’ is used to link the particular body ability assister instance with the agent that can provide that assistance. How the agent provides that assistance is not specified. It may be that the agent performs some personal task, or it may be that they deliver some

object or provide some technical assistance, or they are some kind of artificial agent of a robotic or software type.



Figure 6.12 Body Abilities ontology – object properties diagram

Property	Domain	Range	Cardinality
bodyAbilityHasPerson	BodyAbility	Person	*:1
bodyAbilityAssisterHasAgent	BodyAbilityAssister	Agent	1:1

Table 6.22 Body Abilities ontology – object properties table

The Body Abilities ontology may also be extended to contain an object property for linking to an instance of the ICF Body Function, should it be needed.

Property	Domain	Range	Cardinality
bodyFunctionHasPerson	icf:BodyFnction	Person	*:1

Table 6.23 Body Abilities ontology extensions – object properties to link to ICF

Body Abilities Data Properties

There are three data properties for the Body Abilities ontology, including ‘bodyAbilityHasQualifier’.

This property is used to indicate the degree of functioning of that instance of the BodyAbility subclass.

The classification of Body Ability functioning is done on this scale:

0 is No problems, 1 is Mild, 2 is Moderate, 3 is Severe, 4 is Complete, 8 is Not specified, 9 is Not applicable.

As with the scale for the functioning of the Body Components, this scale is compatible with that of the WHO ICF for the qualifying of functioning.

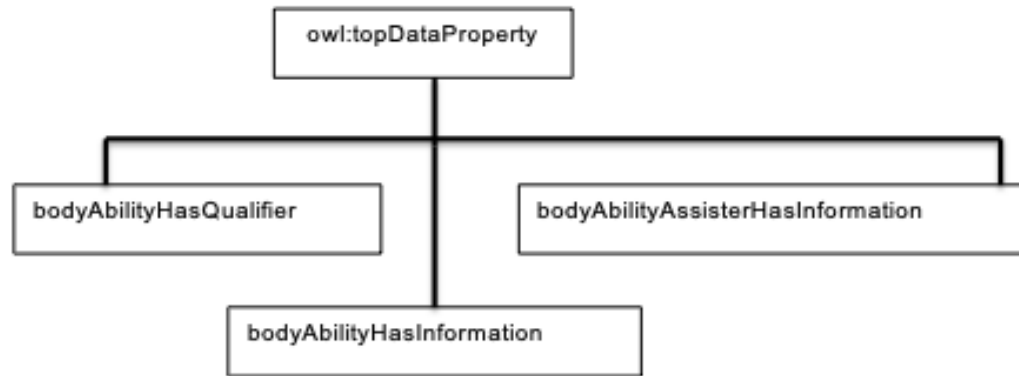


Figure 6.13 Body Abilities ontology – data properties diagram

Property	Domain	Range	Cardinality
bodyAbilityHasQualifier	BodyAbility	Integer	1:1
bodyAbilityHasInformation	BodyAbility	String	1:1
bodyAbilityAssisterHasInformation	BodyAbility	String	1:1

Table 6.24 Body Abilities ontology – data properties table

The Body Component ontology may also be extended to contain data properties for linking to an instance of the ICF Body Function classes, should it be needed.

Property	Domain	Range	Cardinality
bodyFunctionHasQualifier	icf:BodyFunction	integer	1:1
bodyFunctionHasInformation	icf:BodyFunction	String	1:1

Table 6.25 Body Abilities ontology extensions – data properties to link to ICF

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Table 6.26 Table mapping Phase 3 (Body Abilities) elements to Methodology Chapter 4

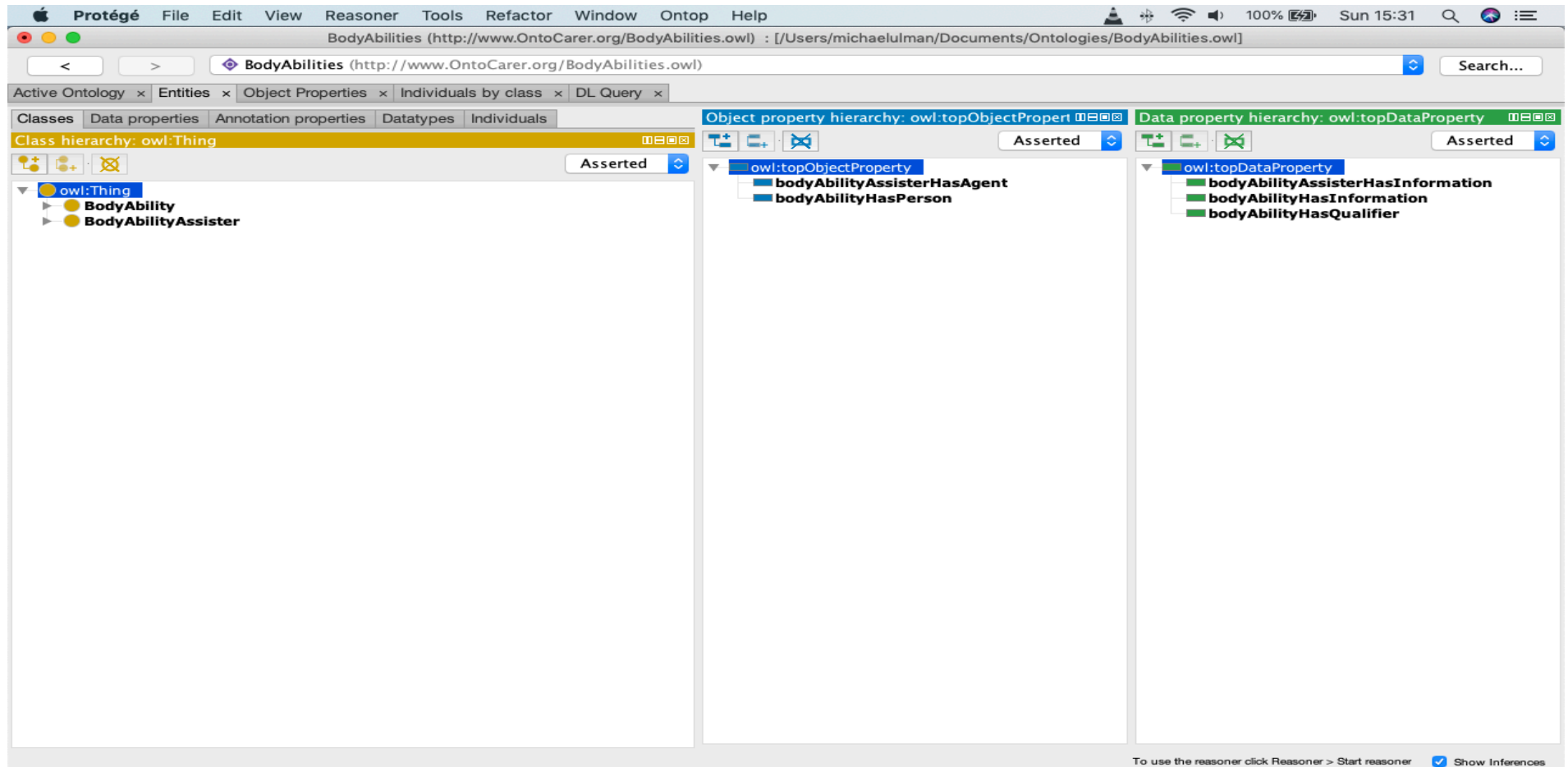


Figure 6.14 Body Abilities ontology – implemented in Protege

6.3.4 Social Action ontology

The Social Action ontology classifies social actions and their assistance. Social Action is a term used to refer to actions that primarily exist within organisations as part of the roles performed there, that are learned as participants in organisations and have a social dimension. This is in contrast with the more primitive basic actions that are included in the Body Abilities ontology, with such actions as; seeing, hearing, breathing, sleeping, thinking, and walking. Social Actions are actions that belong to roles which for most part are roles within organisations. These are for user roles such as; student, customer, passenger, shopper, patient, etc. The social actions are also for provider roles such as; lecturer, waiter, technician, teacher, shop assistant, etc. Though they can include more basic roles whose actions are common in many contexts, such as; eater, drinker, toileter, as well.

The classes in the top-level Social Action ontology are SocialAction, SocialActionAssister, SocialActionAssisterAction and SocialActionAid.

The SocialActionAssister provides assistance to a SocialAction, and can include social actions as an instance of its subclass SocialActionAssisterAction which is a social action that provides assistance to the corresponding social action, or be of another form as a SocialActionAid such as a hardware or software assistance to the social action.

In the BDI theory an agent has beliefs about the world and desires which can become intentions. With the intention involving a commitment to put that intention into action to realise that intention. In the case of the OntoCarer Framework the Social Actions are the main focus of desires and intentions. In choosing to register for a role within an organisation an agent is opting for a menu of social actions as part of that role. An agent will register for a role via their mobile phone and the associated social actions for that role will appear as a menu of options on the phone. A person registering with a college organisation for the role of student, would have student related social actions added to the menu of actions available as part of this role. These could be such student related social actions as: 'NavigateToLectureRoomAction', 'TakeNotesAction', 'MeetWithLecturerAction', 'AskQuestionsAction', 'AnswerQuestionsAction', 'SubmitAssignmentAction', etc. Those social actions as part of a chosen role - form a range of desires, a range of actions that an agent is inclined towards performing. Given the right circumstances, an agent will commit to making such an option for a social action (what is currently a desire) into an intention. In the case of intending to perform a social action and being unable to do so because of disability or impairment, this is what will trigger the planning of assistance by the Organisation Agent. The Organisation Agent will find and direct a suitable SocialActionAssister to the agent needing assistance, which in most cases will be a corresponding SocialActionAssisterAction provided by an assisting agent, but could be some other form of assistance.

As Social Actions are mainly organisation dependent the specification of the SocialAction, SocialActionAssister and SocialActionAssisterAction subclasses are part of the domain ontology extensions to this ontology, rather than the Social Action top-level ontology.

The Social Action ontology is also the correlate of the WHO ICF Participation classification category. Though, in this case the Social Action ontology including its domain ontology extensions provide a more comprehensive set of classes for classifying actions in organisations than the set of ICF Participations.

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Social Action Object Properties	137
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Table 6.27 Table of Social Action ontology section sub-headings

Social Action Concepts

The top-level Social Action ontology concepts consists of four classes. These classes are: SocialAction, SocialActionAssister, SocialActionAssisterAction, and SocialActionAssisterAid. At the top of the Social Action ontology is the owl:Thing class, and all the other classes in the ontology are subclasses of it.

The reason that there are only four classes that belong to the Social Action ontology is that all the other subclasses are domain classes. This because the social action subclasses are domain specific to kinds of organisation, and they normally are participants within organisational roles.

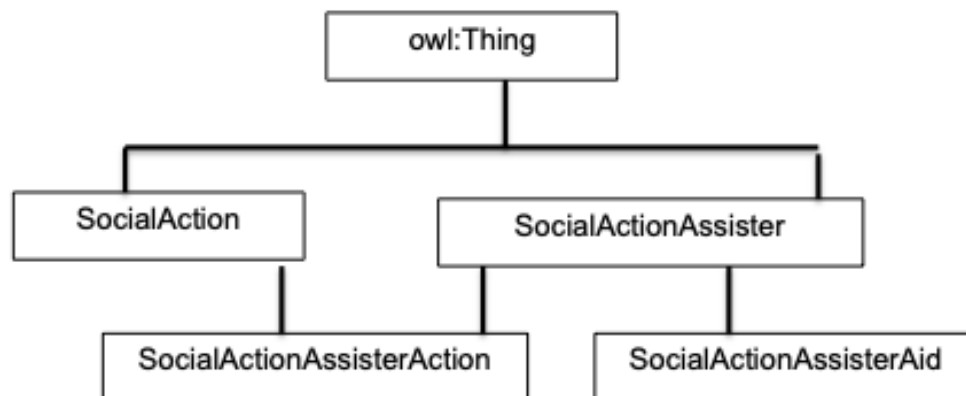


Figure 6.15 Social Action ontology – class diagram

Social Action Concepts Glossary

Concept	Super-Concept	Definition
SocialAction	owl:Thing	A SocialAction is an action that is performed by an agent, usually as part of a role in an organisation
SocialActionAssister	owl:Thing	A SocialActionAssister provides assistance to a social action, which can take a number of different forms
SocialActionAssisterAction	SocialAction, SocialActionAssister	A SocialAction that functions as a SocialActionAssister i.e. a social action that provides assistance to another social action
SocialActionAssisterAid	SocialActionAssister	An aid to a SocialAction, that is not itself an action.

Table 6.28 Social Action ontology – concepts glossary

Social Action Object Properties

The Social Action ontology Object Properties consist of properties to link the SocialAction, SocialActionAssister, and SocialActionAssisterAction class instances with the agents and the roles that they belong to. In the case of SocialActionAssister’s which provide assistance to a corresponding Social Action but are not Social Actions themselves, they may be linked to an agent that can deliver or otherwise provide that SocialActionAssister.

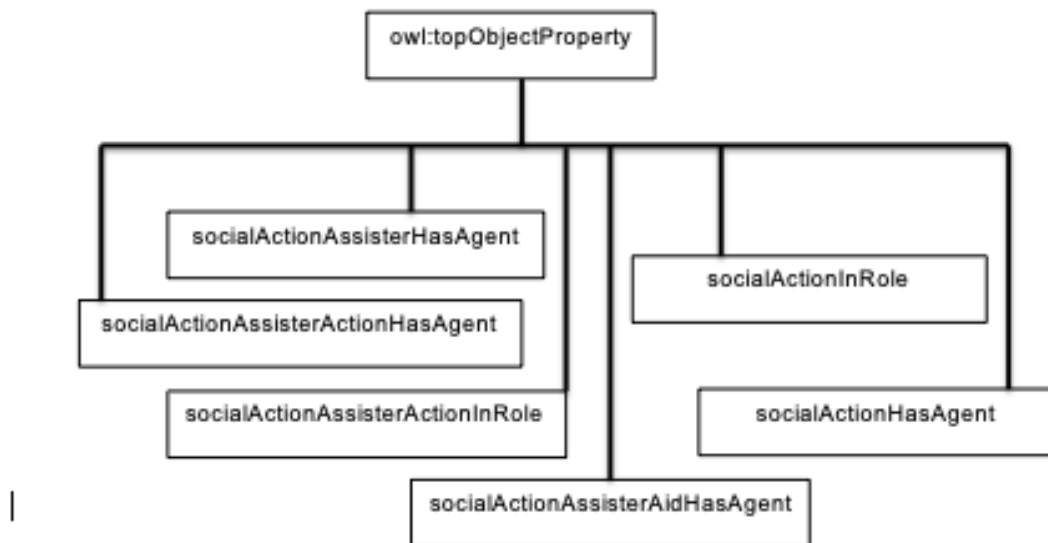


Figure 6.16 Social Action ontology – object properties diagram

Property	Domain	Range	Cardinality
socialActionAssisterHasAgent	SocialActionAssister	Agent	*:1
socialActionAssisterAidHasAgent	SocialActionAssisterAid	Agent	*:1
socialActionAssisterActionHasAgent	SocialActionAssisterAction	Agent	*:1
socialActionAssisterActionInRole	SocialActionAssisterAction	Role	*:1
socialActionHasAgent	SocialAction	Agent	*:1
socialActionInRole	SocialAction	Role	*:1

Table 6.29 Social Action ontology – object properties table

Though not a Social Action the object properties for linking to the ICF Participation classes instances could be inserted into the Social Action ontology as the social actions are their nearest corollaries in the OntoCarer ontologies, if they were needed.

Property	Domain	Range	Cardinality
participationHasAgent	icf:Participation	Agent	*:1

Table 6.30 Social Action ontology extensions – object properties to link to ICF

Social Action Data Properties

The Social Action ontology data properties are used to rate the level of desire-intention of the social action, to assign a qualifier, and to rank the importance of competing social actions for assistance.

A social action is assigned a level of desire-intention by the property ‘socialActionHasDesireIntentionLevel’. Desire-Intentions are assigned a level from 0 to 10, where 0 indicates ‘no desire’, 1 to 4 indicates a increased degree of desire, 5 to 9 indicates an increased degree of intention, and 10 indicates that the intention is satisfied.

The 0 level can be used to indicate the social action is not currently available for desire-intention.

When the level 10 for the satisfaction is reached, then the level can then return to level 1 (or 0).

The qualifier property ‘socialActionHasQualifier’ is used to indicate the degree of functioning of that instance of the BodyAbility subclass.

The classification of Social Action functioning is done on this scale:

0 is No problems, 1 is Mild, 2 is Moderate, 3 is Severe, 4 is Complete, 8 is Not specified, 9 is Not applicable.

A social action is assigned a ranking order of priority in the case where there are competing social actions for assistance by the property ‘socialActionHasRanking’.

The Social Action Information data properties allow additional information to be provided about an instance of a SocialAction, or a SocialActionAssister, or SocialActionAssisterAction, which may be useful.

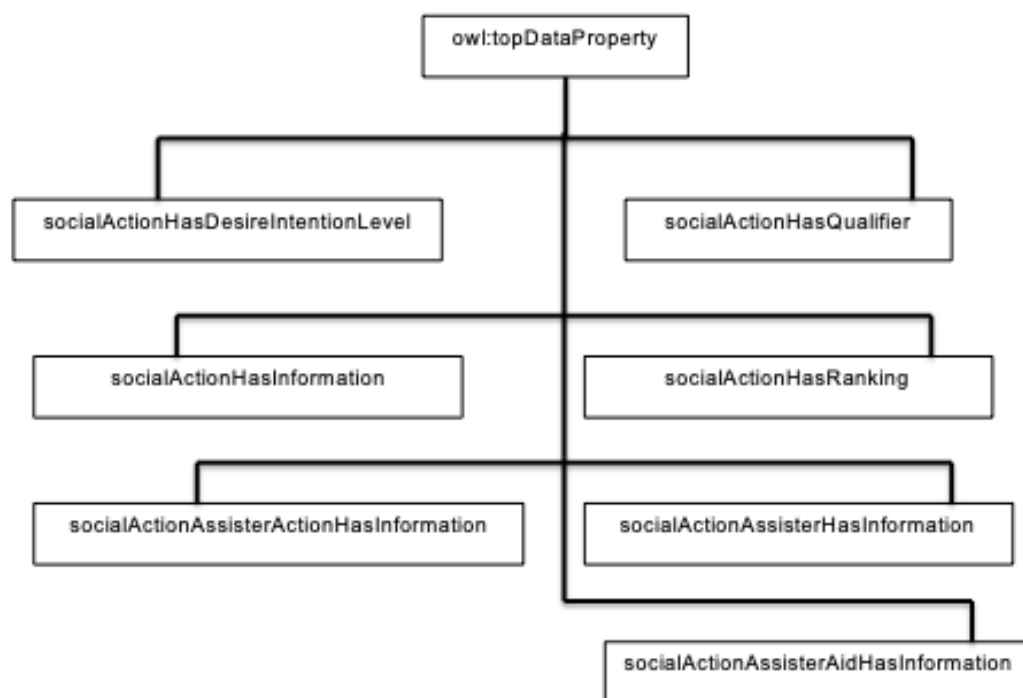


Figure 6.17 Social Action ontology – data properties diagram

Property	Domain	Range	Cardinality
socialActionHasDesireIntentionLevel	SocialAction	integer	1:1
socialActionHasQualifier	SocialAction	integer	1:1
socialActionHasRanking	SocialAction	integer	1:1
socialActionHasInformation	SocialAction	string	1:1
socialActionAssisterHasInformation	SocialActionAssister	string	1:1
socialActionAssisterActionHasInformation	SocialActionAssisterAction	string	1:1
socialActionAssisterAidHasInformation	SocialActionAssisterAid	string	1:1

Table 6.31 Social Action ontology – data properties table

The data properties for linking the ICF Participation classes instances could be inserted in the Social Action ontology as their nearest corollary, if needed.

Property	Domain	Range	Cardinality
participationHasDesireIntentionLevel	icf:Participation	integer	1:1
participationHasQualifier	icf:Participation	integer	1:1
participationHasInformation	icf:Participation	string	1:1

Table 6.32 Social Action ontology extensions – data properties to link to ICF

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Table 6.33 Table mapping Phase 3 (Social Action) elements to Methodology Chapter 4

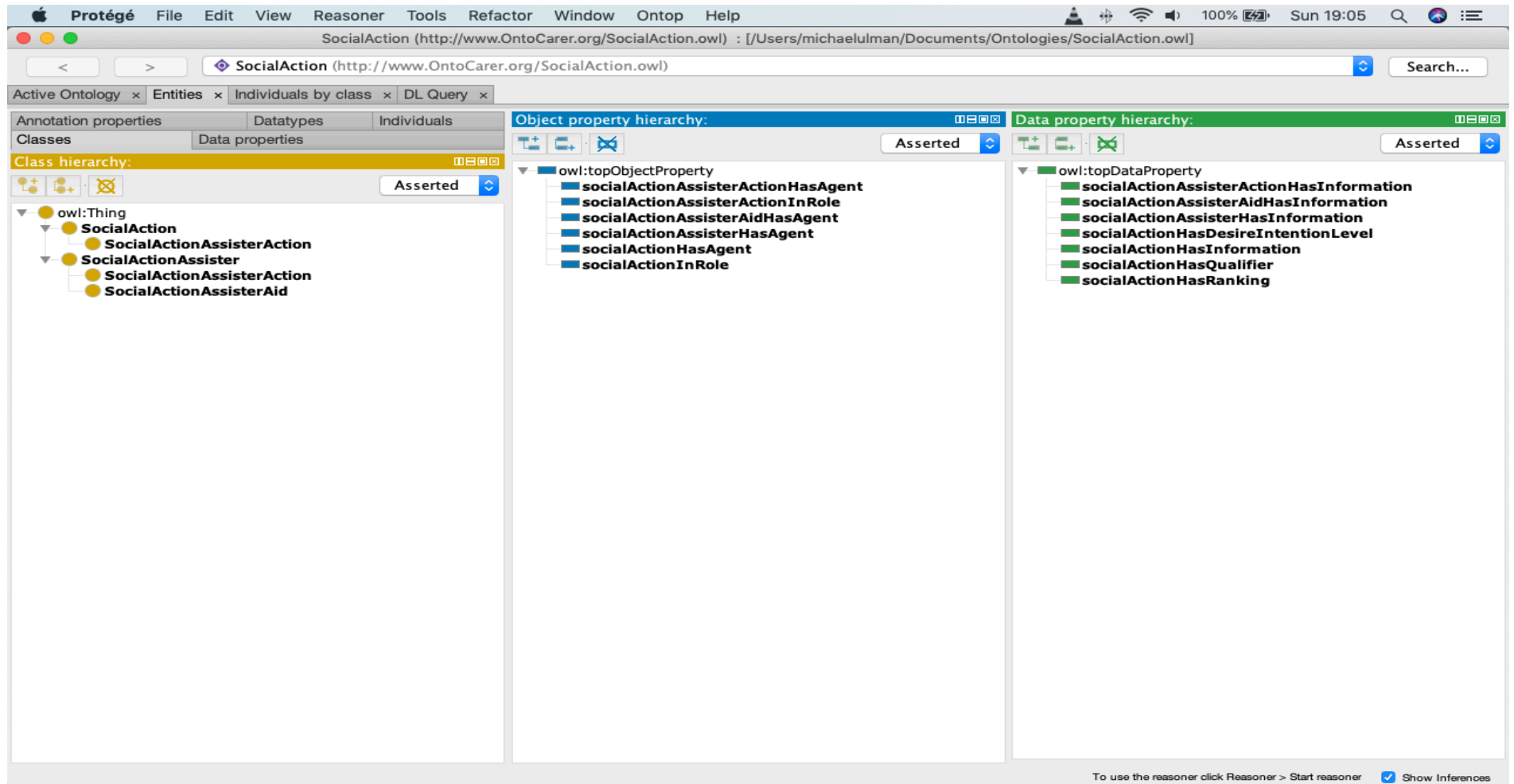


Figure 6.18 Social Action ontology – implemented in Protege

6.3.5 Buildings Ontology

The Buildings ontology classifies buildings and the rooms belonging to buildings, and their constituent parts. The ontology has several aims. These include the designation of different types of building, such as; college, hospital, cinema, theatre, supermarket, etc . The classifying of the constituents of the building themselves, the different types of rooms and other elements that buildings comprise, including features of buildings that provide assistance to the disabled. The modelling of buildings also provides detailed specified locations for; the user, assisted and assisting agents and the delivery of assistance to the assisted agents.

The emphasis in distinguishing different parts of a building in this ontology, is done from the perspective of the user experience of the building rather than from that of an architectural or structural engineering view. This is because the experience of inhabiting, traversing and using the building will be important to that of the user, and in particular the disabled user. As a consequence features of the building that a disabled user may encounter and that provide obstacles or assistance to them, are of primary relevance. These include such elements as; the different types of rooms, and the building passages such as stairs, lifts, and escalators.

Included in the ontology specifically for disabled users are assisting features, such as handrails, wheelchair lifts, and wheelchair ramps. Further features could be added as necessary.

The classification of the different types of room is important as rooms have different functions according to their use, which determine the types of social actions that take place there, rooms such as a restaurant, a toilet, a classroom, or a library, and so the types of assistance that need to be provided in them too.

The modelling of the parts of a building and the relationship of those building parts to each other. and the locating of agents within those models also facilitates the locating and directing of assistance to those agents. In addition, the building modelling including the relationships of the parts of buildings to each other and the paths within them, can also facilitate the providing of navigation to agents within those buildings, including specialised assistive navigation such as ‘wheelchair friendly routes’.

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Buildings ontology - object properties table	145
Buildings Data properties	146
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Table 6.34 Table of Buildings ontology section sub-headings

Buildings Concepts

The Buildings ontology is an OWL ontology with the owl:Thing class at the top of the class hierarchy. Below that there are four classes. These are: Building, BuildingPart, SurfaceOrientation and Location. Of these the two that are most important are Building and BuildingPart. The Building class is used to distinguish the different types of building, such as; school, college, hospital, cinema, supermarket, restaurant, etc. The particular buildings types are specified in the domain ontology extensions. The BuildingPart class has three subclasses; BuildingSpace, BuildingSpaceElement, and AssistingFeatures.

The BuildingSpace subclasses are made up of Room and BuildingPassage. The different types of Room, such as; classroom, bedroom, café, library, toilet, are specified in the domain ontology extension. The BuildingPassage subclasses are made up of the differing passages from one part of a building to another. These are: Corridor, Escalator, Junction, Lift, Portal and Stairs.

The BuildingSpaceElement are the elements from which a building space is constructed. The BuildingSpace subclasses are; Corner, Step, Surface and Window. With Surface having subclasses: Ceiling, Wall, and Floor.

The AssistingFeatures are those building features that can be used to assist disabled persons. They include the features as subclasses: Handrail, WheelchairLift, and WheelchairRamp. Other assisting classes can be added as necessary to the AssistingFeatures classes.

The SurfaceOrientation classes are used to indicate the orientation of building features and elements, which may be of relevance to managing objects for the disabled.

The Location class is used to provide a non-specific class for locating an element which could include an agent or building in a place. A Location can be within a building but can also include outdoor locations.

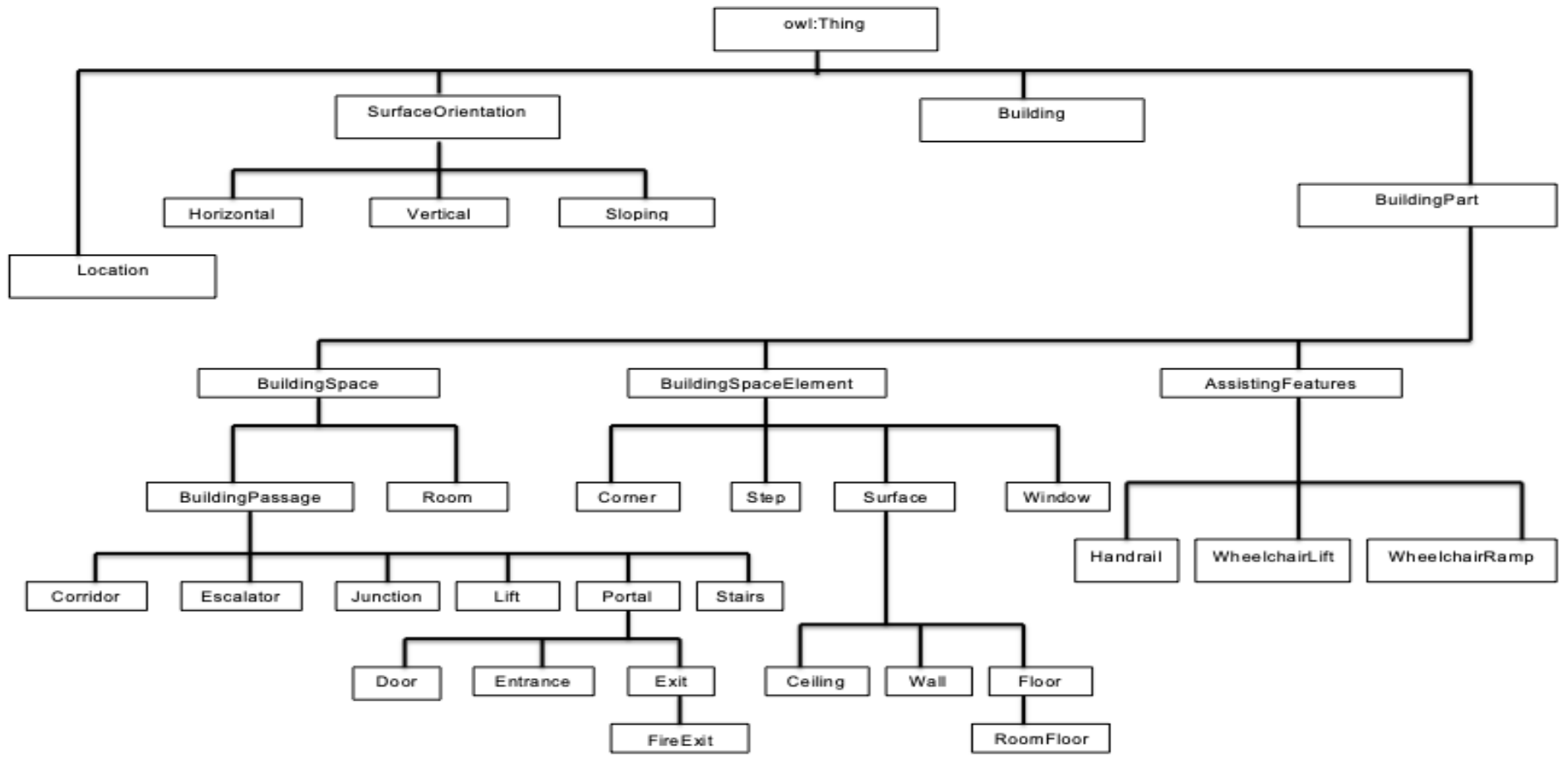


Figure 6.19 Buildings ontology – class diagram

Buildings ontology – concepts glossary

Concept	Super-Concept	Definition
Building	owl:Thing	A Building is physical structure with walls and a roof
Location	owl:Thing	A locality or place which may be in or outside a building
SurfaceOrientation	owl:Thing	The way a surface is positioned in relation to the horizon
BuildingPart	owl:Thing	A part of a building
BuildingSpace	BuildingPart	A space within a building
BuildingPassage	BuildingSpace	A passage from one part of a building to another
Corridor	BuildingPassage	A narrow passage from one part of building to another
Escalator	BuildingPassage	A moving staircase
Junction	BuildingPassage	An intersection of passages
Lift	BuildingPassage	A compartment in a shaft for moving people up or down
Stairs	BuildingPassage	A series of steps from one level to another
Portal	BuildingSpace	An opening from one space to another
Door	Portal	A physical cover over an opening from one space to another
Entrance	Portal	An entry point to a building or part of a building
Exit	Portal	A point through which to leave a room or building
FireExit	Exit	An exit point from a building to use in the case of a building fire
Room	BuildingSpace	An enclosed space within a building
Horizontal	SurfaceOrientation	The surface orientation is parallel to the ground
Vertical	SurfaceOrientation	The surface orientation is at right angles to the ground
Sloping	SurfaceOrientation	The surface orientation is inclined at an angle
AssistingFeatures	BuildingPart	Building parts that assist the disabled
Handrail	AssistingFeatures	A rail for holding on to whilst walking
WheelchairLift	AssistingFeatures	A lift for moving a wheelchair from one level to another
WheelchairRamp	AssistingFeatures	A ramp for wheeling a wheelchair from one level to another
BuildingSpaceElement	BuildingPart	A building part which is an element of a building space
Corner	BuildingSpaceElement	A place where two walls meet each other
Window	BuildingSpaceElement	A viewing opening in a wall or other surface
Step	BuildingSpaceElement	An ascending/descending element of a staircase
Surface	BuildingSpaceElement	A continuous plane occupying part of a building space element
Ceiling	Surface	The surface over the top of a room
Wall	Surface	A perpendicular surface at the side of a room
Floor	Surface	The surface at the bottom of a storey in a building
RoomFloor	Floor	The surface at the bottom of a room

Table 6.35 Buildings ontology – concepts glossary

Buildings Object Properties

The Buildings ontology object properties primary aim is to be able to model a building, by connecting together the related parts of a building. The object properties also facilitate the situating of agents in the building and its constituent parts, and potentially navigation around the building.

Buildings ontology – object properties table

Property	Domain	Range	Cardinality
buildingBelongsToOrganisation	Building	Organisation	*:1
buildingHasAgent	Building	Agent	1:*
buildingHasAssistingFeatures	Building	AssistingFeatures	1:*
buildingHasBuildingSpace	Building	BuildingSpace	1:*
buildingHasBuildingSpaceElement	Building	BuildingSpaceElement	1:*
buildingHasBuildingPassage	Building	BuildingPassage	1:*
buildingHasCorridor	Building	Corridor	1:*
buildingHasDoor	Building	Door	1:*
buildingHasEntrance	Building	Entrance	1:*
buildingHasExit	Building	Exit	1:*
buildingHasEscalator	Building	Escalator	1:*
buildingHasFireExit	Building	FireExit	1:*
buildingHasJunction	Building	Junction	1:*
buildingHasLift	Building	Lift	1:*
buildingHasPortal	Building	Portal	1:*
buildingHasRoom	Building	Room	1:*
buildingHasStairs	Building	Stairs	1:*
buildingPassageHasAgent	BuildingPassage	Agent	1:*
buildingPassageHasAssistingFeatures	BuildingPassage	AssistingFeatures	1:*
buildingPassageHasEntrance	BuildingPassage	Entrance	1:1
buildingPassageHasExit	BuildingPassage	Exit	1:1
buildingPassageHasFloor	BuildingPassage	Floor	1:*
buildingPassageHasFireExit	BuildingPassage	FireExit	1:*
buildingPassageHasPortal	BuildingPassage	Portal	1:*
buildingPassageHasSurfaceOrientation	BuildingPassage	SurfaceOrientation	1:1
buildingSpaceHasAssistingFeatures	Building	AssistingFeatures	1:*
buildingSpaceHasSurfaceOrientation	Building	SurfaceOrientation	1:1
buildingSpaceHasSituationActivity	Building	SituationActivity	1:1
buildingSpaceHasAgent	Building	Agent	1:*
corridorHasAgent	Corridor	Agent	1:*
corridorHasAssistingFeatures	Corridor	AssistingFeatures	1:*
corridorHasEscalator	Corridor	Escalator	1:*
corridorHasExit	Corridor	Exit	1:*
corridorHasFireExit	Corridor	FireExit	1:*
corridorIsOnFloor	Corridor	Floor	1:1
corridorHasHandrail	Corridor	Handrail	1:*
corridorHasLift	Corridor	Lift	1:*
corridorHasPortal	Corridor	Portal	1:*
corridorHasRoom	Corridor	Room	1:*
corridorHasStairs	Corridor	Stairs	1:*
corridorHasSurfaceOrientation	Corridor	SurfaceOrientation	1:1
corridorHasWheelchairLift	Corridor	WheelchairLift	1:*
corridorHasWheelchairRamp	Corridor	WheelchairRamp	1:*
corridorHasWindow	Corridor	Window	1:*
escalatorHasAgent	Escalator	Agent	1:*
escalatorHasAssistingFeatures	Escalator	AssistingFeatures	1:*
escalatorHasBottomFloor	Escalator	Floor	1:1
escalatorHasTopFloor	Escalator	Floor	1:1

escalatorHasSurfaceOrientation	Escalator	SurfaceOrientation	1:1
fireExitHasCorridor	FireExit	Corridor	1:1
fireExitHasRoom	FireExit	Room	1:1
floorHasAgent	Floor	Agent	1:*
floorHasAssistingFeatures	Floor	AssistingFeatures	1:*
floorHasCorridor	Floor	Corridor	1:*
floorHasFireExit	Floor	FireExit	1:*
floorHasRoom	Floor	Floor	1:*
floorHasSurfaceOrientation	Floor	SurfaceOrientation	1:1
junctionHasAgent	Junction	Agent	1:*
junctionHasCorridor	Junction	Corridor	1:*
liftHasAgent	Lift	Agent	1:*
liftHasAssistingFeatures	Lift	AssistingFeatures	1:*
liftHasBottomFloor	Lift	Floor	1:1
liftHasHandrail	Lift	Handrail	1:*
liftHasIntermediateFloor	Lift	Floor	1:*
liftHasTopFloor	Lift	Floor	1:1
locationHasAgent	Location	Agent	1:*
locationHasBuilding	Location	Building	1:1
locationHasBuildingSpace	Location	BuildingSpace	1:1
locationHasAssistingFeatures	Location	AssistingFeatures	1:*
portalHasAssistingFeatures	Portal	AssistingFeatures	1:*
portalHasCorridor	Portal	Corridor	1:1
portalHasRoom	Portal	Room	1:1
roomHasAgent	Room	Agent	1:*
roomHasAssistingFeatures	Room	AssistingFeatures	1:*
roomHasCeiling	Room	Ceiling	1:1
roomHasDoor	Room	Door	1:*
roomHasEntrance	Room	Entrance	1:*
roomHasExit	Room	Exit	1:*
roomHasFireExit	Room	FireExit	1:*
roomHasRoomFloor	Room	RoomFloor	1:1
roomHasPortal	Room	Portal	1:*
roomHasWindow	Room	Window	1:*
roomsInBuilding	Room	Building	*:1
roomsOnCorridor	Room	Corridor	*:1
roomsOnFloor	Room	Floor	*:1
roomHasSituationActivity	Room	SituationActivity	1:1
roomFloorHasSurfaceOrientation	RoomFloor	SurfaceOrientation	1:*
stairsHasAgent	Stairs	Agent	1:*
stairsHasAssistingFeatures	Stairs	AssistingFeatures	1:*
stairsHasBottomCorridor	Stairs	Corridor	1:1
stairsHasBottomFloor	Stairs	Floor	1:1
stairsHasHandrail	Stairs	Handrail	1:*
stairsHasIntermediateCorridor	Stairs	Corridor	1:*
stairsHasIntermediateFloor	Stairs	Floor	1:*
stairsHasStep	Stairs	Step	1:*
stairsHasSurfaceOrientation	Stairs	SurfaceOrientation	1:1
stairsHasTopCorridor	Stairs	Corridor	1:1
stairsHasTopFloor	Stairs	Floor	1:1
stairsHasWheelchairLift	Stairs	WheelchairLift	1:1
surfaceHasSurfaceOrientation	Surface	SurfaceOrientation	1:1

Table 6.36 Buildings ontology – object properties table

Buildings Data Properties

The Buildings ontology data properties allow for the naming and numbering of building constituents.

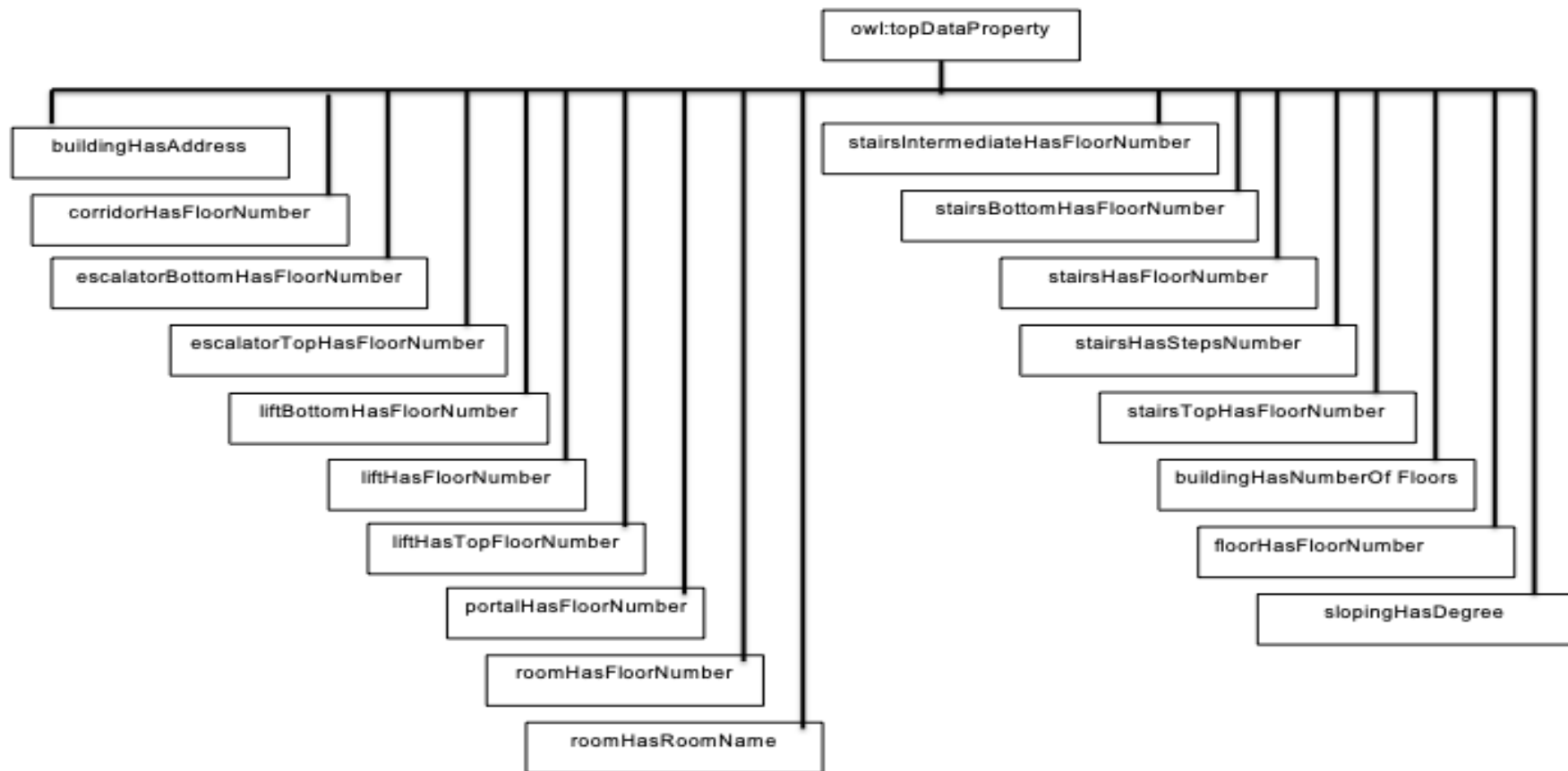


Figure 6.20 Buildings ontology – data properties diagram

Buildings ontology – main data properties

Property	Domain	Range	Cardinality
buildingHasAddress	Building	String	1:1
buildingHasNumberOfFloors	Building	Integer	1:1
corridorHasFloorNumber	Corridor	Integer	1:1
escalatorBottomHasFloorNumber	Escalator	Integer	1:1
escalatorTopHasFloorNumber	Escalator	Integer	1:1
floorHasFloorNumber	Floor	Integer	1:1
liftBottomHasFloorNumber	Lift	Integer	1:1
liftHasFloorNumber	Lift	Integer	1:1
liftIntermediateHasFloorNumber	Lift	Integer	1:1
liftTopHasFloorNumber	Lift	Integer	1:1
portalHasFloorNumber	Portal	Integer	1:1
roomHasFloorNumber	Room	Integer	1:1
roomHasRoomName	Room	String	1:1
stairsBottomHasFloorNumber	Stairs	Integer	1:1
slopingHasDegree	Sloping	Integer	1:1
stairsHasStepsNumber	Stairs	Integer	1:1
stairsIntermediateHasFloorNumber	Stairs	Integer	1:*
stairsTopHasFloorNumber	Stairs	Integer	1:1

Table 6.37 Buildings ontology – main data properties table

Buildings ontology – Information data properties

These can be used to provide additional information about an instance of the main Building ontology class types. Additional specific Building ontology Information data properties, may be added if needed.

Property	Domain	Range	Cardinality
assistingFeaturesHasInformation	AssistingFeatures	String	1:1
buildingHasInformation	Building	String	1:1
buildingPartHasInformation	BuildingPart	String	1:1
buildingPassageHasInformation	BuildingPassage	String	1:1
buildingSpaceHasInformation	BuildingSpace	String	1:1
buildingSpaceElementHasInformation	BuildingSpaceElement	String	1:1
corridorHasInformation	Corridor	String	1:1
locationHasInformation	Location	String	1:1
portalHasInformation	Portal	String	1:1
roomHasInformation	Room	String	1:1
surfaceOrientationHasInformation	SurfaceOrientation	String	1:1

Table 6.38 Buildings ontology – Information data properties table

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Buildings Concepts	92-93
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Buildings Object Properties	92-93
Buildings ontology - object properties table	92-93
Buildings Data properties	92-93
Buildings ontology – Information data properties	92-93

Table 6.39 Table of mappings Phase 3 (Buildings) elements to Methodology in Chapter 4

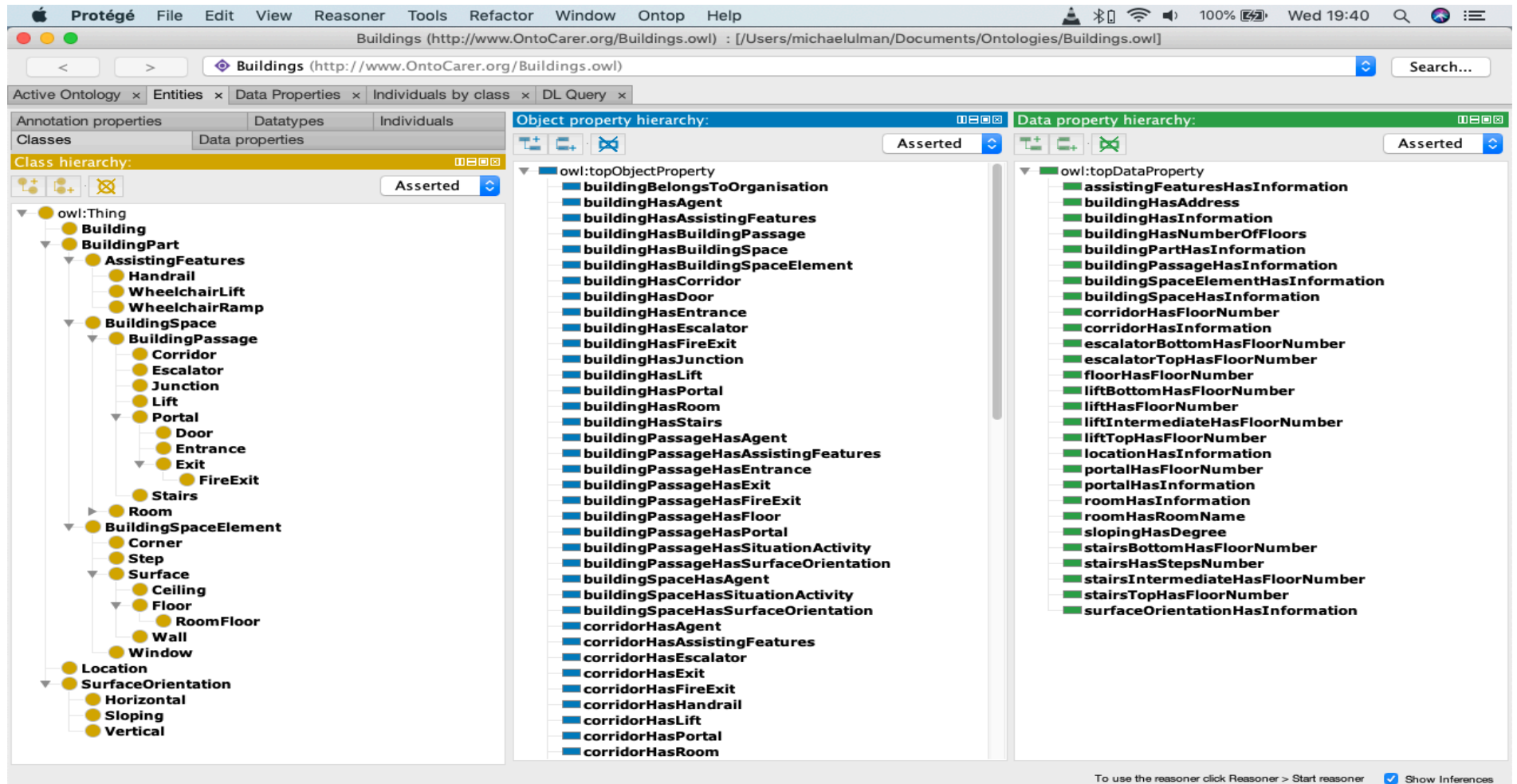


Figure 6.21 Buildings ontology – implemented in Protege

6.3.6 Organisation ontology

The Organisation ontology is used to designate the different types of organisation and also to designate the different types of situation activity.

The actions of agents and the assistance they receive is based around organisations. Each type of organisation has its own purposes, its own types of service it offers and its own dedicated personnel that provides those services. The roles, agent types and social actions are modelled around the purposes of the different types of organisation.

The properties of the Organisation ontology link the particular organisation with its main constituents, which are its; agents, buildings, roles, and situation activities.

Organisation ontology section sub-headings	Page
Organisation Concepts	150
Organisation ontology - concepts glossary	151
Organisation ontology - object properties	151
Organisation ontology – object properties table	153
Organisation ontology - Data Properties	153
Organisation ontology – data properties table	153

Table 6.40 Table of Organisation ontology section sub-headings

Organisation Concepts

There are two main classes in the Organisation ontology, these are Organisation and SituationActivity. These are both subclasses of the OWL class owl:Thing.

The Organisation class is used to designate the different types of organisations in its subclasses. The subclasses designating the different types of organisations are relegated to the domain ontology extensions to this top level ontology.

The SituationActivity class designates the different types of activity that may occur within an organisation. The particular types of activity normally depend upon the particular type of organisation and as such they are part of the domain extensions to the top-level ontology. The purpose of the SituationActivity classes is to be able to refer to an activity independently of its functional location. For the purposes of planning assistance one can normally assume that the activity taking place in a functional location such as a restaurant or lecture theatre is the related activity such as eating or lecturing and proceed accordingly. But there may be occasions when some other activity is taking place there and one wishes to indicate this in order to facilitate the right form of assistance. It may be that the activity of holding a meeting takes place in a restaurant, or a seminar may take place in a lecture theatre. The categories of the SituationActivity subclasses will facilitate this.

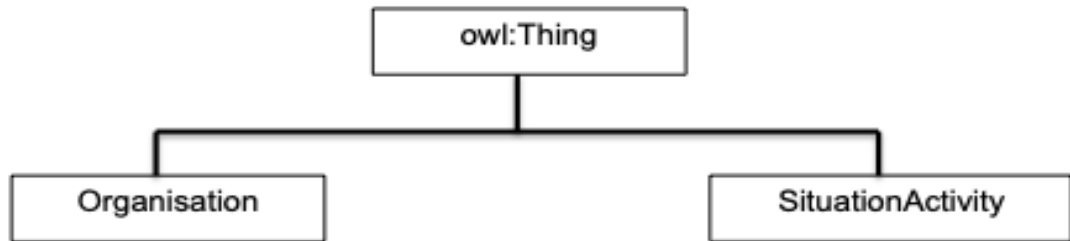


Figure 6.22 Organisation ontology – class diagram

Organisation ontology - concepts glossary

Concept	Super-Concept	Definition
Organisation	owl:Thing	An organisation is a group of agents working together for shared goals
SituationActivity	owl:Thing	A situation activity is a purposeful activity by one or more agents in an organisation

Table 6.41 Organisation ontology – concepts glossary

Organisation ontology - object properties

The Organisation ontology object properties consist of properties to link the Organisation and SituationActivity instances. The Organisation instances can be connected with their agents, buildings, roles, and situation activities. The SituationActivity instances can be connected with their organisation, their location, their room, and their agents.

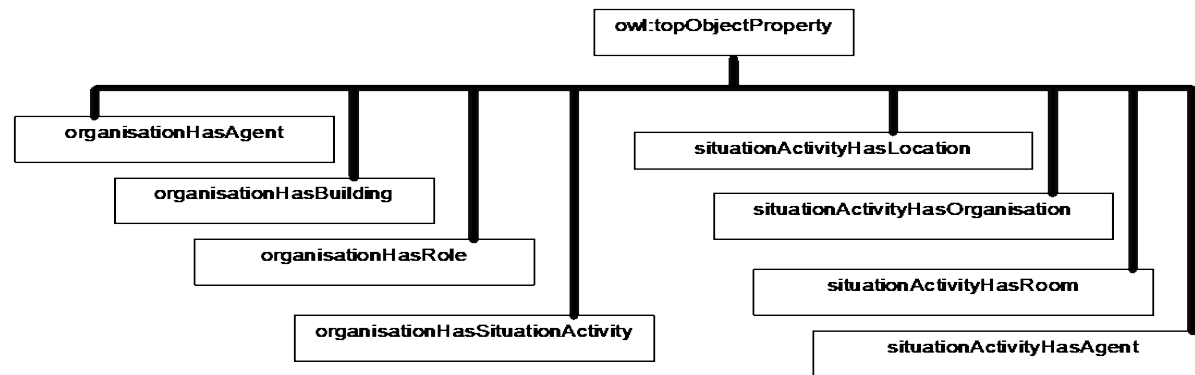


Figure 6.23 Organisation ontology – object properties diagram

Organisation ontology – object properties table

Property	Domain	Range	Cardinality
organisationHasAgent	Organisation	Agent	1:*
organisationHasBuilding	Organisation	Building	1:*
organisationHasRole	Organisation	Role	1:*
organisationHasSituationActivity	Organisation	SituationActivity	1:*
situationActivityHasLocation	SituationActivity	Location	1:1
situationActivityHasOrganisation	SituationActivity	Organisation	*:1
situationActivityHasRoom	SituationActivity	Room	1:1
situationActivityHasAgent	SituationActivity	Agent	1:*

Table 6.42 Organisation ontology – object properties table

Organisation ontology - Data Properties

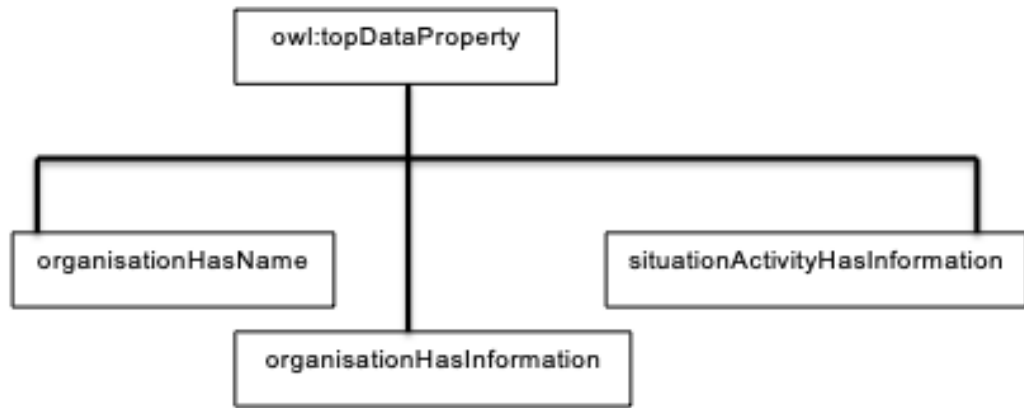


Figure 6.24 Organisation ontology – data properties diagram

Organisation ontology – data properties table

Property	Domain	Range	Cardinality
organisationHasName	Organisation	String	1:1
organisationHasInformation	Organisation	String	1:1
situationActivityHasInformation	SituationActivity	String	1:1

Table 6.43 Organisation ontology – data properties table

Mapping Phase 3 (Buildings) elements to Phase 3 Methodology in Chapter 4	Page
Organisation Concepts	92-93
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Organisation ontology - object properties	92-93
Organisation ontology – object properties table	92-93
Organisation ontology - Data Properties	92-93
Organisation ontology – data properties table	92-93

Table 6.44 Table of mapping Phase 3 (Buildings) to Methodology in Chapter 4

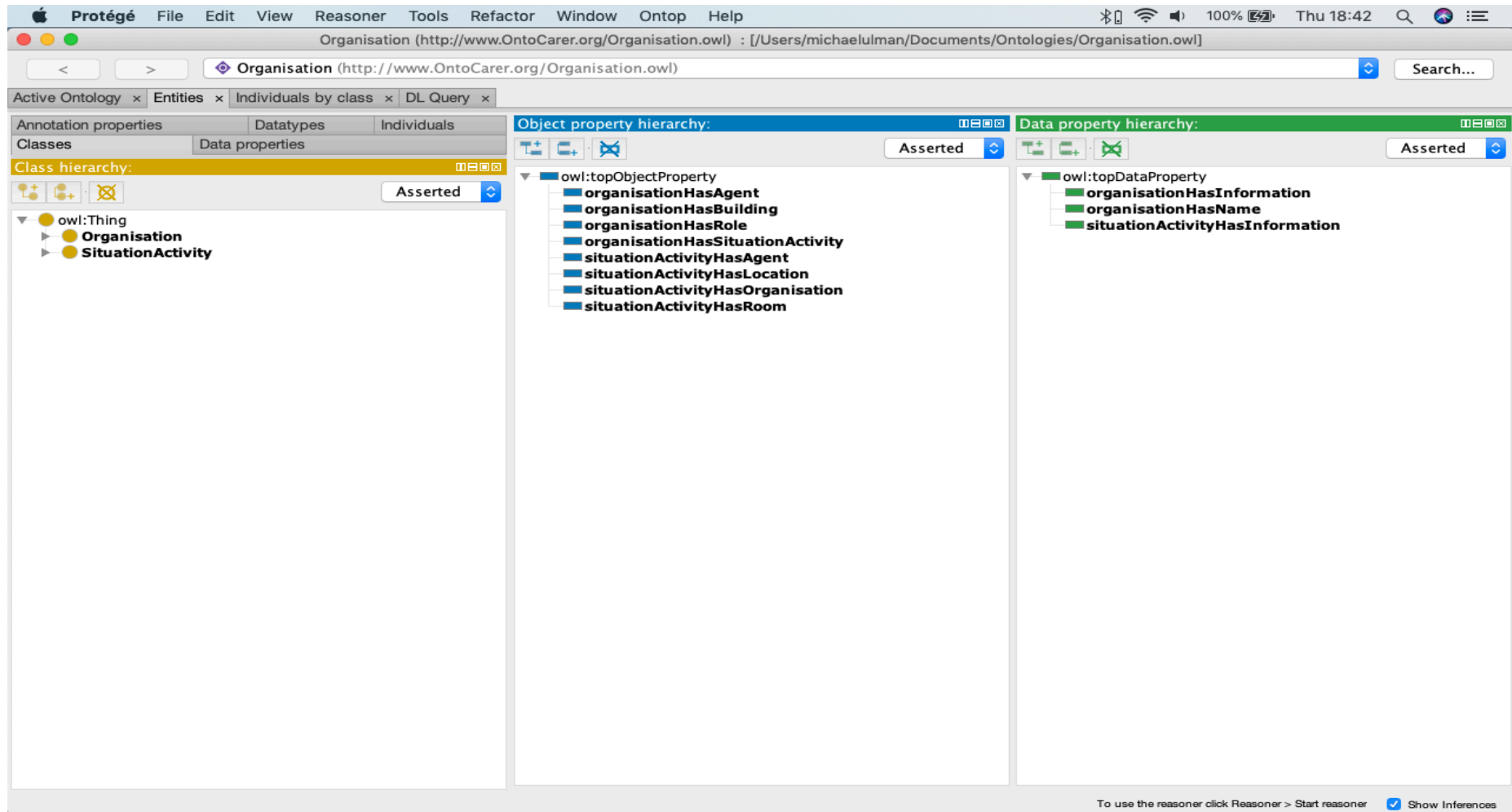


Figure 6.25 Organisation ontology – implemented in Protégé

6.3.7 OntoCarer-Link-Ontology

The OntoCarer-Link-Ontology is an ontology of properties. It collects together the relationships of assistance between Roles, Social Actions, Body Components, and Body Abilities and their assisters and cooperators. Where an assister is something that provides assistance in the case where there is an inability to do something, and a cooperator is where a role or action needs some other cooperator to cooperate in the performance of that role or action.

OntoCarer-Link-Ontology ontology section sub-headings	Page
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OntoCarer-Link-Ontology Object Properties table	159
OntoCarer-Link-Ontology & OntoCarer Assistive Social Network	161

Table 6.45 Table of OntoCarer-Link-Ontology ontology section sub-headings

OntoCarer-Link-Ontology Object Properties

The OntoCarer-Link-Ontology collects together all the object properties that connect an assisted instance with its assister instance, or with its cooperator instance.

They are organised under the owl:topLevelProperty by three super-properties. These three are:

- assistedAssistedByAssister
- assisterOfAssisted
- cooperatorCooperatesWithCooperator

The Assister Assisted properties are inverses of each other:

- ‘assisterOfAssisted’ is the inverse of ‘assistedAssistedByAssister’

The property assistedAssistedByAssister has four subproperties. Each of the subproperties connects a different kind of assisted type with its corresponding assister type. These four properties are:

- bodyAbilityAssistedByBodyAbilityAssister
- bodyComponentAssistedByBodyComponentAssister
- roleAssistedByRoleAssister
- socialActionAssistedBySocialActionAssister

In these properties the form of Assister is not described beyond being of something that provides assistance to the named type. In the case of the properties: ‘roleAssistedByRoleAssister’ and ‘socialActionAssistedBySocialActionAssister’ they each have two sub-properties where the assistance is provided either by the same kind of entity as the domain entity or by an assisting aid.

In the case of ‘roleAssistedByRoleAssister’ the first assisting role sub-property is:

roleAssistedByRoleAssisterRole

where the assistance to the Role is provided by an agent performing a corresponding assisting Role.

The second ‘roleAssistedByRoleAssister’ subproperty is:

roleAssistedByRoleAssisterAid

where the assistance to the Role is provided by an assisting aid.

In the case of ‘socialActionAssistedBySocialActionAssister’ the first assisting social action sub-property is:

socialActionAssistedBySocialActionAssisterAction

where the assistance to the SocialAction is provided by an agent performing a corresponding assisting SocialAction.

The second ‘socialActionAssistedBySocialActionAssister’ sub-property is:

socialActionAssistedBySocialActionAssisterAid

where the assistance to the Social Action is provided by an assisting aid.

These top four assistedByAssister properties each have their inverses:

‘bodyAbilityAssistedByBodyAbilityAssister’ has the inverse

‘bodyAbilityAssisterOfBodyAbility

‘bodyComponentAssistedByBodyComponentAssister’ has the inverse

‘bodyComponentAssisterOfBodyComponent’

‘roleAssistedByRoleAssister’ has the inverse ‘roleAssisterOfRole’

‘socialActionAssistedBySocialActionAssister’ has the inverse

‘socialActionAssisterOfSocialAction’

The two sub-properties of ‘roleAssistedByRoleAssister’ each have their own inverse properties.

‘roleAssistedByRoleAssisterRole’ has the inverse ‘roleAssisterRoleOfRole’.

‘roleAssistedByRoleAssisterAid’ has the inverse

‘roleAssisterAidOfRole’.

The two sub-properties of ‘socialActionAssistedBySocialActionAssister’ each have their own inverse properties.

‘socialActionAssistedBySocialActionAssisterAction’ has the inverse

‘socialActionAssisterActionOfSocialAction’.

‘socialActionAssistedBySoicalActionAssisterAid’ has the inverse

‘socialActionAssisterAidOfSocialAction’.

The particular subproperties detailing the exact assisting relationships between instances of assisted and assister are part of the domain ontology extensions.

This can be illustrated by some examples from the sub-properties of

socialActionAssistedBySocialActionAssisterAction :

- useDrinkingUtensilSocialActionAssistedByUseDrinkingUtensilSocialActionAssisterAction
- useCutleryToFeedSocialActionAssistedByUseCutleryToFeedSocialActionAssisterAction
- takeNotesSocialActionAssistedByTakeNotesSocialActionAssisterAction
- requestItemInShopSocialActionAssistedByRequestItemInShopSocialActionAssisterAction

and the inverse of these properties for assisterOfAssisted subproperty

socialActionAssisterActionOfSocialAction which are:

- useDrinkingUtensilSocialActionAssisterActionOfUseDrinkingUtensilSocialAction
- useCutleryToFeedSocialActionAssisterActionOfUseCutleryToFeedSocialAction
- takeNotesSocialActionAssisterActionOfTakeNotesSocialAction
- requestItemInShopSocialActionAssisterActionOfRequestItemInShopSocialAction

The ‘Cooperates with’ property:

- cooperatorCooperatesWithCooperator

is for special cases of providing assistance where the assistance is not directly assisting an inability to perform an intended role or action, and they only apply to relations between Roles and between SocialActions.

In the case of the Role the sub-property is:

roleCooperatesWithRole

In the case of the of the SocialAction the sub-property is:

socialActionCooperatesWithSocialAction

The ‘Cooperates’ case arises from the need for some special skill to be used in cooperation with another who has that skill. This kind of case arises, for example, when a deaf person who can use sign language and needs another with such a skill to communicate. The (deaf) signer has the capability to sign, but still needs assistance – a cooperative signer, to fulfil their goals, which is to communicate.

In the case of Roles there is a simple correspondence between the special skill in the case of assisted and assister, so this would describe such a sub-property in the signer case:

signerRoleCooperatesWithSignerRole

In the case of cooperating Social Actions the correspondences are more complicated, as the assisting cooperating action is one that complements the assisted action, rather than one that simply provides compensating assistance for the action where there is impairment in performing the action. Also, there may be more than one corresponding cooperating action to a particular action. In the case of a signing action, to cooperate with that action a person may; see the signing, understand the signing, and may also translate the signing into speech.

In the case of signing, an action of:

‘makeSignLanguageSocialAction’ would be paired with the two cooperating actions of :

‘seeSignLanguageActionSocialAction’ in the sub-property

makeSignLanguageSocialActionCooperatesWithSeeSignLanguageSocialAction

and ‘understandSignLanguageSocialAction’ in the sub-property

makeSignLanguageSocialActionCooperatesWithUnderstandSignLanguageSocialAction

It is not necessary that all the corresponding cooperating actions are required in every circumstance where cooperation is needed. It may be that only some are needed, in some circumstances.

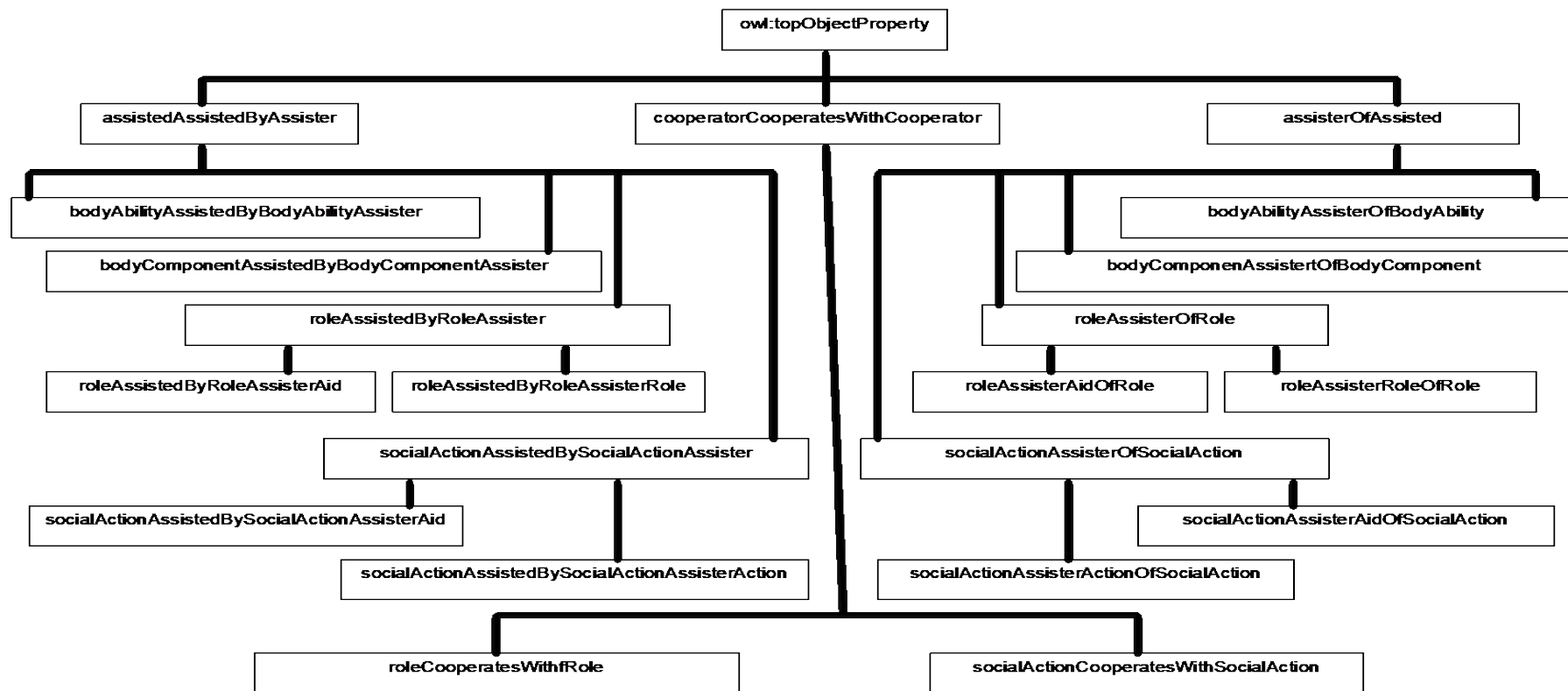


Figure 6.26 OntoCarer-Link-Ontology – object properties

OntoCarer-Link-Ontology Object Properties table

Property	Domain	Range	Cardinality
assistedAssistedByAssister	owl:Thing	owl:Thing	1:1
bodyAbilityAssistedByBodyAbilityAssister	BodyAbility	BodyAbilityAssister	1:1
bodyComponentAssistedByBodyComponentAssister	BodyComponent	BodyComponentAssister	1:1
roleAssistedByRoleAssister	Role	RoleAssister	1:1
roleAssistedByRoleAssisterAid	Role	RoleAssisterAid	1:1
roleAssistedByRoleAssisterRole	Role	RoleAssisterRole	1:1
socialActionAssistedBySocialActionAssister	SocialAction	SocialActionAssister	1:1
socialActionAssistedBySocialActionAssisterAid	SocialAction	SocialActionAssisterAid	1:1
socialActionAssistedBySocialActionAssisterAction	SocialAction	SocialActionAssisterAction	1:1
cooperatorCooperatesWithCooperator	owl:Thing	owl:Thing	1:1
roleCooperatesWithRole	Role	Role	1:1
socialActionCooperatesWithSocialAction	SocialAction	SocialAction	1:1
assisterOfAssisted	owl:Thing	owl:Thing	1:1
bodyAbilityAssisterOfBodyAbility	BodyAbilityAssister	BodyAbility	1:1
bodyComponentAssisterOfBodyComponent	BodyComponentAssister	BodyComponent	1:1
roleAssisterOfRole	RoleAssister	Role	1:1
roleAssisterAidOfRole	RoleAssisterAid	Role	1:1
roleAssisterRoleOfRole	RoleAssisterRole	Role	1:1
socialActionAssisterOfSocialAction	SocialActionAssister	SocialAction	1:1
socialActionAssisterAidOfSocialAction	SocialActionAssisterAid	SocialAction	1:1
socialActionAssisterActionOfSocialAction	SocialActionAssisterAction	SocialAction	1:1

Table 6.46 OntoCarer-Link-Ontology – object properties table

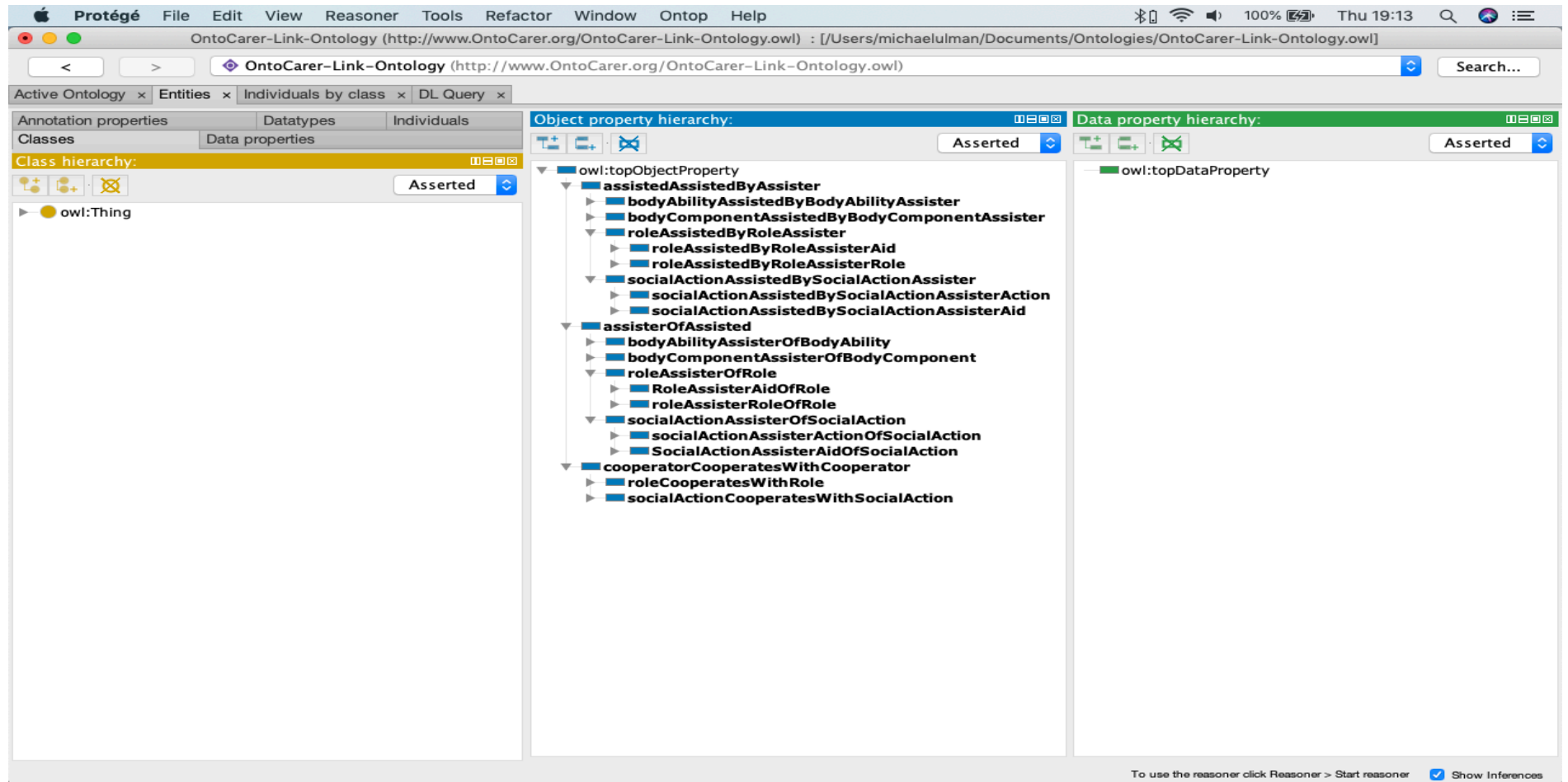


Figure 6.27 OntoCarer-Link-Ontology implemented in Protege

Mapping Phase 3 (OntoCarer-Link-Ontology) elements to Phase 3 Methodology in Chapter 4	Page
OntoCarer-Link-Ontology Object Properties	75 - 76
OntoCarer-Link-Ontology Object Properties table	75 - 76

Table 6.47 Table mapping Phase 3 (OntoCarer-Link-Ontology) to Methodology

OntoCarer-Link-Ontology & OntoCarer Assistive Social Network

The properties of the OntoCarer-Link-Ontology form the basis for creating an assistive social network in an organisation that uses the OntoCarer Ontological Framework and software application to assist people with disabilities.

A social network is a set of nodes where these nodes are linked by binary connections that represent relationships between the nodes. These nodes may represent agents or other things. Where some of those nodes represent agents such as persons and those agents are linked together either directly or indirectly then it can be considered a social network.

There is a precedent for creating a social network using Semantic Web representations, which is the FOAF (Friend Of A Friend) ontology (Brickley, 2000) . This ontology is used to represent information about people such as their name, email address, homepage, etc. and the people they know using the property foaf:knows. It is this property foaf:knows that creates the social network linking a person to other persons they know, who in turn link to other persons that they know.

The ‘assistedAssistedByAssister’ subproperties (and their converse ‘assisterOfAssisted’ subproperties) link the roles and social actions with their corresponding roleAssisterRoles and socialActionAssisterActions. These roles and actions are linked to their respective agents. Thus forming an assistive social network of agents with their assisting roles and actions. Any of these agents can potentially be an assister or assisted, or possibly both for different actions.



Figure 6.28 An example assistive social network

The graph above (Figure 6.28) represents a simple assistive social network comprising two agents (agent1, agent2) which in this case, each provides potential assistance to each other for a particular role and social action. agent1 is potentially assisted by agent2 for agent1's role1 and socialAction1, by agent2's roleAssisterRole1 and socialActionAssisterAction1. agent2 is potentially assisted by agent1's roleAssisterRole2 and socialActionAssisterAction2.

6.4 Summary

Chapter 6 is concerned with the application of the first three phases of the OntoCarer Development Methodology as defined in Chapter 4 to the production of the OntoCarer Ontological Framework. The first three phases of the Methodology are: Initial Phase 1, Framework Phase 2, and Conceptualisation Phase 3.

In the Initial Phase 1 a Goal Statement is defined for the project. A survey of the existing literature was performed, whose results are in Chapter 2 and Chapter 3. A use case diagram is created of organisations that may provide assistance to the disabled, which is shown in Figure 6.1. Ontology languages, tools and class libraries are selected. The Ontology languages are those of the Semantic Web which includes OWL and RDF. The tools are the ontology editor Protégé. The class libraries to be used include the Apache Jena class libraries for handling OWL ontologies and RDF models in a Java program. The project constraints are outlined, and are described in more detail in Chapter 1.

In the Framework Phase 2 is concerned with specifying the OntoCarer Ontological Framework by deciding what the candidate ontologies are and how they will integrate with each other for the purposes of the Framework. Model Categories are used to identify the candidate ontologies. There are five Model Categories: 1. Agency Model Category, 2. Body Model Category, 3. Social Model Category, 4. Disability & Assistance Model Category, 5. Environmental Model Category. The seven candidate ontologies arrived at were: Agent, Body Components, Body Abilities, Social Action, Organisation, Buildings, OntoCarer-Link-Ontology.

The theoretical input of BDI theory to the Framework is described. This includes BDI's role as a theory of how rational agents act and plan actions, and which is used to model the agents and their actions in the Framework. BDI theory is also used to provide a BDI agent architecture for the Organisation Agent.

The external ontology of the WHO ICF is also assessed for its role in relation to the Framework. The Framework is made compatible with the ICF which means that the classes of the ICF's Body Structures and Body Functions classifications can be imported and used with those of the OntoCarer Framework, if necessary. The ICF Body Structures and Body Functions classifications can also be used as a source of validation for the OntoCarer's Body Components and Body Abilities domain ontology classifications.

The Conceptualisation Phase 3 is concerned with determining the particular constituent elements of the ontologies, that is their classes and properties. The knowledge gathering and conceptualisation modelling approach and process is described. The Protégé ontology editor modelling tool for the ontologies is chosen and justified. The conceptualisation of each of the seven OntoCarer top-level ontologies is then described and justified, including their class diagrams, concept glossaries, and property diagrams.

Finally, the chapter concludes with an explanation of how the OntoCarer-Link-Ontology forms the basis for creating an assistive social network to assist people with disabilities.

Chapter 7 OntoCarer Ontological Framework – Domain Ontology Extensions

7.1 Introduction

The OntoCarer Ontological Framework as described in the previous chapter provides a set of top-level ontologies for providing assistance to disabled agents in organisations. Those top-level ontologies provide a framework of mostly abstract classes that in combination, facilitate the OntoCarer Assistance Lifecycle through their implementation of the Core OntoCarer Assistance Data Structure. In order for the OntoCarer Assistance Lifecycle to be applied in practice in organisations those top-level ontologies need to be extended into particular organisational domains by extending the top-level classes to include particular subclasses belonging to the particular organisational domains. For example, the Agent top-level ontology includes the Role class along with general subclasses such as UserRole and ProviderRole, which are then extended in the education domain Agent ontology to include StudentUserRole and LecturerProviderRole subclasses, amongst others. These domain Role classes are then linked to the education domain Social Action ontology classes that relate to those domain roles, including classes such as AskQuestionsSocialAction, TakeNotesFromSpeakerSocialAction, and ShowLectureSlidesSocialAction, etc.

There are numerous types of organisation in the world. Organisation types such as: hospitals, shops, restaurants, cinemas, power stations, police, army, schools, colleges, universities, etc. Each of them have their own buildings, roles and sets of social actions. If all the particular organisational domains were exhaustively defined it would very likely involve the definition of many thousands or more, of domain classes and properties. There are also domain extensions which may be common to many organisations, rather than just particular kinds of organisation, for such activities as; eating, drinking, toileting, etc, which we will refer to as Basic Functions. It is not possible to exhaustively define all the domain ontologies so a selection needs to be made. In this case one domain is chosen that of education and within that the domain of the college. The reasons have been stated elsewhere for doing this, in particular its familiarity to both the researcher and to those reading and assessing the research. Within that college education domain selections will also have to be made as it is also not practical in this project to exhaustively define all the classes and properties in each ontology for this domain or for all the domain ontologies. There are broadly two ways of doing the selection the first is to choose a clearly defined subset of the domain ontology and then exhaustively define the classes and properties for that subset. The second alternative when making a selection is try to select across the whole range of the domain in order to increase the representativeness of the selection. Another intermediate option is somewhere between these two options is to select part of the domain as being the most important or relevant domain area and then if an exhaustive definition of the classes and properties in this area is not possible then a representative selection from them will need to be made. How the selection is made for each of the domain ontologies is discussed below in each of the sections relating to particular domain ontologies, where relevant.

Educational Domain

To illustrate the OntoCarer Domain Ontology Extensions, we will extend the ontologies into the Educational Domain, in particular a subset of that which is the College Domain. The organisation to be represented will be that of a college organisation. One of its main purposes will be to provide classes and properties for the software implementation of scenarios that involves planning assistance (the OntoCarer Assistance Lifecycle) for disability in a simulated college microworld involving a small number of agents with differing roles and some differing disabilities and needs for assistance, in order to validate the OntoCarer Ontological Framework. These scenarios and their implementation is described in the following chapter. In addition, another purpose is to demonstrate an example of a set of domain ontology extensions that are an extension to the OntoCarer Ontological Framework top-level ontologies, that demonstrate the applicability and extendability of the top-level ontologies into a set of domain ontologies.

Below are the example domain ontology extensions for each of the ontologies in the OntoCarer Ontological Framework.

7.2 Agent Ontology - Domain Extensions

Agent Ontology – Domain Extensions sub-headings	Page
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Table 7.1 Table mapping Agent Ontology – Domain Extensions sub-headings to pages

Agent Classes – College Domain Extensions

The College Domain Ontology does not add any subclasses to the Agent class or its subclasses of Person class or Automata class (and its subclasses) in the Agent ontology of the OntoCarer Framework. This is because these Agent classifications are invariant and independent of any organisational context. An individual does not change the type of Agent they are according to circumstance but remains a Person or Automata (or one of its variants) throughout its lifespan.

Role classes – College Domain Extensions

The Role class subclasses do vary according to the particular domain organisations they function in, and so the College Domain Ontology adds subclasses to Role and its top-level subclasses. The roles are how the agents exercise their agency within an organisation. The roles are adopted when an agent registers with an organisation. They provide the range of social actions available for each type of role. Those adopted range of actions constitute the range of ‘desires’ for the agent in the context of BDI theory. Though most roles are organisational roles, there are some roles that are independent of particular organisations. These may be roles that constitute basic human activities that take place in many organisational contexts, such as eating, drinking, washing, etc, which are the Basic Function Roles. They may also be roles that are the result of disability, such as being a paraplegic or a deaf person, which exist independently of any organisation, which are the AssistedRoles.

Roles can be adopted and dropped during the lifetime of an agent, and an agent can play multiple roles.

The Role class has seven subclasses that are used to classify other types of roles, these are: AssistedRole, AssisterRole, RoleAssisterRole, ProviderRole, UserRole, BasicFunctionRole, and CooperatorRole.

The RoleAssister class is a subclass of owl:Thing which is used to classify the different types of assistance for roles, and has two subclasses; AssisterRole and RoleAssisterAid. RoleAssisterAid is used to classify assisting aids, which are not roles in themselves. The AssisterRole class is also a subclass of Role and classifies roles that provide assistance to other roles. The AssisterRole class has the subclass RoleAssisterRole which provides assistance to the corresponding role type, for example; EaterBasicFunctionRoleAssisterRole which provides assistance to the EaterBasicFunctionRole.

Role class subclasses

BasicFunctionRole

There may be specific roles that are independent of a particular organisation, though performed in many organisations, and may be performed by users and providers alike. These roles are subclasses of the BasicFunctionRole class. Such roles may include bodily functions such as eating (EaterBasicFunctionRole), drinking (DrinkerBasicFunctionRole), toileting (ToileterBasicFunctionRole), washing (WasherBasicFunctionRole).

BasicFunctionRole – Domain subclasses

Concept	Super-Concept	Definition
EaterBasicFunctionRole	BasicFunctionRole	A role as an eater
DresserBasicFunctionRole	BasicFunctionRole	A role as a dresser
DrinkerBasicFunctionRole	BasicFunctionRole	A role as a drinker
ToileterBasicFunctionRole	BasicFunctionRole	A role as a toileter
WasherBasicFunctionRole	BasicFunctionRole	A role as a washer

Table 7.2 Agent ontology – BasicFunctionRole domain classes table

CooperatorRole – Domain subclasses

A CooperatorRole is a role which depends up the cooperation of another role in order to perform its function. That other cooperator role does not assist the user to perform a role that they cannot perform because of disability, but provides a partner role to enable that role to be effective such as a fellow signer with which to communicate.

Concept	Super-Concept	Definition
SignerCooperatorRole	CooperatorRole	A cooperator role as a signer
SignerTranslatorCooperatorRole	CooperatorRole	A cooperator role as a signer translator

Table 7.3 Agent ontology – CooperatorRole domain subclasses table

UserRole

The UserRole is a role played by an agent as the client of the organisation. It is the role played by agent in making use of the organisation's services. In the case of the College then the user role is the StudentUserRole. It also includes the roles InformationSeekerRole, CafeUserRole, and LibraryUserRole, that a user of a college may perform.

UserRole class – Domain subclasses

Concept	Super-Concept	Definition
StudentUserRole	UserRole	A user role as a student within an organisation
InformationSeekerUserRole	UserRole	A user role as an information seeker within an organisation
CafeUserRole	UserRole	A user role as a customer in a café
LibraryUserRole	UserRole	A user role in a library

Table 7.4 Agent ontology – UserRole domain classes table

ProviderRole

The ProviderRole is a role played by those who work for the organisation, and provide services directly to users, or work in some other capacity for the organisation.

Within the College, the ProviderRole that directly provides services to the user as a student is that of LecturerProviderRole. Though there are many other roles with a college. Some role actors that come into contact with the students, providing other services, and others that work behind the scenes in keeping the college running. These additional ProviderRoles include:

InformationAssistantProviderRole, TechnicianProviderRole, LibraryAssistantProviderRole, WaiterProviderRole, SecurityGuardProviderRole, RegistrarProviderRole, BursarProviderRole.

CareWorkerProviderAssisterRole which is also a subclass of AssisterRole.

CareWorkerProviderAssisterRole is employed to provide assistance in the organisation and can have a number of assisting sub-roles.

This list of ProviderRoles for the education college domain is not exhaustive. There are other college provider roles that could have been included but were not included. Roles such as cleaner, human resource personnel, manager, principal, etc. The criteria for selecting provider roles was the likelihood of the provider role coming into contact with a college user role such as the StudentUserRole., along with selecting the specialist care worker role which is directly relevant to providing assistance to people with disabilities.

ProviderRole – Domain subclasses

Concept	Super-Concept	Definition
LecturerProviderRole	ProviderRole	A provider role as a lecturer in an organisation
InformationAssistantProviderRole	ProviderRole	A provider role as a information assistant in an organisation
LibraryAssistantProviderRole	ProviderRole	A provider role as a library assistant in an organisation
TechnicianProviderRole	ProviderRole	A provider role as a technician in an organisation
CafeAssistantProviderRole	ProviderRole	A provider role as an assistant in a café
SecurityGuardProviderRole	ProviderRole	A provider role as a security guard in an organisation
RegistrarProviderRole	ProviderRole	A provider role as a registrar in an organisation
BursarProviderRole	ProviderRole	A provider role as a bursar in an organisation
CareWorkerProviderAssisterRole	ProviderRole, AssisterRole	A provider whose organisational role is to provide assistance in an organisation

Table 7.5 Agent ontology – ProviderRole domain classes table

RoleAssister

A RoleAssister is something that provides assistance to another role; it enables that role. It is typically providing assistance to a disabled person in carrying out their roles in an organisation. This assistance can take different forms, it may be through a person performing assistance as part of their role such as a care worker, in which case it falls under its subclass AssisterRole, or it may be providing some other kind of assistance to a disabled person with performing their role such as providing a hardware device or software app, for example. In which case it falls under its subclass RoleAssisterAid.

AssisterRole

AssisterRole is a subclass of both the Role class and the RoleAssister class. An AssisterRole is a role whose primary aim is to provides assistance.

AssisterRole – Domain subclasses

Concept	Super-Concept	Definition
CareWorkerProviderAssisterRole	AssisterRole	A provider whose organisational role is to provide assistance in an organisation

Table 7.6 Agent ontology – AssisterRole domain classes table

RoleAssisterRole

RoleAssisterRole is a subclass of AssisterRole and as such is a role and a role assister. A RoleAssisterRole is a role that provides the corresponding assistance to another role, which is what distinguishes it from AssisterRole which does not necessarily correspond to the role it is assisting. A RoleAssisterRole such as EaterRoleAssisterRole provides assistance to the EaterRole. These RoleAssisterRoles are most likely to be deployed to assist the Basic Function roles and those performing UserRoles, but could also be used to assist Providers in their roles.

RoleAssisterRole – Domain subclasses

Concept	Super-Concept	Definition
SignerCooperatorRoleAssisterRole	RoleAssisterRole	A role to assist a signer in an organisation
EaterRoleAssisterRole	RoleAssisterRole	A role to assist an eater in an organisation
DrinkerRoleAssisterRole	RoleAssisterRole	A role to assist a drinker in an organisation
WasherRoleAssisterRole	RoleAssisterRole	A role to assist a washer in an organisation
DeafAssistedRoleAssisterRole	RoleAssisterRole	A role to assist the DeafAssistedRole
CafeAssistantProviderRoleAssisterRole	RoleAssisterRole	A role to assist the CafeAssistantRole
TechnicianProviderRoleAssisterRole	RoleAssisterRole	A role to assist the TechnicianProviderRole
SecurityGuardProviderRoleAssisterRole	RoleAssisterRole	A role to assist the ScrutinyGuardProviderRole
RegistrarProviderRoleAssisterRole	RoleAssisterRole	A role to assist the RegistraProviderRole
LecturerProviderRoleAssisterRole	RoleAssisterRole	A role to assist the LecturerProviderRole
InformationAssistantProviderRoleAssisterRole	RoleAssisterRole	A role to assist the InformationAssistantProvider Role
InformationSeekerUserRoleAssisterRole	RoleAssisterRole	A role to assist an InformationSeeker UserRole
LibraryAssistantProviderRoleAssisterRole	RoleAssisterRole	A role to assist the LibraryAssistantProviderRole
LibraryUserRoleAssisterRole	RoleAssisterRole	A role to assist the LibraryUserRole
CareWorkerProviderRoleAssisterRole	RoleAssisterRole	A role to assist the CareWorkerProviderRole
BursarProviderRoleAssisterRole	RoleAssisterRole	A role to assist the BursarProviderRole
CafeUserRoleAssisterRole	RoleAssisterRole	A role to assist the CafeUserRole
SignerTranslatorCooperatorRoleAssisterRole	RoleAssisterRole	A role to assist the SignerTranslatorRole
StudentUserRoleAssisterRole	RoleAssisterRole	A role to assist the StudentUserRole
InformationSeekerUserRoleAssisterRole	RoleAssisterRole	A role to assist the InformationSeekerUserRole

Table 7.7 Agent ontology – RoleAssisterRole domain classes table

RoleAssisterAid

A RoleAssisterAid is a subclass of RoleAssister. It is something that provides assistance to a role but is not itself a role. This may include; a hardware device, a prosthetic, a software application, etc. The specifics of the type of aid may be included in the text for the data property roleAssisterAidHasInformation.

RoleAssisterAid – Domain subclasses

Concept	Super-Concept	Definition
SignerCooperatorRoleAssisterAid	RoleAssisterAid	An aid to assist a signer in an organisation
EaterRoleAssisterAid	RoleAssisterAid	An aid to assist an eater in an organisation
DrinkerRoleAssisterAid	RoleAssisterAid	A role to assist a drinker in an organisation
WasherRoleAssisterAid	RoleAssisterAid	An aid to assist a washer in an organisation
DeafAssistedRoleAssisterAid	RoleAssisterAid	An aid to assist the DeafAssistedRole
CafeAssistantProviderRoleAssisterAid	RoleAssisterAid	An aid to assist the CafeAssistantProviderRole
TechnicianProviderRoleAssisterAid	RoleAssisterAid	An aid to assist the TechnicianProviderRole
SecurityGuardProviderRoleAssisterAid	RoleAssisterAid	An aid to assist the ScrutinyGuardProviderRole
RegistrarProviderRoleAssisterAid	RoleAssisterAid	An aid to assist the RegistraProviderRole
LecturerProviderRoleAssisterAid	RoleAssisterAid	An aid to assist the LecturerProviderRole
InformationAssistantProviderRoleAssisterAid	RoleAssisterAid	An aid to assist the InformationAssistantProvider Role
InformationSeekerUserRoleAssisterAid	RoleAssisterAid	An aid to assist the InformationSeekerUserRole
CareWorkerProviderAssisterRoleAssisterAid	RoleAssisterAid	An aid to assist the CareWorkerProviderRole
BursarProviderRoleAssisterAid	RoleAssisterAid	An aid to assist the BursarProviderRole
SignerTranslatorCooperatorRoleAssisterAid	RoleAssisterAid	An aid to assist the SignerTranslatorRole
StudentUserRoleAssisterAid	RoleAssisterAid	An aid to assist the StudentUserRole
InformationSeekerUserRoleAssisterAid	RoleAssisterAid	An aid to assist the InformationSeekerUserRole
LibraryAssistantProviderRoleAssisterAid	RoleAssisterAid	An aid to assist the LibraryAssistantProviderRole
LibraryUserRoleAssisterAid	RoleAssisterAid	An aid to assist the LibraryUserRole

Table 7.8 Agent ontology – RoleAssisterAid domain classes table

AssistedRole class

An AssistedRole is a role that one has a result of a disability classification, and may be used to make inferences as to how they affect (impair) other roles and their actions. As one of the student agents in the College microworld is deaf, the DeafAssistedRole is added as a subclass to AssistedRole class.

AssistedRole class – Domain subclasses

Concept	Super-Concept	Definition
DeafAssistedRole	AssistedRole	A role as an assisted deaf person

Table 7.9 Agent ontology – AssistedRole domain classes table

Goal

There are no College Domain Goal subclasses, as the only objects of the intentions in the scenarios are Social Actions.

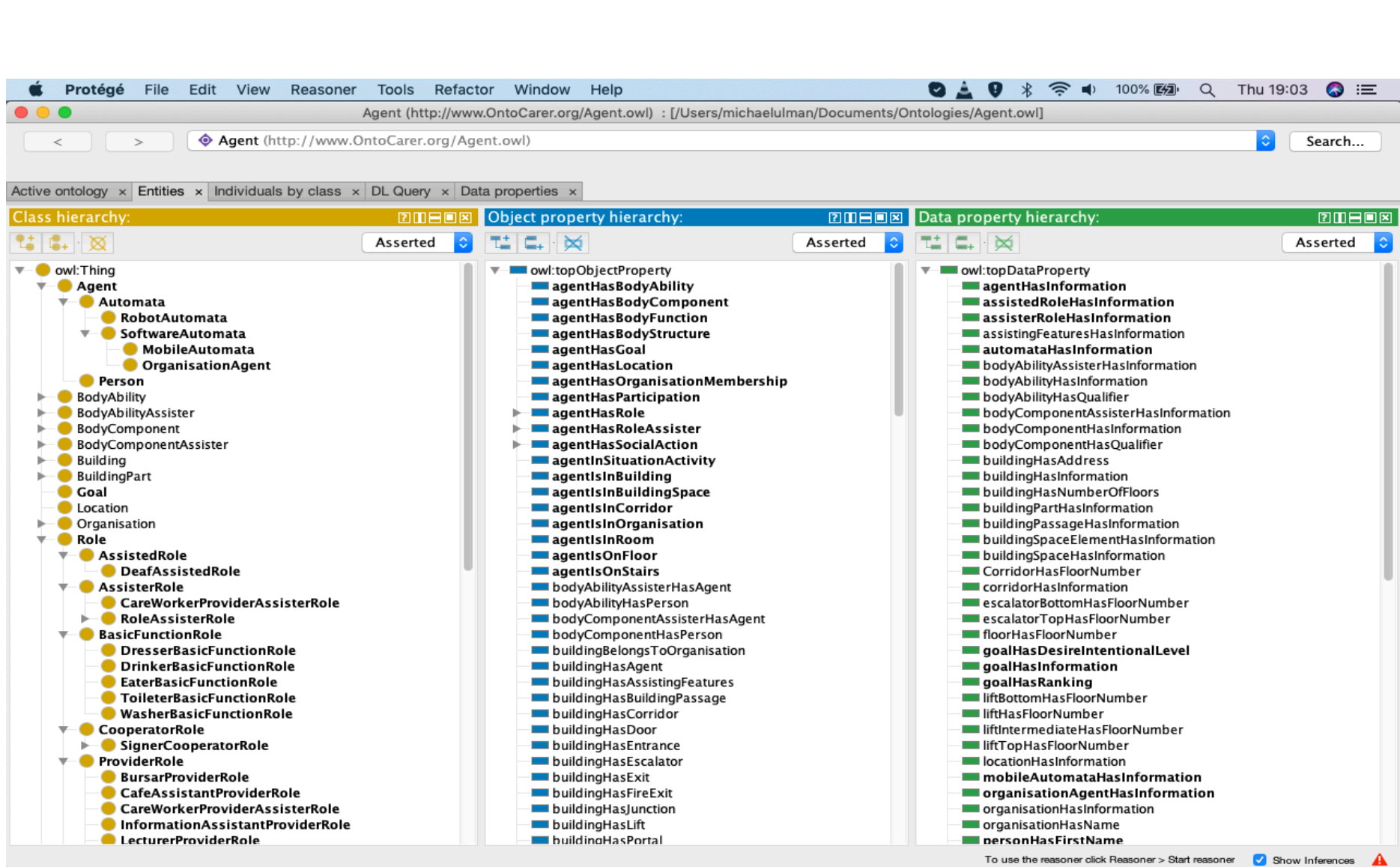


Figure 7.1 Agent ontology with domain extensions – implemented in Protégé

7.3 Body Components Ontology – Domain Extensions

The components of the body do not vary according to the type of organisation. Though, it is possible that the needs for the constituents of a Body Component Ontology may vary according to organisation. With some organisations requiring more or less detailed specifications of body components depending upon their purposes. A hospital organisation is likely to have a need for more body component classifications than a college organisation. A specialised organisation such as an eye hospital is likely to need a limited range of body components in its ontology, though more specialised and detailed in its categories.

The Body Components ontology below with its domain extensions of the two main top-level classes of BodyComponent and BodyComponentAssister, is a sample body component domain ontology, that is used in the College microworld example and its scenarios in the following chapter.

The Body Components domain classes chosen for the ontology is selective and not an exhaustive list of body components. As the set of body components is fixed it would have been possible to have created such a comprehensive list and implemented it as the Body Components top-level ontology. If a comprehensive set of body components was decided on as the best option for the ontology, then another solution more in keeping with the spirit of the Semantic Web is to reuse existing ontologies by linking to them rather than reinventing and duplicating the existing ontologies. This could be done by linking to the Body Structures classifications of the WHO ICF that have been translated into OWL classes and are available at – ‘WHO and The National Center for Biomedical Ontology, 2001’.

These classes can be linked to by the Agent ontology property ‘agentHasBodyStructure’ and the OntoCarer ontologies use ICF compatible qualifiers to indicate the degree of disability of an instance of a body component. An even simpler solution for using these ICF Body Structure OWL classes is just to link to them using the same OntoCarer properties for linking to OntoCarer Body Components classes such as ‘agentHasBodyComponent’, this can be done because the ICF Body Structure classes are not declared as disjoint from the Body Components classes so could be used interchangeably with those ICF classes that represent body components. In the event that some body components not being included in the ICF classifications these could be supplemented by adding other Body Component classes as necessary. This option of using the ICF Body Structure classes in the OntoCarer top-level ontology was not chosen, in order to give the OntoCarer ontologies independence from the ICF and also to allow for the most flexibility in defining the Body Components domain ontologies. It is still an option to use the ICF Body Structures classes in part or full in an OntoCarer Body Components ontology. But other options are available too.

In the OntoCarer Assistance Lifecycle the Body Components do not play a direct functional role in the steps of the Lifecycle. The impairments to the Body Components of individuals are recorded in

the CollegeModel and could be used to provide supplemental information to an assister person in the scenarios if desired.

The example domain Body Components ontology defined below is not exhaustive. There are many body components not included, for example; the kidneys, prostate gland, spleen, etc. The choice of body components was firstly determined by the assistance scenarios to be used for the prototype application. It was essential that the body components included those body components whose impairments were then reflected in the impairments to social action that prompted the cycle of identifying the need for assistance and providing it. For example, the scenario where damaged hands meant that the person was unable to drink from a utensil without assistance, so hands needed to be included in the this Body Components ontology. This applies also to the body components that feature in the other scenarios. Then selection criteria for the other body components selected to be included in this Body Components ontology was on the basis of including those body components most likely to feature in cases of assistance involving impairments to the senses (eyes, ears, nose, etc.) or to motor skills (arms, hands, legs, etc). This is a broad range of body components. This is not intended to be an exhaustive list but one that is sufficient for the prototype, and any not included can be considered outside the scope of the project.

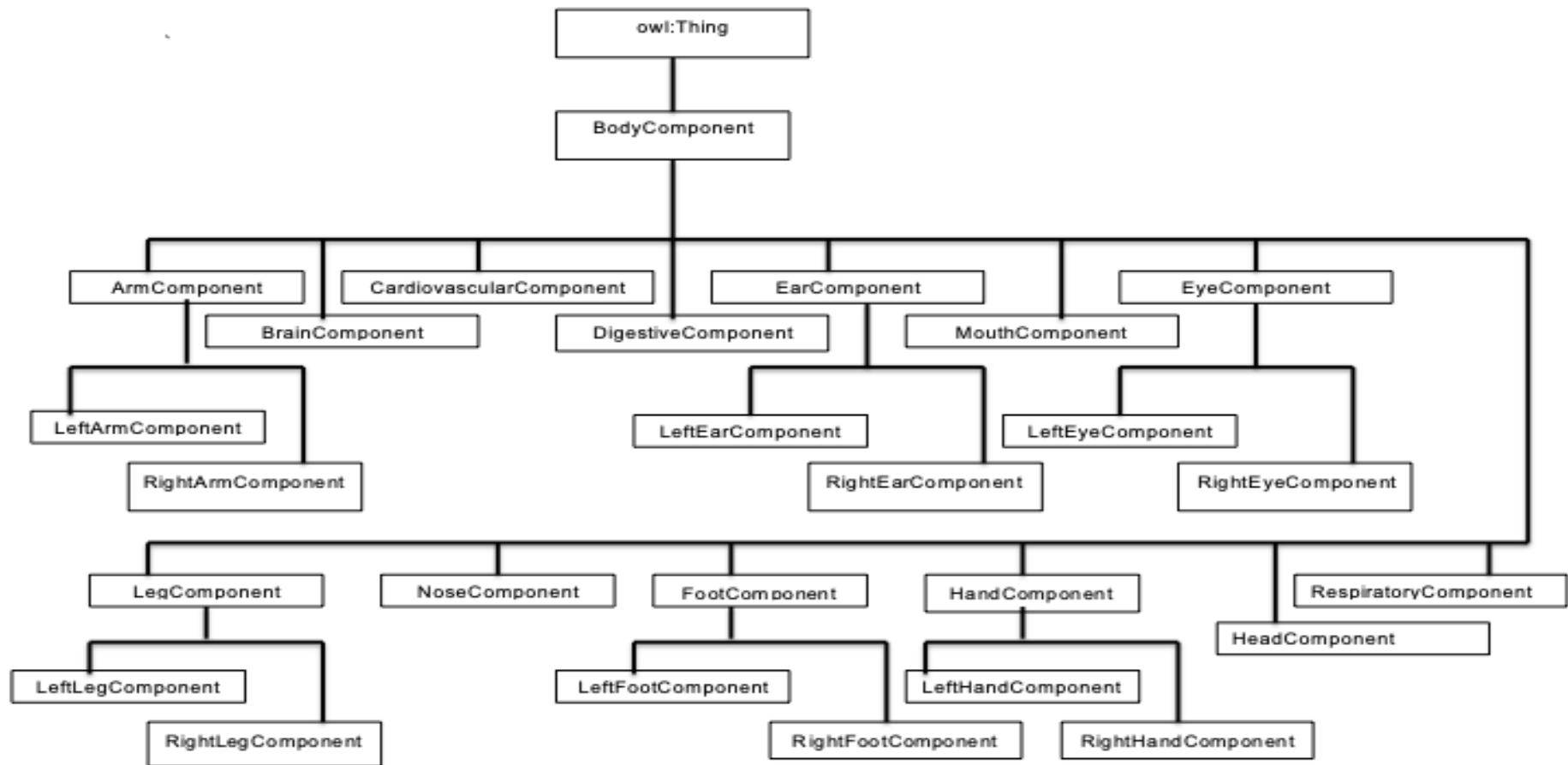


Figure 7.2 Body Components ontology – domain extension class diagram 1

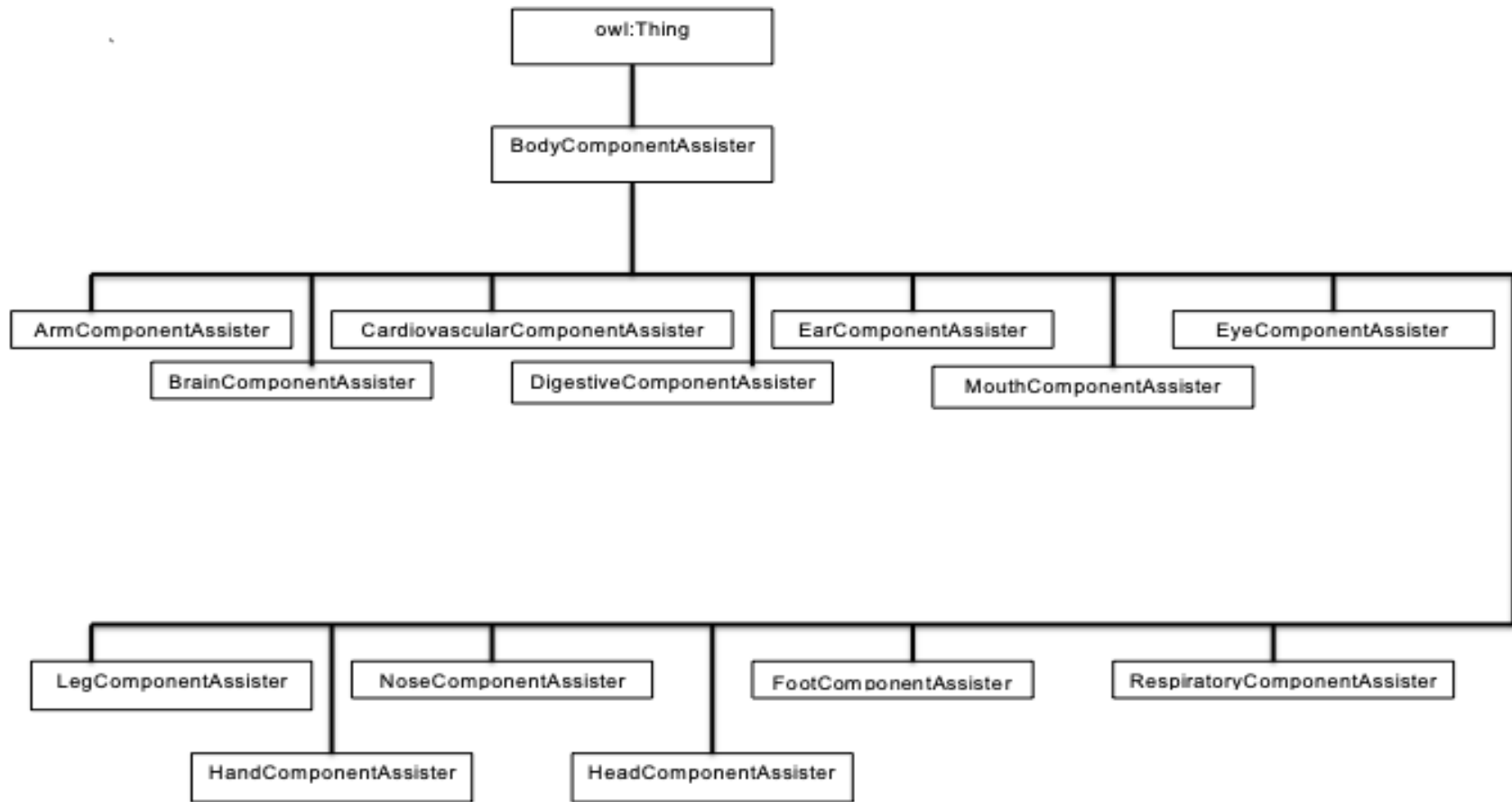


Figure 7.3 Body Components ontology – domain extension class diagram

Body Components – Domain subclasses

Concept	Super-Concept	Definition
BodyComponent	owl:Thing	A physical body part of a human body
ArmComponent	BodyComponent	A human arm
LefArmComponent	ArmComponent	A human left arm
RightArmComponent	ArmComponent	A human right arm
BrainComponent	BodyComponent	A human brain
CardiovascularComponent	BodyComponent	A human cardiovascular part
DigestiveComponent	BodyComponent	A human digestive part
EarComponent	BodyComponent	A human ear
LeftEarComponent	EarComponent	A left ear part
RightEarComponent	EarComponent	A right ear part
EyeComponent	BodyComponent	A human eye
LeftEyeComponent	EyeComponent	A human left eye
RightEyeComponent	EyeComponent	A human right eye
LegComponent	BodyComponent	A human leg
LeftLegComponent	LegComponent	A human left leg
RightLegComponent	LegComponent	A human right leg
FootComponent	BodyComponent	A human foot
LeftFootComponent	FootComponent	A human left foot
RightFootComponent	FootComponent	A human right foot
HandComponent	BodyComponent	A human hand
LeftHandComponent	HandComponent	A human left hand
RightHandComponent	HandComponent	A human right hand
MouthComponent	BodyComponent	A human mouth
NoseComponent	BodyComponent	A human nose
RespiratoryComponent	BodyComponent	A human respiratory part
BodyComponentAssister	owl:Thing	Assistance to a body component
ArmComponentAssister	BodyComponentAssister	An arm assister
BrainComponentAssister	BodyComponentAssister	A brain assister
CardiovascularComponentAssister	BodyComponentAssister	A cardiovascular assister
DigestiveComponentAssister	BodyComponentAssister	A digestive assister
EarComponentAssister	BodyComponentAssister	An ear assister
EyeComponentAssister	BodyComponentAssister	An eye assister
LegComponentAssister	BodyComponentAssister	A leg assister
FootComponentAssister	BodyComponentAssister	A foot assister

MouthComponentAssister	BodyComponentAssister	A mouth assister
NoseComponentAssister	BodyComponentAssister	A nose assister
RespiratoryComponentAssister	BodyComponentAssister	A respiratory assister

Table 7.10 Body Components ontology – domain classes table

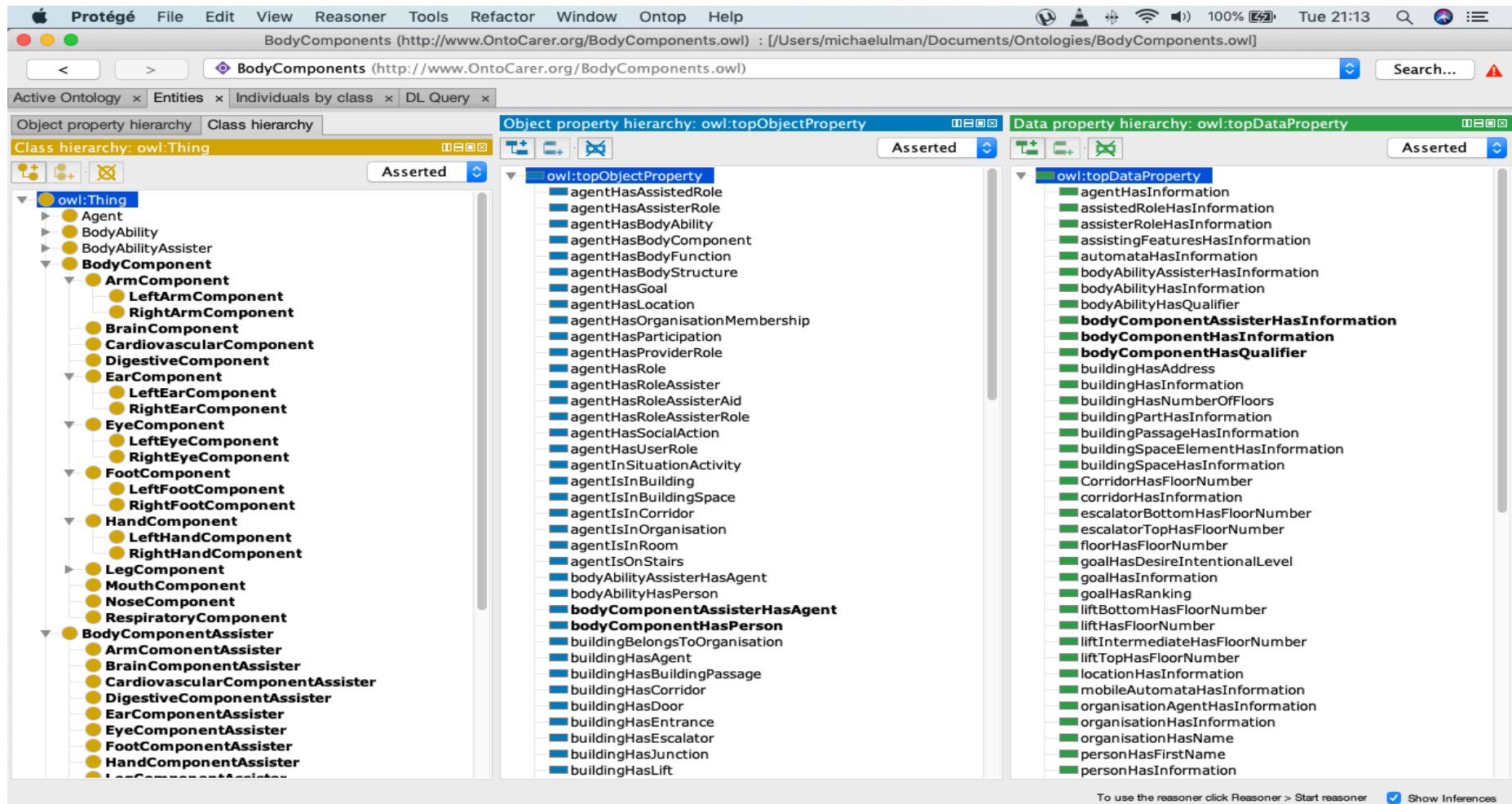


Figure 7.4 Body Components ontology with domain extensions - implemented in Protege

7.4 Body Abilities Ontology – Domain Extensions

Just as the components of the body do not vary according to the type of organisation, the same is true of the body abilities. Though, it is also possible that the needs of a Body Abilities ontology may vary according to organisation. With some organisations requiring more or less detailed specifications of body abilities depending upon their purposes.

The same considerations that apply to the domain Body Components ontology above also apply to the domain Body Abilities ontology.

The Body Abilities Ontology below with its domain extensions of the two main top-level classes of BodyAbility and BodyAbilityAssister, is a sample body abilities domain ontology, that is used in the College microworld example and its scenarios in the following chapter.

The Body Abilities domain classes chosen are a selective list and not an exhaustive list of such body abilities. We can take the set of body abilities to be fixed or at least largely invariant over time. As such it would have been possible to have defined such a comprehensive list and made this the Body Abilities top-level ontology. Rather than create such a list from scratch an option would be to re-use an already well defined and comprehensive set of such classifications in WHO ICF in their Body Functions classifications. This has also been translated into set of OWL classes which can be linked to and incorporated into use with another OWL ontology. The classes could be linked to using the OntoCarer property ‘agentHasBodyFunction’, or as the ICF Body Structures classes have not been made disjoint from the OntoCarer classes then using the ‘agentHasBodyAbility’ property where the ICF Body Functions classes are used interchangeably with the Body Abilities classes. The option of using the ICF Body Functions classes for a comprehensive top-level Body Abilities ontology was not chosen in order to provide a simpler top-level ontology of a few classes that would give the OntoCarer Body Abilities ontology independence from the ICF and also give it flexibility in defining the domain level ontologies. These domain level Body Abilities ontologies could be as complex or as simple as were needed in order to provide assistance in their respective organisational domains.

The Body Abilities do not play a direct functional role in the OntoCarer Assistance Lifecycle. The impairments of the Body Abilities are recorded in the person’s profiles and can be used to provide supplemental information to an assister if needed.

The example Body Abilities ontology defined below is not exhaustive. There are other body abilities that could have been included, such as: digestive ability, heart functions abilities, procreation abilities, haematological systems abilities, emotional processing abilities, etc. The selection of body abilities to be included was determined principally by the assistance scenarios used for the prototype application. Those assistance scenarios were themselves selected to include a range of disabilities and impairments across a range of roles and individuals in the organisation, but could not be exhaustive for practical and resource reasons. It was essential that the body abilities chosen included those body

abilities whose impairments were then reflected in the impairments to social action that initiated the cycle of identifying the need for assistance and then going on to provide that assistance. The selection of the other body abilities was across a range from the cognitive (ThinkingAbility) , to those involving the exercise of motor skills (WalkingAbility, ArmMovementAbility, etc.) to sensory abilities (SeeingAbility, HearingAbility, etc.). This is a selective list from what is a broad range of candidate classes. This is not intended to be an exhaustive list but one that is sufficient for the prototype, and any not included can be considered outside of the scope of this particular domain ontology.

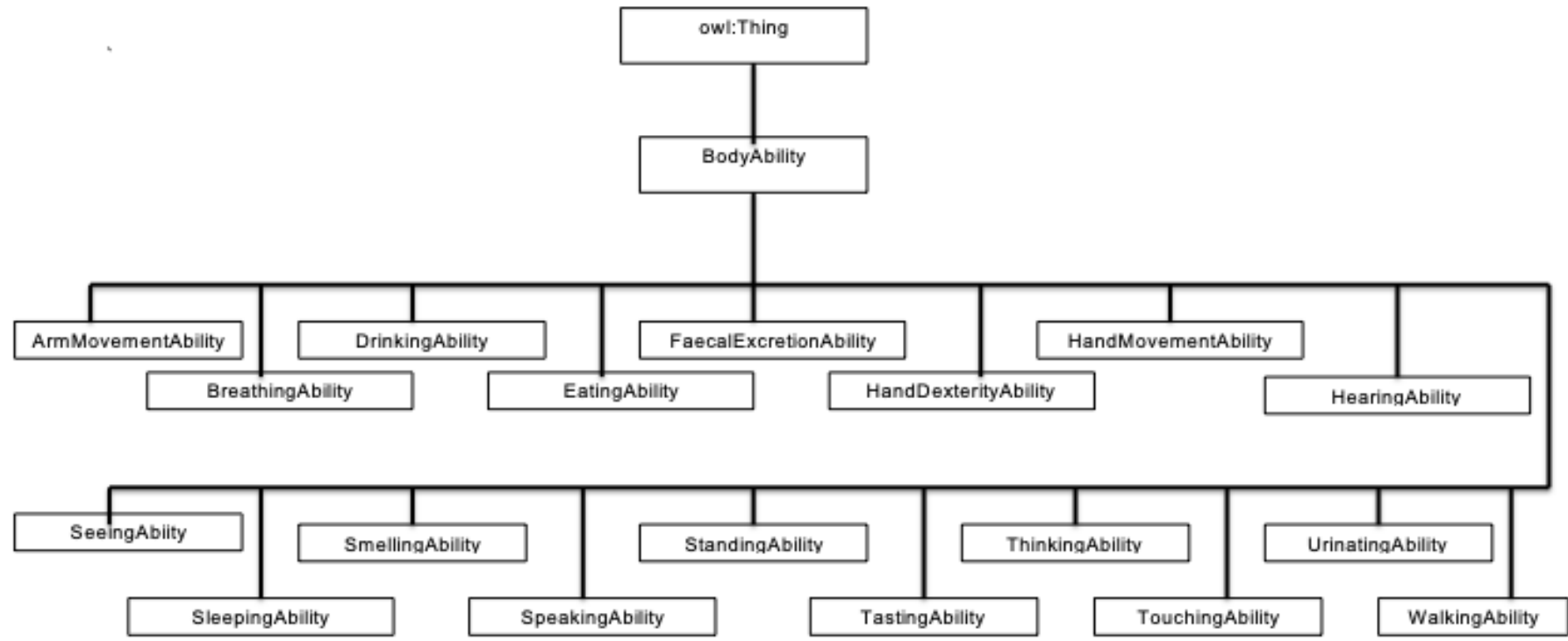


Figure 7.5 Body Abilities ontology – domain extension class diagram 1

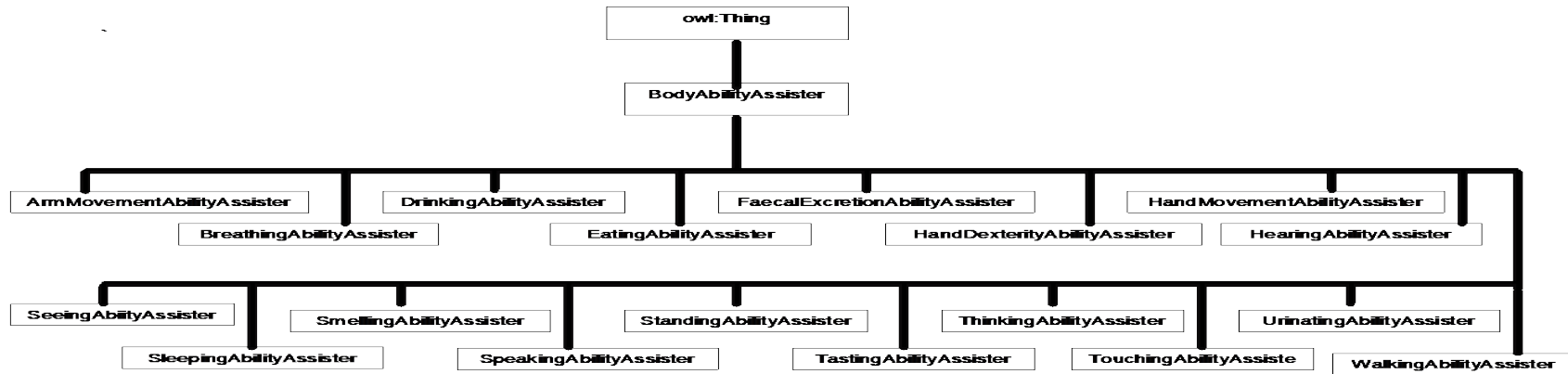


Figure 7.6 Body Abilities ontology – domain extension class diagram 2

Body Abilities – Domain subclasses

Concept	Super-Concept	Definition
BodyAbility	owl:Thing	A functional ability of a body part
ArmMovementAbility	BodyAbility	Ability of an arm to move
BreathingAbility	BodyAbility	Ability to breathe
DrinkingAbility	BodyAbility	Ability to drink
EatingAbility	BodyAbility	Ability to eat
FaecalExcretionAbility	BodyAbility	Ability to excrete faeces
HandDexterityAbility	BodyAbility	Dexterity of the hand
HandMovementAbility	BodyAbility	Ability to move a hand
HearingAbility	BodyAbility	Ability to hear
SeeingAbility	BodyAbility	Ability to see
SleepingAbility	BodyAbility	Ability to sleep
SmellingAbility	BodyAbility	Ability to smell
SpeakingAbility	BodyAbility	Ability to speak
StandingAbility	BodyAbility	Ability to stand
TastingAbility	BodyAbility	Ability to taste
ThinkingAbility	BodyAbility	Ability to think
TouchingAbility	BodyAbility	Ability to touch
UrinatingAbility	BodyAbility	Ability to urinate
WalkingAbility	BodyAbility	Ability to walk
BodyAbilityAssister	owl:Thing	Functional assister to a body ability
ArmMovementAbilityAssister	BodyAbilityAssister	Functional assister for an arm movement
BreathingAbilityAssister	BodyAbilityAssister	Functional assister for breathing
DrinkingAbilityAssister	BodyAbilityAssister	Functional assister for drinking
EatingAbilityAssister	BodyAbilityAssister	Functional assister for eating
FaecalExcretionAbilityAssister	BodyAbilityAssister	Functional assister for faecal excretion
HandDexterityAbilityAssister	BodyAbilityAssister	Functional assister for hand dexterity
HandMovementAbilityAssister	BodyAbilityAssister	Functional assister for hand movement
HearingAbilityAssister	BodyAbilityAssister	Functional assister for hearing
SeeingAbilityAssister	BodyAbilityAssister	Functional assister for seeing
SleepingAbilityAssister	BodyAbilityAssister	Functional assister for sleeping
SmellingAbilityAssister	BodyAbilityAssister	Functional assister for smelling
SpeakingAbilityAssister	BodyAbilityAssister	Functional assister for speaking
StandingAbilityAssister	BodyAbilityAssister	Functional assister for standing
TastingAbilityAssister	BodyAbilityAssister	Functional assister for tasting
ThinkingAbilityAssister	BodyAbilityAssister	Functional assister for thinking
TouchingAbilityAssister	BodyAbilityAssister	Functional assister for touching
UrinatingAbilityAssister	BodyAbilityAssister	Functional assister for urinating
WalkingAbilityAssister	BodyAbilityAssister	Functional assister for walking

Table 7.11 Body Abilities ontology – domain classes table

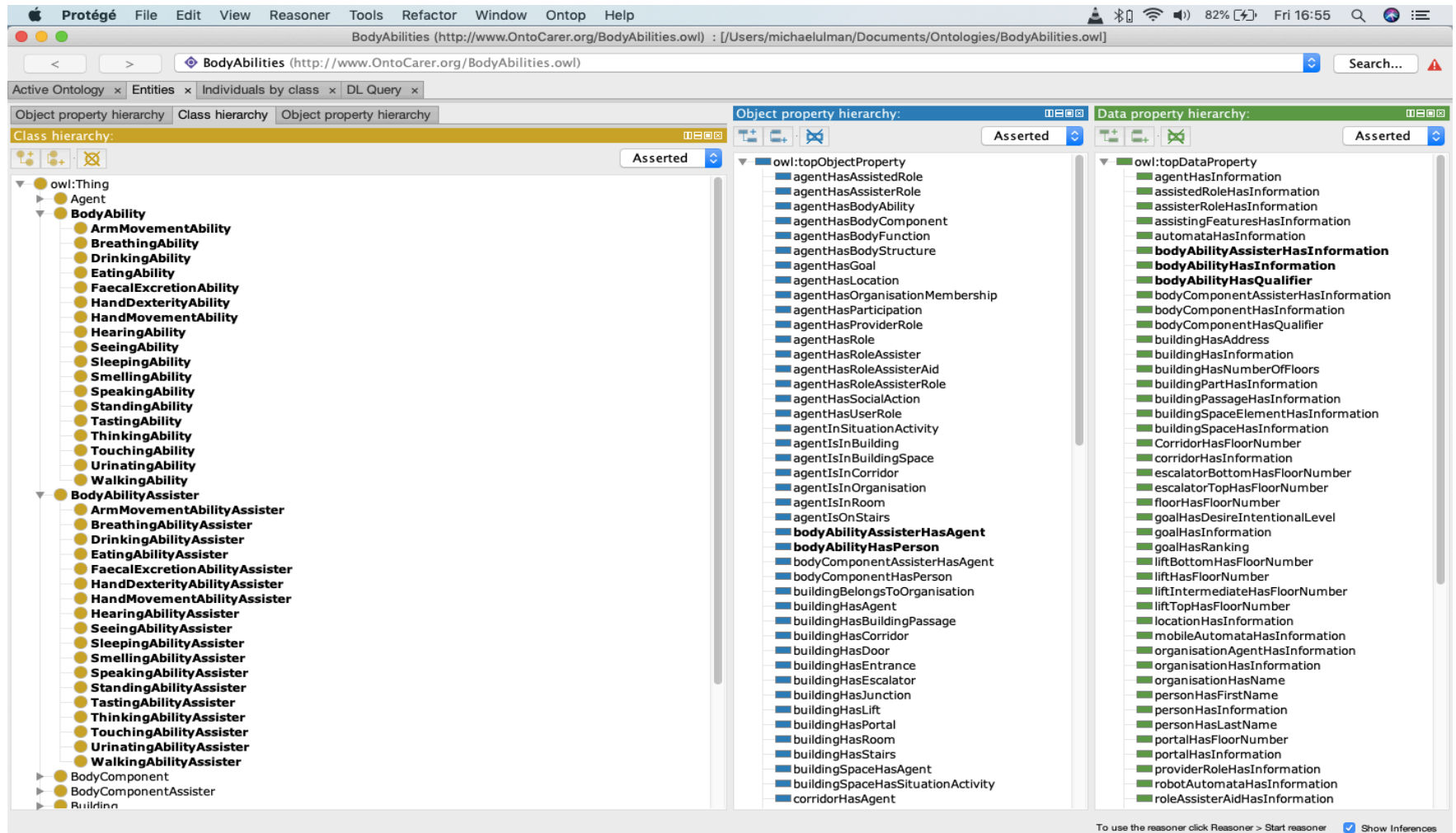


Figure 7.7 Body Abilities ontology with domain extensions – implemented in Protege

7.5 Social Action Ontology – Domain Extensions

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Basic Function Roles & AssisterAids	187
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Table 7.12 Table mapping Social Action Domain Ontology sub-headings to pages

The Social Action Ontology is comprised of social actions and their assisters. Social actions are actions whose content is determined by their social context. That is they are actions whose intent is to achieve some aim within a role, which is usually a role within an organisation. The top level SocialAction ontology classes are SocialAction and SocialActionAssister with the SocialActionAssisterAction class being a subclass of these two classes. The SocialActionAssisterAid class is a subclass of the SocialActionAssister class. All the particular subclasses of these four classes belong to the domain extensions.

The particular social actions are associated with particular roles, but are independent of those roles. Each role has an associated set of Social Actions classes that fulfill that role. A particular Social Action class can be a part of a number of different roles. In the tables of Social Actions below, the roles are included for explanatory purposes to show which roles the social actions are associated with.

It is not possible to specify all the possible social actions for the roles included in this education college domain. The roles included as specified in the domain Agent ontology was selective for practical reasons. Similarly the range of social actions that are included for the selected roles will also have to be selective for practical reasons given the time and resources for this project. The social actions chosen are ones that are considered typical of the role and ones that may be most relevant for scenarios of assistance. The other potential social actions that might have been included in the Social Action domain ontology but are not included are considered outside the scope of this particular domain ontology.

The diagrams and tables below describe the Social Action classes in the context of the Roles and AssisterAids which they belong to.

The domain roles and AssisterAids that are included in the domain ontology extensions for Social Actions are:

Basic Function Roles & AssisterAids

- EaterBasicFunctionRole, DresserBasicFunctionRole, WasherBasicFunctionRole, ToileterBasicFunctionRole
- EaterBasicFunctionRoleAssisterRole, DresserBasicFunctionRoleAssisterRole, WasherBasicFunctionRoleAssisterRole, ToileterBasicFunctionRoleAssisterRole
- EaterAssisterAids, DresserAssisterAids, WasherAssisterAids, ToileterAssister-Aids

The Basic Function Assister Roles may be combined in a single role in an organisation, as a CareAssisterRole.

Education Roles & AssisterAids

- StudentUserRole, LecturerProviderRole
- StudentUserRoleAssisterRole, LecturerProviderRoleAssisterRole
- StudentAssisterAids, LecturerAssisterAids

Adminstration & Support Roles & AssisterAids

- LibraryAssistantProviderRole, CafeAssistantProviderRole, RegistrarProviderRole, InformationAssistantProviderRole, SecurityGuardProviderRole, TechnicianProviderRole
- LibraryAssistantProviderRoleAssisterRole, CafeAssistantProviderRoleAssisterRole, RegistrarProviderRoleAssisterRole, InformationAssistantProviderRoleAssisterRole, SecurityGuardProviderRoleAssisterRole, TechnicianProviderRoleAssisterRole
- LibraryAssistant-AssisterAids, CafeAssistant-AssisterAids, Registrar-AssisterAids, InformationAssistant-AssisterAids, SecurityGuard-AssisterAids, TechnicianProvider-AssisterAids

User Roles for Support Services & Assister Aids

- InforomationSeekerUserRole, LibraryUserRole, CafeUserRole
- InforomationSeekerUserRoleAssisterRole, LibraryUserRoleAssisterRole, CafeUserRoleAssisterRole
- InforomationSeeker-AssisterAids, LibraryUser-AssisterAids, CafeUser-AssisterAids

SignerRole and Signer Translator Role & Assister Aids

- SignerCooperatorRole, SignerCooperatorTranslator Role
- SignerCooperatorRoleAssisterRole, SignerTranslatorCooperatorRoleAssisterRole
- SignerCooperatorRoleAssisterAids, SignerTranslatorCooperatorRoleAssisterAids

To illustrate the sets of Social Actions in the above sets of domain Social Actions, we show below the class diagrams and Social Action tables for the Student and Lecturer Education Roles and their Assister Aids. The full set of diagrams and tables for all the domain Social Actions for the above roles and AssisterAids not in this chapter are included in Appendix H Domain ontology - Social Action and OntoCarer-Link-Ontology additional definitions

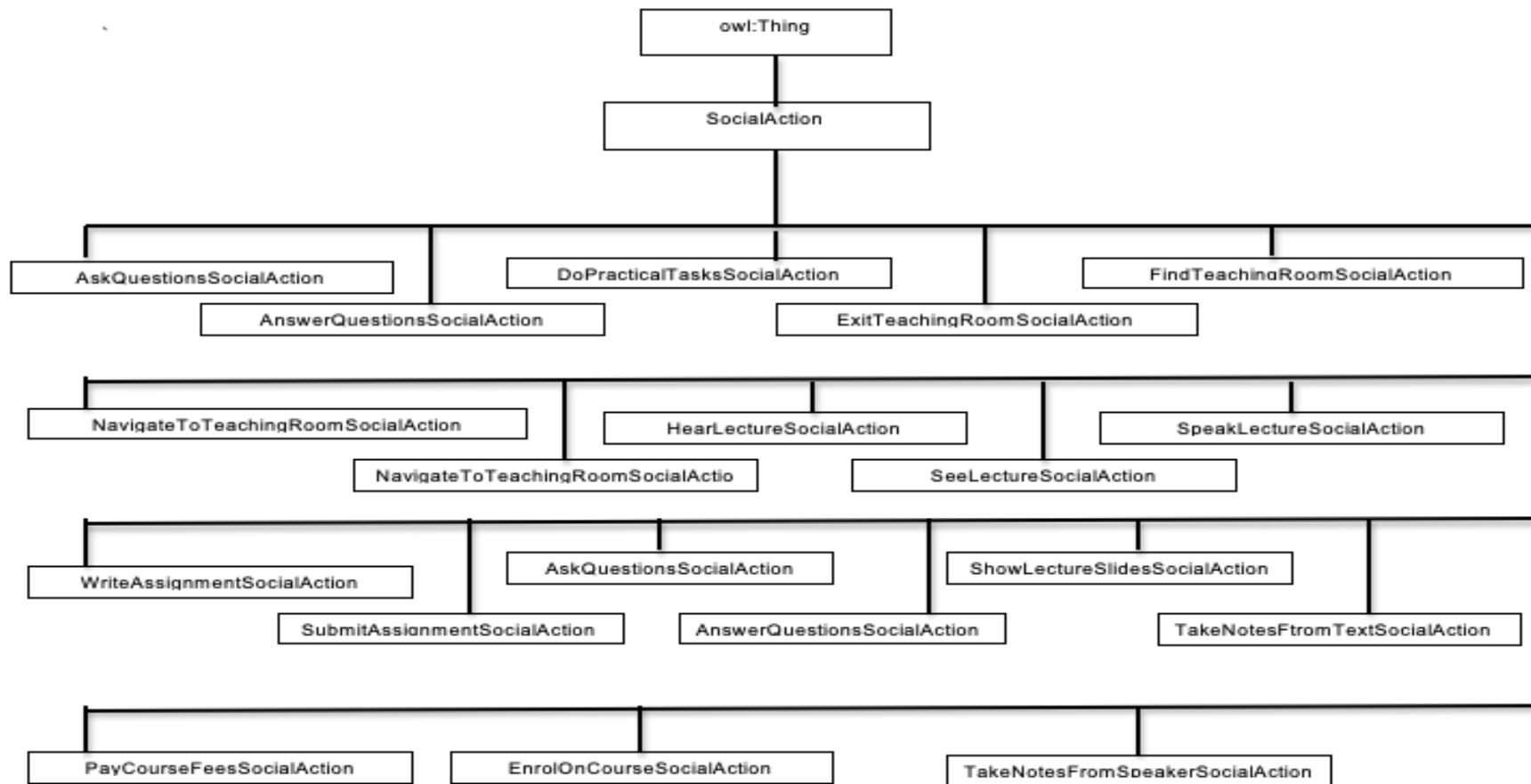


Figure 7.8 Social Action ontology – Education Roles Social Action domain extensions - class diagram

SocialActions for Education Roles

Role	Concept	Super-Concept	Definition
StudentUserRole	AskQuestionsSocialAction	SocialAction	Action to ask questions
StudentUserRole	AnswerQuestionsSocialAction	SocialAction	Action to answer questions
StudentUserRole	DoPracticalTasksSocialAction	SocialAction	Action to do practical tasks
StudentUserRole	ExitTeachingRoomSocialAction	SocialAction	Action to exit teaching room
StudentUserRole	FindTeachingRoomSocialAction	SocialAction	Action to find teaching room
StudentUserRole	NavigateToTeachingRoomSocialAction	SocialAction	Action to navigate to teaching room
StudentUserRole	HearLectureSocialAction	SocialAction	Action to hear a lecture
StudentUserRole	SeeLectureSocialAction	SocialAction	Action to see a lecture
StudentUserRole	TakeNotesFromTextSocialAction	SocialAction	Action to take notes from a text
StudentUserRole	TakeNotesFromSpeakerSocialAction	SocialAction	Action to take notes from a speaker
StudentUserRole	WriteAssignmentSocialAction	SocialAction	Action to write an assignment
StudentUserRole	PayCourseFeesSocialAction	SocialAction	Action to pay course fees
StudentUserRole	EnrolOnCourseSocialAction	SocialAction	Action to enrol on a course
StudentUserRole	SubmitAssignmentSocialAction	SocialAction	Action to submit an assignment
LecturerProviderRole	AskQuestionsSocialAction	SocialAction	Action to ask questions
LecturerProviderRole	AnswerQuestionsSocialAction	SocialAction	Action to answer questions
LecturerProviderRole	ShowLectureSlidesSocialAction	SocialAction	Action to show lecture slides
LecturerProviderRole	SpeakLectureSocialAction	SocialAction	Action to speak a lecture

Table 7.13 Education Roles - Social Action domain extensions table

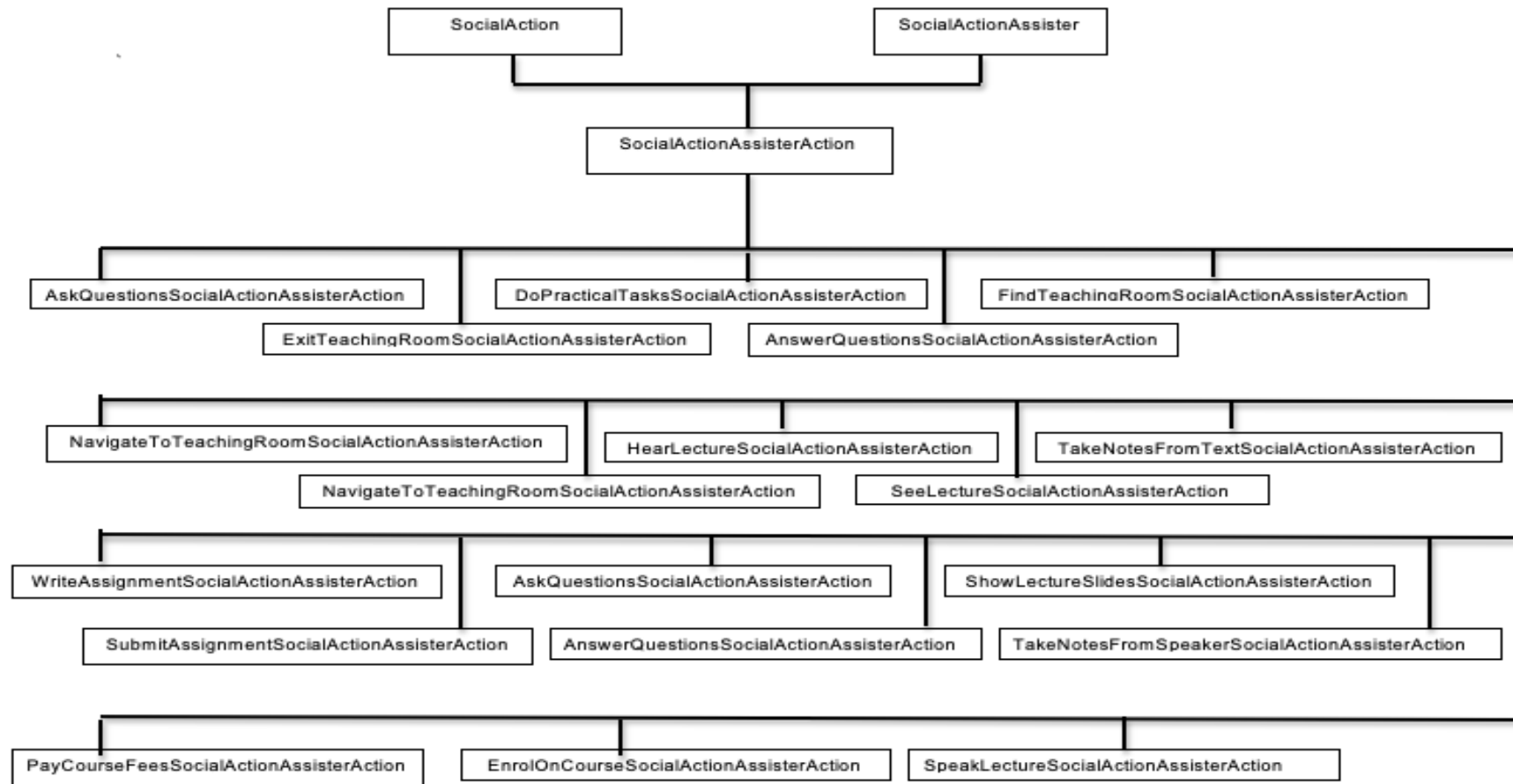


Figure 7.9 Social Action ontology – Education Assister Roles - Social Action Assister Actions domain extensions - class diagram

SocialActionAssisterActions for Education - AssisterRoles

Role	Concept	Super-Concept	Definition
StudentUserRoleAssisterRole	AskQuestionsSocialActionAssisterAction	SocialActionAssisterAction	Action to assist in asking questions
StudentUserRoleAssisterRole	AnswerQuestionsSocialActionAssisterAction	SocialActionAssisterAction	Action to assist in answering questions
StudentUserRoleAssisterRole	DoPracticalTasksSocialActionAssisterAction	SocialActionAssisterAction	Action to assist in doing practical tasks
StudentUserRoleAssisterRole	ExitTeachingRoomSocialActionAssisterAction	SocialActionAssisterAction	Action to assist in exiting the teaching room
StudentUserRoleAssisterRole	FindTeachingRoomSocialActionAssisterAction	SocialActionAssisterAction	Action to assist in finding the teaching room
StudentUserRoleAssisterRole	NavigateToTeachingRoomSocialActionAssisterAction	SocialActionAssisterAction	Action to assist navigating to teaching room
StudentUserRoleAssisterRole	HearLectureSocialActionAssisterAction	SocialActionAssisterAction	Action to assist in hearing a lecture
StudentUserRoleAssisterRole	SeeLectureSocialActionAssisterAction	SocialActionAssisterAction	Action to assist in seeing a lecture
StudentUserRoleAssisterRole	TakeNotesFromTextSocialActionAssisterAction	SocialActionAssisterAction	Action to assist taking notes from a text
StudentUserRoleAssisterRole	TakeNotesFromSpeakerSocialActionAssisterAction	SocialActionAssisterAction	Action to assist taking notes from a speaker
StudentUserRoleAssisterRole	WriteAssignmentSocialActionAssisterAction	SocialActionAssisterAction	Action to assist in write assignment
StudentUserRoleAssisterRole	PayCourseFeesSocialActionAssisterAction	SocialActionAssisterAction	Action to assist a student paying course fees
StudentUserRoleAssisterRole	EnrolOnCourseSocialActionAssisterAction	SocialActionAssisterAction	Action to assist a student in enrolling on a course
StudentUserRoleAssisterRole	SubmitAssignmentSocialActionAssisterAction	SocialActionAssisterAction	Action to assist in submitting assignments
LecturerProviderRoleAssisterRole	AskQuestionsSocialActionAssisterAction	SocialActionAssisterAction	Action to assist in asking questions
LecturerProviderRoleAssisterRole	AnswerQuestionsSocialActionAssisterAction	SocialActionAssisterAction	Action to assist in answering questions
LecturerProviderRoleAssisterRole	ShowLectureSlidesSocialActionAssisterAction	SocialActionAssisterAction	Action to assist in showing lecture slides
LecturerProviderRoleAssisterRole	SpeakLectureSocialActionAssisterAction	SocialActionAssisterAction	Action to assist in speaking lecture

Table 7.14 Education Assister Roles - SocialAction Assister Actions domain extensions table

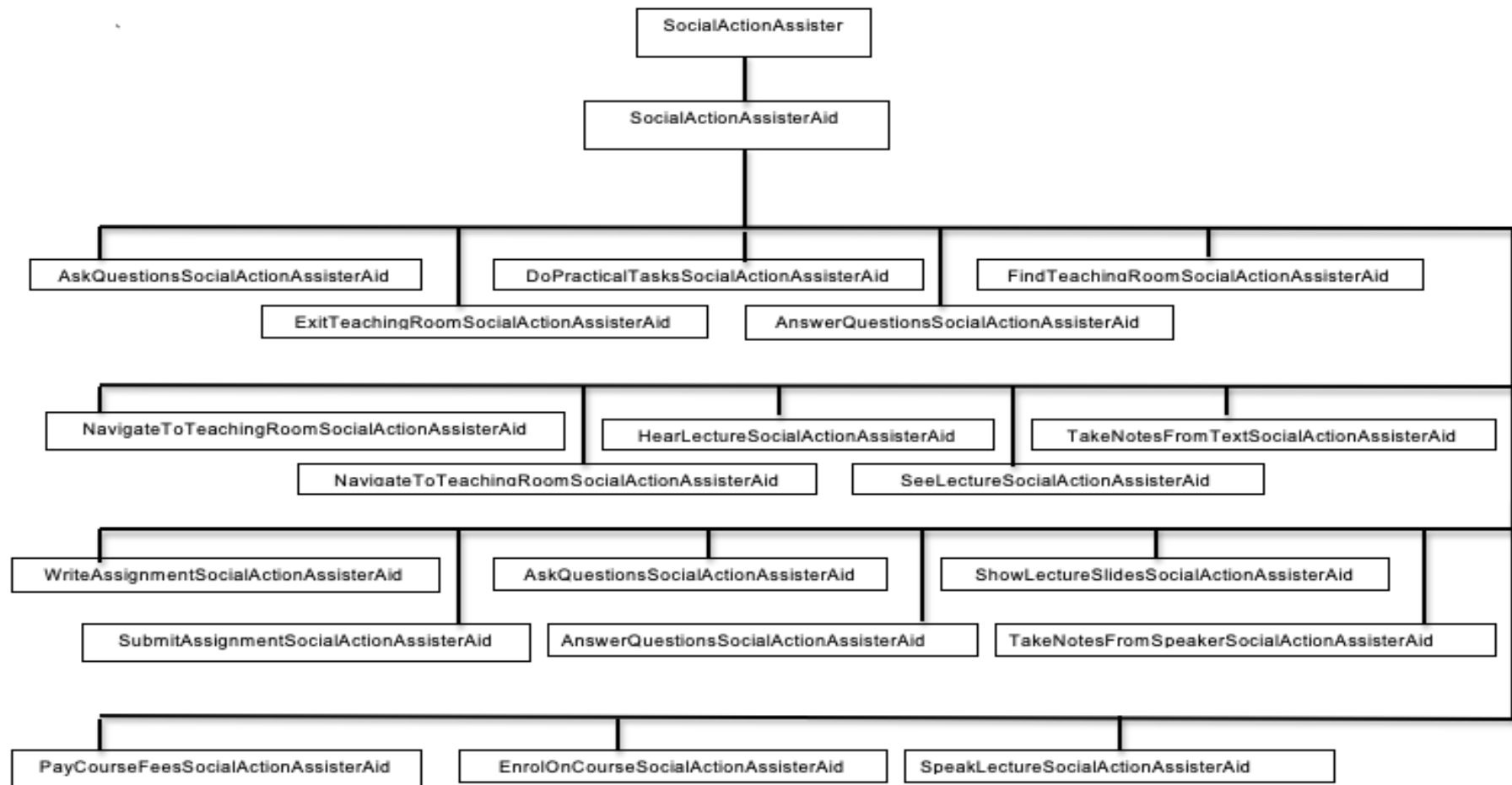


Figure 7.10 Social Action ontology – Social Action Assister Aids – domain extension – class diagram

SocialActionAssisterAid classes for Education Roles

Role (assisted by Aid)	Concept	Super-Concept	Definition
StudentUserRole	AskQuestionsSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in asking questions
StudentUserRole	AnswerQuestionsSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in answering questions
StudentUserRole	DoPracticalTasksSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in doing practical tasks
StudentUserRole	ExitTeachingRoomSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in exiting the teaching room
StudentUserRole	FindTeachingRoomSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in finding the teaching room
StudentUserRole	NavigateToTeachingRoomSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist navigating to teaching room
StudentUserRole	HearLectureSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in hearing a lecture
StudentUserRole	SeeLectureSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in seeing a lecture
StudentUserRole	TakeNotesFromTextSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist taking notes from a text
StudentUserRole	TakeNotesFromSpeakerSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist taking notes from a speaker
StudentUserRole	WriteAssignmentSocialActionAssister	SocialActionAssisterAid	Aid to assist in write assignment
StudentUserRole	PayCourseFeesSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist a student paying course fees
StudentUserRole	EnrolOnCourseSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist a student in enrolling on a course
StudentUserRole	SubmitAssignmentSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in submitting assignments
LecturerProviderRole	AskQuestionsSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in asking questions
LecturerProviderRole	AnswerQuestionsSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in answering questions
LecturerProviderRole	ShowLectureSlidesSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in showing lecture slides
LecturerProviderRole	SpeakLectureSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in speaking lecture

Table 7.15 Education Roles - SocialAction Assister Aids domain extensions table

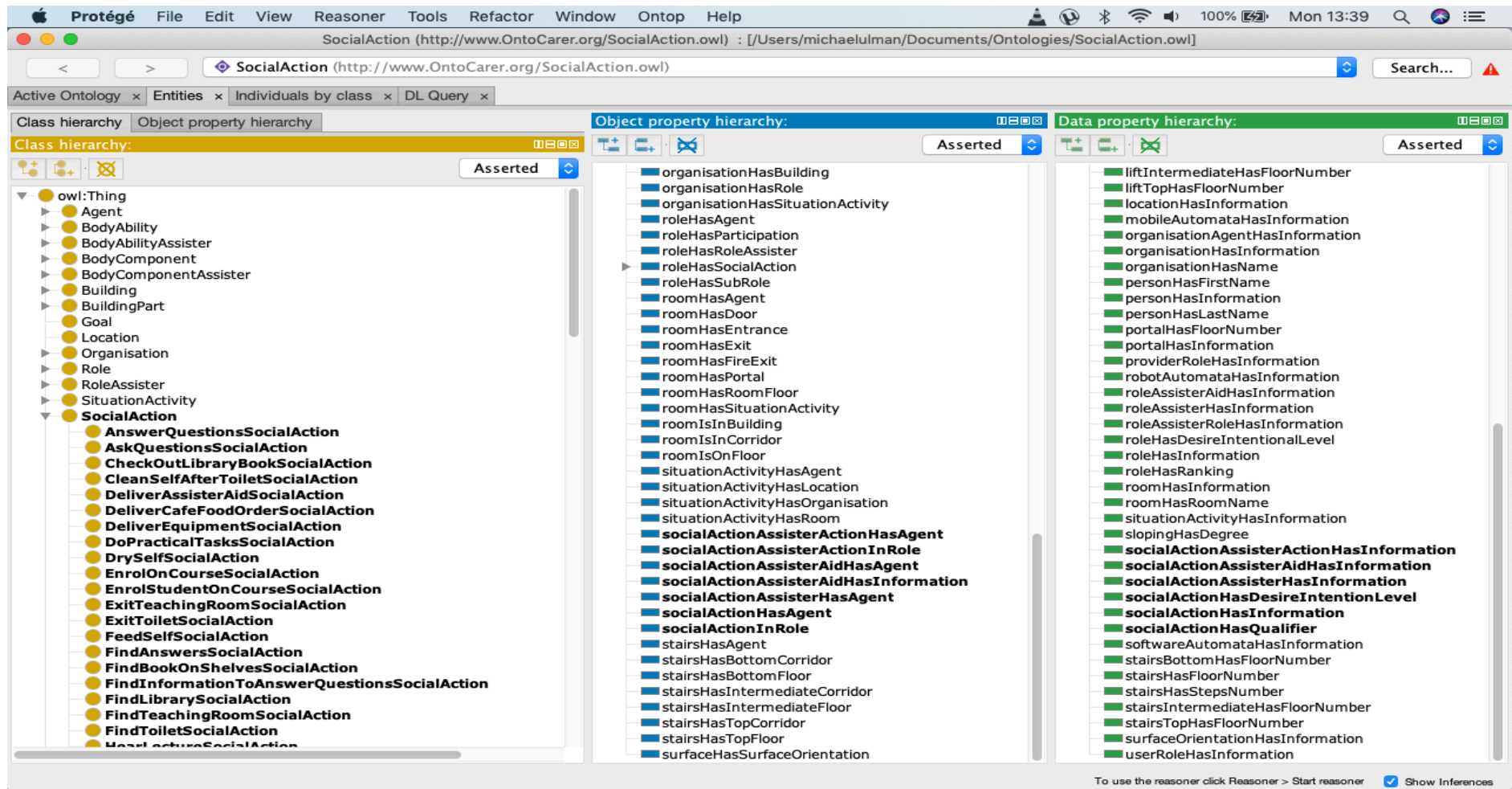


Figure 7.11 Social Action ontology with domain extensions implemented in Protege

7.6 Buildings Ontology - Domain Extensions

The Buildings ontology contains four classes at the top of the Buildings Ontology class hierarchy, under the owl:Thing class. These classes are Location, SurfaceOrientation, Building and BuildingPart. Of these classes only some of the subclasses of the Building and BuildingPart are extended in the College Domain extensions. The classes that are extended are Building, and the Room class which is a direct subclass of BuildingSpace, which is a subclass of BuildingPart.

The domain Buildings ontology scope in this case is to have a sufficient range of classes as to be able to construct a model of a college building that may be considered representative of a real college building and one that can play a role in the simulation of such a college, its building and activities. There could be other classes that could have been included in this domain ontology such as different college rooms that were not represented. Those other potential classes can be considered outside the scope of this particular domain ontology.

The Building class has the subclass CollegeBuilding. The Room class has a number of classes for the different types of room that may be found in a college building, which are detailed below.

Building class – Education Domain subclasses

Concept	Super-Concept	Definition
CollegeBuilding	Building	A building for a college
SchoolBuilding	Building	A building for a school
PrimarySchoolBuilding	SchoolBuilding	A building for a primary school
JuniorSchoolBuilding	SchoolBuilding	A building for a junior school
SecondarySchoolBuilding	SchoolBuilding	A building for a secondary school
UniversityBuilding	Building	A building for a university

Table 7.16 Buildings ontology – Building class education domain extensions table

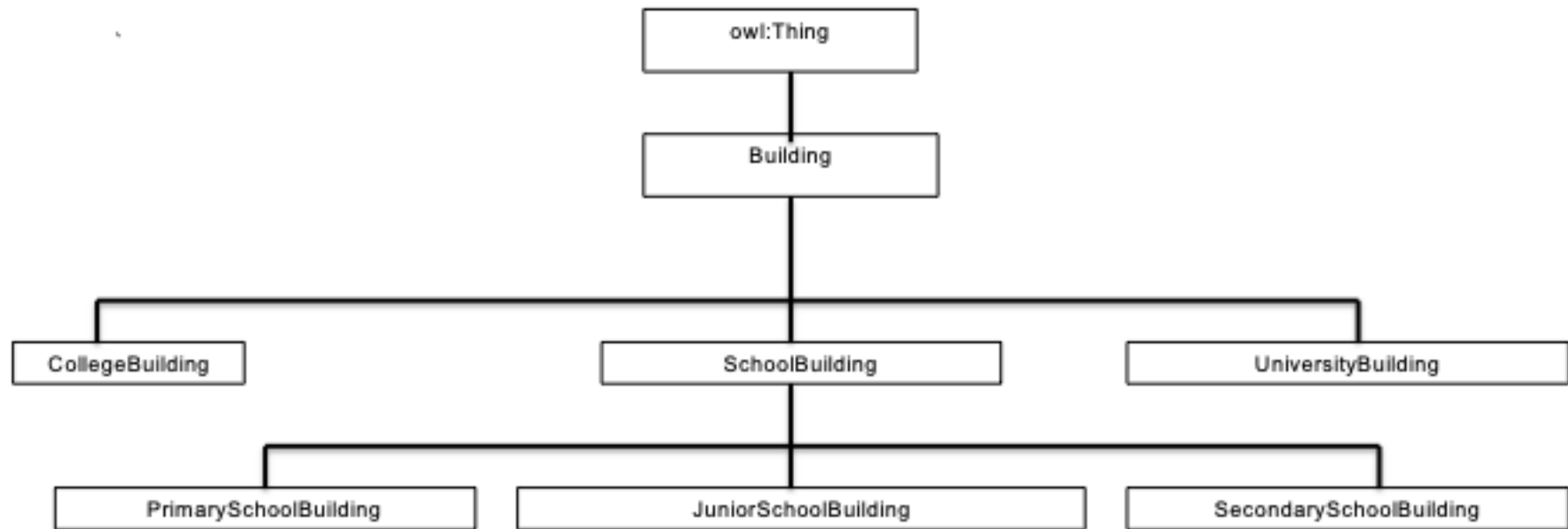


Figure 7.12 Buildings ontology – Building class – domain extensions – class diagram

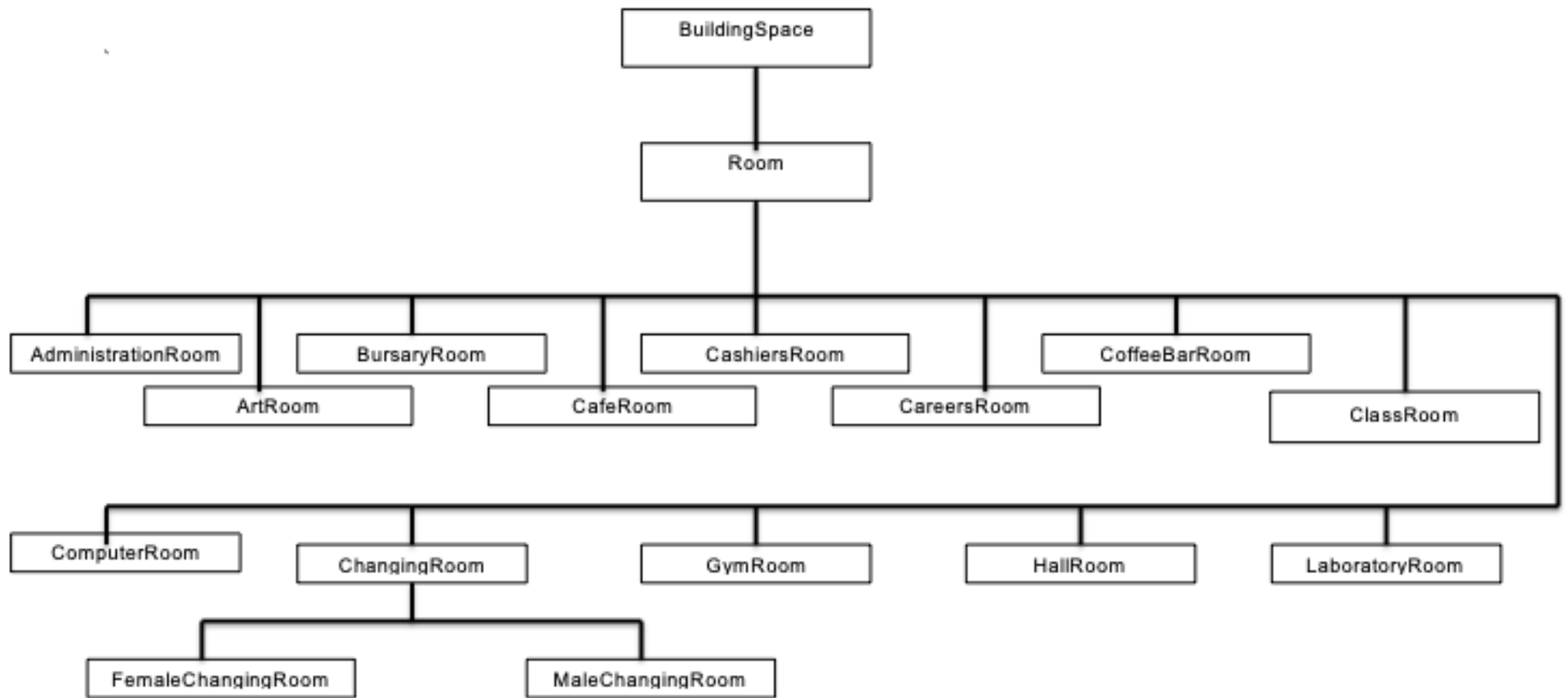


Figure 7.13 Buildings ontology – Room class – domain extensions – class diagram 1

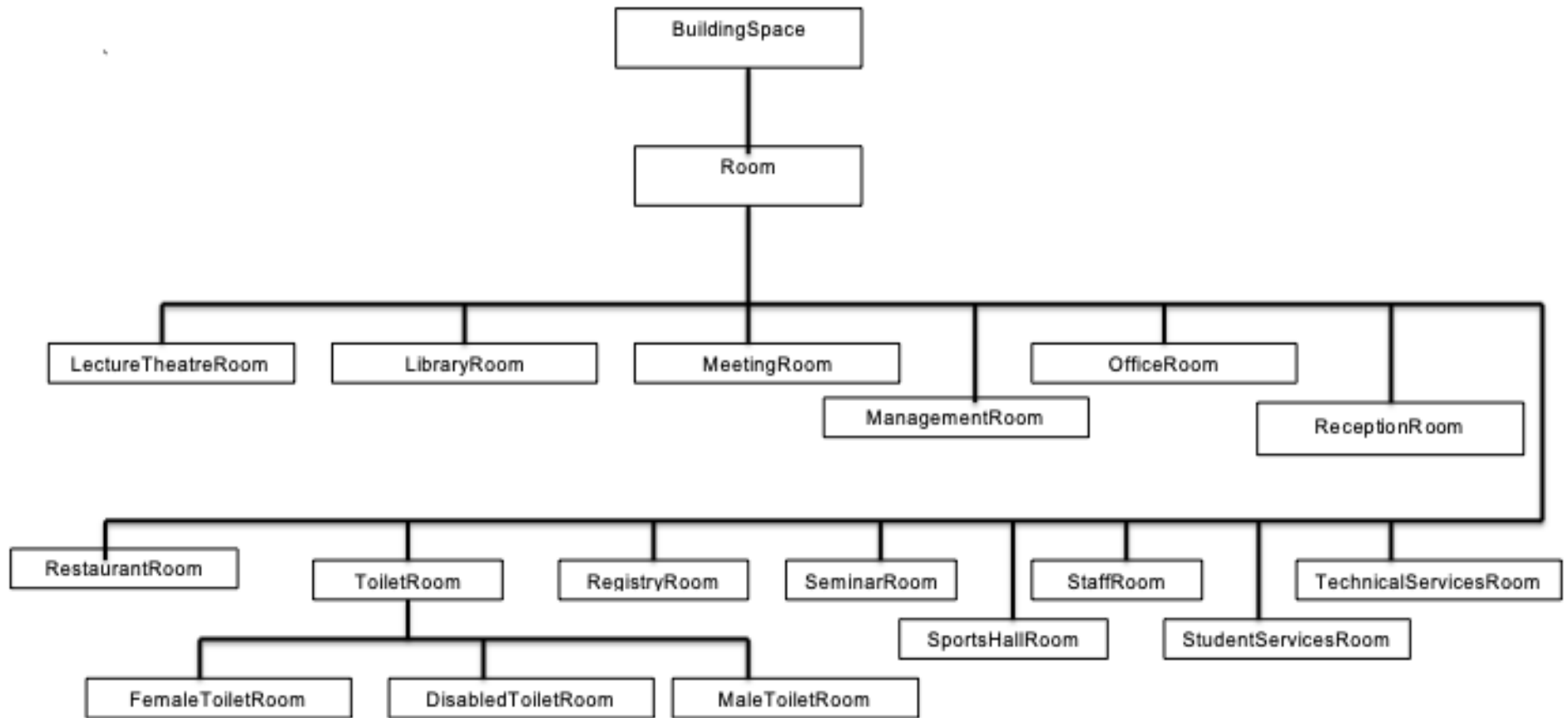


Figure 7.14 Buildings ontology – Room class – domain extensions – class diagram 2

Room class – Education Domain subclasses

Concept	Super Concept	Description
AdministrationRoom	Room	A room for organising the
ArtRoom	Room	A room for teaching and creating art
BursaryRoom	Room	A room for managing the finances of the organisation
CafeRoom	Room	A room for buying and eating prepared food
CashiersRoom	Room	A room for the managing of payments and money
CareersRoom	Room	A room for researching careers
ChangingRoom	Room	A room for changing clothes
MaleChangingRoom	ChangingRoom	A room for males to change clothes
FemaleChangingRoom	ChangingRoom	A room for females to change clothes
CoffeeBarRoom	Room	A room for the purchase and consumption of coffee and snacks
ClassRoom	Room	A room for teaching
ComputerRoom	Room	A room containing computers and for their use
GymRoom	Room	A room of gym equipment and for their use
HallRoom	Room	A large room for assemblies
LaboratoryRoom	Room	A room for performing scientific experiments
LectureTheatreRoom	Room	A room organised for the taking of lectures
LibraryRoom	Room	A room that is part of a library, and usually containing books
MeetingRoom	Room	A room to hold meetings in
ManagementRoom	Room	A room for managers
OfficeRoom	Room	A room for office work
ReceptionRoom	Room	An entrance room
RestaurantRoom	Room	A room for selling and eating prepared meals
RegistryRoom	Room	A room for registering
SeminarRoom	Room	A room for seminars
SportsHallRoom	Room	A sports hall
StaffRoom	Room	A common room for staff
StudentServicesRoom	Room	A room for providing services to students
TechnicalServicesRoom	Room	A room for technical services staff
ToiletRoom	Room	A toilet room
DisabledToiletRoom	ToiletRoom	A toilet for disabled people
MaleToiletRoom	ToiletRoom	A toilet for male persons
FemaleToiletRoom	ToiletRoom	A toilet for female persons

Table 7.17 Buildings ontology – Room class education domain extensions table

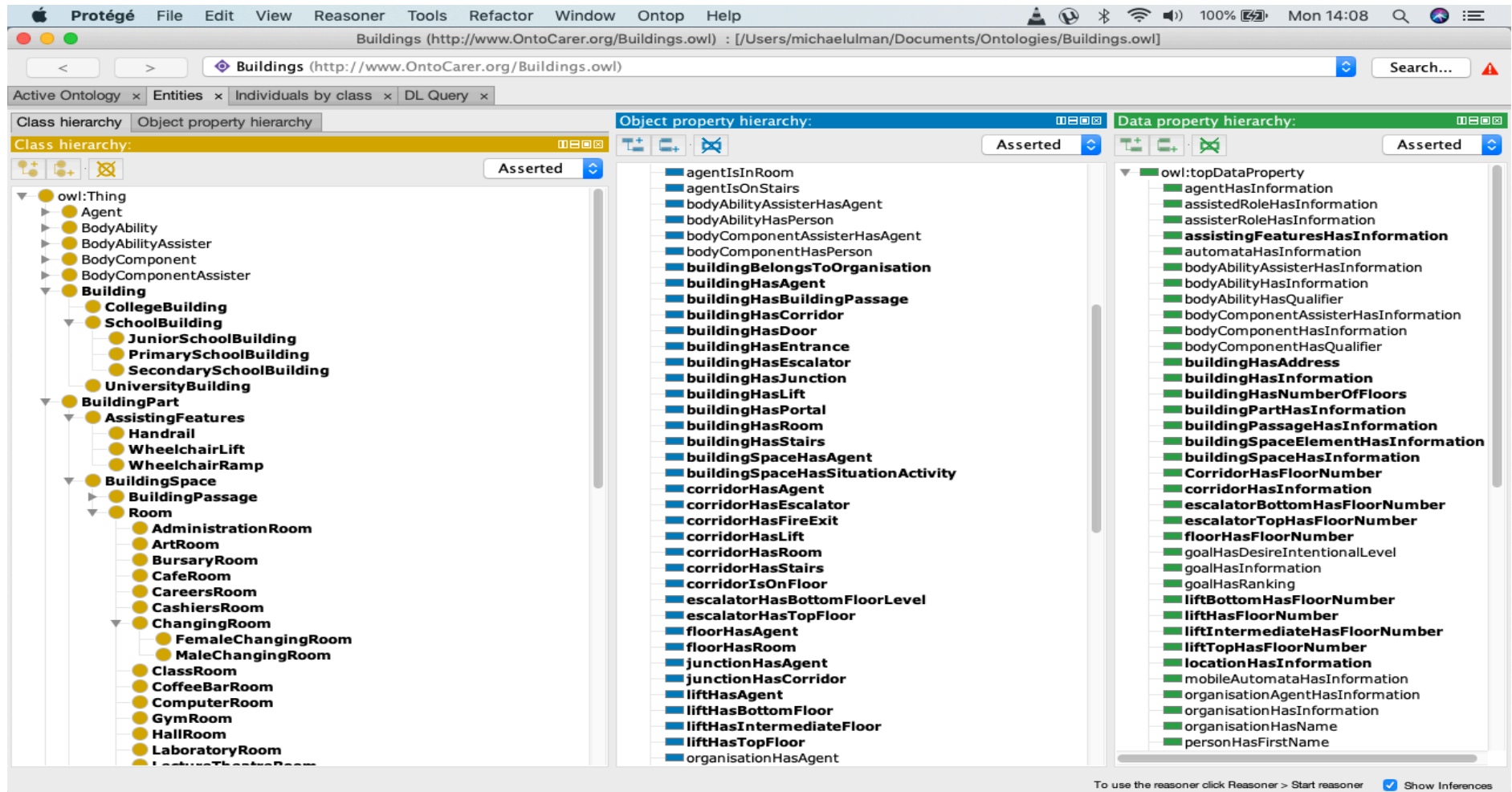


Figure 7.15 Buildings ontology with domain extensions implemented in Protege

7.7 Organisation Ontology - Domain Extensions

The Organisation ontology contains two classes at the top of the hierarchy. These are the Organisation class and the SituationActivity class. The Organisation class is the superclass of the different kinds of organisation. In this case, it has a subclass EducationOrganisation, and then under that class its subclasses; CollegeOrganisation, SchoolOrganisation, and UniversityOrganisation, which are different types of education organisation. The SchoolOrganisation has as subclasses the different types of school; PrimarySchoolOrganisation, JuniorSchoolOrganisation, SecondarySchoolOrganisation. The SituationActivity class is used to identify the different types of activity that can take place in an organisation. In this case these include activities that involve basic functions and generic activities as well as activities that may take place in a college situation.

There are many types of organisation in the world, and many particular organisations within a type of organisation. It is not possible in the scope of this project to define domain ontologies for all types of organisation nor all the organisations that fall under a particular type where they might differ from each other in their needs for particular aspects of their domain ontologies. The particular domain ontologies in this project, which are specific to education and colleges, are intended to demonstrate the applicability of the top-level ontologies to a particular organisational domain, to provide the classifications to construct a college model that can be used in a program that simulates a college and its personnel, with a varying range of roles including assisted and assister for a range of disabilities. With the OntoCarer software application then being able to use this model to perform the OntoCarer Assistance Lifecycle for a variety of scenarios involving the Core OntoCarer Assistance Data Structure. The education domain ontologies are particular and they provide a case study for the top-level ontologies applicability. The OntoCarer Assistance Lifecycle is intended to be universal across organisations provided that they implement the Core OntoCarer Assistance Data Structure in their domain ontologies. A separate argument for the universality of the OntoCarer Assistance Lifecycle across organisations is made in the next chapter in section 8.6.3.

The Organisation domain ontology (Figure 7.16 and Figures 7.17 & 7.18) is not exhaustive, this is particularly true of the SituationActivity class which can encompass the many types of activity that may take place in organisations and in particular a college organisation. The SituationActivities selected are intended to be representative of the kind of activities that may take place in a typical college. They are selective and any other activities not currently included in this particular domain ontology can be considered outside its scope. The SituationActivities classes do not play a functional role in the OntoCarer Assistance Lifecycle as it currently is. Though there could be future assistance use cases where they may play a role.

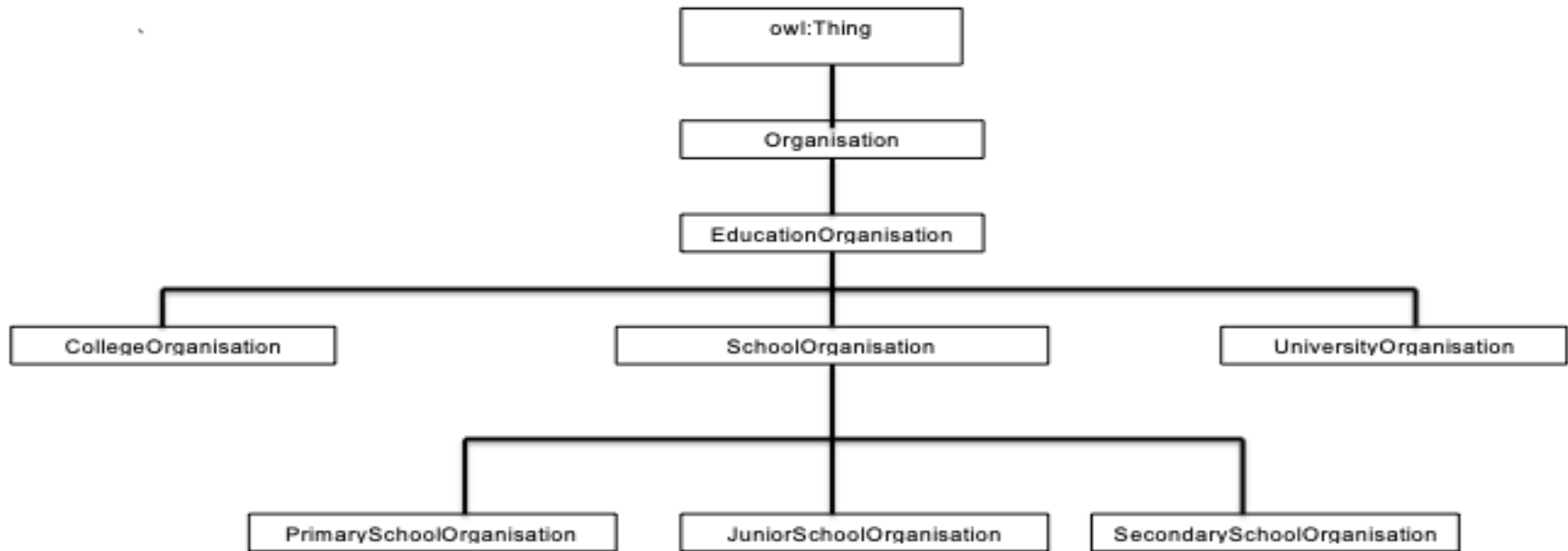


Figure 7.16 Organisation - ontology – Organisation class – domain extensions – class diagram

Organisations – Domain Ontology Extensions

Organisation class – Domain subclasses

Concept	Super Concept	Definition
EducationOrganisation	Organisation	An organisation for the education of people
CollegeOrganisation	EducationOrganisation	A post-school education organisation
SchoolOrganisation	EducationOrganisation	An educational organisation for children
PrimarySchoolOrganisation	SchoolOrganisation	An educational organisation for young children
JuniorSchoolOrganisation	SchoolOrganisation	A middle tier school organisation for educating children
SecondarySchoolOrganisation	SchoolOrganisation	A educational organisation for educating teen aged children, prior to leaving school
UniversityOrganisation	EducationOrganisation	A organisation of higher education and research

Table 7.18 Organisations ontology – Organisation class education domain extensions table

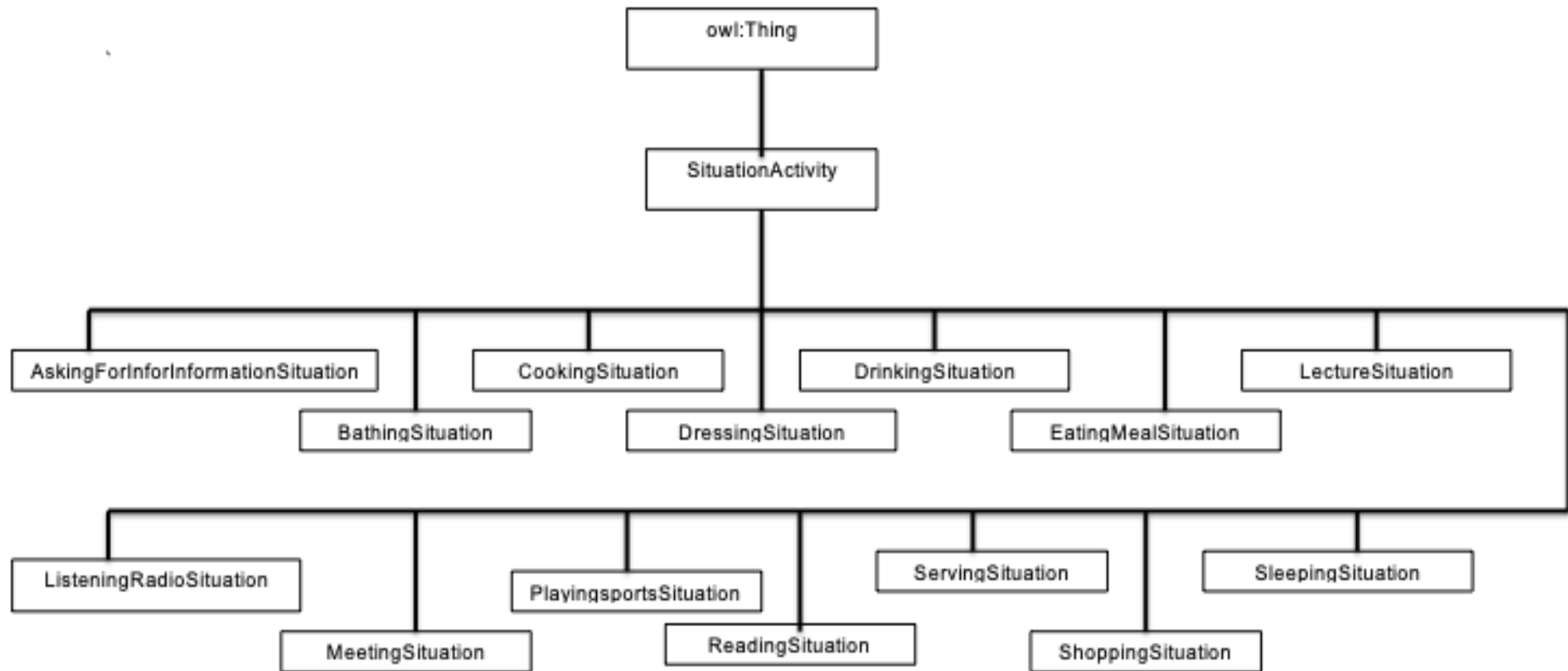


Figure 7.17 Organisation ontology – SituationActivity class – domain extensions – class diagram 1

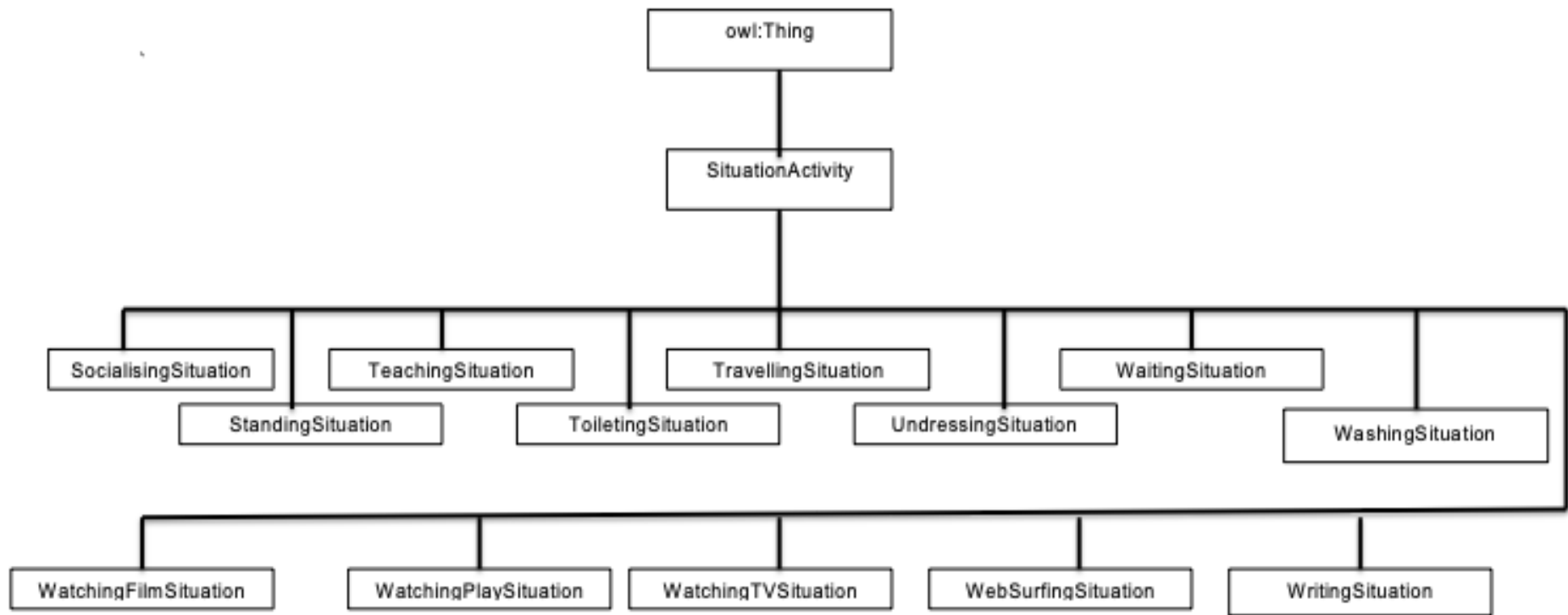


Figure 7.18 Organisation ontology – SituationActivity class – domain extensions – class diagram 2

Organisation – Domain Ontology Extensions

Situation Activity class – Domain subclasses

Concept	Super Concept	Description
AskingForInformationSituation	SituationActivity	A situation where information is asked for
BathingSituation	SituationActivity	A situation where bathing takes place
CookingSituation	SituationActivity	A situation where cooking takes place
DressingSituation	SituationActivity	A situation where dressing takes place
DrinkingSituation	SituationActivity	A situation where dressing takes place
EatingMealSituation	SituationActivity	A situation where eating takes place
LectureSituation	SituationActivity	A situation where a lecture takes place
ListeningRadioSituation	SituationActivity	A situation where listening to the radio takes place
MeetingSituation	SituationActivity	A situation where a meeting between people takes place
PlayingSportSituation	SituationActivity	A situation where the playing of a sport takes place
ReadingSituation	SituationActivity	A situation where where reading takes place
ServingSituation	SituationActivity	A situation where the serving of items takes place
ShoppingSituation	SituationActivity	A situation where shopping takes place
ShoweringSituation	SituationActivity	A situation where showing takes place
SittingSituation	SituationActivity	A situation where sitting place
SleepingSituation	SituationActivity	A situation where sleeping takes place
SocialisingSituation	SituationActivity	A situation where socialising takes place between people
StandingSituation	SituationActivity	A situation where standing takes place
TeachingSituation	SituationActivity	A situation where teaching takes place
ToiletingSituation	SituationActivity	A situation where toilet use takes place
TravellingSituation	SituationActivity	A situation where travelling takes place
UndressingSituation	SituationActivity	A situation where undressing takes place
WaitingSituation	SituationActivity	A situation where waiting takes place
WashingSituation	SituationActivity	A situation where washing takes place
WatchingFilmSituation	SituationActivity	A situation where watching a film takes place
WatchingPlaySituation	SituationActivity	A situation where watching a play takes place
WatchingTVSituation	SituationActivity	A situation where watching television takes place
WebSurfingSituation	SituationActivity	A situation where surfing the web takes place
WritingSituation	SituationActivity	A situation where writing takes place

Table 7.19 Organisation ontology – SituationActivity class domain extensions table

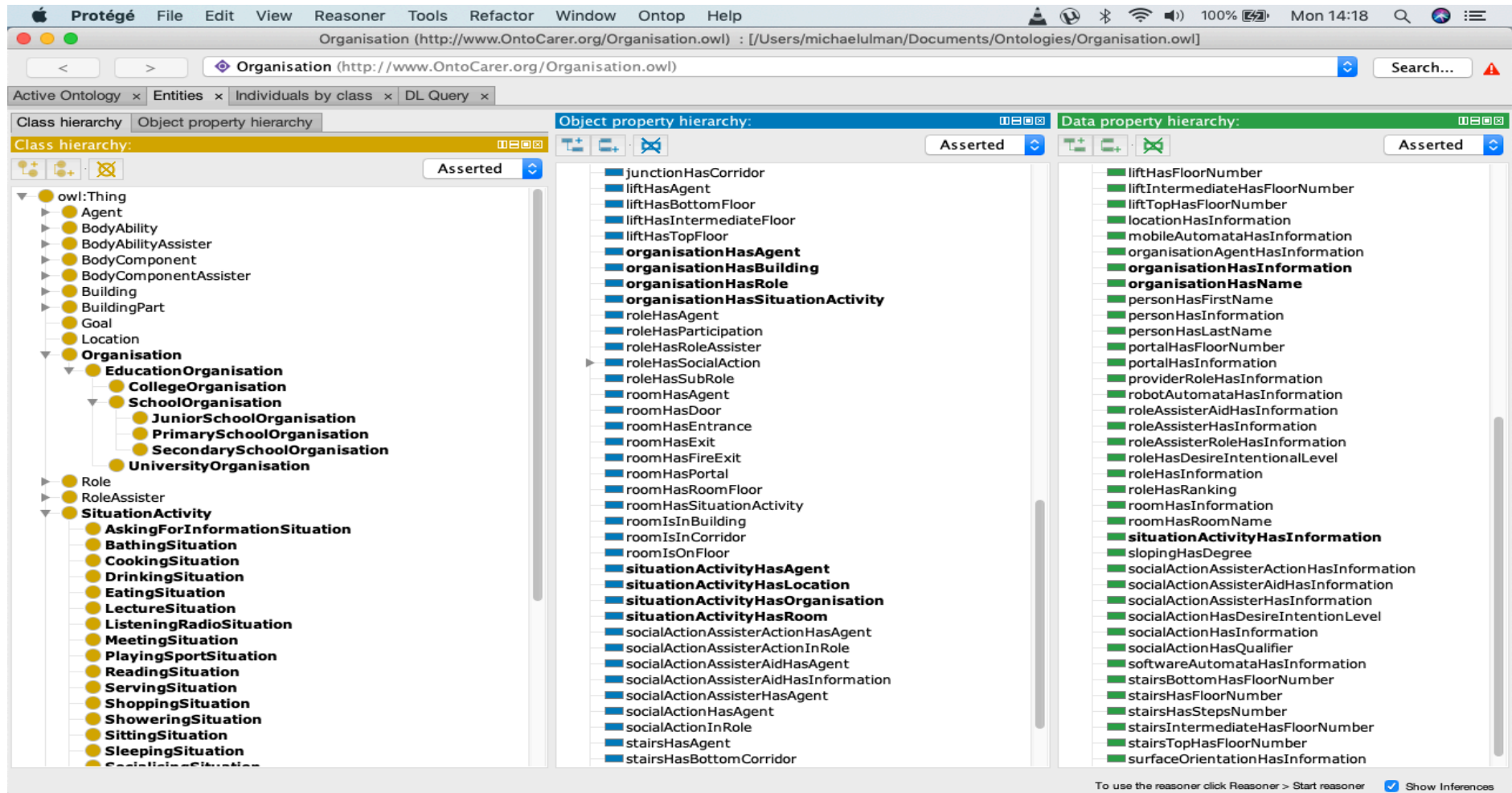


Figure 7.19 Organisation ontology with domain extensions implemented in Protege

7.8 OntoCarer-Link-Ontology Domain Ontology Extensions

The OntoCarer-Link-Ontology provides the properties for relating the assisted with the assister, in all its forms, in order to plan and provide the assistance where it is needed.

This ontology also links cooperating actions with their corresponding cooperating actions.

The OntoCarer-Link-Ontology organises these properties under three super-properties.

These three super-properties are:

- assistedAssistedByAssister
- assisterOfAssisted
- cooperatorCooperatesWithCooperator

Where ‘assisterOfAssisted’ property is the inverse of ‘assistedAssistedByAssister’

Each of these super-properties has sub-properties for the different type of entity that are linked by the properties. So in the case of the super-property ‘assistedAssistedByAssister’, it has these sub-properties:

- bodyAbilityAssistedByBodyAbilityAssister
- bodyComponentAssistedByBodyComponentAssister

- roleAssistedByRoleAssister - which is a super-property for:
 - roleAssistedByRoleAssisterAid
 - roleAssistedByRoleAssisterRole

- socialActionAssistedBySocialActionAssister - which is a super-property for:
 - socialActionAssistedBySocialActionAssisterAid
 - socialActionAssistedBySocialActionAssisterAction

Under each of the sub-properties of the OntoCarer-Link-Ontology super-properties, there are the domain properties for linking the domain entity instances.

The domain OntoCarer-Link-Ontology does cover all linking properties for all the top-level and domain level classes in the OntoCarer ontologies that are intended to be linked with each other by such relations as ‘assistedBy’ and ‘cooperatesWith’. The domain OntoCarer-Link-Ontology does not extend beyond this to include potential future property links to potential future domain classes, such domain properties are outside the scope of this project.

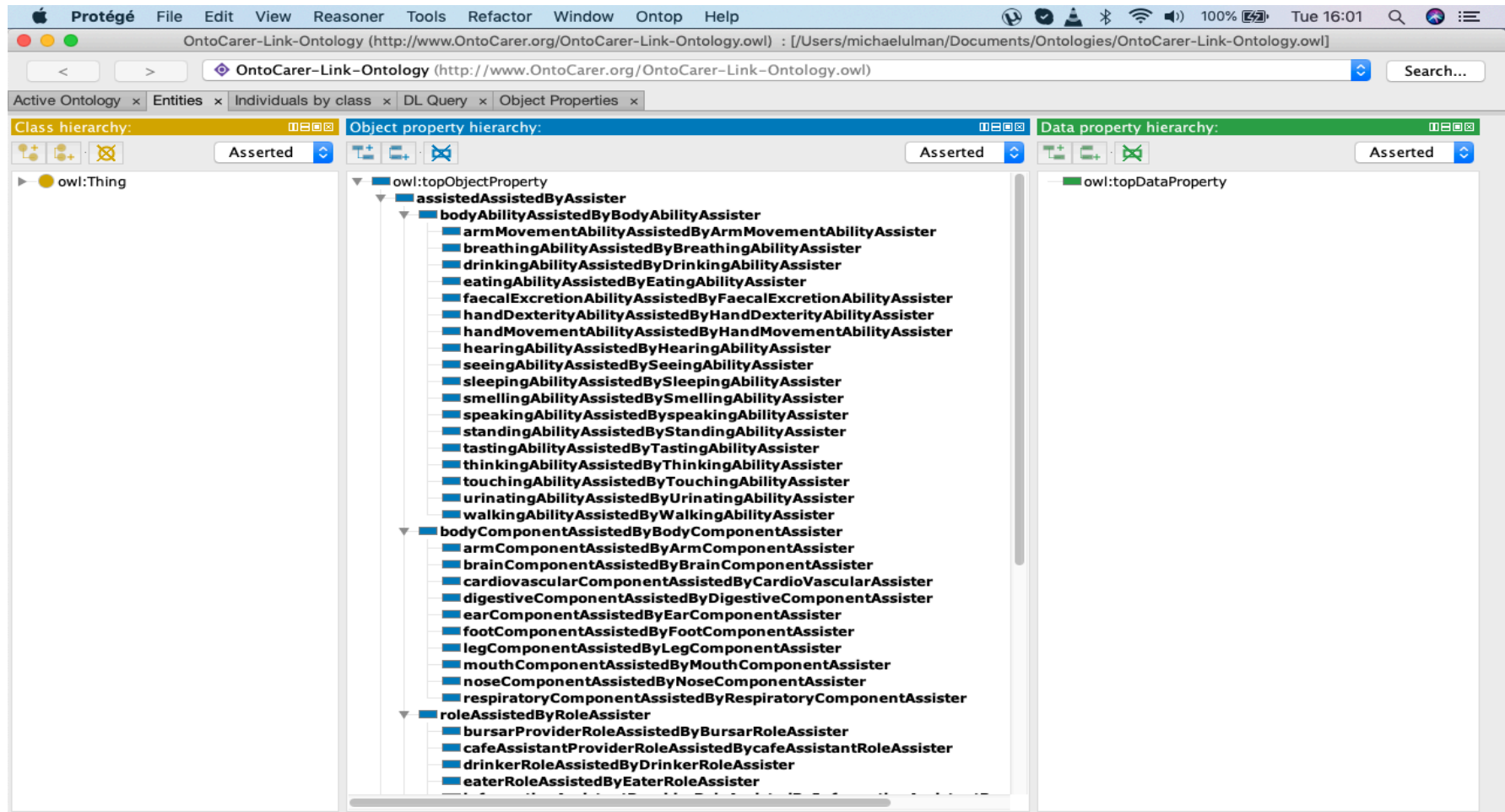


Figure 7.20 OntoCarer-Link-Ontology – with domain extensions implemented in Protege

OntoCarer-Link-Ontology Domain Extensions sub-headings	Page
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Body Component AssisterOf – Domain sub-properties	212
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OntoCarer-Link-Ontology – Body Ability – AssistedBy – Domain subproperties	214
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OntoCarer-Link-Ontology – Educational Organisation User Roles – AssistedBy – Domain sub-properties	217
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Student Role – SocialActionAssisterAction properties Of - Domain subproperties	225
Student Role – AssisterAid properties Of – Domain subproperties	226
Lecturer Role – SocialActionAssisterAction properties AssistedBy– Domain subproperties	227
Lecturer Role – AssisterAid properties AssistedBy – Domain subproperties	228
Lecturer Role – SocialActionAssisterAction properties Of– Domain subproperties	228
Lecturer Role – AssisterAid properties Of – Domain subproperties	228
SignerCooperatorRole – CooperatesWith - SocialAction Domain subproperties	229
SignerTranslatorCooperatorRole – CooperatesWith - SocialAction Domain subproperties	229

Table 7.20 Table mapping OntoCarer-Link-Ontology Domain sub-headings to pages

Below are tables of domain ontology extensions for the different types of subproperties.

OntoCarer-Link-Ontology - Body Component linking properties

The domain extension properties connect domain extension instances of a Body Components domain ontology with their assisters. The particular Body Components – domain extensions are for the Body Components domain ontology – described above, which contains a particular set of selected body components. The Assister instances included are of a non-specific type as it would not be expected that an assister of a particular body component would be assisted by an instance of the same component, such as a disabled foot being assisted by another foot, rather the assistance would be provided in some other (unspecified) way, which could be by some hardware device, for example.

The ‘assistedAssistedByAssister’ super-property has the sub-property:

‘bodyComponentAssistedByBodyComponentAssister’.

The ‘assisterOfAssisted’ super-property has the sub-property:

‘assistedBodyComponentAssisterOfBodyComponent’

These are the properties for connecting the assisted body components with the assisters.

Body Component – AssistedBy – Domain sub-properties

These are sub-properties of ‘**bodyComponentAssistedByBodyComponentAssister**’ property

Property	Domain	Range	Cardinality
armComponentAssistedByArmComponentAssister	ArmComponent	ArmComponentAssister	1:0..*
brainComponentAssistedByBrainComponentAssister	BrainComponent	BrainComponentAssister	1:0..*
cardiovascularComponentAssistedByCardioVascularAssister	CardiovascularComponent	CardiovascularComponentAssister	1:0..*
digestiveComponentAssistedByDigestiveComponentAssister	DigestiveComponent	DigestiveComponentAssister	1:0..*
earComponentAssistedByEarComponentAssister	EarComponent	EarComponentAssister	1:0..*
legComponentAssistedByLegComponentAssister	LegComponent	LegComponentAssister	1:0..*
footComponentAssistedByFootComponentAssister	FootComponent	FootComponentAssister	1:0..*
mouthComponentAssistedByMouthComponentAssister	MouthComponent	MouthComponentAssister	1:0..*
noseComponentAssistedByNoseComponentAssister	NoseComponent	NoseComponentAssister	1:0..*
respiratoryComponentAssistedByRespiratoryComponentAssister	RespiratoryComponent	RespiratoryComponentAssister	1:0..*

Table 7.21 OntoCarer-Link-Ontology Body Component AssistedBy domain subproperties table

These are the inverse properties for the Body Component domain ontology, connecting the assister with the assisted body component.

Body Component AssisterOf – Domain sub-properties - sub-properties of ‘**assistedBodyComponentAssisterOfBodyComponent**’ property

Property	Domain	Range	Cardinality
armComponentAssisterOfArmComponent	ArmComponentAssister	ArmComponent	0..*:1
brainComponentAssisterOfBrainComponent	BrainComponentAssister	BrainComponent	0..*:1
cardiovascularAssisterOfCardiovascularComponent	CardiovascularComponentAssister	CardiovascularComponent	0..*:1
digestiveComponentAssisterOfDigestiveComponent	DigestiveComponentAssister	DigestiveComponent	0..*:1
earComponentAssisterOfEarComponent	EarComponentAssister	EarComponent	0..*:1
legComponentAssisterOfLegComponent	LegComponentAssister	LegComponent	0..*:1
footComponentAssisterOfFootComponent	FootComponentAssister	FootComponent	0..*:1
mouthComponentAssisterOfMouthComponent	MouthComponentAssister	MouthComponent	0..*:1
noseComponentAssisterOfNoseComponent	NoseComponentAssister	NoseComponent	0..*:1
respiratoryComponentAssisterOfRespiratoryComponent	RespiratoryComponentAssister	RespiratoryComponent	0..*:1

Table 7.22 OntoCarer-Link-Ontology Body Component AssisterOf domain subproperties table

OntoCarer-Link-Ontology – Body Ability linking properties

The Ontocarer-Link-Ontology domain extension properties connect domain extension instances of a Body Abilities domain ontology with their assisters. The particular Body Abilities – domain extensions are for the Body Abilities domain ontology – described above, which contains a particular set of selected body abilities. The Body Abilities Assister instances providing the assistance are of a non-specific type, which may be a hardware device, a software app, or other kind of assistance.

The ‘assistedAssistedByAssister’ super-property has the sub-property:

‘bodyAbilityAssistedByBodyAbilityAssister’.

The ‘assisterOfAssisted’ super-property has the sub-property:

‘assistedBodyAbilityAssisterOfBodyAbility’

Below are the tables of domain properties for connecting the assisted body abilities with the assisters.

OntoCarer-Link-Ontology – Body Ability – AssistedBy – Domain subproperties

These are sub-properties of the property ‘assistedBodyAbilityAssistedByBodyAbilityAssister’

Property	Domain	Range	Cardinality
armMovementAbilityAssistedByArmMovementAbilityAssister	ArmMovementAbility	ArmMovementAbilityAssister	1:0..*
breathingAbilityAssistedByBreathingAbilityAssister	BreathingAbility	BreathingAbilityAssister	1:0..*
drinkingAbilityAssistedByDrinkingAbilityAssister	DrinkingAbility	DrinkingAbilityAssister	1:0..*
eatingAbilityAssistedByEatingAbilityAssister	EatingAbility	EatingAbilityAssister	1:0..*
faecalExcretionAbilityAssistedByFaecalExcretionAbilityAssister	FaecalExcretionAbility	FaecalExcretionAbilityAssister	1:0..*
handDexterityAbilityAssistedByHandDexterityAbilityAssister	HandDexterityAbility	HandDexterityAbilityAssister	1:0..*
handMovementAbilityAssistedByHandMovementAbilityAssister	HandMovementAbility	HandMovementAbilityAssister	1:0..*
hearingAbilityAssistedByHearingAbilityAssister	HearingAbility	HearingAbilityAssister	1:0..*
seeingAbilityAssistedBySeeingAbilityAssister	SeeingAbility	SeeingAbilityAssister	1:0..*
sleepingAbilityAssistedBySleepingAbilityAssister	SleepingAbility	SleepingAbilityAssister	1:0..*
smellingAbilityAssistedBySmellingAbilityAssister	smellingAbility	SmellingAbilityAssister	1:0..*
speakingAbilityAssistedByspeakingAbilityAssister	SpeakingAbility	SpeakingAbilityAssister	1:0..*
standingAbilityAssistedByStandingAbilityAssister	StandingAbility	StandingAbilityAssister	1:0..*
tastingAbilityAssistedByTastingAbilityAssister	TastingAbility	TastingAbilityAssister	1:0..*
thinkingAbilityAssistedByThinkingAbilityAssister	ThinkingAbility	ThinkingAbilityAssister	1:0..*
touchingAbilityAssistedByTouchingAbilityAssister	TouchingAbility	TouchingAbilityAssister	1:0..*
urinatingAbilityAssistedByUrinatingAbilityAssister	UrinatingAbility	UrinatingAbilityAssister	1:0..*
walkingAbilityAssistedByWalkingAbilityAssister	WalkingAbility	WalkingAbilityAssister	1:0..*

Table 7.23 OntoCarer-Link-Ontology Body Ability AssistedBy domain subproperties table

These are the inverse properties for the Body Ability domain ontology, connecting the assister with the assisted body ability.

OntoCarer-Link-Ontology – Body Ability – AssisterOf – Domain subproperties

These are sub-properties of ‘assisterBodyAbilityOfAssistedBodyAbility’

Property	Domain	Range	Cardinality
armMovementAbilityAssisterOfArmMovementAbility	ArmMovementAbilityAssister	ArmMovementAbility	0..*:1
breathingAbilityAssisterOfBreathingAbility	BreathingAbilityAssister	BreathingAbility	0..*:1
drinkingAbilityAssisterOfdrinkingAbility	DrinkingAbilityAssister	DrinkingAbility	0..*:1
eatingAbilityAssisterOfEatingAbility	EatingAbilityAssister	EatingAbility	0..*:1
faecalExcretionAbilityAssisterOfFaecalExcretionAbility	FaecalExcretionAbilityAssiste	FaecalExcretionAbility	0..*:1
handDexterityAbilityAssisterOfHandDexterityAbility	HandDexterityAbilityAssister	HandDexterityAbility	0..*:1
handMovementAbilityAssisterOfhandMovementAbility	HandMovementAbilityAssister	HandMovementAbility	0..*:1
hearingAbilityAssisterOfHearingAbility	HearingAbilityAssister	HearingAbility	0..*:1
seeingAbilityAssisterOfSeeingAbility	SeeingAbilityAssister	SeeingAbility	0..*:1
sleepingAbilityAssisterOfSleepingAbility	SleepingAbilityAssister	SleepingAbility	0..*:1
smellingAbilityAssisterOfsmellingAbility	SmellingAbilityAssister	smellingAbility	0..*:1
speakingAbilityAssisterOfSpeakingAbility	SpeakingAbilityAssister	SpeakingAbility	0..*:1
standingAbilityAssisterOfStandingAbility	StandingAbilityAssister	StandingAbility	0..*:1
tastingAbilityAssisterOfTastingAbility	TastingAbilityAssister	TastingAbility	0..*:1
thinkingAbilityAssisterOfThinkingAbility	ThinkingAbilityAssister	ThinkingAbility	0..*:1
touchingAbilityAssisterOfTouchingAbility	TouchingAbilityAssister	TouchingAbility	0..*:1
urinatingAbilityAssisterOfUrinatingAbility	UrinatingAbilityAssister	UrinatingAbility	0..*:1
walkingAbilityAssisterOfWalkingAbility	WalkingAbilityAssister	WalkingAbility	0..*:1

Table 7.24 OntoCarer-Link-Ontology Body Ability AssisterOf domain subproperties table

OntoCarer-Link-Ontology – Role linking properties

The OntoCarer-Link-Ontology domain extension properties connect instances of the Role domain ontology with their assisters and cooperators, for different types of Role, which are the Basic Functions Roles, Educational Organisation User Roles, Educational Organisation Provider Roles. These are described in Appendix H.

Each Role is connected to an Assister, which is either a RoleAssisterRole or a RoleAssisterAid. The property ‘roleAssistedByRoleAssister’ is the super-property for the properties that link the two types of assistance:

- roleAssistedByRoleAssisterRole
- roleAssistedByRoleAssisterAid

As well as the ‘assisting’ properties for roles, there are ‘cooperating’ properties:

- roleCooperatesWithRole

which is a sub-property of:

- cooperatorCooperatesWithCooperator

where a person has some special skill that needs to be used in cooperation with another who has that skill, such as a deaf person who uses sign language to sign needs another cooperative signer to communicate with or a signer translator to communicate with and translate for them. Hence a ‘signerRoleCooperatesWithSignerRole’ and a ‘signerRoleCooperatesWithSignerTranslatorRole’.

Below example tables for the Educational Organisation User Roles and Educational Organisation Provider Roles are shown. Along with example tables for the cooperating properties for the Signer and SignerTranslator roles.

OntoCarer-Link-Ontology – Educational Organisation User Roles – AssistedBy – Domain sub-properties

Educational Organisation User Roles are roles enacted by those persons who are using an educational organisation, which includes the student role.

These are sub-properties of ‘**roleAssistedByRoleAssisterRole**’

Property	Domain	Range	Cardinality
studentUserRoleAssistedByStudentUserRoleAssisterRole	StudentUserRole	StudentUserRoleAssisterRole	1:0..*
informationSeekerUserRoleAssistedByInformationSeekerUserRoleAssisterRole	InformationSeekerUserRole	InformationSeekerUserRoleAssisterRole	1:0..*
cafeUserRoleAssistedByCafeUserRoleAssisterRole	cafeUserRole	cafeUserRoleAssisterRole	1:0..*
libraryUserRoleAssistedByLibraryUserRoleAssisterRole	LibraryUserRole	LibraryUserRoleAssisterRole	1:0..*

Table 7.25 OntoCarer-Link-Ontology UserRole roleAssistedByRole domain subproperties table

These are sub-properties of ‘**roleAssistedByRoleAssisterAid**’

Property	Domain	Range	Cardinality
studentUserRoleAssistedByStudentUserRoleAssisterAid	StudentUserRole	StudentUserRoleAssisterAid	1:0..*
informationSeekerUserRoleAssistedByInformationSeekerUserRoleAssisterAid	InformationSeekerUserRole	InformationSeekerUserRoleAssisterAid	1:0..*
cafeUserRoleAssistedByCafeUserRoleAssisterAid	cafeUserRole	cafeUserRoleAssisterAid	1:0..*
libraryUserRoleAssistedByLibraryUserRoleAssisterAid	LibraryUserRole	LibraryUserRoleAssisterAid	1:0..*

Table 7.26 OntoCarer-Link-Ontology UserRole roleAssistedByRoleAssisterAid domain subproperties table

These are the inverse properties for these UserRoles, connecting the assister with the assisted role.

OntoCarer-Link-Ontology – Educational Organisation User Roles – Of – Domain sub-properties

These are sub-properties of ‘roleAssisterRoleOfRole’

Property	Domain	Range	Cardinality
studentUserRoleAssisterRoleOfStudentUserRole	StudentUserRoleAssisterRole	StudentUserRole	0..*:1
informationSeekerUserRoleAssisterRoleOfInformationSeekerUserRole	InformationSeekerUserRole	InformationSeekerUserRoleAssisterRole	0..*:1
cafeUserRoleAssisterRoleOfCafeUserRole	CafeUserRoleAssisterRole	CafeUserRole	0..*:1
libraryUserRoleAssisterRoleOfLibraryUserRole	LibraryUserRoleAssisterRole	LibraryUserRole	0..*:1

Table 7.27 OntoCarer-Link-Ontology UserRole roleAssisterRoleOfRole domain subproperties table

These are sub-properties of ‘roleAssisterAidOfRole’

Property	Domain	Range	Cardinality
studentUserRoleAssisterAidOfStudentUserRole	StudentUserRoleAssisterRole	StudentUserRole	0..*:1
informationSeekerUserRoleAssisterAidOfInformationSeekerUserRole	InformationSeekerUserRole	InformationSeekerUserRoleAssisterRole	0..*:1
cafeUserRoleAssisterAidOfCafeUserRole	CafeUserRoleAssisterRole	CafeUserRole	0..*:1
libraryUserRoleAssisterAidOfLibraryUserRole	LibraryUserRoleAssisterRole	LibraryUserRole	0..*:1

Table 7.28 OntoCarer-Link-Ontology UserRole roleAssisterAidOfRole domain subproperties table

OntoCarer-Link-Ontology – Educational Organisation Provider Roles- AssistedBy –Domain sub-properties

Educational Organisation Provider Roles includes both those roles that are direct providers of education such as the lecturer role and also indirect providers in an education organisation such as those involved in support services in such an institution. Though, these some of support roles could exist in other types of organisation too.

These are sub-properties of ‘**roleAssistedByRoleAssisterRole**’

Property	Domain	Range	Cardinality
lecturerProviderRoleAssistedByLecturerProviderRoleAssisterRole	LecturerProviderRole	LecturerProviderRoleAssisterRole	1:0..*
informationAssistantProviderRoleAssistedByInformationAssistantProviderRoleAssisterRole	InformationAssistantProviderRole	InformationAssistantProviderRoleAssisterRole	1:0..*
libraryAssistantProviderRoleAssistedByLibraryAssistantProviderRoleAssisterRole	LibraryAssistantProviderRole	LibraryAssistantProviderRoleAssisterRole	1:0..*
technicianProviderRoleAssistedByTechnicianProviderRoleAssisterRole	TechnicianProviderRole	TechnicianProviderRoleAssisterRole	1:0..*
cafeAssistantProviderRoleAssistedByCafeAssistantProviderRoleAssisterRole	CafeAssistantProviderRole	CafeAssistantProviderRoleAssisterRole	1:0..*
securityGuardProviderRoleAssistedBySecurityGuardProviderRoleAssisterRole	SecurityGuardProviderRole	SecurityGuardProviderRoleAssisterRole	1:0..*
registrarProviderRoleAssistedByRegistrarProviderRoleAssisterRole	RegistrarProviderRole	RegistrarProviderRoleAssisterRole	1:0..*
bursarProviderRoleAssistedByBursarProviderRoleAssisterRole	BursarProviderRole	BursarProviderRoleAssisterRole	1:0..*

Table 7.29 OntoCarer-Link-Ontology ProviderRole AssistedByRoleAssisterRole domain subproperties table

These are sub-properties of ‘**roleAssistedByRoleAssisterAid**’

Property	Domain	Range	Cardinality
lecturerProviderRoleAssistedByLecturerProviderRoleAssisterAid	LecturerProviderRole	LecturerProviderRoleAssisterAid	1:0..*
informationAssistantProviderRoleAssistedByInformationAssistantProviderRoleAssisterAid	InformationAssistantProviderRole	InformationAssistantProviderRoleAssisterAid	1:0..*
libraryAssistantProviderRoleAssistedByLibraryAssistantProviderRoleAssisterAid	LibraryAssistantProviderRole	LibraryAssistantProviderRoleAssisterAid	1:0..*
technicianProviderRoleAssistedByTechnicianProviderRoleAssisterAid	TechnicianProviderRole	TechnicianProviderRoleAssisterAid	1:0..*
cafeAssistantProviderRoleAssistedByCafeAssistantProviderRoleAssisterAid	CafeAssistantProviderRole	CafeAssistantProviderRoleAssisterAid	1:0..*
securityGuardProviderRoleAssistedBySecurityGuardProviderRoleAssisterAid	SecurityGuardProviderRole	SecurityGuardProviderRoleAssisterAid	1:0..*
registrarProviderRoleAssistedByRegistrarProviderRoleAssisterAid	RegistrarProviderRole	RegistrarProviderRoleAssisterAid	1:0..*
bursarProviderRoleAssistedByBursarProviderRoleAssisterAid	BursarProviderRole	BursarProviderRoleAssisterAid	1:0..*

Table 7.30 OntoCarer-Link-Ontology ProviderRole AssistedByRoleAssisterAid domain subproperties table

These are the inverse properties for the Educational Organisation Provider Roles, connecting the assister with the assisted role.

OntoCarer-Link-Ontology – Educational Organisation Provider Roles – Of – Domain sub-properties

These are sub-properties of ‘roleAssisterRoleOfRole’

Property	Domain	Range	Cardinality
lecturerProviderRoleAssisterRoleOfLecturerProviderRole	LecturerProviderRoleAssisterRole	LecturerProviderRole	0..*:1
InformationAssistantProviderRoleAssisterRoleOfInformationAssistantProviderRole	InformationAssistantProviderRoleAssisterRole	InformationAssistantProviderRole	0..*:1
libraryAssistantProviderRoleAssisterRoleOfLibrarianProviderRole	LibraryAssistantProviderRoleAssisterRole	LibraryAssistantProviderRole	0..*:1
technicianProviderRoleAssisterRoleOfTechnicianProviderRole	TechnicianProviderRoleAssisterRole	TechnicianProviderRole	0..*:1
cafeAssistantProviderRoleAssisterRoleOfCafeAssistantProviderRole	CafeAssistantProviderRoleAssisterRole	CafeAssistantProviderRole	0..*:1
securityGuardProviderRoleAssisterRoleOfSecurityGuardProviderRole	SecurityGuardProviderRoleAssisterRole	SecurityGuardProviderRole	0..*:1
registrarProviderRoleAssisterRoleOfRegistrarProviderRole	RegistrarProviderRoleAssisterRole	RegistrarProviderRole	0..*:1
BursarProviderRoleAssisterRoleOfBursarProviderRole	BursarProviderRoleAssisterRole	BursarProviderRole	0..*:1

Table 7.31 OntoCarer-Link-Ontology ProviderRole roleAssisterRoleOfRole domain subproperties table

These are sub-properties of ‘roleAssisterAidOfRole’

Property	Domain	Range	Cardinality
lecturerProviderRoleAssisterAidOfLecturerProviderRole	LecturerProviderRoleAssisterAid	LecturerProviderRole	0..*:1
InformationAssistantProviderRoleAssisterAidOfInformationAssistantProviderRole	InformationAssistantProviderRoleAssisterAid	InformationAssistantProviderRole	0..*:1
libraryAssistantProviderRoleAssisterAidOfLibraryAssistantProviderRole	LibraryAssistantProviderRoleAssisterAid	LibraryAssistantProviderRole	0..*:1
technicianProviderRoleAssisterAidOfTechnicianProviderRole	TechnicianProviderRoleAssisterAid	TechnicianProviderRole	0..*:1
cafeAssistantProviderRoleAssisterAidOfCafeAssistantProviderRole	CafeAssistantProviderRoleAssisterAid	CafeAssistantProviderRole	0..*:1
securityGuardProviderRoleAssisterAidOfSecurityGuardProviderRole	SecurityGuardProviderRoleAssisterAid	SecurityGuardProviderRole	0..*:1
registrarProviderRoleAssisterAidOfRegistrarProviderRole	RegistrarProviderRoleAssisterAid	RegistrarProviderRole	0..*:1
bursarProviderRoleAssisterAidOfBursarProviderRole	BursarProviderRoleAssisterAid	BursarProviderRole	0..*:1

Table 7.32 OntoCarer-Link-Ontology ProviderRole roleAssisterAidOfRole domain subproperties table

OntoCarer-Link-Ontology – Cooperating Roles

A CooperatesWith relation between roles is performed where the assister does not do actions that the assisted is not capable of, but rather provides assistance by being able to cooperate with the assisted agent in the performance of their role. Where that role is one that facilitates the actions of a disabled person, such as a signer who communicates with a deaf person who can sign.

A Signer role is one that involves being able to sign and to understand sign language for the deaf.

A SignerTranslator role is one that involves being able to sign and understand sign language for the deaf and also translate that language into speech and writing for non-signers.

OntoCarer-Link-Ontology – Signer Role – CooperatesWith – Domain sub-properties

This is a sub-property of ‘roleCooperatesWithRole’

Property	Domain	Range	Cardinality
signerCooperatorRoleCooperatesWith SignerCooperatorRole	Signer CooperatorRole	SignerCooperatorRole	1:0..*

Table 7.33 OntoCarer-Link-Ontology SignerCooperatorRole CooperatesWith subproperties table

OntoCarer-Link-Ontology – SignerTranslatorRole – CooperatesWith – Domain sub-properties

This is a sub-property of ‘roleCooperatesWithRole’

Property	Domain	Range	Cardinality
signerCooperatorRoleCooperatesWithSigner TranslatorCooperatorRole	Signer CooperatorRole	SignerCooperator TranslatorRole	1:0..*

Table 7.34 OntoCarer-Link-Ontology SignerTranslatorCooperatorRole CooperatesWith subproperties table

OntoCarer-Link-Ontology – Social Action linking properties

The OntoCarer-Link-Ontology domain extension properties connect domain

Social Actions with their assisters and cooperators.

The ‘assistedAssistedByAssister’ super-property has the sub-property

‘socialActionAssistedBySocialActionAssister’. This sub-property is itself a super-property to two sub-properties that link a Social Action with a different kind of assistance:

- ‘socialActionAssistedBySocialActionAssisterAid’ – where the assistance is provided by some assistive aid, which might be a hardware device or software app, for example.
- ‘socialActionAssistedBySocialActionAssisterAction’ – where the assistance is provided by another person’s assistive Social Action.

It is these two sub-properties of ‘socialActionAssistedBySocialActionAssister’ that will have the domain properties as sub-properties.

The three properties above have their inverses:

- ‘socialActionAssisterOfSocialAction’
- ‘socialActionAssisterAidOfSocialAction’
- ‘socialActionAssisterActionOfSocialAction’

There is also a property for relating cooperating Social Actions:

‘socialActionCooperatesWithSocialAction’

All of these properties are super-properties to the specific OntoCarer-Link-Ontology domain sub-properties. The domains for which we are creating classes and properties are those of the College Domain which is a sub-domain of Education. In addition there are classes and properties for Basic Functions of the person which exist acrosss organisations for such activities as eating, drinking etc.

The domain properties which link Social Actions with their assisters and cooperators will be described below according to the roles that the Social Actions participate in.

The examples shown here will be for the education roles of Student and Lecturer.

To illustrate linking property for relating cooperating Social Actions the roles of Signer and SignerTranslator are described.

The full set of tables for the domain linking properties not included here are described in Appendix H.

OntoCarer-Link-Ontology – Social Action linking properties

OntoCarer-Link-Ontology – Social Action Education Roles - AssistedBy and Of – Domain sub-properties

Student Role – SocialActionAssisterAction properties AssistedBy - Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialActionAssistedByAskQuestions SocialActionAssisterAction	AskQuestionsSocialAction	AskQuestionsSocialAction AssisterAction	1:0..*
answerQuestionsSocialActionAssistedByAnswerQuestions SocialActionAssisterAction	AnswerQuestionsSocialAction	AnswerQuestionsSocialAction AssisterAction	1:0..*
doPracticalTasksSocialActionAssistedBy DoPracticalTasksSocialActionAssisterAction	DoPracticalTasksSocialAction	DoPracticalTasksSocialAction AssisterAction	1:0..*
exitTeachingRoomSocialActionAssistedByexitTeachingRoom SocialActionAssisterAction	ExitTeachingRoomSocialAction	ExitTeachingRoomSocialAction AssisterAction	1:0..*
findTeachingRoomSocialActionAssistedByFindTeachingRoom SocialActionAssisterAction	FindTeachingRoomSocialAction	FindTeachingRoomSocialAction AssisterAction	1:0..*
navigateToTeachingRoomSocialActionAssistedByNavigateTo TeachingRoomSocialActionAssisterAction	NavigateToTeachingRoomSocialAction	NavigateToTeachingRoomSocial ActionAssisterAction	1:0..*
hearLectureSocialActionAssistedByHearLecture SocialActionAssisterAction	HearLectureSocialAction	HearLectureSocialAction AssisterAction	1:0..*
seeLectureSocialActionAssistedBySeeLecture SocialActionAssisterAction	SeeLectureSocialAction	SeeLectureSocialAction AssisterAction	1:0..*
takeNotesFromTextSocialActionAssistedByTakeNotesFrom TextSocialActionAssisterAction	TakeNotesFromTextSocialAction	TakeNotesFromTextSocialAction AssisterAction	1:0..*
takeNotesFromSpeakerSocialActionAssistedByTakeNotesFrom SpeakerSocialActionAssisterAction	TakeNotesFromSpeakerSocialAction	TakeNotesFromSpeakerSocial ActionAssisterAction	1:0..*
writeAssignmentSocialActionAssistedByWriteAssignment SocialActionAssisterAction	WriteAssignmentSocialAction	WriteAssignmentSocialAction AssisterAction	1:0..*
submitAssignmentSocialActionAssistedBySubmitAssignment SocialActionAssisterAction	SubmitAssignmentSocialAction	SubmitAssignmentSocialAction AssisterAction	1:0..*

Table 7.35 OntoCarer-Link-Ontology StudentRole Social Action AssistedBy domain subproperties table

Student Role – AssisterAid properties AssistedBy – Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialActionAssistedByAskQuestionsSocialActionAssisterAid	AskQuestionsSocialAction	AskQuestionsSocialActionAssisterAid	1:0..*
answerQuestionsSocialActionAssistedByAnswerQuestionsSocialActionAssisterAid	AnswerQuestionsSocialAction	AnswerQuestionsSocialActionAssisterAid	1:0..*
doPracticalTasksSocialActionAssistedByDoPracticalTasksSocialActionAssisterAid	DoPracticalTasksSocialAction	DoPracticalTasksSocialActionAssisterAid	1:0..*
exitTeachingRoomSocialActionAssistedByexitTeachingRoomSocialActionAssisterAid	ExitTeachingRoomSocialAction	ExitTeachingRoomSocialActionAssisterAid	1:0..*
findTeachingRoomSocialActionAssistedByFindTeachingRoomSocialActionAssisterAid	FindTeachingRoomSocialAction	FindTeachingRoomSocialActionAssisterAid	1:0..*
navigateToTeachingRoomSocialActionNavigateToTeachingRoomSocialActionAssisterAid	NavigateToTeachingRoomSocialAction	NavigateToTeachingRoomSocialActionAssisterAid	1:0..*
hearLectureSocialActionAssistedByHearLectureSocialActionAssisterAid	HearLectureSocialAction	HearLectureSocialActionAssisterAid	1:0..*
seeLectureSocialActionAssistedBySeeLectureSocialActionAssisterAid	SeeLectureSocialAction	SeeLectureSocialActionAssisterAid	1:0..*
takeNotesFromTextSocialActionAssistedByTakeNotesFromTextSocialActionAssisterAid	TakeNotesFromTextSocialAction	TakeNotesFromTextSocialActionAssisterAid	1:0..*
takeNotesFromSpeakerSocialActionAssistedByTakeNotesFromSpeakerSocialActionAssisterAid	TakeNotesFromSpeakerSocialAction	TakeNotesFromSpeakerSocialActionAssisterAid	1:0..*
writeAssignmentSocialActionAssistedByWriteAssignmentSocialActionAssisterAid	WriteAssignmentSocialAction	WriteAssignmentSocialActionAssisterAid	1:0..*
submitAssignmentSocialActionAssistedBySubmitAssignmentSocialActionAssisterAid	SubmitAssignmentSocialAction	SubmitAssignmentSocialActionAssisterAid	1:0..*

Table 7.36 OntoCarer-Link-Ontology StudentRole SocialActionAssisterAid AssistedBy domain subproperties table

The inverses of these Student Role Social Action AssistedBy properties are:

Student Role – SocialActionAssisterAction properties Of - Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialActionAssisterActionOfAskQuestionsSocialAction	AskQuestionsSocialAction AssisterAction	AskQuestionsSocialAction	0..*:1
answerQuestionsSocialActionAssisterActionOfAnswerQuestions SocialAction	AnswerQuestionsSocialAction AssisterAction	AnswerQuestionsSocialAction	0..*:1
doPracticalTasksSocialActionAssisterActionOfDoPracticalTasks SocialAction	DoPracticalTasksSocialAction AssisterAction	DoPracticalTasksSocialAction	0..*:1
exitTeachingRoomSocialActionAssisterActionOfExitTeachingRoom SocialAction	ExitTeachingRoomSocial ActionAssisterAction	ExitTeachingRoomSocialAction	0..*:1
findTeachingRoomSocialActionAssisterActionOfFindTeachingRoom SocialAction	FindTeachingRoomSocial ActionAssisterAction	FindTeachingRoomSocialAction	0..*:1
navigateToTeachingRoomSocialActionAssisterActionOfNavigateTo TeachingRoomSocialAction	NavigateToTeachingRoomSocialAction AssisterAction	NavigateToTeachingRoomSocial Action	0..*:1
hearLectureSocialActionAssisterActionOfHearLectureSocialAction	HearLectureSocialAction AssisterAction	HearLectureSocialAction	0..*:1
seeLectureSocialActionAssistedBySeeLectureSocialActionAssister Action	SeeLectureSocialAction	SeeLectureSocialAction AssisterAction	0..*:1
takeNotesFromTextSocialActionAssisterActionOfTakeNotesFrom TextSocialAction	TakeNotesFromTextSocial ActionAssisterAction	TakeNotesFromTextSocialAction	0..*:1
takeNotesFromSpeakerSocialActionAssisterActionOfTakeNotesFrom SpeakerSocialAction	TakeNotesFromSpeakerSocialActionAss isterAction	TakeNotesFromSpeakerSocial Action	0..*:1
writeAssignmentSocialActionAssisterActionOfwriteAssignmentSocial Action	WriteAssignmentSocialAction AssisterAction	WriteAssignmentSocialAction	0..*:1
submitAssignmentSocialActionAssisterActionOfSubmitAssignment SocialAction	SubmitAssignmentSocial ActionAssisterAction	SubmitAssignmentSocialAction	0..*:1

Table 7.37 OntoCarer-Link-Ontology StudentRole - Of - SocialActionAssisterAction domain subproperties table

Student Role – AssisterAid properties Of – Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialActionAssisterAidOfAskQuestionsSocialAction	AskQuestionsSocialAction AssisterAid	AskQuestionsSocialAction	0..*:1
answerQuestionsSocialActionAssisterAidOfAnswerQuestionsSocialAction	AnswerQuestionsSocialAction AssisterAid	AnswerQuestionsSocialAction	0..*:1
doPracticalTasksSocialActionAssisterAidOfDoPracticalTasksSocialAction	DoPracticalTasksSocialAction AssisterAid	DoPracticalTasksSocialAction	0..*:1
exitTeachingRoomSocialActionAssisterAidOfExitTeachingRoomSocialAction	ExitTeachingRoomSocialAction AssisterAid	ExitTeachingRoomSocialAction	0..*:1
findTeachingRoomSocialActionAssisterAidOfFindTeachingRoomSocialAction	FindTeachingRoom SocialActionAssisterAid	FindTeachingRoomSocialAction	0..*:1
navigateToTeachingRoomSocialActionAssisterAidOfNavigateToTeachingRoomSocialAction	NavigateToTeachingRoom SocialActionAssisterAid	NavigateToTeachingRoom SocialAction	0..*:1
hearLectureSocialActionAssisterAidOfHearLectureSocialAction	HearLectureSocialAction AssisterAid	HearLectureSocialAction	0..*:1
seeLectureSocialActionAssisterAidOfSeeLectureSocialAction	SeeLectureSocialAction AssisterAid	SeeLectureSocialAction	0..*:1
takeNotesFromTextSocialActionAssisterAidOfTakeNotesFromTextSocialAction	TakeNotesFromTextSocial ActionAssisterAid	TakeNotesFromTextSocialAction	0..*:1
takeNotesFromSpeakerSocialActionAssisterAidOfTakeNotesFromSpeakerSocialAction	TakeNotesFromSpeakerSocial ActionAssisterAid	TakeNotesFromSpeakerSocial Action	0..*:1
writeAssignmentSocialActionAssisterAidOfWriteAssignmentSocialAction	WriteAssignmentSocialAction AssisterAid	WriteAssignmentSocialAction	0..*:1
submitAssignmentSocialActionAssisterAidOfSubmitAssignmentSocialAction	SubmitAssignmentSocialAction AssisterAid	SubmitAssignmentSocialAction	0..*:1

Table 7.38 OntoCarer-Link-Ontology StudentRole - Of - Social ActionAssisterAid domain subproperties table

Lecturer Role – SocialActionAssisterAction properties AssistedBy– Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialActionAssistedByAskQuestions SocialActionAssisterAction	AskQuestionsSocialAction	AskQuestionsSocialAction AssisterAction	1:0..*
answerQuestionsSocialActionAssistedByAnswerQuestions SocialActionAssisterAction	AnswerQuestionsSocialAction	AnswerQuestionsSocialAction AssisterAction	1:0..*
showLectureSlidesSocialActionAssistedByShowLectureSlidesSocial ActionAssisterAction	ShowLectureSlidesSocialAction	ShowLectureSlidesSocialAction AssisterAction	1:0..*
speakLectureSocialActionAssistedBySpeakLecture SocialActionAssisterAction	SpeakLectureSocialAction	SpeakLectureSocialAction AssisterActionAction	1:0..*

Table 7.39 OntoCarer-Link-Ontology LecturerRole Social Action AssistedBy domain subproperties table

Lecturer Role – AssisterAid properties AssistedBy – Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialActionAssistedByAskQuestions SocialActionAssisterAid	AskQuestionsSocialAction	AskQuestionsSocialAction AssisterAid	1:0..*
answerQuestionsSocialActionAssistedByAnswerQuestions SocialActionAssisterAid	AnswerQuestionsSocialAction	AnswerQuestionsSocialAction AssisterAid	1:0..*
showLectureSlidesSocialActionAssistedByShowLectureSlides SocialActionAssisterAid	ShowLectureSlidesSocialAction	ShowLectureSlidesSocialAction AssisterAid	1:0..*
speakLectureSocialActionAssistedBySpeakLecture SocialActionAssisterAid	SpeakLectureSocialAction	SpeakLectureSocialAction AssisterAid	1:0..*

Table 7.40 OntoCarer-Link-Ontology LecturerRole SocialActionAssisterAid AssistedBy domain subproperties table

The inverses of these Lecturer Role Social Action AssistedBy properties are:

Lecturer Role – SocialActionAssisterAction properties Of– Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialActionAssisterActionOfAskQuestionsSocialAction	AskQuestionsSocialActionAssisterAction	AskQuestionsSocialAction	0..*:1
answerQuestionsSocialActionAssisterActionOfAnswerQuestionsSocialAction	AnswerQuestionsSocialActionAssisterAction	AnswerQuestionsSocialAction	0..*:1
showLectureSlidesSocialActionAssisterActionOfShowLectureSlidesSocialAction	ShowLectureSlidesSocialActionAssisterAction	ShowLectureSlidesSocialAction	0..*:1
speakLectureSocialActionAssisterActionOfSpeakLectureSocialAction	SpeakLectureSocialActionAssisterAction	SpeakLectureSocialAction	0..*:1

Table 7.41 OntoCarer-Link-Ontology LecturerRole - Of - SocialActionAssisterAction domain subproperties table

Lecturer Role – AssisterAid properties Of – Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialActionAssisterAidOfAskQuestionsSocialAction	AskQuestionsSocialActionAssisterAid	AskQuestionsSocialAction	0..*:1
answerQuestionsSocialActionAssisterAidOfAnswerQuestionsSocialAction	AnswerQuestionsSocialActionAssisterAid	AnswerQuestionsSocialAction	0..*:1
showLectureSlidesSocialActionAssisterAidOfShowLectureSlidesSocialAction	ShowLectureSlidesSocialActionAssisterAid	ShowLectureSlidesSocialAction	0..*:1
speakLectureSocialActionAssisterAidOfspeakLectureSocialAction	SpeakLectureSocialActionAssisterAid	SpeakLectureSocialAction	0..*:1

Table 7.42 OntoCarer-Link-Ontology LecturerRole – Of- SocialActionAssisterAid domain subproperties table

SignerCooperatorRole – CooperatesWith - SocialAction Domain subproperties

Property	Domain	Range	Cardinality
makeSignLanguageSocialActionCooperatesWithSeeSignLanguageSocialAction	MakeSignLanguageSocialAction	SeeSignLanguageActionSocialAction	1:0..*
seeSignLanguageActionSocialActionCooperatesWithMakeSignLanguageSocialAction	SeeSignLanguageActionSocialAction	MakeSignLanguageSocialAction	1:0..*
makeSignLanguageSocialActionCooperatesWithUnderstandSignLanguageSocialAction	MakeSignLanguageSocialAction	UnderstandSignLanguageSocialAction	1:0..*
understandSignLanguageSocialActionCooperatesWithMakeSignLanguageSocialAction	UnderstandSignLanguageSocialAction	MakeSignLanguageSocialAction	1:0..*

Table 7.43 OntoCarer-Link-Ontology SignerCooperatorRole CooperatesWith Social Action subproperties table

SignerTranslatorCooperatorRole – CooperatesWith - SocialAction Domain subproperties

Property	Domain	Range	Cardinality
makeSignLanguageSocialActionCooperatesWithTranslateSignLanguageToSpokenLanguageSocialAction	MakeSignLanguageSocialAction	TranslateSignLanguageToSpokenLanguageSocialAction	1:0..*
translateSignLanguageToSpokenLanguageSocialActionCooperatesWithMakeSignLanguageSocialAction	TranslateSignLanguageToSpokenLanguageSocialAction	MakeSignLanguageSocialAction	1:0..*
translateSpokenLanguageToSignLanguageSocialActionCooperatesWithMakeSignLanguageSocialAction	TranslateSpokenLanguageToSignLanguageSocialAction	MakeSignLanguageSocialAction	1:0..*
makeSignLanguageSocialActionCooperatesWithTranslateSpokenLanguageToSignLanguageSocialAction	MakeSignLanguageSocialAction	TranslateSpokenLanguageToSignLanguageSocialAction	1:0..*

Table 7.44 OntoCarer-Link-Ontology SignerTranslatorCooperatorRole CooperatesWith Social Action subproperties

7.9 The Extendibility of the OntoCarer ontologies

A main purpose of the OntoCarer Ontological Framework is to facilitate the OntoCarer Assistance Lifecycle in organisations. The OntoCarer Assistance Lifecycle is that process that begins with performing a role in an organisation and then intending an action within that organisational role and being unable to perform the action because of an impairment, then the process continues by finding relevant assistance, selecting the assistance and directing and monitoring the assistance until the original intention of the impaired person is satisfied. The top-level ontologies of the Ontological Framework facilitate this through the integration with each other to create a graph whose traversal by the OntoCarer Assistance Algorithm results in the successful completion of the OntoCarer Assistance Lifecycle in a model created from the Ontological Framework. The Ontological Framework is extended into particular organisational domains to provide the particular classes that belong to those domains, such as in the education domain, the education roles such as student and lecturer, the particular social actions that belong to those roles, and also the particular assister roles and assister actions. This allows the model to be a model of a particular organisation such as a particular college. Whilst still sharing that same pattern of classes and relationships that make up the Core OntoCarer Assistance Data Structure, that facilitates the performance of the OntoCarer Assistance Lifecycle. OntoCarer is focused upon this computational finding and planning of assistance in organisations and its classifications reflect this, unlike a classification such as the ICF which is a much broader and multipurpose classification, and consequently the ICF has much broader and varied set of classifications.

The extendibility comes from the top-level ontologies by providing the abstract classes and properties that belong to organisations, classes such as agent, person, role, social action, building, room, etc., which can then be given an extension into domain classes that are of the same type but reflect the particulars of that domain.

In this project only one domain is defined for the educational college domain. The extent of the domain definition was enough to be able to create a model of a college and use it in a software application that provided proof of concept for the OntoCarer Assistance Lifecycle and the OntoCarer Ontological Framework. But the defining of the educational domain ontology was not exhaustive for reasons of time and resources. The defining of other domain ontologies that extends the Ontological Framework into other organisational domains is possible, but has not been done in this project because of the need for specific domain knowledge in order for this to be successful as well as limitations of time and resources. Deciding, that is it was better to leave such domain extensions for future research rather than attempt a patch work of other domain classes and properties based upon limited knowledge, and which, due to not being specified in a complete form may not in that form be integrated together to be able to perform the Assistance Lifecycle which is one of their main purposes. Extensions are discussed further in 9.2 Further Work.

7.10 OntoCarer Implementation Phase 4

Having completed the Conceptualisation Phase by creating the conceptual representations of the OntoCarer top-level ontologies and OntoCarer College domain ontology in Protégé, the next step is to create a machine readable representation of these ontologies. This is done by translating the conceptual representations and translating them into RDF/XML so that they can be used and processed in the software application. The translation can be performed automatically in Protégé to generate the RDF/XML files of the OntoCarer ontologies.

The output of the translation process is displayed in the screenshot of the OntoCarer ontologies RDF/XML files below.

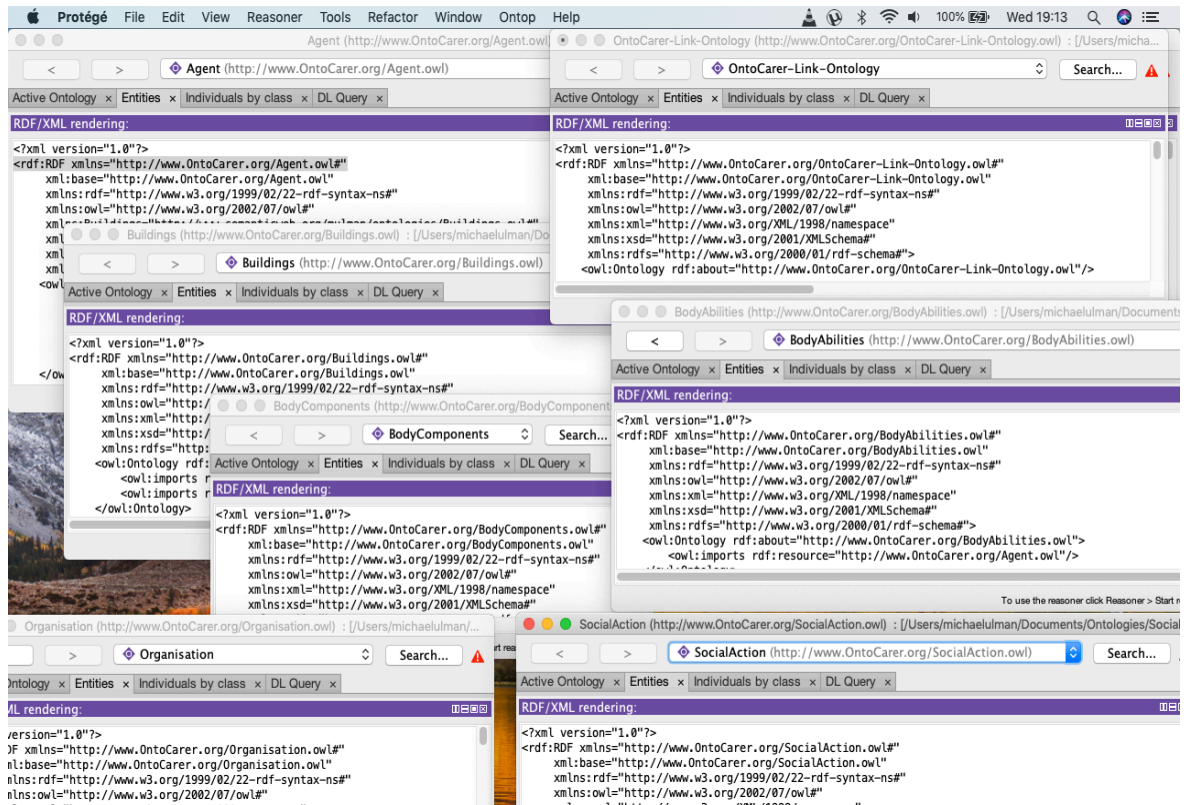


Figure 7.21 OntoCarer Ontologies RDF/XML implementation screenshot

7.11 Summary

This chapter is concerned with defining the domain ontology extensions to the top-level OntoCarer ontologies described in the previous chapter. These domain ontologies are for the Education Domain and in particular for a College Domain.

The chapter begins with a general introduction considering the many types of organisation in the world and the impossibility of covering them all in a project such as this, and so the need to be selective in the defining of domain ontologies for this project.

A choice is made to use the Education College Domain as the basis for each of the domain extensions to the top-level ontologies. This is because of the familiarity of this domain and the ease of constructing and judging such ontologies, the model and simulation constructed from the domain ontologies. The aims of doing so are to demonstrate the applicability of the top-level ontologies to a domain. In particular to extend the classes and properties of the Core OntoCarer Assistance Data Structure into the domain level and to facilitate the OntoCarer Assistance Lifecycle in a software application to identify and provide for assistance in that domain.

The following sections describe in detail how the seven top-level ontologies are extended into the domain ontologies for each of them. These are domain ontologies for the: Agent domain ontology, Body Components domain ontology, Body Abilities domain ontology, Social Action domain ontology, Buildings domain ontology, Organisation domain ontology, OntoCarer-Link-Ontology domain ontology.

The chapter finishes by considering the extendibility of the ontologies and finally the application of the implementation Phase 4 of the methodology whereby the OWL ontologies and model are translated by Protégé into machine readable RDF/XML files for use in the software application.

Chapter 8

Evaluation - Verification & Validation of the OntoCarer Ontological Framework

8.1 Introduction

This chapter is concerned with the evaluation of the OntoCarer Ontological Framework. This involves both the verification and validation of the Framework.

The ontology verification process is concerned with whether the ontology has been built correctly in accordance with the project goals and requirements, and built to the standards of correctness established in the methodology for constructing the ontologies.

The ontology validation process is concerned with whether the ontologies correctly model those aspects of the world, which they are intended to model. As part of this validation process a simulation of a college is used with the OntoCarer software application to execute a number of scenarios of assistance, in order to validate the OntoCarer Ontological Framework. The structure and content of the college model and the architecture and functioning of the software application are also described and assessed. In addition, the OntoCarer Software Architecture is evaluated as a BDI Agent Architecture. The ICF is also used for validation and evaluated in its functions in relation to OntoCarer.

8.2 OntoCarer Verification Process

The OntoCarer Verification Process consists of checking the Goals and the 6 Levels of Verification primarily for their completeness, consistency, and conciseness, and other related checks upon the build process. Where the six Levels are:

1. Categories Level
2. Vocabulary Level
3. Taxonomy Level
4. Syntactic Level
5. Framework Level
6. Application Level

The contents of these Levels are described as part of the OntoCarer Development Methodology in Chapter Four.

The OntoCarer Verification Process is an iterative process that is applied at each iteration of the prototype. What is summarised below is the state of the verification process at the completion of this prototype.

The terms by which the content of the Levels are judged: completeness, consistency, and conciseness are given these general definitions:

- **Completeness** – where all that is intended to be represented in the ontologies (and software application), and is essential to it is contained in it, or can be inferred from it (Gomez-Perez, 1999). In particular in this context it is concerned with *completeness* from the perspective of this prototype. It asks whether the aspect that is being evaluated is developed *sufficiently* to fulfil the purposes of the prototype within the constraints of the project, in particular the steps in the OntoCarer Assistance Lifecycle, whether that be the ontologies or the software application that uses them. For completeness to be fulfilled it is not necessary that the element being assessed is developed to the point of being *exhaustive*, such that no additional elements can potentially be added.
- **Consistency** – is concerned with checking that the elements of the ontologies do not contradict each other, or allow inconsistencies to be inferred from them.
- **Conciseness** – is concerned with whether the element being assessed can be simplified further without loss of content, and whether it contains redundancy or irrelevant aspects.

These three terms may be given more specific meanings within the context of a particular Level of verification.

As the process of verification is an iterative one that goes on throughout the project with adjustments also made throughout, the assessments made below are only at the current iteration, at the end state of the project.

Goals – the goals, objectives and purposes of the Ontological Framework as defined in the goal statement, use cases, and scenarios defined in chapters 4 and 5 act as an overall guide for checking that the purposes of the Ontological Framework are being met at each stage of the verification process.

The table below summarises the verification process for each of the six Levels of verification. The Outcomes are assessed from the perspective of being sufficient to fulfil the aims of the prototype, rather than from an absolute standard. With ‘Verified’ indicating there is sufficient functionality and adherence to the standards of the methodology and goals of the Ontological Framework to pass. Where there are differences between the prototype standard and an absolute standard these are clarified for particular cases below the table, with reasons given for the choices made.

Level	Content Verified	Criteria used	Additional Checks	Outcomes
1. Categories Level	- Model Categories - Candidate Ontologies list	- Completeness - Consistency - Conciseness - Accordance with Goal aims		Verified
2. Vocabulary Level	OntoCarer ontologies - Classes - Properties & - domains & ranges	- Correct level of precision & extension. - Completeness - Consistency - Conciseness - Accordance with Goal aims	- Naming conventions followed. - *Partition errors. - Incompleteness errors – missing concepts. - Redundancy errors – identical formal definitions.	Verified
3. Taxonomy Level	Hierarchy of 'is-a' relations in the OntoCarer ontologies	- Completeness - Consistency - Conciseness - Accordance with Goal aims	Taxonomy Inconsistency Errors - Circularity errors - *Partition errors Taxonomy Incompleteness Errors - Subclass partition omission - Exhaustive subclass partition omission Taxonomy Redundancy Errors	Verified
4. Syntactic Level	OntoCarer Ontologies & CollegeModel domain model - Translation from Conceptual model to RDF/XML	Correctness of syntax & translation from Conceptual model to RDF/XML - Automated checking by Protégé editor		Verified
5. Framework Level	OntoCarer Ontologies functioning integration	Scenarios – successful step throughs		Verified
6. Application Level	OntoCarer Ontologies functioning integration	Scenarios –successful program executions using the OntoCarer Ontologies and models		Verified

Table 8.1 OntoCarer Verification Process - Outcomes

8.2.1 Scenarios for the Verification Process

Below are descriptions of how the criteria were applied practice, along with relevant examples of the application of the criteria in the verification process for the six levels of verification.

1. Categories Level

1. Categories Level – subsections	Page
Consistency	236
Conciseness	237
Completeness	237
Accordance with Goal aims	238

Table 8.2 Table mapping 1. Categories Level subsections to pages

The Model Categories are: Agency, Body, Social, Disability & Assistance, Environmental
The candidate ontologies list is: Agent, Body Components, Body Abilities, Social Action, Organisation, Buildings, OntoCarer-Link-Ontology

Consistency

The five Model Categories are distinct covering different aspects of the world that need to be modelled to fulfil the goals of the project and sustain the OntoCarer Assistance Lifecycle. The Agency Model Category covers the agents and their agency which is exercised through the roles they play in organisations. The agents exist in a social context (Social Model Category) of organisations (Organisation Model Category) and organisational roles that have social actions. The agents and organisations exist in a physical environment (Environment Model Category) made up of buildings. The agents have a body (Body Model Category) which includes their components and abilities. These body components may have impairments which impact their body abilities and their social actions resulting in disability. The disabilities require assistance (Disability & Assistance Model Category) in the form of assisters which consist of assisting agents, assisting roles, assisting actions and assisting aids. These aspects are covered without contradicting or negating themselves or the other categories, and so are consistent and thus verified.

The consistency of the seven candidate ontologies, which are only considered in this section at an abstract level based on the type of things they would classify, with the consistency of their detailed constituent classes and properties and their relationships being considered separately in the verification levels: Level 2 (Vocabulary) and Level 3 (Taxonomy). The Agent ontology covers the different types of agent and their roles and assister roles. The Body Components ontology covers the different body parts, while the Body Abilities ontology covers the functioning of the body components, abilities such as seeing, hearing, etc. The Social Actions are distinguished from Body Abilities by being actions that belong to roles along with desire-intention levels and impairments, principally organisational roles

including assister roles and as such are more complex and involve conscious learning and training. The Organisation ontology is concerned to identify the social organisation and its situation activities, which is distinct from the buildings of the organisation which are the physical structures of the organisation and are described by the Buildings ontology. The OntoCarer-Link- Ontology contains properties that are used to link assisted with assisters and co-operators with related co-operators. These seven ontologies considered as just as potential ontologies without looking at the detail of the their constituent elements (their classes and properties) are consistent with each other and so are verified.

Conciseness

The five Model Categories do not contain superfluous categories as they are all used in classifying the seven OntoCarer ontologies.

Some of the ontologies occur in more than one Model Category. The Social Action ontology occurs in the in the Disability & Assistance category. This occurrence of ontologies in more than one category is explained as ontologies such as Social Action, Body Structures, Body Abilities, etc need to have additional classes and properties that identify impairments and also have assisters for those impairments so that Disability and Assistance is needed as distinct category to represent these aspects relating to disability and assistance in those ontologies.

The candidate ontologies list of seven ontologies: Agent, Body Components, Body Abilities, Social Action, Organisation, Buildings, OntoCarer-Link-Ontology, does not contain duplicate ontologies.

Completeness

Completeness in this context is concerned with whether the Model Categories are sufficient to cover the candidate ontologies. The completeness of the seven candidate ontologies depends upon whether when they are fleshed out to include their classes, properties, and taxonomy relationships they are sufficient to create the top level and domain ontologies and domain model along with a software application that can model the assistance needs of an organisation and in particular successfully implement the OntoCarer Assistance Lifecycle to successfully identify and deliver assistance in an organisation. As the OntoCarer Model Categories cover all the seven OntoCarer Ontologies and these ontologies when defined are sufficient for creating a domain ontology and a domain model, along with the successful completion of the OntoCarer Assistance Lifecycle in the software application then we can conclude there is sufficient evidence of the completeness of the Model Categories and the candidate ontologies.

Accordance with Goal aims

The initial Goal is given as: *To produce an ontological framework to plan personalised assistance for disabled agents in their interactions within organisations, and implemented in a software application and mobile phone apps.*

The initial Goal is a very brief statement of aims with which the Model Categories are in accordance, as they include: Agent category covering: ‘the agents’; Disability and Assistance category covering: ‘personalised assistance for disabled agents’; Social category covering: ‘agents in their interactions within organisations’; Body category covering: ‘disabled’; Environmental category covering: ‘organisations’.

2. Vocabulary Level

2. Vocabularies Level – subsections	Page
Consistency	238
Conciseness	240
Completeness	240
Correct level of precision & extension	245
Accordance with goal aims	245
Naming Conventions Followed	245
Partition Errors	246
Incompleteness errors – missing concepts	247
Redundancy errors – repeated formal definitions	247

Table 8.3 Vocabularies Level – subsections mapped to pages

The Vocabulary Level covers the detailed content of the OntoCarer ontologies, that is each of the ontologies’ classes and properties including their domains and ranges.

Consistency

The consistency of an ontology’s classes and properties is decided by whether the definitions of each of classes and properties are internally consistent and does not contain any contradictions. It does not exclude an ontology containing classes where a class is the negation of another class. Where classes are incompatible they can be marked as Disjoint in OWL, which if it is not obvious that they are incompatible it makes their disjointness clear and it also prevents an individual in a model being an instance of both the incompatible classes.

Each class in the ontologies is given a definition in a ‘glossary of concepts’ where a class represents a concept. For example, in the Agent ontology, here are the definitions of the concepts: Agent and Automata.

Concepts	Super-Concept	Definition
Agent	owl:Thing	An Agent is an actor that performs actions towards a goal
Automata	Agent	An Automata is an artificial agent

Table 8.4 Example of Agent and Automata definitions

Each definition of each concept in each ontology is checked to ensure that the definition is consistent and contains no contradictions.

The properties belonging to each ontology consist of two types. There are object properties and data properties. The object properties consist of relationships between two individuals each of which are instances of instances of particular classes that are identified in the domain and ranges of the property. The domain and range are also identified in the way that the object properties are named in the OntoCarer ontologies, as they begin with the domain name and end with the range name. The data properties consist of a relationship between an individual and a typed value.

For an object property to be inconsistent, the table of object properties would have to contain properties where the name of the property (which includes the name of the domain and the name of the range, with the domain at the front of the property name and the range at the end of the property name), was inconsistent with the names held in the Domain and Range columns in the same table for that row.

This is an example of some of the Agent object properties as defined in that table.

Property	Domain	Range	Cardinality
agentHasBodyAbility	Agent	BodyAbility	1:*
agentHasBodyComponent	Agent	BodyComponent	1:*
agentHasLocation	Agent	Location	*:1
agentHasSocialAction	Agent	SocialAction	1:*

Table 8.5 Example of Agent object properties

Each object property, in each ontology, is checked by ensuring the consistency of the object property name with the related domain and range names in each row of the object property tables.

In the above example we can see that the Property names are consistent with the names in the Domain and Range columns for the same row.

For a data property to be inconsistent the data property name which begins with the name of the domain would have to be inconsistent with the name of the Domain in the object

property table, and that name of the range which ends the property name would have to be inconsistent with the data type for the Range given in the data property table.

This is an example of some of the Agent data properties as defined in that table.

Property	Domain	Range	Cardinality
personHasFirstName	Person	String	1:*
personHasLastName	Person	String	1:1

Table 8.6 Example of Agent data properties

Each data property in each ontology is checked by ensuring the consistency of the data property name with the related Domain name and Range types in each row of the object property tables.

In the above example we can see the beginning of the Property names are consistent with the Domain names in the same row and the end of the property name e.g. FirstName is consistent with the Range data type on the same row, which is string, as a FirstName is a text.

Conciseness

The conciseness of each of the ontologies classes is considered by checking each of the class definitions in the Concepts Glossaries for repetition, tautologies, or superfluous or irrelevant information in the definitions of the classes.

The conciseness of each of the ontologies properties is considered by checking each of the properties in the object property and data property tables to see whether the property adheres to the OntoCarer naming conventions for properties. The naming convention for properties is to begin the property name with the name of the particular domain and end it with the name of the particular range, and for these domain and range names to be joined by a short name for the type of relationship between the domain objects and the range objects. In the case of the example object and data properties above they are joined by the relationship name ‘Has’ as in agentHasLocation or agentHas FirstName.

Completeness

As Gomez-Perez et al, reminds us ‘we cannot prove the completeness of an ontology nor the completeness of its definitions’ and that ‘incompleteness is a fundamental problem in ontologies, even more when ontologies are available in such an open environment as the Semantic Web’ (p179, Gomez-Perez, A., Fernandez-Loez, M., Corcho, O, 2004). Although *proofs* of ontology completeness cannot be given, *justifications* for considering an ontology complete within a limited scope can.

Completeness at the vocabulary level is concerned with the completeness of the classes and properties of the ontologies. In this case completeness is concerned with their being sufficient to fulfil the purposes of the project and its prototype, within the research constraints established for the project.

At the top level ontologies the classes and properties should be sufficient to fulfil the classificatory purposes of that ontology in relation to the overall goals of the project, which are for the providing of assistance to persons with disabilities and health conditions in organisations, and specifically to contribute where necessary to the fulfilment of the OntoCarer Assistance Lifecycle in practice. Such that there are all the classes and properties necessary to fulfil this lifecycle from an agent intending to perform an action, to identifying the capability to perform the action and its need for assistance, to finding and selecting the assistance, to directing and then monitoring the assistance to completion. To do this involves providing the top level ontologies with the classes and properties with the scope to describe their domain abstractly so that they can be extended to cover the particular type of classes and properties for particular domains. In the case of the seven OntoCarer ontologies this means for:

Agent ontology – covering the abstract types of agent (Agent, Person, Automata, RobotAutomata, etc) and more abstract types of role (AssistedRole, ProviderRole, UserRole, BasicFunctionRole, CooperatorRole, and AssisterRole) which are abstracted from those belonging to particular types of organisations.

Body Components – covering the classes of BodyComponent and BodyComponentAssister and the properties for connecting them to individuals of other classes. At the top level ontology this is done without specifying particular body components classes or their assisters as the particular body components classes necessary and the specificity and detail with which they are classified for a providing assistance in a particular type organisation may vary across the domain organisations and so these are specified in the domain ontologies.

Body Abilities – covers only the abstract categories of BodyAbility and BodyAbilityAssister as the specificity and detail with which they are classified in the domain ontology subclasses for providing assistance in a particular type organisation may vary across the domain organisations.

Social Action – covers the top level classes SocialAction and SocialActionAssister and their subclasses SocialActionAssisterAction and SocialActionAssisterAid, along with their relevant properties. The specific subclasses of these social actions and their assisters depend upon the type of organisation and so are specified in the domain ontologies. The Social

Action properties must include those for specifying the desire-intention level of the social action and a qualifier to indicate a level of impairment if there is one.

Building ontology – covers a variety of classes covering the elements that are common to buildings across many organisational domains. These include: Building, Surface, and BuildingPart with subclasses BuildingSpace (and its subclasses of BuildingPassage and Room) and BuildingSpaceElement along with more specific subclasses for these classes. AssistingFeatures for classes of building features that are intended to provide assistance for people with disabilities. The Location class is for a locality or place inside or outside of a building.

The specific subclasses for buildings in particular domains such as: education, restaurants, cinemas, hospitals, etc are specified in their respective building domain ontologies.

Organisation ontology – has only two top level classes; Organisation and SituationActivity. These are for the different types of organisation and the situation activities that may take place in organisations, which are specified for the particular types.

The **OntoCarer-Link-Ontology** – contains properties that collect together the relationships of assistance between Roles, Social Actions, Body Components, and Body Abilities and their assisters and cooperators. The relationships between the specific organisational roles and their social actions, and specific body components and body abilities and their assisters and cooperators are specified in the subproperties of the domain ontologies.

The justification for the classes at the top of the hierarchy in these top level ontologies are provided by them being included in assistance scenarios. In so far as these classes at the top of the class hierarchies appear in the assistance scenarios then they can be said to have universal scope or at least generality of scope for that particular class of things, in that the classes Agent, Role, Social Action, BodyComponent, BodyAbility, Organisation cover all subclasses of their type, i.e. every type of agent is an Agent, every role is of type Role, every type of social action is of type SocialAction etc. For the intermediate classes in the top level ontologies that are subclasses of these top of the hierarchy classes then these can be justified by appearing in assistance scenarios or potential scenarios. Though this does not rule out that there may be other intermediate classes that could be added and justified in their use in assistance scenarios for as yet undefined domains which are not currently represented in the top level ontologies. The test for this depends upon trying to find scenarios and counter examples where there are intermediate classes not already included in these top level ontologies that could not be justified to considered domain ontology subclasses. While the successful use of the ontologies as they are in assistance scenarios and for the education domain, and the process of attempting to find potential other additional intermediate

subclasses has been gone through provides the justification for considering them as being verified as complete. Though this does not extend to as yet unspecified domains which will require their own verification for completeness.

An outline of the main concepts and their relationships that must be included in the OntoCarer Ontological Framework if it is to be considered as complete in fulfilling its purpose of providing assistance to people with disabilities and health conditions is shown below in Figure 8.1. In particular, it includes in the rectangle inside the diagram those in the Core OntoCarer Assistance Data Structure. The Core OntoCarer Assistance Data Structure are those classes and properties which are essential to any OntoCarer organisational assistance scenario and must be reflected in the subclasses of the domain ontologies. Without these classes and properties either from the top level ontologies or reflected in the subclasses of the respective domain ontologies, then the framework of ontologies is not complete. The Core OntoCarer Assistance Data Structure at the top level provides the classes and properties for the universality of the OntoCarer Assistance Lifecycle in conjunction with the OntoCarer Assistance Algorithm, such that the Assistance Lifecycle will function correctly for the domain ontologies provided that their subclasses and properties also implement them to cover the Core OntoCarer Assistance Data Structure in the respective ontologies for which they are intended. This universality of application is demonstrated in 8.6.3 that covers the application of the OntoCarer Assistance Algorithm to the Core OntoCarer Assistance Data Structure.

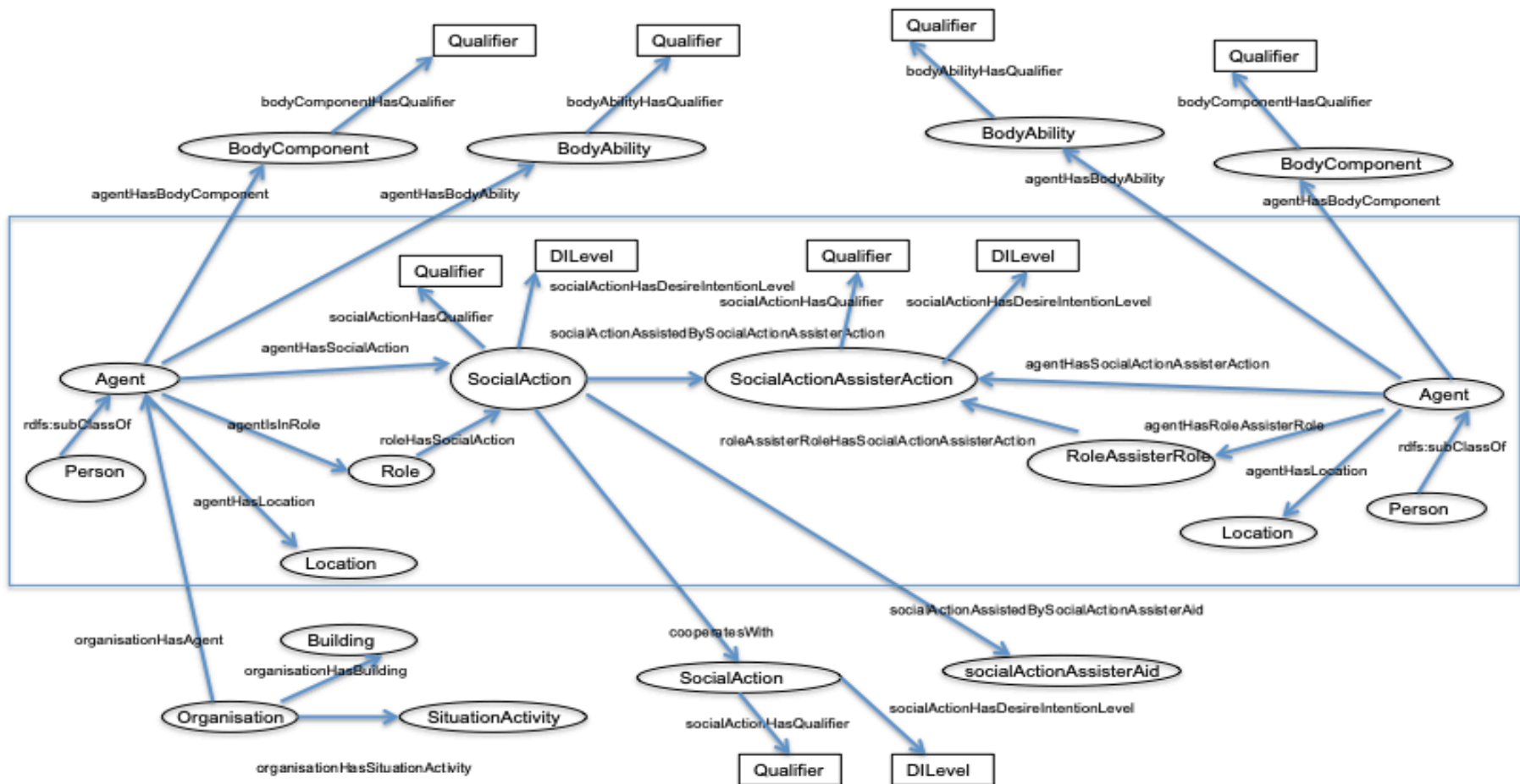


Figure 8.1 Outline of OntoCarer top-level classes and properties and the Core OntoCarer Assistance Data Structure (in the rectangle)

Correct level of precision & extension

The ‘correct level of precision and extension’ is a judgement applied to the concepts and their implementation as OWL classes. The judgement is made in relation to the purposes of the concepts and classes as to their relevance and their ‘correct level of precision and extension’ and whether they are too vague with too wide an extension, or too precise with too narrow an extension. This is best illustrated with some examples. In the Agent ontology there is the Agent class which covers all types of agent, which have agency and perform actions, which are relevant to the purposes of OntoCarer which is concerned with agent performing actions in organisations and their assistance. This concept of Agent is given more precision in the subclasses of Agent. These Agent subclasses are Person and Automata, as we need to distinguish between persons who may require assistance from automata that do not, amongst other reasons. The different type of Automata are further defined in the subclasses with greater precision, as RobotAutomata and SoftwareAutomata. It may be possible that at some point assistance could be provided by robots and so these need to be distinguished from software agents embodied in computer programs. The SoftwareAutomata are made more precise by distinguishing between MobileAutomata and OrganisationAgent as we may wish distinguish between the different OntoCarer software applications, the one that runs on the mobile phone and the one that runs on the server and does the assistance planning. It is possible that other Agent concepts could be made more precise but be correctly considered not to be at the correct level of precision and extension, such as introducing subclasses to the class Person for persons of different hair colour. Introducing PersonBrunette, PersonBlonde, etc would be more precise but be irrelevant to the finding and directing of assistance of persons. Similarly, adding broad concepts with a wide extension such as ‘LandThing’ and ‘AquaticThing’ as subclasses of class Thing in the Agent ontology, would have no value as they are also irrelevant to the finding and directing of assistance.

Accordance with Goal aims

Each class and property in each ontology needs to be judged as to whether it is accordance with the Goal aims as stated above. This is a matter of deciding whether the classes and properties in the ontologies contribute or may potentially contribute to ‘*an ontological framework to plan personalised assistance for disabled agents in their interactions within organisations*’ rejecting those that are irrelevant to such an aim.

Naming Conventions Followed

There are naming conventions used in the OntoCarer ontologies for the classes and properties to ensure their: clarity, informativeness, consistency and recognition.

In the case of the classes, each class begins with a capital letter and the name should reflect the concept it represents, as Agent for concept representing the class of agent. In the case

where a class name requires the use of more than one word to define it then each word that forms part of the name begins with a capital letter and the words are conjoined with no spaces or underscores in between them. For example the complex names; RobotAutomata and SoftwareAutomata.

In the case of properties, each property begins with a lowercase letter and subsequent words that form part of a complex property name in capital letters. The first word of a property should be the name of the property domain and the last word of the property should be the name of the property range. The domain name and the property name should be joined by a succinct name for the particular relation such as; Has, IsOn, AssistedBy. For example the property names; agentHasRole, agentIsOnFloor, agentIsInBuilding.

Partition Errors

Partition errors occur when individuals are made instances of two or more classes that are incompatible. To prevent such errors occurring *disjoints* between classes are used

The OWL property owl: DisjointWith allows us to declare that the two classes that it links do not share any individuals in common.

When creating an ontology or a framework of ontologies the use of disjoints first provides information to someone who may not be familiar with the concepts that the classes represent, as to which classes are disjoint.

The second function such disjoints provide is when creating a model from the classes, is to prevent errors occurring, whereby individuals that should only be instances of one class or another are assigned to both classes.

To fulfil the checks for Partition Errors at the Vocabulary Level then ideally all the disjoints should be included in the ontologies of the Framework. This is not done in the prototype, only selective disjoints are made. The reasons for this are several. The main one is that of resources, in order to include disjoint statements for every disjoint between a class and those other classes it is disjoint with in the Ontological Framework would mean creating tens of thousands of disjoint statements to do this. This could be partially mitigated by the use of applying disjoints between superclasses where all of their subclasses were disjoint, but would still be a very time consuming task to both construct all the disjoints and ensure they were correctly applied. The time that this would involve could not be justified. Firstly, because the concepts in the ontologies are familiar ones, as they are concepts belonging to agents, body components and abilities, education organisations and buildings, so a common sense understanding of them is sufficient for knowing which classes are disjoint from other classes, rather than relying on expert knowledge of the domains being required. Secondly, care has been taken to ensure when constructing the model that the partition and incompleteness errors have not been committed by violating potential disjoint constraints.

Consequently, with the understanding that these are comprised from an absolute standard, for the pragmatic purposes of the prototype these Levels pass the verification test.

Incompleteness errors – missing concepts

Incompleteness errors, where there are missing concepts and properties. Incompleteness is the inverse of completeness, so the steps towards discovering incompleteness are the same as those for ensuring completeness and so are covered in that section rather than being repeated again here in detail. They include the use of scenarios and stepping through them to find missing classes and properties in their execution.

Redundancy errors – repeated formal definitions

Each definition of a class is checked to ensure that it is not repeated in the same definition and that differently named classes do not share the same definition.

3. Taxonomy Level

Taxonomy Level – subsections	Page
Consistency	247
Taxonomy Redundancy Errors	248
Taxonomy Completeness Errors	249

Table 8.7 Table mapping Taxonomy Level subsections to pages

The Taxonomy Level is concerned with hierarchies of classes and properties in the ontologies and in particular the correctness of these is-a relationships.

Consistency

Consistency at the Taxonomy Level is concerned with checking for and avoiding Taxonomy Inconsistency Errors. Taxonomy Inconsistency errors include Circularity Errors and Partition Errors.

Circularity Errors are errors in the ‘is-a’ relationships where a class is made a subclass of one of its own subclasses so the inheritance relationship becomes circular. Checking for Circularity Errors involves firstly checking each row of the concept definition in the Concepts glossary for each ontology for the Super-Concept of each concept that will be implemented as a class that it does not contain itself as its own Super-Concept. For example in the concepts glossary for the classes in the Agent ontology: where none of the classes (Concepts) contains itself as its own super-class (Super-Concept).

Concepts	Super-Concept	Definition
Agent	owl:Thing	An Agent is an actor that performs actions towards a goal
Automata	Agent	An Automata is an artificial agent
RobotAutomata	Automata	A RobotAutomata is a physically embodied artificial agent
SoftwareAutomata	Automata	A SoftwareAutomata is an artificial agent that is a computer program

Table 8.8 Example of concepts glossary for the Agent ontology

Then check that the class diagram representing the relationships between the classes in a hierarchy does not contain any circular inheritance relationships.

Finally, when implementing the relationships between classes in Protégé care also needs to be taken to avoid implementing circular relationships between the classes as Protégé allows these kind of relationships to be created, as they are equivalent classes. Protégé also allows a class to be a subclass of itself. These consistency taxonomy checks are also done for the hierarchy of properties in each ontology.

Taxonomy inconsistency errors include Partition errors which includes subclass partition omission and exhaustive subclass partition omission. Subclass partition omission is where subclasses which should be disjoint are not partitioned allowing these subclasses to share an individual or have a common subclass. The same applies to exhaustive subclass omission where a set of subclasses has been declared to be exhaustive and then includes an individual instance of the superclass from a class outside this exhaustive set of subclasses. While care has been taken to ensure that such inconsistencies do not arise when creating the CollegeModel, their exclusion through the comprehensive use of the OWL property owl:DisjointWith to partition every relevant class was ruled out for practical reasons, as explained above in the section on Partition Errors in Vocabulary Level 2.

Taxonomy Redundancy Errors

These are where there are redundancies in the hierarchy of relations between classes, or between instances and classes. Redundancies affect the simplicity and elegance of the code but do not affect its functionality, so as are not as important as other errors which do affect the functioning.

Redundancies in the hierarchy of relations between classes occur directly or indirectly. A direct redundancy occurs when the subclass relationship between a subclass and superclass is repeated. An indirect redundancy occurs when a class is a subclass of another class as a result of being the subclass of an intermediary class that is also a subclass of its direct

superclass, and that first subclass then establishes a direct subclass relationship with the superclass so that the subclass relationship with the superclass is established twice and so is redundant.

The direct redundancy can be checked in the Concept glossary by checking the Super-Concept for repetition and in the class diagram for each ontology. Direct redundancy is prevented in the implementation by Protégé not allowing the duplication of direct subclassing relationships between two classes.

The indirect redundancy can be checked in the concepts glossary by checking the Super-Concept for repetition of super—concepts further up the hierarchy and in the class diagram for each ontology. For example the RoleAssisterRole is a subclass of AssisterRole which is a subclass of Role, if there was an indirect redundancy then Role would be specified as a Super-Concept of RoleAssisterRole in the glossary of concepts and there would be a direct subclass relationship shown by a line between the RoleAssisterRole class and the Role class in the class diagram.

Concepts	Super-Concept	Definition
RoleAssisterRole	AssisterRole	An AssisterRole that provides assistance to a corresponding role

Table 8.9 Example of RoleAssisterRole for Taxonomy Redundancy

Protégé does not prevent indirect redundancy being implemented between subclasses so checks would need to be made to prevent such redundancies in the code.

Taxonomy redundancy errors between instances and classes would occur when an individual is explicitly made an instance of a class twice either directly or through being made one of a class and one of its superclasses. This can be checked in any tables or diagrams of individuals and their relationship or in Protégé. In Protégé it does not allow an individual to be made directly an instance of the same class twice, but does allow an explicit declaration of an individual being an instance of a class and that class' superclass so to avoid this redundancy an explicit check of the editor contents or code needs to be made.

Taxonomy Completeness Errors

For checking taxonomy completeness as with other completeness checks on ontologies, it cannot be proved that a taxonomy is complete, one can only demonstrate incompleteness by detecting missing elements in the hierarchies. This can be done through the use of stepping through scenarios and looking for gaps in the hierarchies. Other means are through looking at existing superclass subclass hierarchies in an ontology and looking for gaps. For example, the top level Agent ontology contains a Role class and its subclasses for these types of roles: AssisterRole, AssistedRole, UserRole, ProviderRole, CooperatorRole. In addition there were

a number of social actions which existed in the domain ontology which did not fit into any of these role types. These were social actions such as: FeedSelfSocialAction, UseCutleryToFeedSocialAction, WashSelfSocialAction, PutClothesOnSocialAction. These social actions do not fit into the roles just mentioned, as they are not specific just to users or providers, or assisters or assisted, not do they depend upon a cooperator. These are actions that that everyone performs whether they are a user or provider, assisted or assister. In addition these are actions that transcend any particular type of organisation; people eat and drink, wash and dress in every organisation and outside of organisations. As a consequence there was a gap in the list of subroles to Role in the Agent ontology which the BasicFunctionRole subclass could fill and then be used to relate that role to these social actions classes that identified basic function actions such as those related to eating, drinking, washing, dressing, etc.

Another important check is to make sure that the correct superclass subclass relationships are established between the superclasses of the top level ontologies and subclasses of the domain ontologies. This is particularly important for ensuring that the OntoCarer Assistance Lifecycle functions effectively and its universality is transmitted from the top level ontologies to the domain ontologies. To do this involves the establishing the correct subclass relationships to the top level classes in the Core OntoCarer Assistance Data Structure, so for example the top-level SocialAction class is made a superclass to the particular domain level SocialAction classes and the other classes and properties, so that the effectiveness of the OntoCarer Assistance Algorithm as applied to the top level data structure is transmitted to the domain level classes and then on to the individuals in the model that represents the organisation and its agents.

4. Syntactic Level

The Syntactic Level involves ensuring that the specification in the Conceptual model which includes the class and property diagrams, the glossaries and tables which result in the model created in the Protégé editor of the classes and properties and of the model of the individuals and its relationships are then translated correctly into the syntactic requirements of the ontology implementation language such as RDF/XML. The checking of this involves ensuring that the specification of the ontologies and model are correctly reproduced in the Protégé editor. The Protégé editor then performs the translation into the implementation into RDF/XML (or other implementation format) automatically, so that further checks on this aspect of the ontologies and models are not needed.

5. Framework Level

The Framework Level is concerned with ensuring that the OntoCarer Ontologies are integrated with each other in a form that enables the ontologies function together to fulfil the purposes of the Framework. In particular this means the ontologies being able to fulfil the

OntoCarer Assistance Lifecycle. To verify that the Assistance Lifecycle is capable of being fulfilled involves constructing a variety of assistance scenarios and then stepping through the scenarios to find if there are the classes and properties available to fulfil the scenarios. In the case of scenarios where there are gaps in the classes and properties to add them to the respective ontologies, until each scenario could be stepped through from initialisation to initiating an intended action to the completion of any assistance satisfying the action and returning to the default state.

The scenario step throughs are done first using the top-level ontologies in the Framework and then using particular scenarios using the domain level ontologies.

The top level scenario involves stepping through the Assistance Lifecycle in conjunction with the Core OntoCarer Assistance Lifecycle Data Structure as implemented in classes and properties of the OntoCarer top level ontologies. Whereby the lifecycle is fulfilled without any gaps being found in the classes and properties needed. Variants on the lifecycle are also tested, whereby such situations as assistance not being needed or not being available are also stepped through to ensure the robustness of the Framework to manage alternative possibilities.

The domain level scenarios used for the step throughs are based on the Education domain which implement the top level classes and properties in the ontologies for this particular domain. The domain level scenarios used for the step throughs are those described in the tables in section 8.6.4.

6. Application Level

The Application Level involves testing the execution of the scenarios to ensure that the program functions correctly at each step of the execution of each scenario to produce the correct outcomes for each input and method of each scenario execution. This is done by using output statements inserted in the program to show the inputs to each method, and the results of: operations, conditionals, iterations, and queries within each method, and also the data returned from each method, throughout the execution of each scenario. The execution of the program can then be checked against the correct expected outputs from the scenarios which are summarised in the tables in section 8.6.4.

An outline is given below of the order of execution of the methods in the program, which are used for checking the correct execution of the program for each scenario and their outputs.

The OntoCarerDriver class contains the main method from where the program begins execution. The main method invokes the OntoCarerDriver constructor. The constructor invokes the initialData method, then a method for each of the seven scenarios; scenario1(), scenario2(), etc.

The `initialData` method loads each ontology and the `CollegeModel` from a file into `dataModel`. Each of the statements in `dataModel` is passed to the `addCurrent` method of an instance of the `OntoCarerPlanner` class, where each is used as a parameter to create an instance of the inner `CurrentStatement` class with the boolean value `true` as the other parameter and added to the list `boolStatements`.

Each scenario invokes the `OntoCarerDriver` `newData` method multiple times, passing as parameters files giving the starting location and the floor of each of the fifteen agents in each scenario. The assistance lifecycle is triggered in each scenario by invoking `newData` with a file as parameter that changes the desire-intention level of a social action for one of the agents from a desire to an intention (levels 5 to 9). The `OntoCarerPlanner` method `changeDesireIntentionLevel` is invoked passing the social action and its new desire-intention level as parameters. The existing statement of the social action's desire-intention is searched for in the list of `boolStatements` and when found has its associated boolean value changed from `true` to `false`. A new statement for the social action's new desire-intention level is created and added to the list of `boolStatements` using the `addCurrent` method which creates an instance of `CurrentStatement` containing the new statement and the value `true`. The new desire-intention level is checked to determine what action to take. If the level is below 5 then it is a desire or if 0 no desire, so no action needs to be taken. If the level is 10 then the action is satisfied, and so can be set back to the default of 1. If there is a linked assisted action then the satisfaction of the assisted action is also satisfied, so the assisted action should also have its desire-intention level set to 10 and then to 1. If the desire-intention level is between 5 and 9 then the action is an intention. As such it needs to be checked whether it can perform the action without assistance by passing the social action as a parameter to the `findSocialActionCapabilityQualifier` which returns the qualifier. The `findSocialActionCapabilityQualifier` method invokes the `QueryUtility.objectQuery` method to query the `currentModel` of true statements to find the qualifier belonging to the social action. If the qualifier is in the range 1 to 4 then assistance is needed. If assistance is needed then the method `findSubjectDIForAction` is invoked with the social action as parameter and returns the (assisted) agent that the action belongs to. The method `findAgentSubjectDIForAction` invokes the method `QueryUtility.subjectQuery` to query the `currentModel` of statements held true to find the agent that has the social action. The method `searchForAssistance` is then invoked with the assisted agent, the social action needing assistance and its qualifier and desire-intention level. The method `findAssistingActions` is invoked passing the assisted action as a parameter. The method `findAssistingActions` invokes the method `QueryUtility.objectQuery` to find and return a list of assisting actions for the assisted action in the `currentModel` of statements. The `findAssistingActions` method returns a list of all the instances of assisting social actions that are available for it and linked to it. The assisting actions list is iterated through, and each assisting action is passed as a parameter to the

method `findAssistingAgent` in order to find the assisting agent that the assisting action belongs to. The `findAssistingAgent` method invokes the `QueryUtility.subjectQuery` method using a query to find the agent that has the assisting agent which returned and that agent is added to the `assistingAgentsList`. The `AssistingAgentsList` is then iterated through, and each assisting agent is passed as a parameter to the method `findAgentLocation` in order to find the location of the assisting agent, as this will be used for selecting the optimal assisting agent from those available. The `findAgentLocation` method invokes the `QueryUtility.objectQuery` method with a query to find the agent at the location in the `currentModel`. The assisting agent location is then added to the list `assistingAgentLocationList`. The same is done to find on which floor the assisting agent is on by invoking the `findAgentFloor` method passing the assisting agent as a parameter and using `QueryUtility.objectQuery` method and then returning the floor. The floor may also be used to find the nearest assisting agent. The floor is added to the `assistingAgentsFloorList`. The method then goes on to select the optimal assisting agent from those available for the social action requiring assistance based upon the nearness of the assisting agent to the assisted agent. The location of the assisting agent's are first checked to find if they are at the same location, and if they are not then checked for being on the same floor, and if not then any available assisting agent for the assisted action. When an assisting agent is found then the method `findAssistingAction` is invoked with the parameters the selected nearest assisting agent and the `assistingActionsList`, which will return the selected assisting action. If the assisting agent is on a different floor then the particular floor has to be retrieved to act as a parameter to the `assistancePlanningResult` method and is done so by invoking the `findAgentFloor` method with the parameter of the selected assisting agent, and using the `QueryUtility.objectQuery` method to query the `currentModel`.

Once the selected assisted agent is found then the flag variable 'found' is set to true. If no assisting agent is found and the 'found' variable remains at false then the assisted agent is informed that no assistance is available for the assisted action. Consequent to 'found' being true, the linked variables `linkedAssistedSocialAction` and `linkedAssisterSocialAction` are assigned the assisted action and the selected assisting action respectively, as these linked actions will be used to ensure that the results of performing the assisting action are reflected in the desire-intention levels of the assisted action. The assisting action selected to perform the assistance is then passed to the method `changeDesireIntentionLevel` along with the integer 9, which indicates that the assisting action has gone from a desire to an intention. This in turn will trigger a check on the capability level of the assisting action in case it in turn requires assistance.

The method `assistancePlanningResult` is invoked which takes the parameters: `assistedAgent`, `assistedLocation`, `assistedFloor`, `assistedAction`, `assistedSocialActionLevel`, `assistedCapability`, `selectedAssistingAgent`, `assistingLocation`, `assistingFloor`,

assistingAction. The assistancePlanningResult simulates the directing and informing of the assisted agent and assisting agent by outputting the relevant information input as parameters for to the screen with relevant messages for those agents.

The process of monitoring the provision of the assistance until completion is then done by the program. If the selected assisting agent is not at the same location as the assisted agent then the assisting agent will have to proceed through the college building until arriving at the assisted agent’s location. This is simulated in the relevant scenarios through invoking the newData method with an rdf/xml file for each change of location for the assisting agent along with the parameter “location”, so that the addNewLocation method can be invoked to update the location of the assisting agent. Once the assisting agent arrives at the assisted agent’s location (if they are not there already) then the assisting agent provides the assistance, the completion of the assistance would be communicated by the assisting agent messaging that the assisted action is satisfied by setting its desire-intention level to 10. This is simulated in the scenario by invoking the newData method and passing an rdf/xml file that changes the desire-intention level of the assisting action to 10. This leads to the changeDesireIntentionLevel method being invoked with the parameters of the assisting social action and the level 10. If the level is 10 then the social action parameter is checked to find if it matches the one held in the variable linkedAssisterSocialAction. If such a match is found then this means that as the assisting action is satisfied at level 10 then so should the action held in linkedAssistedSocialAction, consequently the changeDesireIntentionLevel method is invoked with the corresponding assisted social action and level 10 as parameters. Once both assisting and the related assisted social action have been satisfied then the both of these actions have their levels set back to the default desire-intention level of 1 through invoking changeDesireIntentionLevel method for each with a parameter of level 1.

```

SELECT DISTINCT ?object
WHERE {
  { CollegeModel:agent9DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1
    SocialAction:socialActionHasQualifier ?object
  }
}

Query executed
query response gotorg.apache.jena.sparql.engine.ResultSetCheckCondition@3866c9e8
response loop entered
object is 0^http://www.w3.org/2001/XMLSchema#integer
Result of query is - capability qualifier is 0^http://www.w3.org/2001/XMLSchema#integer
socialAction Qualifier value is 0^http://www.w3.org/2001/XMLSchema#integer
assistancePlanningResult method executing

The ASSISTED agent http://www.OntoCarer.org/CollegeModel.rdf#agent7 is LOCATED at http://www.OntoCarer.org/CollegeModel.rdf#cafa1 and has the SOCIAL ACTION http://www.OntoCarer.org/CollegeModel.rdf#agent7DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 has INTENTION level 9^http://www.w3.org/2001/XMLSchema#integer
The selected ASSISTING agent is http://www.OntoCarer.org/CollegeModel.rdf#agent9 at LOCATION http://www.OntoCarer.org/CollegeModel.rdf#cafa1 providing ASSISTING SOCIAL ACTION http://www.OntoCarer.org/CollegeModel.rdf#agent9DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1

END of newData method
read newData into dataModel from filename /Users/michaelulman/Documents/Ontologies/agent9Scenario4SocialActionIchange1.rdf
change type is DESIRE-INTENTION value
match found for socialActionHasDesireIntentionLevel
with subject http://www.OntoCarer.org/CollegeModel.rdf#agent9DrinkerBasicFunctionRole1UseDrinkingUtensilSocialActionAssisterAction1 and value 10^http://www.w3.org/2001/XMLSchema#integer
changeDesireIntention method called
with parameters socialAction instance value is http://www.OntoCarer.org/CollegeModel.rdf#agent9DrinkerBasicFunctionRole1UseDrinkingUtensilSocialActionAssisterAction1
Iterate through the Statements and their subject, predicate and object in boolStatements list
Condition finds match for Social Action http://www.OntoCarer.org/CollegeModel.rdf#agent9DrinkerBasicFunctionRole1UseDrinkingUtensilSocialActionAssisterAction1 where the previous level is 9^http://www.w3.org/2001/XMLSchema#integer its Statement value is changed to false
New statement of Social action desire intention is [http://www.OntoCarer.org/CollegeModel.rdf#agent9DrinkerBasicFunctionRole1UseDrinkingUtensilSocialActionAssisterAction1]
The new Statement of Social action level is passed to addCurrent method
addCurrent method called with Statement [http://www.OntoCarer.org/CollegeModel.rdf#agent9DrinkerBasicFunctionRole1UseDrinkingUtensilSocialActionAssisterAction1]
new CurrentStatement OntoCarer.OntoCarerPlanner$CurrentStatement@ca2985696 created and added to boolStatements list
changeDesireIntention method called
with parameters socialAction instance value is http://www.OntoCarer.org/CollegeModel.rdf#agent7DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 new desire-intention level is 10
Iterate through the Statements and their subject, predicate and object in boolStatements list
Condition finds match for Social Action http://www.OntoCarer.org/CollegeModel.rdf#agent7DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 and socialActionHasDesireIntentionLevel where the previous level is 9^http://www.w3.org/2001/XMLSchema#integer its Statement value is changed to false
New statement of Social Action desire intention is [http://www.OntoCarer.org/CollegeModel.rdf#agent7DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1]
The new Statement of Social action level is passed to addCurrent method
addCurrent method called with Statement [http://www.OntoCarer.org/CollegeModel.rdf#agent7DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1]
new CurrentStatement OntoCarer.OntoCarerPlanner$CurrentStatement@ca35104 created and added to boolStatements list
Social action http://www.OntoCarer.org/CollegeModel.rdf#agent7DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 is performed and the intention satisfied at level 1
  
```

Figure 8.2 Example screen output from Application Level verification for scenario 4

8.3 OntoCarer Validation Process

The OntoCarer Validation Process for the OntoCarer Ontological Framework is concerned with determining whether those ontologies represent the real world entities they claim to represent and whether they can be used to represent a particular real world situation and function effectively together in a software application for the purposes of providing assistance. In order to determine whether the Ontological Framework is valid we will evaluate it against the four proposed methods of validation in the OntoCarer Methodology. These four validation methods are:

- Sources
- Correspondences and Comparisons
- Functionality
- Simulations

Each of these methods can validate an ontology to varying degrees. It is not necessary that each ontology be validated by all of them to be considered valid. In validating the OntoCarer Ontological Framework the main emphasis will be on the functionality within the software application and the use of the simulation of a college for testing the use of the Ontological framework in the software application.

8.3.1 Validation by Sources

The OntoCarer Ontological Framework consists of seven interdependent top-level ontologies and their domain extensions:

Agent, Body Components, Body Abilities, Social Action, Organisations, Buildings, and OntoCarer-Link-Ontology.

The domain extensions are in the field of education and are concerned with representing a college organisation, its buildings and agents with their profiles including their needs for assistance and ability to provide assistance.

The kinds of sources of knowledge in the methodology that could provide validity for the contents of the ontologies:

- Common sense knowledge
- Everyday knowledge
- Specialist domain knowledge
- Expert knowledge

Much of the source knowledge that is embodied in the concepts and properties of the ontologies can be considered to be based upon common sense knowledge and everyday knowledge. Where *common sense knowledge* is ‘the set of knowledge that every human has’ (Andrich et al, 2009) and *everyday knowledge* is the ‘kind of knowledge everyone in modern society acquires as part of participating in everyday life, such as knowledge of: schools, shops, transport, cinema, television, etc.’. These kinds of knowledge are reflected in the basic distinctions in the Agent ontology between different types of Agent and the idea of having persons having roles to play. The knowledge of a distinction between

body components and body abilities is a common sense one. The basic categories of body components (arms, legs, hands, feet, eyes, ears, etc.), and body abilities (seeing, hearing, walking, standing, etc.) are known by everyone as part of growing up as a person. Similarly with the Social Action ontology, the actions that go with the Basic Function roles of: washer, dresser, eater, drinker, etc., are known by everyone, and those belonging to particular roles; student, lecturer, library assistant, etc., in the education domain are normally common knowledge as everyone has experience of education. That there are different types of organisation and the situation activities that may take place in the commonly encountered ones such as schools, colleges, shops, restaurants, which are part of the domain of the Organisation ontology are also part of everyday knowledge. The different component parts from which buildings are constructed such as floors, rooms, corridors, stairs, is also part of common sense and everyday knowledge, so can act to justify the content of the Buildings ontology. This also applies to many buildings within everyday domains such as: schools, colleges, restaurants, cinemas, etc.

While it is the case that these concepts and properties in the OntoCarer ontologies that are familiar from the point of view of common sense and everyday knowledge can be considered as representative of their real world counterparts, this in itself does not make for their full validation. In addition to this, we have to consider the scope and integration of the concepts and properties covered in the ontologies, and whether the concepts and properties chosen for the ontologies are sufficient to fulfil the assistive purposes of the software application. We also need to consider whether the concepts and properties are sufficiently integrated and linked together in the ontologies and between the ontologies in order to fulfil the assistive purposes of the OntoCarer software application. To decide whether these additional features are fulfilled we need to validate them through their functionality and performance in the assistive software application.

Because of the choice of domain that of education and in particular a college organisation there was no need for calling upon external specialist or expert knowledge in order to validate the ontologies. The only use of expert was knowledge was the use of the WHO ICF Body Structure and Body Functions classifications to provide additional validation for the OntoCarer Body Components and Body Abilities ontologies.

Not all the concepts in the OntoCarer ontologies will be familiar concepts to someone based upon their common sense and everyday knowledge. Some of the concepts are particular to the ontologies such as the idea of a social action and the various type of assister. Many of the properties are not part of normal discourse as they are used to link the various concepts in the ontologies. The OntoCarer-Link-Ontology is composed entirely of properties for linking concepts in the ontologies. Linking the concepts in relationships of assistance and cooperation. These specialist concepts and properties in the OntoCarer Ontological Framework will also have to seek validation in the realms of Functionality and Simulation, as they are used in the functioning of the OntoCarer assistive software application.

8.3.2 Validation by Correspondences and Comparisons

Validation can be performed by making comparisons and correspondences with other classifications and real world situations, for the ontological classes and properties and the models created from them. Developers, users, or domain experts may do the comparisons.

In this project given the familiarity of the educational domain, additional comparisons to validate the ontologies and models was not judged to be necessary for their validation.

8.3.3 Validation by Functionality

The OntoCarer ontologies are intended for use in an assistive software application to identify and provide assistance to the disabled in an organisation.

The OntoCarer ontologies functionality is validated by their successful functioning in:

- The OntoCarer Assistance Algorithm
- The scenarios used to test the algorithm and application, including the range of disabilities and organisational roles
- The successful execution of software application – including the successful simulation of the college and its provision of assistance

The use of the ontologies in such an application validates their functionality, including the scope of the classes and properties chosen and their ability to work together in an integrated way for these purposes.

8.3.4 Validation by Simulations

The ideal when validating the software application would be test it out in a real world situation, which in OntoCarer's case would be a real organisation with its staff and users including disabled users, all of which interacted with the application through their mobile phones in order to provide assistance to those needing assistance in real time. As this was not practically feasible, a simulation of an organisation was used. A virtual college with simulations of its building and the agents in it, who are users and providers, including some who are disabled who need assistance. Representative assistive algorithms were implemented in the program, and realistic scenarios of assistance were then run against this software to test the ability to act as an assistive social network to identify and provide assistance in this simulated college, in a similar manner to that which would happen in a real college.

8.4 Requirements for an OntoCarer data model

These are the requirements for a data model that can provide the required functionality and act as a suitable simulation of an organisation in order to validate the OntoCarer Ontological Framework:

- The data model should represent an organisation including its agents and building. The organisation type should be one that is well understood in terms of its constituent elements and its functioning so that it can be verified that the model and its functioning in the software application is representative of such an organisation and so capable of validating the ontologies in the simulation.

- The agents and their profiles should be representative of the typical roles and their associated actions in such an organisation.
- The profiles should include a representative sample of different disabilities, reflected in their body components and body abilities.
- The disabled should include agents with provider roles as well as user roles.
- Assister roles and assister actions should be distributed across agents in the organisation, where those assisting agents also have a variety of provider and user roles, and not just be restricted to specialist care provider roles.
- Some agents who are themselves disabled in some aspect and so who are also assisted at times should also have assister roles.
- The data model should implement in its particular individuals and properties the relationships that make up the OntoCarer Assistance Data Structure. This means that in turn that these data structures will facilitate the implementation of the assisting scenarios that make up the OntoCarer Assistance Lifecycle for the particular domain the data model represents.
- The agents in the organisation along with their roles and actions including assisting roles and assisting actions should form an assistive social network.

8.5 OntoCarer CollegeModel Data Model

The OntoCarer CollegeModel data model aims to meet the above requirements by basing the simulation upon a model of a college organisation with a representative sample of agents and their roles and actions, which includes representative samples of disabilities amongst them. The CollegeModel data model is described below followed by a description of the assistive algorithm, and the scenarios used to test it in the software application, with the results.

The OntoCarer CollegeModel data model represents a college organisation in the education domain. It is intended to simulate the organisation, building and agents of such an educational college, albeit on a smaller scale.

8.5.1 College building

This is the floor plan of the OntoCarer college building

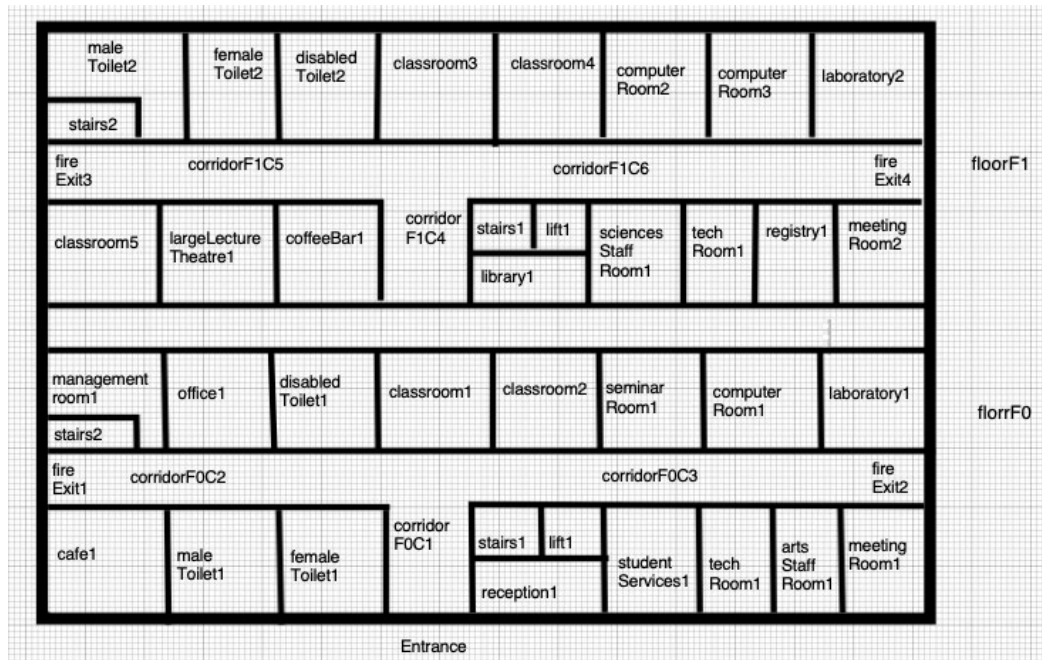


Figure 8.3 OntoCarer College Building Floor Plan

This college building contains many of the features of a typical college. It contains rooms for: classrooms, offices, laboratories, staff rooms, meeting rooms, lecture theatres, computer rooms, reception rooms, student services, registry, library, cafes, toilets. In addition they have other building features for getting around the building. These other features include: corridors, entrances, exits, fire exits, stairs, lifts, and more than one storey to the building.

There are also assisting features to help the disabled. These include handrails on the corridors and stairs, and a wheelchair stair lift.

College Building Specification

The College Building specification consists of a series of statements, where each statement consists of a triple of a subject, predicate and object, defining the College building.

The college building floor specification is then implemented in RDF by creating instances of the BuildingPart classes etc. as individual instances in Protégé.

The College Building instances are then related to each other to form the model of the college building using Buildings ontology properties.

8.5.2 CollegeModel Agent profiles

The CollegeModel contains fifteen agent profiles. Each of these agents each can play multiple roles in the organisation. The main roles in this organisation are:

- **Basic Function Roles:** eater, drinker, dresser, washer, toileter.
- **User Roles:** student, library user, café user, information seeker

- **Provider Roles:** lecturer, information assistant, library assistant, café assistant, security guard, bursar, registrar, technician, care worker
- **Cooperator Roles:** signer, signer translator
- **Role Assister Roles:** eater role-assister-role, drinker role-assister-role, dresser role-assister-role, washer role-assister-role, toileter role-assister-role, information seeker role-assister-role, student role-assister-role, café user role-assister-role, library user role-assister-role
- **Assister Roles:** care worker assister role

These are the Agent profiles of the fifteen agents, that includes their roles and their body components and body abilities where they have disabilities. It should be noted that an agent having a particular role does not mean that it necessarily has all the social actions or assister actions potentially associated with that role. A complete set of the Agent profiles which includes the social actions and social action assister actions belonging to each agent role is included in Appendix G CollegeModel Agent Profiles (tables of the agent profiles)

Agent1

Basic Function Roles	User Roles	Provider Roles	Cooperator Roles	Role Assister Roles
Dresser	Café User		Signer	
Drinker	Information Seeker			
Eater	Library User			
Toileter	Student User			
Body Components	Qualifier	Body Abilities	Qualifier	
Left Ear	4	Hearing	4	
Right Ear	4	Left Ear	4	
		Right Ear	4	

Table 8.10 CollegeModel Agent1 Profile

Agent2

Basic Function Roles	User Roles	Provider Roles	Cooperator Roles	Role Assister Roles
Dresser	Café User	Information Assistant	Signer	Information Seeker
Drinker			Signer Translator	
Eater				
Toileter				

Table 8.11 CollegeModel Agent2 Profile

Agent3

Basic Function Roles	User Roles	Provider Roles	Cooperator Roles	Role Assister Roles
Dresser	Café User	Information Assistant		Information Seeker
Drinker				
Eater				
Toileter				

Table 8.12 CollegeModel Agent3 Profile

Agent4

Basic Function Roles	User Roles	Provider Roles	Cooperator Roles	Role Assister Roles
Dresser	Café User	Lecturer		
Drinker	Library User			
Eater				
Toileter				
Body Components	Qualifier	Body Abilities	Qualifier	
Left Eye	4	Seeing ability	4	
Right Eye	4	Left Eye seeing ability	4	
		Right Eye seeing ability	4	

Table 8.13 CollegeModel Agent4 Profile

Agent5

Basic Function Roles	User Roles	Provider Roles	Cooperator Roles	Role Assister Roles
Dresser	Café User			Student User
Drinker	Information Seeker			
Eater	Library User			
Toileter	Student User			

Table 8.14 CollegeModel Agent5 Profile

Agent6

Basic Function Roles	User Roles	Provider Roles	Cooperator Roles	Role Assister Roles
Dresser	Café User			Dresser
Drinker				Drinker
Eater				Eater
Toileter				Toileter
				Library User
				Student User

Table 8.15 CollegeModel Agent6 Profile
Agent6 also has the Care Worker Assister Role

Agent7

Basic Function Roles	User Roles	Provider Roles	Cooperator Roles	Role Assister Roles
Dresser	Café User			
Drinker	Information Seeker			
Eater	Library User			
Toileter	Student User			
Body Components	Qualifier	Body Abilities	Qualifier	
Left Hand	4	Left Hand Dexterity	4	
Right Hand	4	Right Hand Dexterity	4	
		Left Hand Movement	4	
		Right Hand Movement	4	

Table 8.16 CollegeModel Agent7 Profile

Agent8

Basic Function Roles	User Roles	Provider Roles	Cooperator Roles	Role Assister Roles
Dresser	Library User	Library Assistant		Library User
Drinker				
Eater				
Toileter				

Table 8.17 CollegeModel Agent8 Profile

Agent9

Basic Function Roles	User Roles	Provider Roles	Cooperator Roles	Role Assister Roles
Dresser	Cafe User	Cafe Assistant		Café User
Drinker				Eater
Eater				Drinker
Toileter				

Table 8.18 CollegeModel Agent9 Profile

Agent10

Basic Function Roles	User Roles	Provider Roles	Cooperator Roles	Role Assister Roles
Dresser	Café User	Bursar		Student User
Drinker	Library User			
Eater				
Toileter				
Body Components	Qualifier	Body Abilities	Qualifier	
Left Leg	4	Standing ability	4	
Right Leg	4	Walking ability	4	

Table 8.19 CollegeModel Agent10 Profile

Agent11

Basic Function Roles	User Roles	Provider Roles	Cooperator Roles	Role Assister Roles
Dresser	Café User	Registrar		Student User
Drinker	Library User			
Eater				
Toileter				

Table 8.20 CollegeModel Agent11 Profile

Agent12

Basic Function Roles	User Roles	Provider Roles	Cooperator Roles	Role Assister Roles
Dresser	Café User	Security Guard		Student User
Drinker	Library User			Library User
Eater				Toileter User
Toileter				

Table 8.21 CollegeModel Agent12 Profile

Agent13

Basic Function Roles	User Roles	Provider Roles	Cooperator Roles	Role Assister Roles
Dresser		Technician		
Drinker				
Eater				
Toileter				

Table 8.22 CollegeModel Agent13 Profile

Agent14

Basic Function Roles	User Roles	Provider Roles	Cooperator Roles	Role Assister Roles
Dresser	Café User			Dresser
Drinker				Drinker
Eater				Eater
Toileter				Toileter
				Library User
				Student User

Table 8.22 CollegeModel Agent14 Profile

Agent14 also has the Care Worker Assister Role

Agent15

Basic Function Roles	User Roles	Provider Roles	Cooperator Roles	Role Assister Roles
Dresser	Café User	Lecturer		Student User
Drinker	Library User			
Eater	Information Seeker			
Toileter				

Table 8.23 CollegeModel Agent15 Profile

The agent profiles include the following disabilities: deafness (agent1), blindness (agent4), damaged hands (agent7), inability to stand and walk (agent10).

The agent profiles include the following role assister roles: Information Seeker RoleAssisterRole, Student User RoleAssisterRole, Dresser BasicFunctionRoleAssisterRole, Drinker BasicFunctionRoleAssisterRole, Eater BasicFunctionRoleAssisterRole, Toileter BasicFunctionRoleAssisterRole, Library User RoleAssisterRole, Café User RoleAssisterRole. These assisting roles include agents other than dedicated care workers (agent6, agent14) who have other provider roles including lecturers, bursars, registrars, information assistant, café assistants, library assistants, and security guards.

It should also be noted that the assisted disabled agent10 who has the bursar provider role is also an assister providing assistance to disabled students when performing the act of paying their fees. Also, the student agent5 who is only a user and not a provider in the organisation does provide assistance to other students in a role assister role.

Roles and Social Actions

Each of the roles that an agent has is potentially connected to a range of social actions (or social assister actions in the case of RoleAssisterRoles) that belong to that role by the property ‘roleHasSocialAction’ or ‘roleAssisterRoleHasSocialActionAssisterAction’. Each social action and social action assister action is also linked by properties to their role and their agent.

Each social action (and social assister action) has two integer values associated with it. These are the social action’s desire-intention level and its qualifier – which indicates its level of capability.

The desire-intention level is linked to the social action by the property ‘socialActionHasDesireIntentionLevel’. Where the desire-intention level is on a scale from 0 to 10. Where 0 is no desire, and can be used to indicate the social action is not currently available. Levels 1 to 4 indicates the level of desire. Levels of 5 to 9 indicates the level of intention. Level 10 indicates that the intention is satisfied.

The qualifier is linked to the social action by the property ‘socialActionHasQualifier’. The qualifiers range from 0 to 9 where

0 is No problems, 1 is Mild, 2 is Moderate, 3 is Severe, 4 is Complete, 8 is Not specified, 9 is Not applicable.

Assistance - AssistedBy

The assistive social network is created by linking the elements that need assistance, with the elements that provide the assistance. This is done by ‘assistedAssisitedByAssister’ properties:

- bodyAbilityAssistedByBodyAbilityAssister
- bodyComponentAssistedByBodyComponentAssister
- roleAssistedByRoleAssister
- socialActionAssistedBySocialActionAssister

and their sub-properties that link them to particular forms of assistance such an assister aid or social action etc.

In the case of the CollegeModel each social action is linked to every corresponding social action assister action that can assist it, if it is needed.

An example of this is agent7 who is a disabled student with complete impairments to her hands (qualifier level 4). Amongst her roles are the Basic Function role for Drinker, which has the use drinking utensil social action. These states are represented by the following statements:

Agent:

agent7 agentHasBasicFunctionRole agent7DrinkerRole1
agent7 agentHasSocialAction agent7DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1
agent7 agentHasBodyComponent agent7LeftHandComponent1
agent7 agentHasBodyComponent agent7RightHandComponent1

Table 8.24 Agent7 Drinker Role RDF statements

Disabilities:

agent7LeftHandComponent1	bodyComponentHasQualifier	4
agent7RightHandComponent1	bodyComponentHasQualifier	4
agent7LeftHandDexterityAbility1	bodyAbilityHasQualifier	4
agent7RightHandDexterityAbility1	bodyAbilityHasQualifier	4
agent7LeftHandMovementAbility1	bodyAbilityHasQualifier	4
agent7RightHandMovementAbility1	bodyAbilityHasQualifier	4

Table 8.25 Agent7 Disability RDF statements

Role:

agent7DrinkerBasicFunctionRole1 roleHasAgent agent7
agent7DrinkerBasicFunctionRole1 roleHasSocialAction agent7BasicFunctionDrinkerRole1UseDrinkingUtensilSocialAction1

Table 8.26 Agent7 Role RDF statements

Social Action:

agent7DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 socialActionHasAgent agent7
agent7DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 socialActionInRole agent7DrinkerBasicFunctionRole1
agent7DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 socialActionHasQualifier 4
agent7BasicFunctionDrinkerRole1UseDrinkingUtensilSocialAction1 socialActionHasDesireIntentionLevel 1

Table 8.27 Agent7 Social Action RDF statements

AssistedBy:

agent7DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1
useDrinkingUtensilSocialActionAssistedByUseDrinkingUtensilSocialActionAssisterAction
agent6DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1
agent7DrinkerRole1UseDrinkingUtensilSocialAction1
useDrinkingUtensilSocialActionAssistedByUseDrinkingUtensilSocialActionAssisterAction
agent9DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1
agent7DrinkerRole1UseDrinkingUtensilSocialAction1
useDrinkingUtensilSocialActionAssistedByUseDrinkingUtensilSocialActionAssisterAction
agent14DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1

Table 8.28 Agent7 AssistedBy RDF statements

These CollegeModel social action statements are represented in Protégé as:

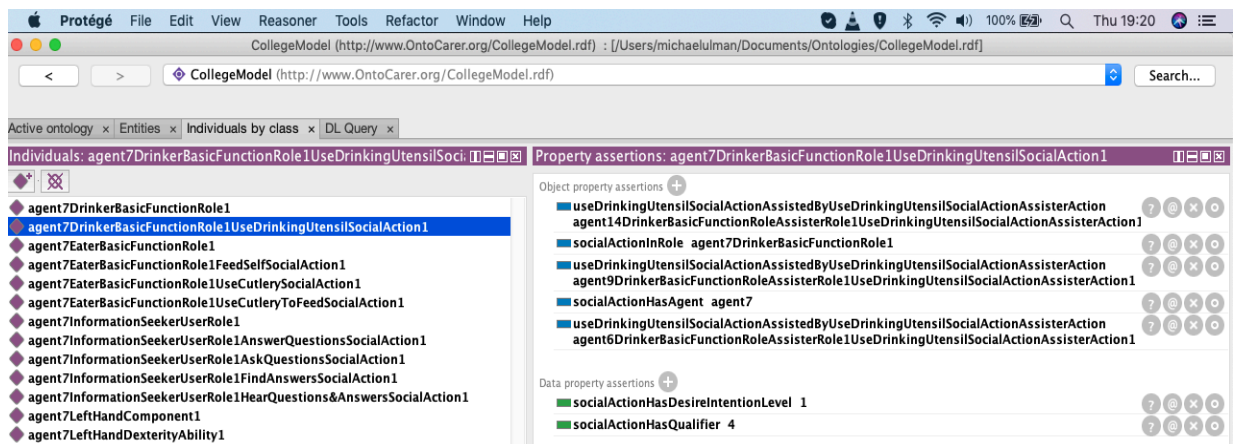


Figure 8.4 Agent7 UseDrinkingUtensil Social Action statements in Protégé

This assisting situation can be represented as a graph. The graph below (with its URI's abbreviated) shows agent7 with two disabled hands (qualifier 4) that affects her ability to perform the social action useDrinkingUtensil (qualifier 4) and desire-intention level 1. There are three assisting actions linked to this social action, which belongs to agent6, agent9, and agent14. These actions also have values for their capability level – the qualifier integer and their level of desire-intention.

The CollegeModel itself is a large graph that links the college organisation, its building, its agents and their body components and abilities, their roles and social actions with the social action assister actions and disability aids that assist them and the assisting roles and assisting agents that they are linked with. These all form an assistive social network that the OntoCarer software application can query and traverse and add statements to in order to identify, plan and direct assistance for the disabled in the organisation when they need it.

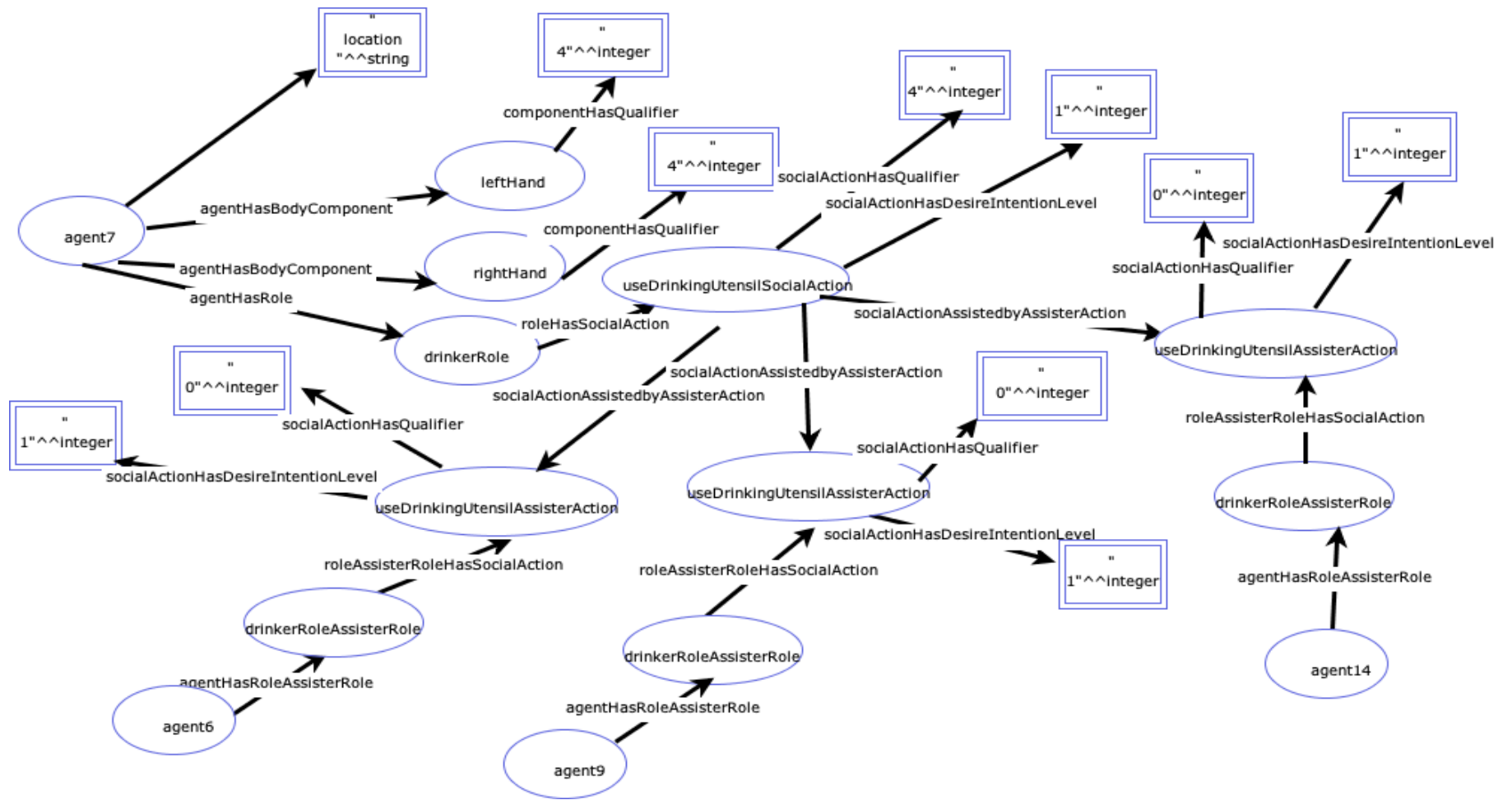


Figure 8.5 Assistance relationships - example graph for agent7

8.6 OntoCarer Software Application

The OntoCarer Software Application in this prototype is the software that implements the functionality of the Organisation Agent, which identifies the need for assistance, finds the assistance, plans and directs the assistance, using the ontologies of the OntoCarer Ontological Framework and the CollegeModel.

8.6.1 OntoCarer Software Application Requirements

- The algorithms using the OntoCarer ontologies should:
 - Identify the intention to perform an action by an agent
 - Identify the inability to perform an action through disability
 - Identify the potential assistance
 - Select the optimal assistance
 - Make that optimal assistance become an intention of its assisting agent
 - Inform and direct the assisting and assisted agents involved
 - Manage the process of assistance to its completion

- The algorithms for identifying and providing assistance should treat all agents and their actions (social actions and corresponding social action assister actions) in a uniform manner, so that any agent, role or action can potentially be assisted, and any agent can potentially be an assister, as part of an assistive social network.

- These assisting algorithms should employ BDI concepts and the software architecture of the Organisation Agent should be a BDI architecture.

- The assisting scenarios used to test the application and the ontologies should contain a representative sample of agents with differing roles in the organisation as users and providers, and assisters and assisted, including having a representative sample of disabilities that are assisted.

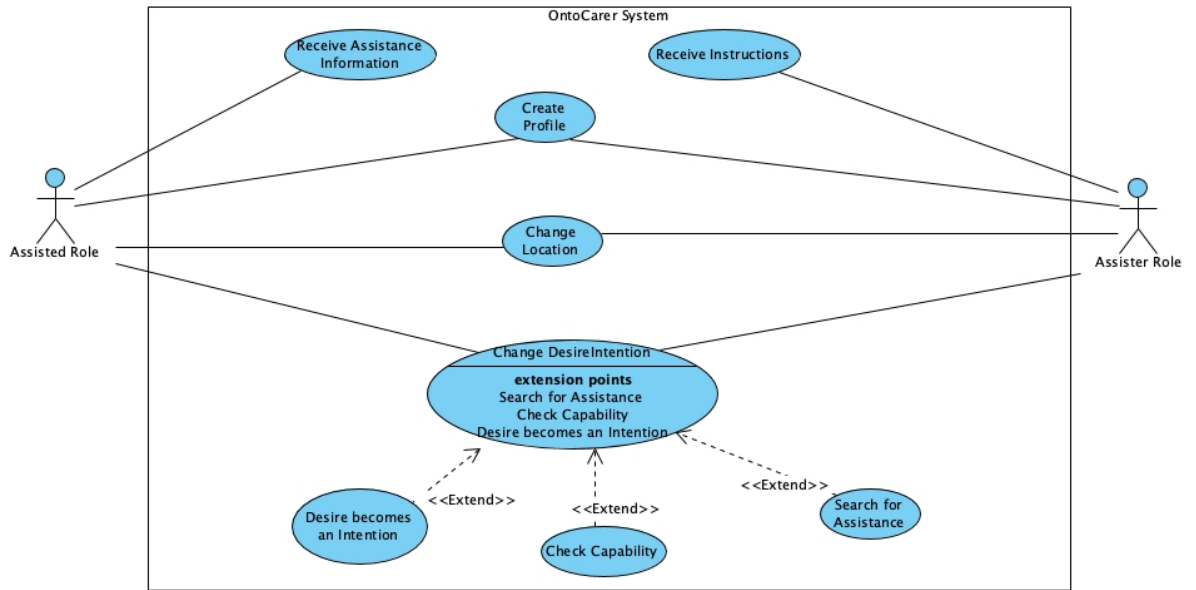


Figure 8.6 OntoCarer Assistance Use Case diagram

The above use case diagram illustrates the key features of the OntoCarer Assistance use case. There are two main types of role involved that actors play that of Assister and Assisted. The actors create an organisational profile, which contains their roles, social actions and social assister actions, and relevant body components and abilities. The main use case is changing the desire-intention of a social action, with the extension points of a desire becoming an intention, checking the capability of that intended action, and if not capable then initiate a search for assistance. Initiating a search for assistance would result in instructions being sent to the Assister and information sent to the Assisted agent.

The assisted agent performs an action, and the assisting agent performs an assisting action.

The other use cases involved are where an actor changes location, which is relevant for selecting and directing assistance. Also, adding a new role to a profile, which actors may do along with adding that role's associated actions.

8.6.2 OntoCarer Assistance Algorithm

The OntoCarer Assistance Algorithm is concerned with an agent deciding to change the desire-intention state of a social action, in particular to make a desired action an intention and then the steps that are involved in processing this to find and select and direct the assistance, if the intended action is not capable of being performed because of disability.

The following algorithm focuses mainly on the declarative steps that need to be performed in finding and providing assistance to an action belonging to an agent. The particular procedural details of how this is achieved by the OntoCarer program can be found in the code listing in Appendix C, and the class diagram and description of the program elements in Appendix A of this thesis.

1. When there is new input data to change a desire-intention level of a social action or social action assister action then check whether the level change makes the action no desire (0) or a desire (level 1 to 4) or an intention (level 5 to 9) or is a satisfied intention (10).
 - 1.1 If the action is no desire (0) or a desire (1 to 4) then take no further action.
 - 1.2 If the social action is a satisfied intention (level 10) then reset the desire-intention level back to 1, so that the action cycle can begin again. If it is a social action assister action at level 10, then set the associated social action to level 10 also, as the performance of the assisting action will have satisfied the original intention, and then reset both the social action and its social action assister action back to desire-intention level 1.
 - 1.3 If the action is an intention (5 to 9) then check the social action's capability by checking its qualifier value.
 - 1.4 If the qualifier value is 0 then the action is capable of being performed without assistance.
 - 1.5 If the qualifier is 1 to 4 then assistance is needed.
2. If assistance is needed for an action, then find the agent (which is a person) that the social action that needs assistance belongs to.
3. Find the location of the assisted agent (which is a person), as (the nearest) assistance will need to be directed to that location.
4. Find all the instances of the social action assister actions that can assist that social action, and store them in a list of assisting actions. The social action and the social action assister actions that can assist the action will be linked together by an Assisted By property in the OntoCarer assistive social network.
5. Find all the agents that the assisting actions belong to and store them in a list of assisting agents, as the assisting agent will have to be directed to the assisted agent.
6. Find the location of each assisting agent and add it to a list of assisting agent locations, as the location is needed to select the optimal assisting agent, which is the nearest one available.
7. Find the building floor of each assisting agent and add it to a list of assisting agent floors. The floor the assisting agent is on will be relevant to finding the nearest assisting agent.
8. Find the optimal assisting agent to provide assistance to the assisted agent for the social action that needs assistance. In this prototype the optimal assisting agent will be the nearest assisting agent.
 - 8.1 Iterate through the list of assisting agent locations. Compare the location of the assisted agent with each location in the list of assisting agent locations. If a match is found then as the assisting agent is in the same location as the assisted agent then that is the nearest assisting agent, so the search can stop. Use the iteration count to find the assisting agent, at the next step of the algorithm.
 - 8.2 Iterate through the list of assisting agents and stop at the same count point as the found assisting agent location, so it will be the assisting agent at that location.
 - 8.3 Find the assisting action that belongs to the optimal assisting agent that will be used to provide the assistance. Iterate through the list of assisting actions and find which agent

each action belongs to. If there is a match between the found agent and the optimal assisting agent then that assisting action is the action that is the optimal assisting action.

8.4 If the nearest assisting agent is not in the same room, then a search is made to find the nearest assisting agent on the same floor as the assisted agent. Iterate through the assisting agents list and for each agent find the floor the assisting agent is on. If an assisting agent is on the same floor as the assisted agent then that agent is a match for the nearest optimal agent. Find the particular location of that assisting agent. Find the assisting action (for assisting the social action) that belongs to the assisting agent.

8.5 If the nearest assisting agent is not on the same floor then a search is made of the assisting agents on different floors to find one that can provide the assistance needed. Iterate through the list of assisting agents and find the floor the agent is on and test whether it is a different floor to the one the assisted agent is on. If it is on a different floor then the agent is added to the list of assisting agents on different floors.

8.6 If no assisting agent is found then a message is sent confirming that no assistance is available for the agent with the social action that needs assistance and the search for assistance is ended.

9. If an optimal assisting action is found then the assisted action and assisting action are stored as being in this assisting relationship. The assisting action then has its desire-intention level changed by the Organisation Agent to become an intention (level 9). As it is possible that the assisting action may not be fully capable and so need assistance, it itself potentially goes through steps 1 to 9, starting with a check on its capability.

10. The Organisation Agent communicates with the assisted and assisting agent. The assisted agent is informed of which assisting agent will provide the assisted action. The assisting agent is informed that they are to provide the particular assisting action to the particular assisted agent in a particular location.

11. The assisting agent will proceed to the assisting location, with the Organisation Agent updating the assisting agent's location automatically as it receives the location updates.

12. When the assisting agent arrives at the assisting location they will perform the assisting action. Upon completion of the assisting action an update will be sent to the Organisation Agent that the desire-intention level of the assisting action will change from an intention level (5 to 9) to 10, indicating the intention is satisfied. As the assisting action is complete then this will satisfy the intention of the social action it is assisting, so the desire-intention level of the assisted action will be automatically set to 10 also.

13. When the assisting action and assisted action are set to level 10 the assisting cycle is complete. The desire-intention levels of both assisted and assisting action are set back to 1, so that the assisting cycle can begin again if required.

The execution of the algorithm is illustrated and described in the OntoCarer program sequence diagrams in Appendix B, and for a particular scenario in the sequence diagrams in section 8.6.4

8.6.3 OntoCarer Algorithm & Core OntoCarer Assistance Data Structure

There is a need to demonstrate the universal applicability of the OntoCarer Ontological Framework to facilitating the OntoCarer Assistance lifecycle. This can be done by demonstrating the application of the OntoCarer Assistance Algorithm to the Core OntoCarer Assistance Data Structure to show how they can be used together to facilitate the steps involved in: making a desired action an intention, identifying the need for assistance, finding the assistance, selecting the assistance, directing and monitoring the assistance until completion.

For this to be a universal process the algorithm is applied to classes and their relationships in the top-level OntoCarer Ontologies, in particular those classes and relationships in the Core OntoCarer Assistance Data Structure. These are then reflected in the application of the OntoCarer Assistance Algorithm to the corresponding OntoCarer Assistance Data Structure as reflected in the corresponding classes and properties in the OntoCarer Domain ontologies and the models created from them. The universality is established based upon the common form or structure, rather as in logic it is the common logical form of an argument that establishes its universal validity regardless of the particular content of the propositions that make up particular instances of arguments that share this common logical form.

This demonstration of the universality of the OntoCarer Assistance Algorithm combined with its application to the Core OntoCarer Assistance Data Structure takes the form of linking each step in the algorithm with corresponding top-level classes and properties and their relationships to form the data structure to which the algorithm is applied. The Core OntoCarer Assistance Data Structure is shown in Figure 8.7. The inverse properties in the data structure are not depicted in the figure for reasons of space. The extension of the Core Assistance Data Structure to the domain level and model level is illustrated in the Figure 8.8 and Figure 8.9 respectively, for particular instances of its application.

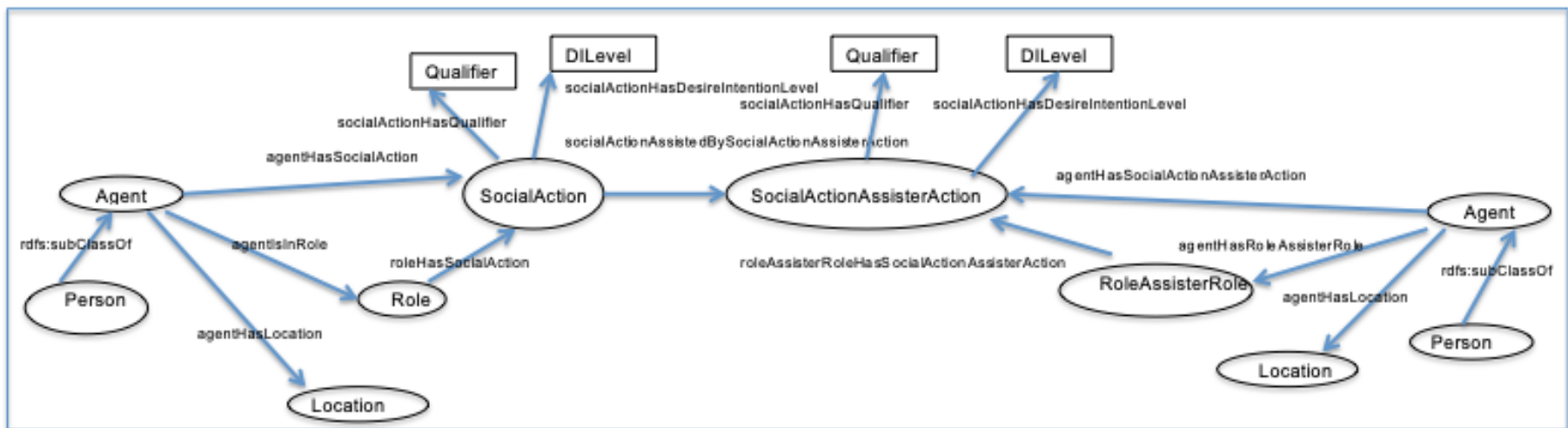


Figure 8.7 Core OntoCarer Assistance Data Structure

Algorithm Step Number	Algorithm Step	Core OntoCarer Assistance Data Structure Statements
1. 1.1	If a desire (1-4) or no desire (0)	SocialAction socialActionHasDiLevel DiLevel
1. 1.2	If an intention satisfied (10)	SocialAction socialActionHasDiLevel DiLevel
1. 1.3	If an intention (5-9) then check capability	SocialAction socialActionHasQualifier Qualifier
1. 1.4	If Qualifier 0	SocialAction socialActionHasQualifier Qualifier
1. 1.5	If Qualifier (1-4)	SocialAction socialActionHasQualifier Qualifier
2.	Find the Agent the Social Action belongs to	SocialAction socialActionHasAgent Agent
3.	Find the location of the Agent	Agent agentHasLocation Location
4.	Find Assisting Social Actions	SocialAction socialActionAssistedBySocialActionAssisterAction SocialActionAssisterAction
5.	Find the Assisting Agents	SocialActionAssisterAction socialActionAssisterActionHasAgent Agent
6.	Find the Location of the Assisting Agent	Agent agentHasLocation Location
7.	Find the building floor of the Assisting Agent	Agent agentIsOnFloor Floor
8. 8.1 8.2 8.3	Find the optimal Assisting agent: compare Agent Locations	Agent agentHasLocation Location
8. 8.3	Find the Assisting Action that belongs to the optimal Assisting Agent	Agent agentHasSocialActionAssisterAction SocialActionAssisterAction
8. 8.4	Find Assisting Agent on the same floor	Agent agentIsOnFloor Floor
8. 8.5	Find Assisting Agent on other floor	Agent agentIsOnFloor Floor

8. 8.6	If no Assisting Agent is found inform Assisted Agent	
9.	Assisting Action becomes an intention and is checked for capability	SocialAction socialActionHasDesireIntentionLevel DILevel SocialAction socialActionHasQualifier Qualifier
10.	Inform Assisted and Assisting Agent of details of assistance	SocialAction socialActionHasDiLevel DILevel SocialAction socialActionHasQualifier Qualifier Agent agentHasSocialAction SocialAction Agent agentHasSocialActionAssisterAction SocialActionAssisterAction SocialActionAssisterAction socialActionHasQualifier Qualifier Agent agentHasLocation Location Agent agentIsOnFloor Floor
11.	Assisting Agent proceeds to Assisted Agent Location	Agent agentHasLocation Location
12.	Assisting Agent performs Assisting Action	SocialActionAssisterAction socialActionHasDiLevel DILevel SocialAction socialActionHasDiLevel DILevel
13.	Assister Action and Assisted Action have desire-intention level set back to 1	SocialActionAssisterAction socialActionHasDiLevel DILevel SocialAction socialActionHasDiLevel DILevel

Table 8.29 Table relating the OntoCarer Assistance Algorithm to the Core OntoCarer Assistance Data Structure

The algorithm steps which find the optimal assisting agent based upon the optimal assisting agent being the nearest to the assisted agent in steps 8.1 to 8.5, is particular to the program in this project. Other algorithms could be used to determine which of the available assisting agents is the optimal one. Alternatively, the first available assisting agent could be selected or one at random, as long as when there is an assisting agent available one is selected then the universality of the assistance algorithm is satisfied, in this respect.

Below are figures for the instances of the application of the Core OntoCarer Assistance Data Structure to the Education Domain Model ontology and the CollegeModel of individuals (which are instances of the top level and domain ontologies) and their relationships, showing the applicability of the Core OntoCarer Assistance Data Structure. Each is a single instance (as an exemplar) of which there are many in the domain ontology and CollegeModel.



Figure 8.8 Example of the Core OntoCarer Assistance Data Structure applied to the Education Domain level

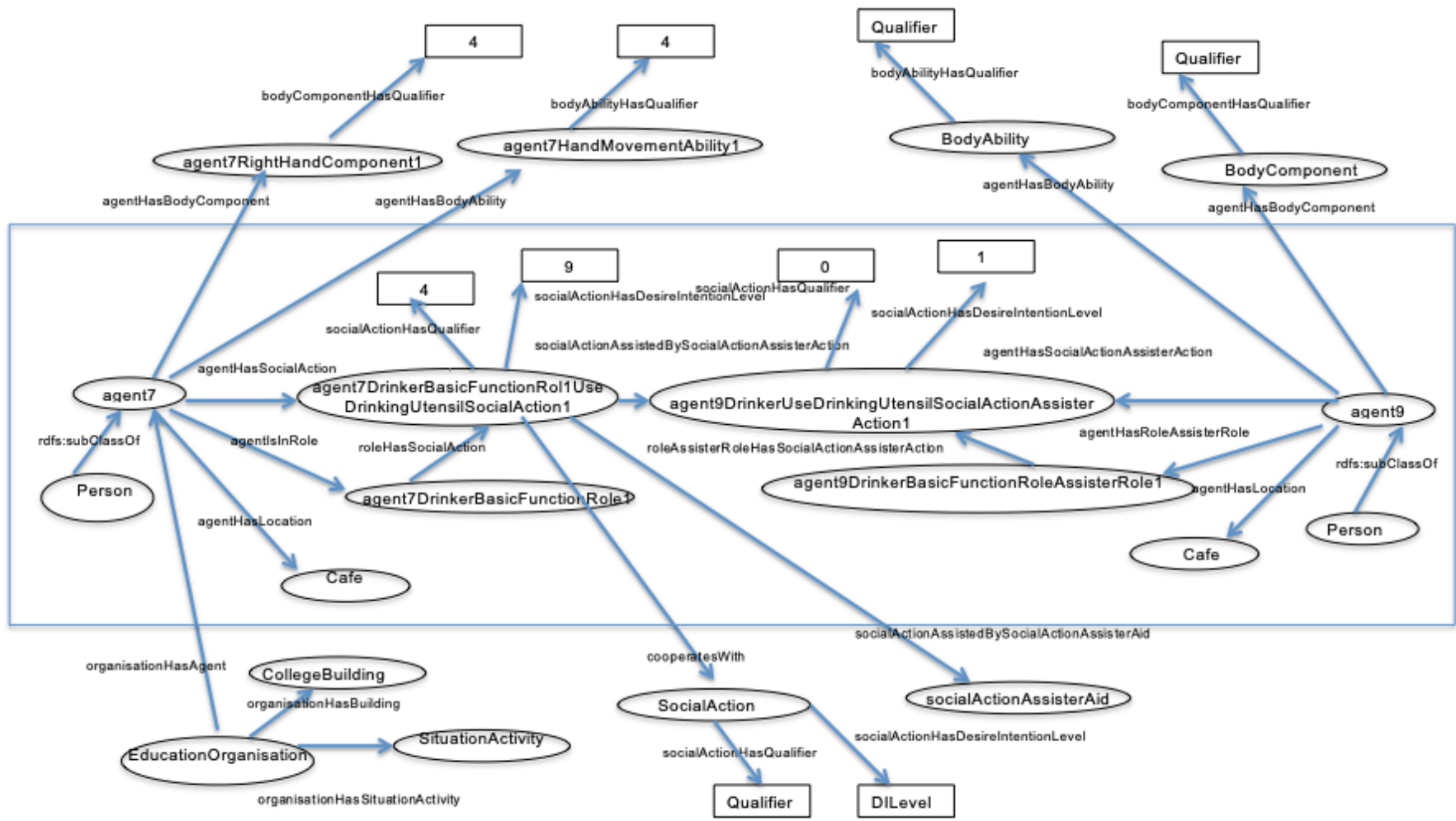


Figure 8.9 Example of the Core OntoCarer Assistance Data Structure applied to the College Model level

8.6.4 OntoCarer Assistance Scenarios

There are seven OntoCarer Assistance Scenarios which are used to test the functionality of the software application and its ability to use the OntoCarer Ontologies and CollegeModel to simulate a college and provide personalised automated assistance for the disabled in a variety of circumstances and for different disabilities and agents occupying different roles in the organisation.

The table below lists the seven scenarios, with the agent that is assisted, their main organisational role, their disability and the social action that requires assistance, the assisting agent that will provide the corresponding assisting action, and the organisational role the assisting agent provides.

The scenarios were successfully tested within the software application, verifying the implementation of the assisting algorithm by the program, and successfully finding and directing the assistance needed.

In the table below (Table 8.30) the actual agent that is selected to provide the assistance when the program is run is marked in bold, along with the role they play. It is to be noted the variety of agent roles that are available to provide assistance. In the case of scenario's 6 and 7, Agent10 is first a provider of assistance and then a person with disabilities who is a recipient of assistance.

The following seven tables then summarise the main elements in each scenario which are: For the assisted agent, the location of the assisted agent, the impaired body component, the qualifier indicating the degree of impairment to the body component, the social action the assisted agent intends to perform, the qualifier indicating the degree of impairment for the intended social action, the intention levels the social action goes through in this assistance lifecycle, what the particular disability the assisted agent has. The rest of each table then summarises the main elements for the assisting agents which are: the assisting agents, the current location of the assisting agents at the start of the assistance lifecycle, the social assister actions that the assisting agents have that can provide assistance to the assisted social action, the optimal assisting agent that is selected to provide the assistance, the particular assisting action that is selected to provide the assistance, the qualifier indicating the degree of impairment (if any) that the assisting action has, the desire-intention levels the assisting social action goes through in this assistance lifecycle, the locations that the selected assisting agent moves through to get to the location of the assisted agent.

Scenario	Assisted Agent	Main Role	Disability	Assisted Social Action	Assisting Agents	Main Role
1	Agent1	Student	Deafness	TakeNotesFromSpeaker	Agent5 Agent6 Agent14	Student Care Worker Care Worker
2.	Agent4	Lecturer	Blindness	NavigateToLibrary	Agent6 Agent12 Agent14	Care Worker Security Guard Care Worker
3	Agent4	Lecturer	Blindness	SearchCatalogue	Agent8	Library Assistant
4	Agent7	Student	Damaged Hands	UseDrinkingUtensil	Agent6 Agent9 Agent14	Care Worker Café Assistant Care Worker
5	Agent7	Student	Damaged Hands	SubmitAssignment	Agent5 Agent6 Agent14 Agent15	Student Care Worker Care Worker Lecturer
6	Agent7	Student	Damaged Hands	PayCourseFees	Agent6 Agent10 Agent14	Care Worker Bursar Care Worker
7	Agent10	Bursar	Unable to Stand or Walk	RemoveRelevant Clothes CleanSelfAfterToilet RestoreRelevantClothes	Agent6 Agent14	Care Worker Care Worker

Table 8.30 OntoCarer Assistance Scenarios

Scenario1

Assisted Agent	Location	Body Component	Qualifier	Social Action	Qualifier	Desire-Intention Levels				Disability
Agent1	largeLecture Theatre floorF1	leftEar rightEar	4 4	agent1Take Notes FromSpeaker	4	1	9	10	1	Deafness
Assisting Agents	Current Location	Social Action Assister Actions	Selected Agent	Selected Assister Action	Qualifier	Desire-Intention Levels				Locations
Agent5	classroom2 floorF0	agent5Take Notes FromSpeaker								
Agent6	largeLecture Theatre1 FloorF1	agent6Take Notes FromSpeaker	Agent6	agent6Take Notes FromSpeaker	0	1	9	10	1	largeLecture Theatre1 floorF1
Agent14	classroom2 floorF0	agent14Take Notes FromSpeaker								

Table 8.31 Table for Scenario1 elements

Scenario1

In Scenario1 Agent1 who is a student and suffers from complete deafness intends to take notes from the lecturer speaking but is unable to because of disability. The intention to take notes from the speaker (level 9) triggers a capability check on the social action *agent1StudentUserRoleITakeNotesFromSpeakerSocialAction1* (qualifier 4). The disability prompts a search for assistance.

Three social action assister actions are found to assist with taking notes from a speaker:

agent5StudentUserRoleAssisterRoleITakeNotesFromSpeakerSocialActionAssisterAction1

agent6StudentUserRoleAssisterRoleITakeNotesFromSpeakerSocialActionAssisterAction1

agent14StudentUserRoleAssisterRoleITakeNotesFromSpeakerSocialActionAssisterAction1

These belong to Agent5 who is a fellow student, and Agent6 and Agent14 who are care worker assistants. Agent6 is selected as she is also in the largeLectureTheatre1. Her assisting action becomes an intention (level 9), its capability is checked (qualifier 0). The assisting action is performed (level 10) so Agent6's original action is satisfied (level 10). The Agent1 social action and Agent6 social assister action desire-intention levels are set back to level 1.

Scenario2

Assisted Agent	Current Location	Body Component	Qualifier	Social Action	Qualifier	Desire-Intention Levels				Disability
Agent4	largeLectureTheatre1 floorF1	leftEye rightEye	4 4	agent4Navigate ToLibrary	3	1	9	10	1	Blindness
Assisting Agents	Current Location	Social Action Assister Actions	Selected Agent	Selected Assister Action	Qualifier	Desire-Intention Levels				Locations
Agent6	disabledToilet1 floorF0	agent6Navigate ToLibrary								
Agent12	corridorF1C5 floorF1	agent12Navigate ToLibrary	Agent12	agent12 Navigate ToLibrary	0	1	9	10	1	largeLectureTheatre1 corridorF1C5 corridorF1C4 library1
Agent14	classroom2 floorF0	agent14Navigate ToLibrary								

Table 8.32 Table for Scenario2 elements

Scenario2

In Scenario2 Agent4 who is a lecturer wishes to navigate to the library but because of complete blindness needs assistance to do so. The intention (level 9) to perform the social action

agent4LibraryUserRole1NavigateToLibrarySocialAction1 triggers a capability check on the social action, which has qualifier 3 – severe impairment. Three social action assister actions are found to assist with navigating to the library:

agent6LibraryUserRoleAssisterRole1NavigateToLibrarySocialActionAssisterAction1,

agent12LibraryUserRoleAssisterRole1NavigateToLibrarySocialActionAssisterAction

agent14LibraryUserRoleAssisterRole1NavigateToLibrarySocialActionAssisterAction1 These assister actions belong to Agent6 and Agent14 who are both care worker assistants, and agent12 who is a security guard in the college. Agent12 is selected as on the same floor as Agent4.

The assisting action of Agent12 becomes an intention (level 9), and its capability is checked (qualifier 0).

Agent12 goes to largeLectureTheatre1 and guides Agent4 to the library, with both agents updating their location along the route. At the library the assister action is satisfied (level 10) as is Agent4's action. Both action and assister action are set back to desire level 1.

Scenario3

Assisted Agent	Location	Body Component	Qualifier	Social Action	Qualifier	Desire-Intention Levels				Disability
Agent4	library1 floorF1	leftEye rightEye	4 4	agent4Search Catalogue	4	1	9	10	1	Blindness
Assisting Agents	Current Location	Social Action Assister Actions	Selected Agent	Selected Assister Action	Qualifier	Desire-Intention Levels				Locations
Agent8	library1 floorF1	agent4Search Catalogue	Agent8	agent4Search Catalogue	0	1	9	10	1	library1 floorF1

Table 8.32 Table for Scenario 3 elements

Scenario3

In Scenario 3, Agent 4 a college lecturer is in the college library and wants to search the library catalogue but because of his blindness is unable to do so. The intention (level 9) to perform the social action *agent4LibraryUserRole1SearchCatalogueSocialAction1* triggers a capability check on the social action, which has qualifier 4 complete impairment. There is one social assister action to assist with searching the library catalogue:

agent8LibraryUserRoleAssisterRole1SearchCatalogueSocialActionAssisterAction1

This assister action belongs to Agent8 who is a library assistant. This assisting action is selected and becomes an intention – level 9. This assister action is itself tested for capability and is found to be capable – qualifier 0. Agent8 is already in the library and performs the search of the library catalogue, so the assister action is satisfied (level 10) as is Agent 4's associated social action (level 10). Both action and assister action are then set back to desire level 1.

Scenario 4

Assisted Agent	Location	Body Component	Qualifier	Social Action	Qualifier	Desire-Intention Levels				Disability
Agent7	cafe1 floorF0	leftHand rightHand	4 4	useDrinking Utensil	4	1	9	10	1	Damaged hands
Assisting Agents	Current Location	Social Action Assister Actions	Selected Agent	Selected Assister Action	Qualifier	Desire-Intention Levels				Locations
Agent6	disabledToilet2 floorF1	agent6Use DrinkingUtensil								
Agent9	cafe1 floorF0	agent9Use DrinkingUtensil	Agent9	agent9Use DrinkingUtensil	0	1	9	10	1	cafe1 floorF0
Agent14	library1 floorF1	agent14Use DrinkingUtensil								

Table 8.33 Table for Scenario 4 elements

Scenario 4

In Scenario 4, Agent7 who is a student in the college café and wants to use a drinking utensil to take a drink from it. Agent7 sets the intention level for the social action

agent7DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 to level 9, which triggers a capability check resulting in a qualifier 4 which indicates complete disability for the action as Agent7 has severely damaged hands. Three social action assister actions are found to assist with drinking from a utensil:

agent6DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1

agent9DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1

agent14DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1

The assister action of Agent9 is selected as Agent9 is in the café. Agent9 is a café assistant. This assisting action is selected and becomes an intention – level 9. This assister action is itself tested for capability and is found to be capable – qualifier 0. Agent9 performs the assisting action to help Agent7 with drinking from the utensil, so the assisting action is satisfied (level 10) and so is Agent7 original intention (level 10). Both action and assister action are then set back to desire level 1.

Scenario 5

Assisted Agent	Location	Body Component	Qualifier	Social Action	Qualifier	Desire-Intention Levels				Disability
Agent7	computerRoom1 floorF0	leftHand rightHand	4 4	agent7Submit Assignment	4	1	9	10	1	Damaged hands
Assisting Agents	Current Location	Social Action Assister Actions	Selected Agent	Selected Assister Action	Qualifier	Desire-Intention Levels				Locations
Agent5	computerRoom1 floorF0	agent5Submit Assignment	Agent5	agent5Submit Assignment	0	1	9	10	1	computerRoom1 floorF0
Agent6	library1 floorF1	agent6Submit Assignment								
Agent14	disabledToilet2 floorF1	agent14Submit Assignment								
Agent15	computerRoom2 floorF1	agent15Submit Assignment								

Table 8.33 Table for Scenario 5 elements

Scenario 5

In Scenario5, Agent7 a student with severely damaged hands want to submit an assignment through a computer upload. Agent7 makes the social action

agent7StudentUserRole1SubmitAssignmentSocialAction1 an intention (level 9), as a consequence the social action is checked for capability and found to be not capable (qualifier 4). A search for assistance is triggered and four assisting actions are found:

agent5StudentUserRoleAssisterRole1SubmitAssignmentSocialActionAssisterAction1,agent6StudentUserRoleAssisterRole1SubmitAssignmentSocialActionAssisterAction1

agent14StudentUserRoleAssisterRole1SubmitAssignmentSocialActionAssisterAction1,

agent15StudentUserRoleAssisterRole1SubmitAssignmentSocialActionAssisterAction1

Agent5 is a fellow student, Agent6 and Agent14 are care worker assistants, and Agent15 is a lecturer.

Agent5's assisting action is selected as the agent is in the same room, and becomes an intention(level

9). The assisting is checked and found capable (qualifier 0). The assisting action is performed (level

10) so satisfying the assisted action (level 10). Both action and assister action are then set back to

desire level 1.

Scenario 6

Assisted Agent	Location	Body Component	Qualifier	Social Action	Qualifier	Desire-Intention Levels				Disability
Agent7	registry1 floorF0	leftHand rightHand	4 4	agent7Pay CourseFees	4	1	9	10	1	Damaged hands
Assisting Agents	Current Location	Social Action Assister Actions	Selected Agent	Selected Assister Action	Qualifier	Desire-Intention Levels				Locations
Agent6	meetingRoom1 floorF0	agent6Pay CourseFees								
Agent10	registry1 floorF0	agent10Pay CourseFees	Agent10	agent10Pay CourseFees	0	1	9	10	1	registry1 floorF0
Agent14	corridorF0C2 floorF0	agent14Pay CourseFees								

Table 8.34 Table for Scenario 6 elements

Scenario 6

In Scenario6 Agent7 who is a student intends to pay her course fees at the registry. Agent7 has severely disabled hands, so when making the social action agent5StudentUserRole1PayCourseFeesSocialAction1 an intention (level 9) it is found to be incapable of being carried out by the agent (qualifier 4).

This triggers a search for assistance and finds three assisting actions:

agent6StudentUserRoleAssisterRole1PayCourseFeesSocialActionAssisterAction1

agent10StudentUserRoleAssisterRole1PayCourseFeesSocialActionAssisterAction1

agent14StudentUserRoleAssisterRole1PayCourseFeesSocialActionAssisterAction1

These assisting actions belong to Agent10 who is the bursar (and being disabled himself needing to use a wheelchair) and Agent6 and Agent14 who are care assistants. Agent10 is selected as being already in the registry, and his assisting action becomes an intention (level 9). The assisting action is checked for capability and found capable (qualifier 0). The bursar Agent10 carries out the assisting action helping Agent7 with the payment details, so satisfying the assisting action (level 10) and also the assisted action (level 10). Both social action and assister action are then set back to desire level 1.

Scenario 7

Assisted Agent	Location	Body Component	Qualifier	Social Action	Qualifier	Desire-Intention Levels				Disability
Agent10	disabledToilet2 floorF1	leftleg rightLeg	4 4	removeRelevant Clothes cleanSelfAfter Toilet restoreRelevant Clothes	2 3 3	1 1 1	9 9 9	10 10 10	1 1 1	Unable to stand or walk
Assisting Agents	Current Location	Social Action Assister Actions	Selected Agent	Selected Assister Action	Qualifier	Desire-Intention Levels				Locations
Agent6	coffeeBar1 floorF1	removeRelevant Clothes cleanSelfAfter Toilet restoreRelevant Clothes	Agent6	removeRelevant Clothes cleanSelfAfter Toilet restoreRelevant Clothes	0	1 1 1	9 9 9	10 10 10	1 1 1	corridorF1C5 floorF1 disabledToilet2 floorF1
Agent14	cafe1 floorF0	removeRelevant Clothes cleanSelfAfter Toilet restoreRelevant Clothes								

Table 8.35 Table for Scenario 7 elements

Scenario 7

In Scenario 7 Agent10 who is the college bursar, want to use the disabled toilet. Agent10 is disabled and cannot stand or walk so uses a wheelchair. Agent7 goes to the disabledToilet2 on the first floor.

He wants to perform three social actions in sequence. These are:

agent10ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1

agent10ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1

agent10ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1

These are dealt with in sequence by the program, with each social action cycle being completed before starting on the next social action.

The first, agent10ToileterRole1RemoveRelevantClothesSocialAction1 becomes an intention (level 9), this is checked for capability – qualifier 2, and so needs assistance. A search is made and two assister actions found:

agent6ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocialActionAssisterAction1

agent14ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocialActionAssisterAction1

Agent6 is the nearest agent, and so is selected to assist. The assisting action becomes an intention (level 9) and is checked for capability – qualifier 0. Agent6 goes to disabledToilet2 and performs the assisting action

agent6ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocialActionAssisterAction1

which is then satisfied – level 10. This also satisfies Agent10's social action

agent10ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 (level 10) . Both action and assister action are then set back to desire level 1.

The same cycle is followed for the next two of Agent10's social actions, which both have qualifiers 3. Agent6 is now in the disabled toilet 2, so is again selected when the assisting actions are found and carries out the assisting actions:

agent6ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocialActionAssisterAction1

agent6ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocialActionAssisterAction1

which are then satisfied (level 10) thus satisfying Agent10's intentions for the social actions. Again, the social actions and assister actions are then set back to desire level 1.

8.6.5 Example Scenario – Sequence Diagrams

Below are sequence diagrams for the execution of Scenario 4. They are instances of the general sequence diagrams for the execution of the OntoCarer Assistance Algorithm which are in Appendix B. The detailed description of each step/method call in each sequence diagram are given in the diagrams in Appendix B.

The classes and methods in these sequence diagram correspond to the classes and methods with the same names in the class diagram Figure 1.1 OntoCarer Application Class Diagram in Appendix A.

Example Scenario – Sequence Diagrams subheadings	Pages
Initialisation Sequence	295
Scenario 4 Set Location Sequence	295
Scenario 4 Set Floor Sequence	296
Assisting Lifecycle for Scenario 4 Sequence diagrams	297
Scenario 4 Initiate changing an Action’s desire-intention level	298
Scenario 4 Change an Action’s desire-intention level	299
Scenario 4 Agent 7 check the capability of the social action	300
Find the Assisting Actions, the Assisting Agents and their Locations	301
Find the floors of the assisting agents, and search for the nearest agent	302
Assisting agent9 completes the assisting action and satisfies the assisted action	305

Table 8.36 Table mapping Scenario-Sequence Diagram subheadings to pages

Initialisation Sequence

The Initialisation sequence takes place before the execution of any of the scenarios execute. There is a single initialisation sequence that takes place before all of the scenarios executes. The Initialisation sequence involves the reading of each of the seven OntoCarer OWL ontologies and the CollegeModel into the dataModel Model for use in the execution of the scenarios. The sequence diagram for the Initialisation Sequence is depicted in Figure B.1 OntoCarer Initialisation sequence diagram in Appendix B, and also described in Appendix B.

Scenario 4 Set Location Sequence

Each scenario begins by setting up the location and floor of each of the fifteen college agents before for the particular scenario executes.

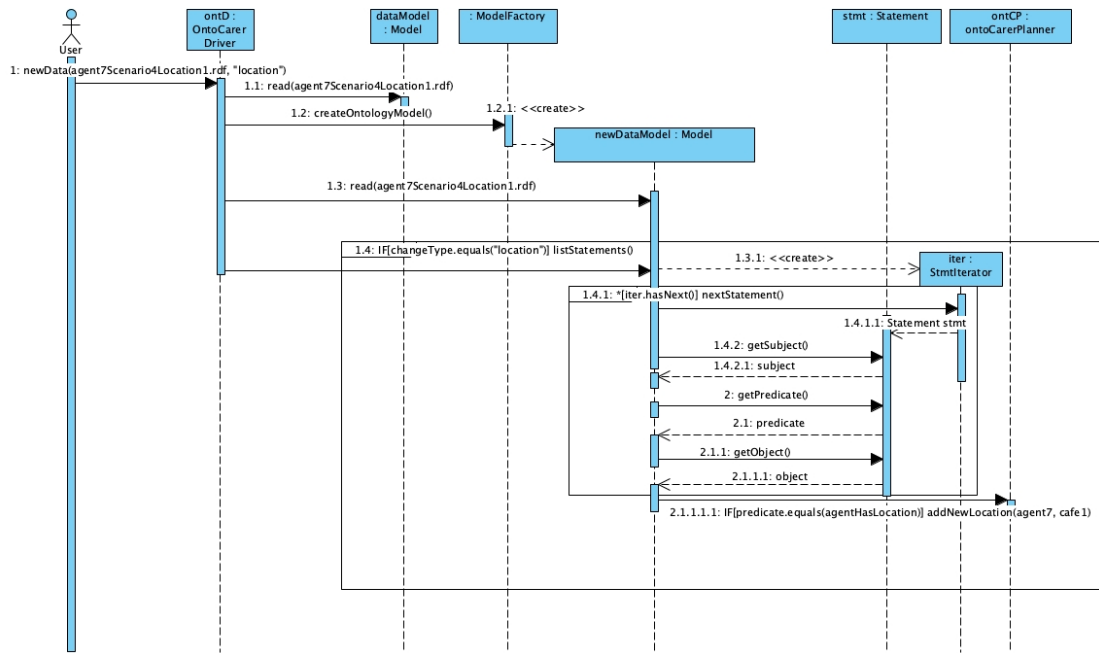


Figure 8.10 Scenario 4 Agent 7 Set Location sequence diagram

The sequence diagram in Figure 8.10 depicts the change of location for Agent 7 which is the assisted agent in the scenario. This sequence diagram for the particular sequence of steps in this Scenario 4 corresponds to the general sequence diagram for changing location in Figure B.2 OntoCarer Change Location sequence diagram in Appendix B.

The newData method is invoked, passing the data file agent7Scenario4Location1.rdf and the string “location” as parameters. The data in the file is read into a Model newDataModel for processing. The string parameter “location” is tested in a conditional to find how the new data should be handled. As the parameter is “location” then the statements from the file which are now held in the newDataModel are iterated through to find the statement which contains the new location. This statement will be that one that contains the predicate ‘agentHasLocation’, when this one is found by a conditional that matches the predicate then the addNewLocation method can be invoked with the parameters for the agent and the location which in this case is agent7 and cafe1. This sequence is followed for the other fourteen college agents.

Scenario 4 Set Floor Sequence

The floor on which each agent is positioned is also set for each agent. The reason for making a point of recording the floor of the agent is that it can play a role in the algorithm for finding the nearest assisting agent capable of providing the assisted action, in the case of an assisting agent not being in the same location but being on the same floor as the assisted agent.

Scenario 4 Set the floor of the Agent

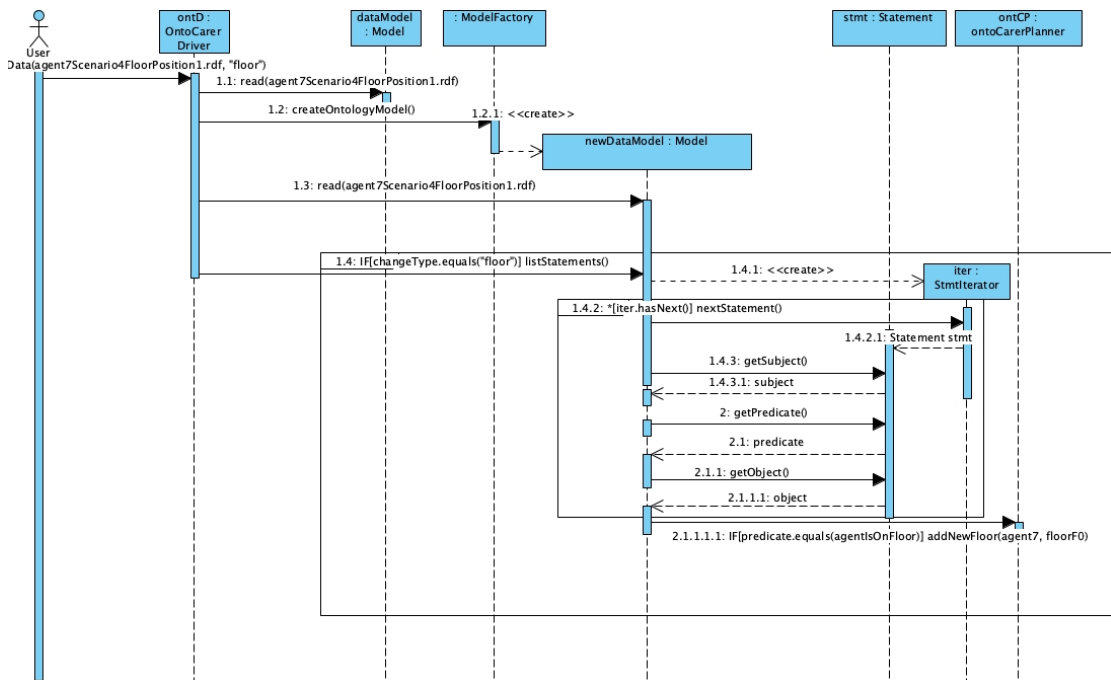


Figure 8.11 Scenario 4 Agent 7 Set Floor sequence diagram

The sequence diagram in Figure 8.11 depicts the change of floor for Agent 7 which is the assisted agent in the scenario. The newData method is invoked, passing the data file agent7Scenario4Floor1.rdf and the string “floor” as parameters. The data in the file is read into a Model newDataModel for processing. The string parameter “floor” is tested in a conditional to find how the new data should be handled. The parameter is “floor” so then the statements from the file which are now held in the newDataModel are iterated through to find the statement which contains the new floor where the agent is located. This statement will be that one that contains the predicate ‘agentIsOnFloor’, when this one is found by a conditional that matches the predicate then the addNewFloor method can be invoked with the parameters for the agent and the floor which in this case is agent7 and floorF0. This sequence is again followed for the other fourteen college agents.

Assisting Lifecycle for Scenario 4 Sequence diagrams

The Assisting Lifecycle sequence diagrams for the case of agent 7 in Scenario 4 is depicted in the series of sequence diagrams below. These cover the sequence of events from Agent7’s changing its action of ‘drinking from a utensil’ from a desire to an intention, though to its capability being assessed, its impairment being identified, and then going on to search for potential assisting actions, then from these assisting actions finding the optimal assisting agent based upon its location, to then directing and monitoring the assistance until it is complete and the default states of desire-intention are restored for the lifecycle to begin again.

Scenario 4 Initiate changing an Action's desire-intention level

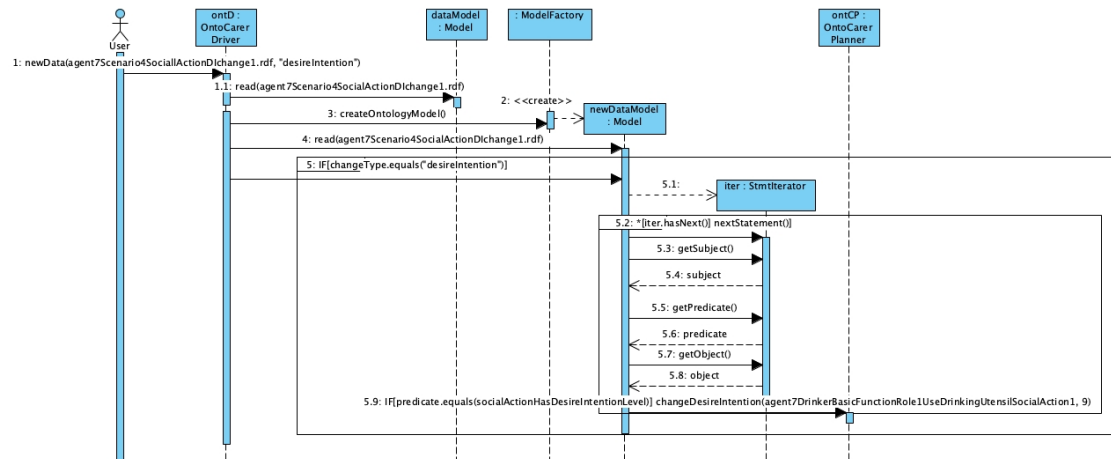


Figure 8.12 Scenario 4 Agent 7 initiate change desire-intention level of the action

The sequence diagram in Figure 8.12 shows the sequence of steps involved for initiating the change of the desire-intention level of the social action:

‘agent7DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1’ from a desire at level 1 to an intention at level 9. This sequence diagram for the particular sequence of steps in this Scenario 4 corresponds to the general sequence diagram for initiating the changing of the desire-intention level of a social action in Figure B.3 Change Desire-Intention: initiate change sequence diagram in Appendix B.

This change to an intention for the action involves invoking the `newData` method with the file ‘agent7Scenario4SocialActionDIChange.rdf’ and the string “desireIntention”. The data in the file is read into a new Model `newDataModel` for processing. The parameter string “desireIntention” is tested in a conditional to determine how to process the data in the file. As the `changeType` parameter matches “desireIntention” then each statement in the file is read and each predicate is tested to find a match for ‘socialActionHasDesireIntentionLevel’. When a match is found then this is the statement that contains the new desire-intention level for the social action. The subject and object of that statement give the social action and the new desire-intention level for the particular social action which are: ‘agent7DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1’ and level 9. These are used as parameters for the invoking of the method ‘changeDesireIntention’.

Scenario 4 Change an Action's desire-intention level

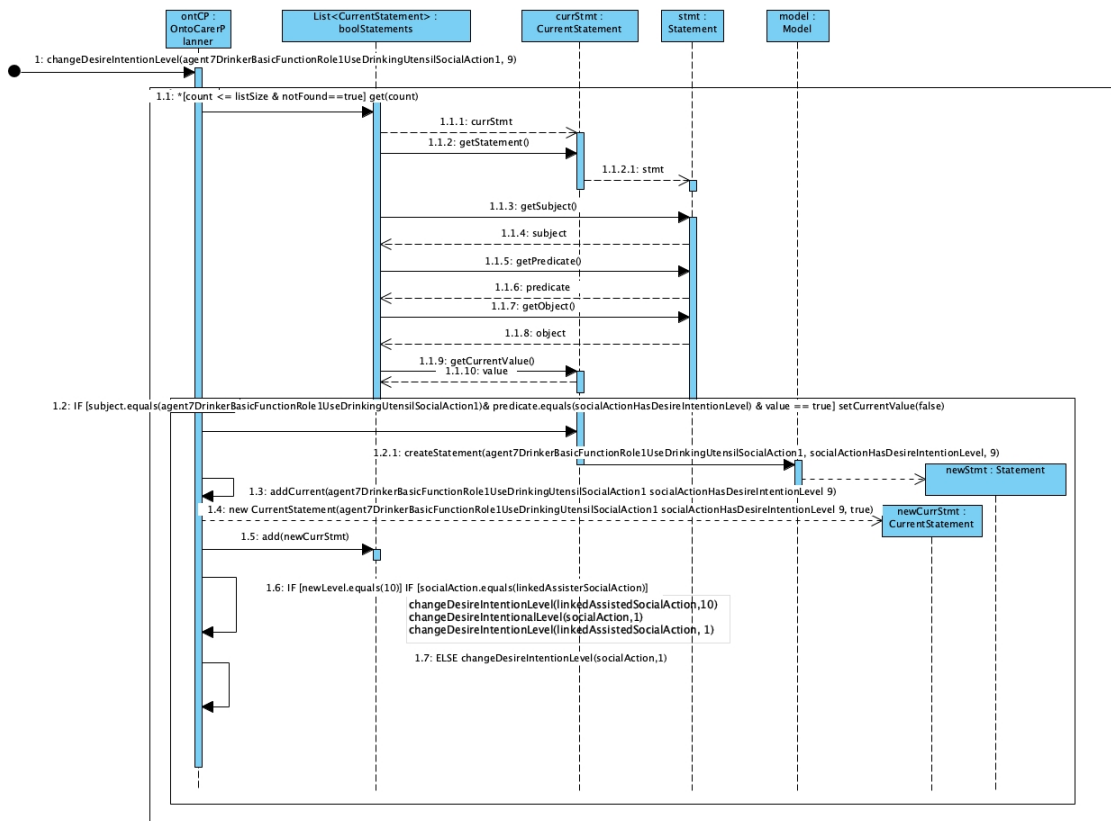


Figure 8.13 Scenario 4 Agent 7 change desire-intention level of action

In this sequence diagram in Figure 8.13 it shows the steps for changing the desire-intention level of social action ‘agent7DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1’ from a desire at level 1 to an intention at level 9.

This sequence diagram for the particular sequence of steps in this Scenario 4 corresponds to the general sequence diagram for initiating the changing of the desire-intention level of a social action in Figure B.4 Change Desire-Intention: change desire-intention level sequence diagram in Appendix B.

The method `changeDesireIntentionLevel` first iterates through the statements in the list `boolStatements`. This list contains instances of the class `CurrentStatement`, where each instance holds a statement and an associated truth value which is either true or false. Each statement’s subject, predicate and object is retrieved along with the statement’s associated truth value. A conditional is used to find the pre-existing statement representing the social action’s desire-intention level, by finding a match for the social action, the predicate ‘`socialActionHasDesireIntentionLevel`’ and the truth value ‘true’. When a match is found the statement’s truth value is changed from true to false, as the desire-intention level has changed.

The `createStatement` method is invoked passing the three elements of the triple; the social action as the subject, the predicate ‘`socialActionHasDesireIntentionLevel`’ and the object’s new value of 9 indicating it has now become an intention. This new statement is passed to the method `addCurrent`

along with the parameter 'true', which uses it to create a new CurrentStatement newCurrStmnt instance. This new CurrentStatement instance is then added to the list boolStatements.

Scenario 4 Agent 7 check the capability of the social action

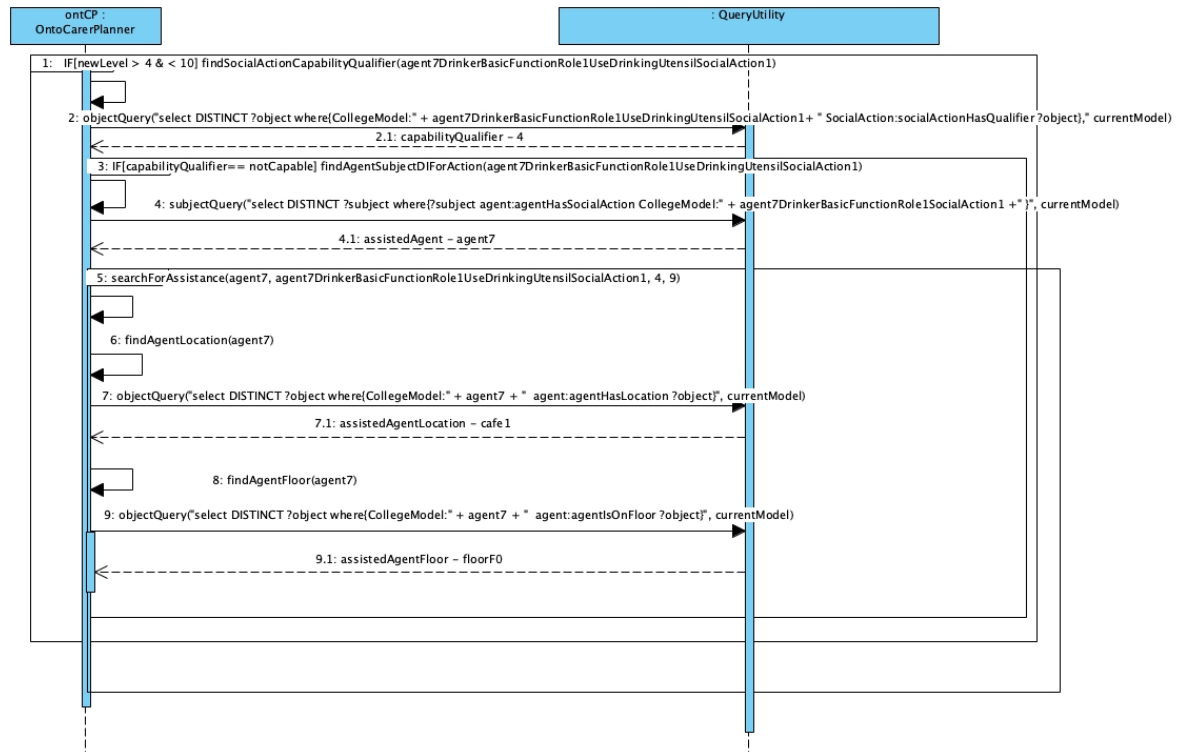


Figure 8.14 Scenario 4 Agent 7 check the capability of the social action

In the sequence diagram in Figure 8.14 the capability of the intended action is checked for impairment.

This sequence diagram for the particular sequence of steps in this Scenario 4 corresponds to the general sequence diagram for checking the capability of an action in Figure B.5 Change Desire-Intention: check capability & search for assistance sequence diagram in Appendix B.

If the social action: 'agent7DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1' is an intention i.e. it has a desire-intention level between 5 and 9, and now is intended to be performed as an action then it is checked to find if the agent is capable of performing the action or needs assistance. This is done by invoking the method findSocialActionCapabilityQualifier passing the social action as a parameter. This method uses a SPARQL query to find the qualifier value indicating whether the social action is capable of being performed without assistance. In this case it returns the value 4 which indicates completely incapable. The capability qualifier is tested in a conditional and if found to be not capable i.e. in the range 1 to 4 then another SPARQL query is performed to find the identity of the agent that has the social action that needs assistance using the predicate 'agentHasSocialAction' and the social action, along with the currentModel which contains all the currently held true statements

about the college held by the Organisation Agent. This query returns the assisted agent - agent7 as the subject.

The searchForAssistance method is invoked with the parameters: agent7 – the assisted agent, ‘agent7DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1’ – the social action that needs assistance, 4 – the capability qualifier, 9 the level of desire-intention for the social action. This first step in the search for assistance is to find the location of the assisted agent – agent7, as the assisting agent will have to be directed to this location and it will also be used to select the particular assisting agent based on which is the nearest assisting agent to the assisted agent. A SPARQL query is performed using agent7 as the subject and the predicate ‘agentHasLocation’ along with the currentModel as parameters, in order to find the object of this statement which is the cafe1 location.

The next step in finding assistance is find the floor on which the assisted agent is located, as this may also be used to find the nearest assisting agent. The agent’s floor is found with a SPARQL query that uses the agent as subject. ‘agentIsOnFloor’ as predicate and then finds the matching object, in the statements in currentModel. floorF0 is returned from the query.

Find the Assisting Actions, the Assisting Agents and their Locations

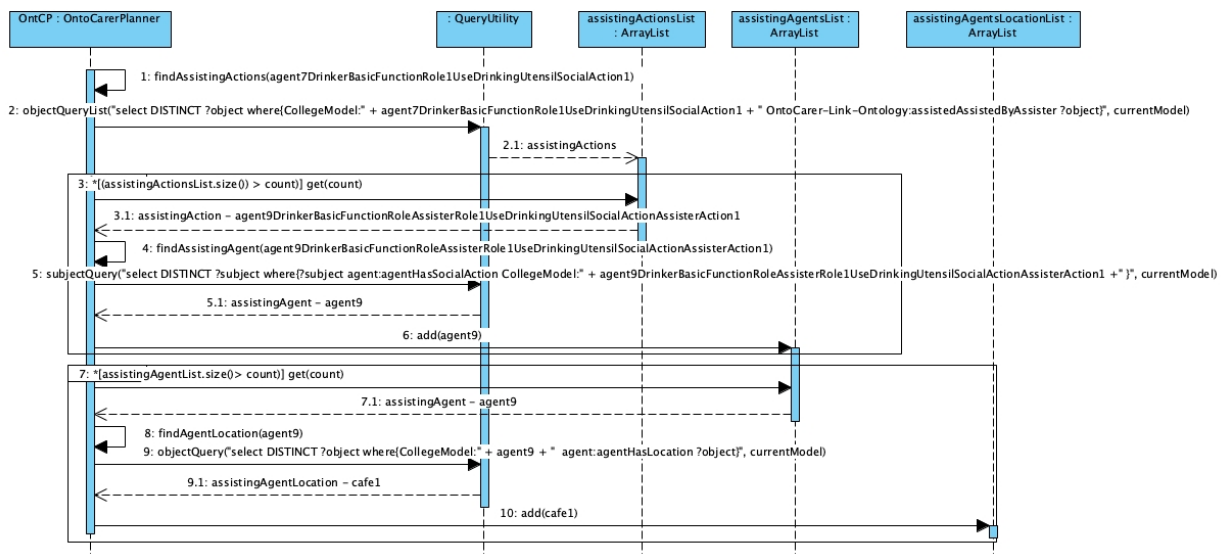


Figure 8.15 Find Assisting Actions, the Assisting Agents and their Locations

In the sequence diagram in Figure 8.15 it depicts the finding of the assisting actions for the action in need of assistance, along with the assisting agents the assisting actions belong to, and their locations. This sequence diagram for the particular sequence of steps in this Scenario 4 corresponds to the general sequence diagram for continuing the search for assistance elements in Figure B.6 Change Desire-Intention: continue search for assistance sequence diagram in Appendix B.

The findAssistingActions method is invoked passing the action that needs assistance as a parameter: ‘agent7DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1’.

This method uses a SPARQL query that returns a list of all the objects that match the query. That query uses the assisted social action as subject, and ‘assistedAssistedByAssister’ as the predicate to find all the matches for statements in the currentModel, and then returns those matches of assisting actions as a list, which are store in assistingActionsList. That list contains three assisting actions which are:

agent6DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1
 agent9DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1
 agent14DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1

The next step is to iterate through that list of assisting actions and find the assisting agent that has that assisting action and store them in a list. This is done by retrieving each assisting social action in turn and using it as a parameter to the method findAssistingAgent. This method uses a SPARQL query that find the subject of the query in the statements of the currentModel where the other parameters are the predicate ‘agentHasSocialAction’ and the each of particular assisting action of the three found. The assisting agents are returned as a list that are stored in assistingAgentsList. Those assisting agents are: agent6, agent9, and agent14.

The assistingAgentsList is then used to find and create a list of the locations each of these assisting agents are in as it is relevant to finding the nearest assisting agent. To do this the assistingAgentsList is iterated through and for each assistingAgent it is passed to the method findAgentLocation. The findAgentLocation method creates a SPARQL query that uses the agent and the predicate ‘agentHasLocation’ to find the object of the query in the statements in the currentModel. Each assisting agent location is added to the list assistingAgentsLocationsList. Those assisting agent locations are: disabledToilet2, cafe1, and library1.

Find the floors of the assisting agents, and search for the nearest agent

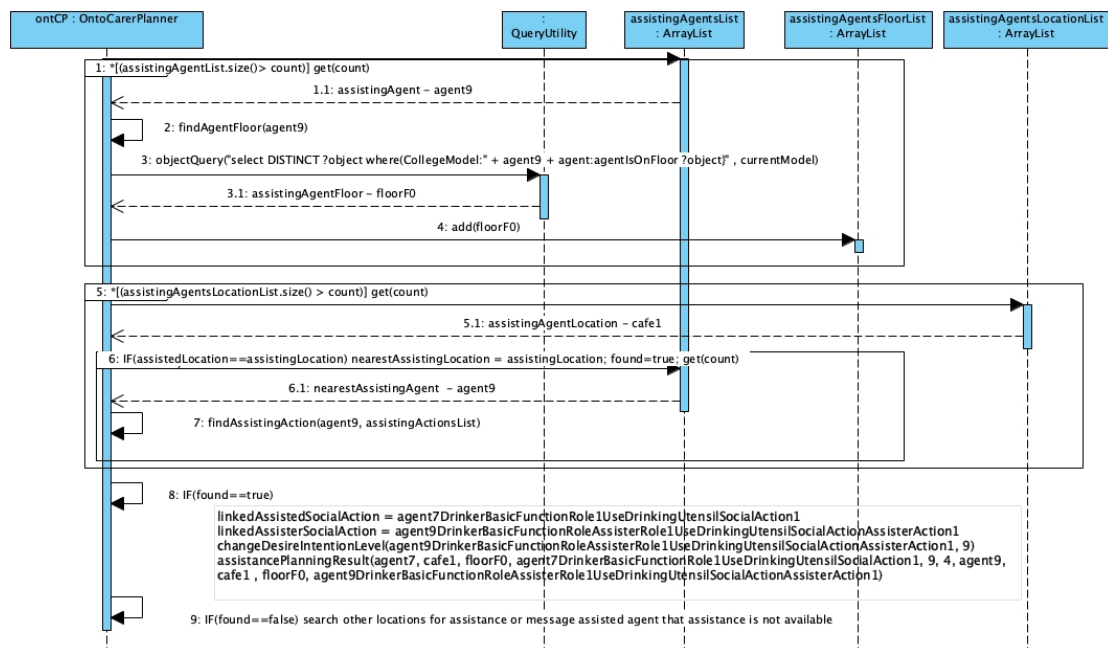


Figure 8.15 Find the floors of the assisting agents, and search for the nearest agent

In the sequence diagram in Figure 8.15 this depicts the search for the floors on which the assisting agents are currently located, and then the search for the nearest assisting agent to the agent to be assisted.

This sequence diagram for the particular sequence of steps in this Scenario 4 corresponds to the general sequence diagram for checking if the nearest assistance has been found in Figure B.7 Change Desire-Intention: check if assistance found sequence diagram in Appendix B.

Find the floors of assisting agents (Figure 8.15) and find which if any assisting agent is nearest then iterate through the list of the list of assisting agents and for each assisting agent pass it as a parameter to the method `findAgentFloor`. This method creates a SPARQL query that takes the agent as subject and the predicate `'agentIsOnFloor'` and finds the object of the query from the statements in the `currentModel`. The assisting agent floors are: `floorF1` (for `agent6`), `floorF0` (for `agent9`), `floorF1` (for `agent14`).

There is then the first test to find the optimal assisting agent and its assisting action from amongst those that are available to the assisted action and its agent. The optimal assisting agent in this case is chosen as the agent that is nearest to the assisted agent, The first test of being nearest is to test if the assisting agent is in the same room as the assisted agent. To do this the list of `assistingAgentsLocationsList` is iterated through retrieving each location in turn. The assisting agent location is then tested in a conditional to find if it is at the same location as the assisted agent which is `cafe1`. When a match is found for the assisting agent location at `cafe1` then the variable `found` is set to true and the value of `count` in the iteration is used to retrieve the related assisting agent from the list `assistingAgentsList`.

This assisting agent `agent9` will be the nearest assisting agent who will be directed to provide the assistance to `agent7`. The `assistingAction` for this context that belongs to the nearest assisting agent `agent9` is also retrieved using the method `findAssistingAction` and the parameters `agent9` and the list `assistingActionsList`.

The variable `'found'` is tested in a conditional for a match with the Boolean value true and as there is now a match the consequents of the conditional are performed. The first step on having found the optimally assisting agent and its assisting action is to assign the assisted social action:

`'agent7DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1'`

to the variable `linkedAssistedSocialAction`, and the optimal assister social action

`agent9DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1`

to the variable `linkedAssisterSocialAction`. These two linked variables are used in tandem for the case where the performance of the assisting agent's assisting action is satisfied and so as a consequence satisfies the linked assisted action.

When the nearest assisting action has been found then it will also have go from a state of desire to an intention, to this the assisting action:

agent9DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1 is passed along with the new desire-intention level 9 - indicating an intention, to the method changeDesireIntentionLevel where it is changed to an intention. As a consequence of this the assisting action is also tested for capability and if found to need assistance then a search for assistance for the assisting action will be triggered. Though in this case, no assistance is necessary.

The next step is direct the assisting agent to the assisted agent, and informing each of these agents with relevant information. This is done by invoking the method assistingPlanningResult and passing the following as parameters:

Agent7 as the assisted agent, cafe1 as the assisted agent's location, floorF0 as the floor of the assisted agent, 'agent7DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1' as the assisted action, 9 - as the assisted action desire-intention level, 4 - as the capability qualifier for the assisted action, agent9 as the selected assisting agent, cafe1 as the assisting agent's location, floorF0 as the assisting agent's floor, and agent9DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1 as the selected assisting action. This information would then be used to direct the assisted agent to perform its assisting action for the assisted agent at the assisted agent's location and inform the assisted agent of this.

If the assisted agent had not been found in the same location as the assisted agent then a search would have been performed to find a relevant assisted agent on the same floor as the assisted agent, and if this was not successful then a search would have been made for any relevant assisting agents not on the same floor. In the even that no relevant assisting actions and their agent's were found then the assisted agent would be informed of this.

Assisting agent9 completes the assisting action and satisfies the assisted action

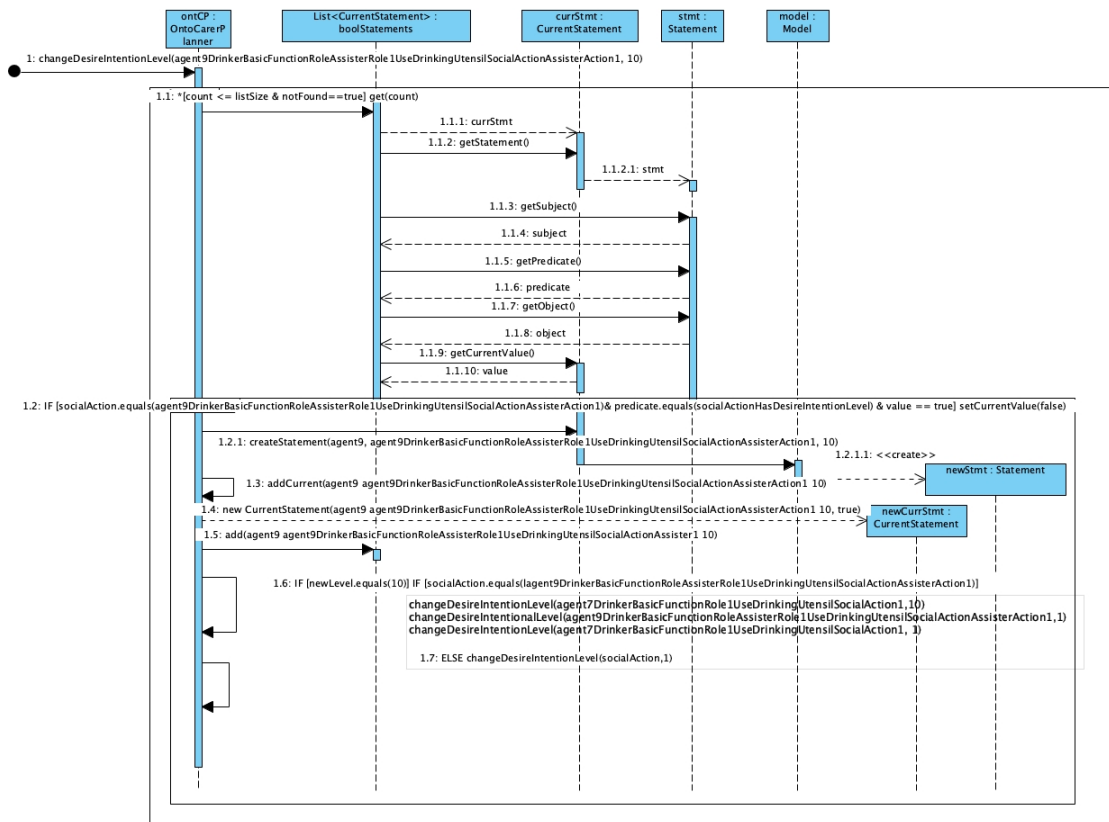


Figure 8.16 Assisting agent9 completes the assisting action and satisfies the assisted action

In the sequence diagram in Figure 8.16 this depicts the sequence of events involving the completion of the assisting action to help the assisted agent and so satisfies the original assisted action.

When agent9 completes the assisting action

agent9DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1 then the change from desire-intention level 9 to 10 signalling the intention is satisfied. This is done by invoking the method changeDesireIntentionLevel and passing as parameters the assisting action and the new level 10. When there is a change to desire-intention level of a social action then the existing CurrentStatement in the boolStatements needs to have its Boolean value changed from true to false and a new CurrentStatement added that includes the new desire-intention level of 10 with the value of true added to boolStatements.

A condition checks if the method parameter level is 10 and if it is then if the method parameter social action matches that in the linkedAssisterSocialAction then this means that the corresponding linkedAssistedSocialAction needs to have its desire-intention level changed to 10. This is because if the assisted action is completed and its level set to 10 as satisfied then the linked assisted action is then also satisfied. As a consequence the method changeDesireIntentionLevel is invoked with the linked assisted social action: 'agent7DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1'

As parameter along with the new desire-intention level of 10, indicating it is satisfied. This will change the Boolean value of the existing CurrentStatement holding the statement for this social action to false and add a new CurrentStatement with a desire-intention level of 10 and value true and add it to boolStatements.

When both the linked assister action and linked assisted action are both satisfied and had their desire-intention levels set to 10, then this process of assistance is complete and it is now time to set the actions desire-intention levels back to their default of 1, so that the assistance cycle can begin again, if necessary. This is done by invoking the

method changeDesireIntentionLevel with the assister social action:

agent9DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1

and new level 1 as parameters. Then invoking the method changeDesireIntentionLevel again this time with the assisted social action:

‘agent7DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1’ and the level 1 as parameter.

When these desire-intention values are reset then the assistance cycle is complete and the desire-intention levels are back to their default levels.

8.6.6 OntoCarer Functional Software Architecture

The OntoCarer Functional Software Architecture provides a view of the different elements of the software architecture from the point of view of their function; whether they act as a data repository or a function (or procedure) and the data flows or events. This Architecture will be used to compare it to the BDI Architecture (Wooldridge, 1999) to evaluate the extent to which the OntoCarer Software Architecture can be described as a BDI Architecture.

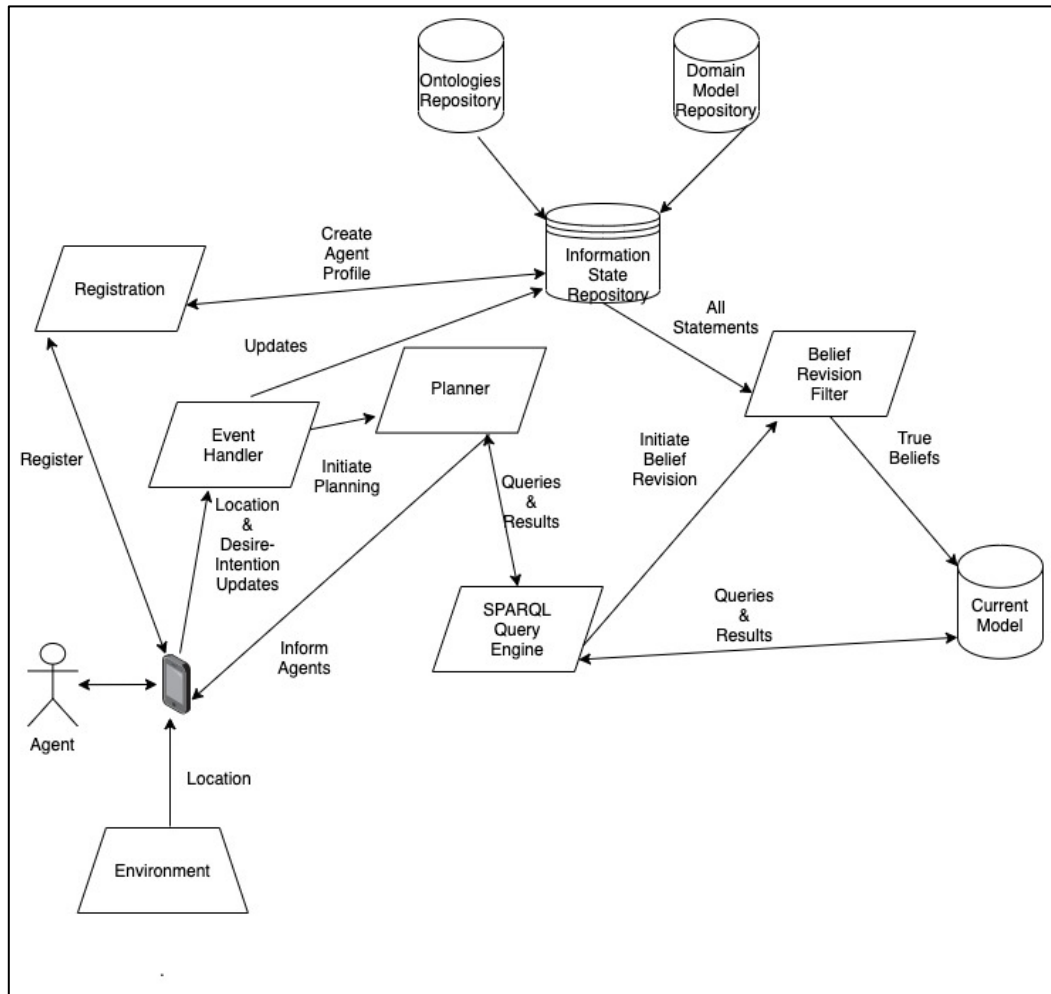


Figure 8.17 OntoCarer Functional Software Architecture

OntoCarer Functional Architecture subheadings	Page
Ontology Repository	308
Domain Model Repository	308
Information State Repository	308
Belief Revision Filter	309
Current Model (Beliefs)	309
Query Engine	309
Agent	310
OntoCarer Mobile Phone App	310
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Table 8.37 Table mapping OntoCarer Functional Architecture to pages

Ontology Repository

The Ontology Repository contains the OWL OntoCarer Ontological Framework Ontologies, which are:

- Agent
- Body Abilities
- Body Components
- Social Action
- Organisation
- Buildings
- OntoCarer-Link-Ontology

OntoCarer prototype implementation

The OWL ontologies were created in Protégé and are stored as RDF/XML files and are all read by the program into a Jena OntModel dataModel field for processing.

Domain Model Repository

The Domain Model Repository contains the RDF CollegeModel, that contains the representations of the OntoCarer College organisation, its building, its agents with their profiles including their roles, social actions and social action assister actions with their desire-intention levels, their body components, body abilities including their disabilities.

OntoCarer prototype implementation

The CollegeModel was created in Protégé and stored as an RDF/XML file for processing, and is read into a Jena OntModel dataModel field for processing.

Information State Repository

The Information State Repository contains all the OntoCarer statements, including the ontologies, the domain model and all the new statements that update the information in these statements.

With each statement it also holds an associated truth value (True or False), which it updates according to the latest statements received.

OntoCarer prototype implementation

Each statement that is read into the dataModel from the ontology files or CollegeModel domain model file is passed to the addCurrent method which creates a new instance of CurrentStatement which is an inner class that wraps a statement and an associated Boolean value (True in this case) with it in an object, which is then added to the ArrayList boolStatements. This associating of a Boolean value with statements allows us to treat the statements as beliefs by the Organisation Agent where it holds some statements as true and others as false. It also allows a process of belief revision to take place whereby beliefs are revised in being held as true or false.

Belief Revision Filter

The Belief Revision Filter extracts all the statements that are held to be true from the Information State Repository. This is so that any queries performed on the data only uses statements that are held to be true.

OntoCarer prototype implementation

The Belief Revision Filter is implemented by the method `getCurrentStatements` which iterates through the `CurrentStatement` instances in the `boolStatements` list and selects those statements that have an associated value of `True` and adds them to a list of `trueStatements`, then returns the list.

Current Model (Beliefs)

The Current Model is the set of those statements held to be true by the Organisation Agent and so can be regarded as the set of its beliefs. These true beliefs can then be used for queries about the college and its agents.

OntoCarer prototype implementation

The `getCurrentModel` method creates a new `OntModel` consisting only of statements held to be true and returns that `currentModel`. It uses the method `getCurrentStatements` to do this, which acts as the Belief Revision Filter.

Query Engine

The Query Engine is used to query the `CollegeModel` in order to find: agents, agent locations, social actions belonging to agents and roles, assistance for social actions and roles, desire-intention levels, capability qualifier values, etc.

OntoCarer prototype implementation

OntoCarer uses a number of specific query methods and utility query methods along with SPARQL to query the `CollegeModel`. The specific query methods find out a particular piece of information relating to a particular resources that are passed as parameters. The query methods include:

- Resource `findSocialActionCapabilityQualifier(Resource socialAction)`
- Resource `findAgentSubjectDIForAction(Resource socialAction)`
- `ArrayList findAgentSocialActions(Resource agent)`
- Resource `findAssistingAgent(Resource socialAction)`
- Resource `findAssitingAction(Resource assisitngAgent, ArrayList actionList)`
- `ArrayList findAssistingActions(Resource socialAction)`
- `RDFNode findAgentLocation(Resource agent)`
- `RDFNode findAgentFloor(Resource agent)`
- `ArrayList findAssistingAgentsOnSameFloor(ArrayList assistingAgentsList, RDFNode assistingFloor)`
- `ArrayList findAssistingAgentsOnDifferentFloor(ArrayList assistingAgentsList, RDFNode assistingFloor)`

Each of these methods creates a SPARQL query string which is passed to a query utility method along with the currentModel, which is the set of statements currently held true by the Organisation Agent.

The query utility methods are methods of the class QueryUtility which contains the following static methods:

- Resource subjectQuery(String queryRequest, Model model)
- Property propertyQuery(String queryRequest, Model model)
- RDFNode objectQuery(String queryRequest, Model model)
- ArrayList subjectQueryList(String queryRequest, Model model)
- ArrayList objectQueryList(String queryRequest, Model model)

Each of these queries a different element of the statement triple, finding the element that matches the rest of the query. In the case of the last two queries it is all the elements that are found to match the query that are returned as a list.

It is these queryUtility methods that use the SPARQL query engine using the methods QueryFactory to create the query from the query string, and QueryExecutionFactory to execute the query, and to generate a ResultSet.

Agent

Agent is the human agent that interacts with the Organisation Agent through their mobile phone and its OntoCarer app. The human agents assume roles within the organisation, which include user and provider roles and assisted and assister roles amongst others, and of which these roles are not mutually exclusive.

OntoCarer prototype implementation

A human agent does not have a software implementation, but such updates to information that would be initiated by a human agent interacting with OntoCarer , they are in the agent profiles created in Protégé and the data updates are simulated in the data inputs in the methods for the seven scenarios which are executed in the OntoCarerDriver class.

OntoCarer Mobile Phone App

The OntoCarer Mobile Phone app is how an agent interacting with the Organisation Agent will register with the organisation as an agent and create a profile by adopting organisation roles and their social actions, and social action assister actions in the case of role assister roles. The mobile phone app will then be used to update the agent's social action desire-intention levels. In the case of a desire becoming an intention, and where an action is incapable through disability this will initiate the search for assistance. The mobile phone app will also monitor and update the agent's location within the organisation buildings.

OntoCarer prototype implementation

The OntoCarer Mobile Phone App is not implemented as an app that interacts with the Organisation Agent in this prototype. Only the data which the app would create; which are the agent profiles that are created within Protégé and the data updates for the agent locations and updates of the desire-intention levels that are simulated by RDF/XML files read into the OntoCarer program.

Registration

The Registration function is the process by which the human agent would through the OntoCarer Mobile Phone App register with the organisation and create a profile of roles, social actions, body components and abilities, and also potentially social action assister roles and actions.

OntoCarer prototype implementation

The registration process is simulated by creating the agent profiles in Protégé.

Event Handler

The Event Handler function handles changes to the agent, in particular changes to the desire-intention level of a social action and an agent's location including the floor an agent is on. Changes to the desire-intention level may involve triggering a search for assistance where the agent is not capable of performing the intended action. This function involves belief revision as some statements that were previously true will become false and new true statements will be added.

OntoCarer prototype implementation

The Event Handler function is implemented as the newData method:

```
void newData( String filename, String format, String changeType)
```

This method takes in a file of new data, which updates either the desire-intention level of a social action or the location or floor an agent is on. The changeType parameter indicates which of these changes it is. The method searches in the new data for the particular property involved 'socialActionHasDesireIntentionLevel' or 'agentHasLocation' or 'agentIsOnFloor' and when it finds a match it passes the subject and object of the found statement to the relevant method. Those methods are:

```
void changeDesireIntentionLevel(Resource socialAction, String newValue)
```

```
void addNewLocation(Resource agent, RDFNode location)
```

```
void addNewFloor(Resource agent, RDFNode floor)
```

These methods search for a match for the existing statement in the boolStatements list of CurrentStatement each of which holds a statement and an associated truth value. When it finds a match it changes the value from True to False and adds the new statement using the addCurrent method which adds a new CurrentStatement instance containing the statement with the value True. This is how belief revision is implemented.

In the case of the changeDesireIntentionLevel events may be triggered depending upon the new level. If the new level is 10 then the social action is satisfied and so it will then be changed again to set it

back to level 1. If the social action is a social action assister action and there is a linked social action it is assisting then the linked action's level is changed to 10 also. If the new level is between 5 and 9 then the social action has become an intention. Before carrying out the intention its capability must be checked by calling `findSocialActionCapabilityQualifier` and if the returned value is between 1 and 4 indicating disability then a search for assistance is triggered by calling `searchForAssistance` method.

Planner

The Planner is the function that searches for, identifies and directs the needed assistance to the disabled agent, once the Event Handler has triggered it.

OntoCarer prototype implementation

The Planner is implemented in the method:

```
void searchForAssistance(Resource assistedAgent, Resource socialAction, RDFNode  
socialActionQualifier, String socialActionLevel)
```

The method finds all the assisting actions instances for the social action needing assistance, using the `findAssistingActions` method. Then finds the agents the assisting actions belong to and their location and floor. The best assisting action is selected based upon which is the nearest assisting agent to the assisted agent.

When the best assisting action has been found its desire-intention level is changed to make it an intention (level 9), which will then be also checked for its capability in turn. The assisted and assisting agents are then informed and directed by calling the method `assistancePlanningResult` passing all the relevant parameters to it, which are: `assistedAgent`, `assistedLocation`, `assistedFloor`, `assistedSocialAction`, `assistedSocialActionLevel`, `assistedSocialActionQualifier`, `nearestAssistingAgent`, `nearestAssistingLocation`, `assistingFloor`, `assistingAction`

Environment

The Environment is the environment the agent inhabits, senses and interacts with. In the case of OntoCarer it is the physical environment of the organisation's buildings which the human agent inhabits. In particular it is the agent's mobile phone and its Ontocarer app that senses the agent's location in the college building, and reports that location (and floor) to the Organisation Agent.

OntoCarer prototype implementation

In the OntoCarer prototype the environment is simulated in the form of the `collegeModel` which includes the college building. An OntoCarer Mobile Phone App has not been created, so the location and floor updates are simulated in each of the seven scenarios by inputs RDF/XML files for each of the agent's locations and location movements.

8.6.7 Evaluation of the OntoCarer Software Architecture as a BDI Agent Architecture

As outlined in Chapter 2 in the section on BDI Agent Architecture, Ian Wooldridge (Wooldridge, 1999) identifies seven main components to a BDI agent. These are repeated here and a comparison made with the OntoCarer Software Architecture.

1. A set of current **beliefs**, representing information the agent has about its current environment.

OntoCarer

Current Model (Beliefs) mirrors this function containing a set of statements currently held true by the OntoCarer Agent.

2. A **belief revision function**, (br f), which takes a perceptual input and the agent's current beliefs, and on the basis of these, determines a new set of beliefs.

OntoCarer

The Event Handler methods that handle changes to desire-intention, location and floor manage the belief revision functions of changing the truth value of the previous statements for these states from True to False and then adding the new statements with the value True. The Belief Revision Filter then can separate out those statements now held true, from the older revised beliefs, which are now held to be false.

3. An **option generation function** generation function, (options), which determines the options available to the agent (its desires), on the basis of its current beliefs about its current intentions.

OntoCarer

OntoCarer is a mixed initiative (Velo, 1996) system that involves human agents in its system. These human agents have options that are represented in the roles and social actions they adopt when they register with the organisation and create a profile that represents their options for action within the organisation.

4. A set of **current options**, representing possible courses of actions available to the agent.

OntoCarer

The current options in OntoCarer will be the roles and social actions that can become intentions in the current location, along with the assistance available in the case of disability affecting those roles, actions and intentions.

5. A **filter function** (filter), which represents the agent's deliberation process, and which determines the agent's intentions on the basis of its current beliefs, desires, and intentions.

OntoCarer

The human user agents determine their own desires and intentions. In the case where the agent needs assistance to fulfil those intentions, then the OntoCarer Organisation Agent comes into play. The Planner deliberates how to fulfil those intentions by finding agents that can offer relevant assistance that can fulfil those intentions and chooses the best of these. It then determines the intentions of the assisting agent, and directs it to the assisting goal.

6. A set of **current intentions**, representing the agent's current focus – those states of affairs that it has committed to trying to bring about.

OntoCarer

The human agent determines the current intentions by its direct choices from menus on the Mobile Phone App. Those choices change a desire to an intention and are handled by the Event Handler. In the case where the agent cannot fulfil those intentions, then it is the Planner that tries to fulfil those intentions. It does so by directing the intentions of an assisting agent.

7. An **action selection** function (execute), which determines an action to perform on the basis of current intentions.

OntoCarer

In the case of OntoCarer the human agent selects the actions they intend to perform. In the case where they cannot fulfil those actions because of disability, the OntoCarer Planner in providing assistance selects the actions of the assisting agents, finds those assisting agents that can perform it, selects the best agent to carry out the assisting action, and directs them to perform it.

Is the OntoCarer Organisation Agent's architecture a BDI Agent Architecture?

From the above we can see the correspondences between the OntoCarer Organisation Agent's functional architecture and Wooldridge's BDI Agent Architecture. The main difference between them is that Wooldridge's agent is an individual autonomous agent whereas OntoCarer is a mixed initiative system whereby human agents interact with and are represented as agents within the OntoCarer system. The OntoCarer Organisation Agent is an agent that acts for others – in this case for the disabled members of its organisation in enabling them to fulfil their intentions in cases where disability prevents this by directing the intentions of other assisting agents to do this. As well as the correspondences between Wooldridge's BDI Agent architecture and the OntoCarer architecture another reason for considering OntoCarer to have a BDI Agent architecture is that it facilitates the design and understanding of the OntoCarer architecture. In line with Dennett's 'Intentional Stance'

(Dennett, 1971) (Dennett, 1981) we should not be concerned with whether OntoCarer is intrinsically a BDI agent, but pragmatically, does viewing it in this way help us to design and understand the workings of a software application that acts as a seamless intermediary between human agents (assisted and assister) that have beliefs, desires and intentions and that itself uses belief, desire and intention representations in order to act as an agent for the disabled in directing the intentions and actions of human assisting agents. The answer to this question is, that it *does* facilitate the design and understanding of such a system. Consequently, we can conclude that in terms of correspondences with a BDI Agent architecture and in terms of the design and understanding of such a system that OntoCarer has a BDI Agent architecture.

8.6.8 Evaluation of the agent features of the OntoCarer Organisation Agent

In Chapter 2 a number of agent characteristics and features were described. These included: *autonomy, communicative, reactivity, pro-activeness, reasoning*. Agents are: *situated in, perceives, act in, and react to*, an environment. Agents in addition to acting, may also *act on behalf* of others.

The OntoCarer Organisation Agent is *situated* in an organisation environment that includes buildings and human agents. It *perceives* the changes in the human agent's locations through the mobile phones and their app. It *reacts* to changes in the desires and intentions of the human agents and their capabilities to implement those intentions. It *reasons* with its beliefs (statements held true) about the organisation and its agents, and the desires, intentions and capabilities of agents to plan and direct assistance. It *communicates* with the human agents through their mobile phone app to direct the assistance. The Organisation Agent is primarily *reactive* and not *pro-active* as it responds to the intentions of human agents and does not have its own goals and intentions beyond providing assistance to the human agents. It *acts on behalf* of those human agents it is assisting, though the assisting actions themselves are provided by the human assisting agents it directs.

8.7 Evaluating the WHO ICF classification in relation to the OntoCarer

Ontological Framework

The WHO International Classification of Functioning, Disability, and Health (ICF) is described in some detail in Chapter Two, where its functions in relation to OntoCarer is also outlined.

These functions can be summarised as:

1. OntoCarer is designed to be compatible with and integrate the ICF classifications that have been translated into an OWL ontology (World Health Organisation and The National Center for Biomedical Ontology, 2001)
2. The ICF can as an authoritative source of knowledge on body structures and body abilities that can be used for validating the corresponding OntoCarer domain ontologies for Body Components and Body Abilities. The ICF also has the Activities & Participation range of classifications which correspond in part to the OntoCarer Roles and Social Action classifications. These Activities & Participation classifications are

evaluated in relation to OntoCarer's ontologies, as to their suitability to function in a personalised assistive software application for organisations, and on the merits of OntoCarer's ontologies over them.

We will describe and evaluate each of these functions that the ICF plays with OntoCarer below.

1. The ICF has been implemented as an OWL ontology (World Health Organisation and The National Center for Biomedical Ontology, 2001). Given that this OWL resource is available it was decided to make the OntoCarer Framework compatible with the ICF ontology. This was done in several ways:
 - i) Firstly the division of the ontologies in the OntoCarer Framework. Making the Body Components and Body Abilities distinct ontologies so that they could correspond to the Body Structures and Body Functions classifications. Also making the Social Action ontology distinct as it could correspond to some extent to the Participations classifications.
 - ii) The OntoCarer qualifiers scale for classifying the degree of disability follows those qualifier categories of the ICF, differing only in using integers instead of the corresponding decimal numbers.
 - iii) The OntoCarer ontologies include properties for incorporating ICF OWL class instances in their statements. With such Agent ontology properties as:
 - agentHasBodyFunction
 - agentHasBodyStructure
 - agentHasParticipation

where the range of each of these properties is an ICF OWL class individual of the indicated type. Additional properties can be added to the Body Components, Body Abilities and Social Action ontologies (as those ontologies are the nearest corollaries to the corresponding ICF classifications) to provide object and data properties to link instances of the Body Structure, Body Function and Participation classes with their agents and their qualifiers, if needed, and are listed in the ontology descriptions of Chapter 4.

2. The OntoCarer top-level Body Component and Body Abilities ontologies are very simple and austere only containing two classes each. These are Body Component and Body Component Assister, and Body Ability and Body Ability Assister, respectively. The ICF has a role to play in the design and validation of the domain ontologies for the Body Component and Body Abilities domain ontologies, as it is a comprehensive and detailed classification of body structures and body functions, that has been tried and tested over a number of years. The OntoCarer Body Component and Body Abilities domain ontologies are compared with the classifications of the ICF Body Structures and Body Functions classifications in order to validate them.

To demonstrate this, here is a table of the OntoCarer Body Components domain ontology categories matched with comparable categories in the ICF Body Structures classifications'. Many of the ICF Body Structures included here, are further broken down into constituent substructures in the complete ICF.

OntoCarer Body Component	ICF Body Structures
ArmComponent	s7300 Structure of Upper Arm s73001 Structure of Forearm
BrainComponent	s110 Structure of brain
CardioVascularComponent	s410 Structure of cardiovascular system s400 Heart s4101 Arteries s4102 Veins
DigestiveComponent	s520 Structure of oesophagus s530 Structure of stomach s540 Structure of intestine
EarComponent	S240 Structure of external ear S250 Structure of middle ear s260 Structure of inner ear
EyeComponent	s210 Structure of eye socket s220 Structure of eyeball s230 Structures around eye
FootComponent	s7502 Structure of ankle and foot
HandComponent	s7302 Structure of hand s73020 Bones of hand s73021 Joints of hand and fingers s73022 Muscles of hand s73023 Ligaments of hand and fasciae of hand
HeadComponent	s710 Structure of head and neck region s7100 Bones of cranium s7101 Bones of face s7104 Muscles of head and neck region
LegComponent	s7500 Structure of thigh s75001 Structure of lower leg
MouthComponent	s320 Structure of mouth
NoseComponent	s310 Structure of nose
RespiratoryComponent	s340 Structure of respiratory system

Table 8.38 Comparison of OntoCarer Body Components with ICF Body Structures

Here is a table of the OntoCarer Body Abilities domain ontology categories matched with comparable categories in the ICF Body Functions classifications'. Many of the ICF Body Functions included here, are further broken down into constituent sub-functions in the complete ICF.

OntoCarer BodyAbility	ICF Body Functions
ArmMovementAbility	b760 Control of voluntary movement functions b7301 Power of muscles of one limb
BreathingAbility	b440 Respiration functions
DrinkingAbility	b510 Ingestion functions b5105 Swallowing
EatingAbility	b510 Ingestion functions b5101 Biting b5102 Chewing b5103 Manipulation of food in the mouth b5105 Swallowing
FaecalExcretionAbility	b525 Defecation functions b5250 Elimination of faeces
HandDexterityAbility	b760 Control of voluntary movement functions
HandMovementAbility	b760 Control of voluntary movement functions b7202 Mobility of carpal bones
HearingAbility	b230 Hearing functions b2304 Speech discrimination
SeeingAbility	b210 Seeing functions b2100 Visual acuity functions b2101 Visual field functions b2102 Quality of vision
SleepingAbility	b134 Sleep functions b1342 Maintenance of sleep
SmellingAbility	b255 Smell function
SpeakingAbility	b310 Voice functions b3100 Production of voice b3101 Quality of voice b320 Articulation functions b330 Fluency and rhythm of speech functions b3300 Fluency of speech
StandingAbility	b7630 Supportive functions of arm and leg b7303 Power of muscles in lower half of the body
TastingAbility	b250 Tasting function
ThinkingAbility	b117 Intellectual functions
TouchingAbility	b265 Touch function
UrinatingAbility	b610 Urinary excretory functions b620 Urination functions
WalkingAbility	b760 Control of voluntary movement functions b7303 Power of muscles in lower half of body b7304 Power of muscles in all limbs b7203 Mobility of tarsal bones

Table 8.39 Comparison of OntoCarer Body Abilities with ICF Body Functions

The validation of the Social Action ontology, which mainly represents roles and their actions within an organisation, is principally justified by basing the choice of the extension of the ontology into a well understood domain. This is the educational domain, with a college as its organisation, and the familiar roles of lecturers, students, etc. and their actions, which is used for the validation of the Social Action ontology, as discussed in Chapter Seven. In addition the Social Action ontology is validated through its classifications' ability to function effectively in the college simulation and the OntoCarer assistive software application. Though, it worth comparing the Social Action ontology with the Activities & Participations classification to do two things. Firstly to assess to what extent the Activities & Participations classifications can be used to validate the Social Action ontology, and

secondly to discuss to what extent the Social Action ontology might be a useful addition to the ICF classification, or a better alternative in the case of an assistive software application for organisations.

There are nine domains in the Activities & Participations

- Learning & applying knowledge
- General tasks and demands
- Communication
- Mobility
- Self-Care
- Domestic Life
- Interpersonal interactions and relationships
- Major life areas
- Community, social and civic life

The domains are then each broken down into a number of tasks or activities. These activities vary in the level of specificity. Some categories are very specific, others are more general. Each category is supplemented with a description. That description itself may cover a very specific activity or a very broad range of activities. We shall look at some examples that are related to OntoCarer, the educational domain and self care activities such as eating drinking and toileting that may take place within such a domain.

The Self-care domain includes the following tasks:

d510 Washing oneself
d520 Caring for body parts
d530 Toileting
d540 Dressing
d550 Eating
d560 Drinking
d570 Looking after one's health
d598 Self-care, other specified
d599 Self-care, unspecified

Table 8.40 ICF Activities & Participation Self-Care tasks

These are further described with descriptions of the activity. In particular for:

d530 Toileting:

Planning and carrying out the elimination of human waste (menstruation, urination and defecation), and cleaning oneself afterwards.

Inclusions: regulating urination, defecation and menstrual care

Exclusions: washing oneself(d510); caring for body parts (d520)

d550 Eating

Carrying out the coordinated tasks and actions of eating food that has been served, bringing it to the mouth and consuming it in culturally acceptable ways, cutting or breaking food into pieces, opening bottles and cans, using eating implements, having meals, feasting or dining.

Exclusion: drinking (d560)

d560 Drinking

Taking hold of a drink, bringing it to the mouth, and consuming the drink in culturally acceptable ways, mixing, stirring and pouring liquids for drinking, opening bottles and cans, drinking through a straw or drinking running water such as from a tap or spring; feeding from the breast.

Exclusion: eating (d550)

The other relevant Activities and Participation domain is Major life areas, in particular Education (d810-d839) which is made of the following categories:

d810 Informal education
d815 Preschool education
d820 School education
d825 Vocational training
d830 Higher education
d839 Education, other specified and unspecified

Table 8.41 ICF Activities & Participation, Major Life Areas: Education

These relevant categories d820, d825, d830, are described as:

d820 School education

Gaining admission to school, education, engaging in all school-related responsibilities and privileges, and learning the course material, subjects and other curriculum requirements in a primary or secondary education programme, including attending school regularly, working cooperatively with other students, taking directions from teachers, organizing, studying and completing assigned tasks and projects, and advancing to other stages of education.

d825 Vocational training

Engaging in all activities of a vocational programme and learning the curriculum material for preparation for employment in a trade, job or profession.

d830 Higher education

Engaging in the activities of advanced educational programmes in universities, colleges and professional schools and learning all aspects of the curriculum required for degrees, diplomas, certificates and other accreditations, such as completing a university bachelor's or master's course of study, medical school or other professional school.

Comparing ICF Activities & Participation with the OntoCarer SocialAction ontology, the OntCarer SocialAction ontology is based upon organisations and the roles and related actions within them. The roles typically collect together related sets of actions such as eater, drinker, toiler or those functional roles in the organisation such as lecturer, student, information assistant, etc. Each role and each social action within that role can be rated for its capability by using the same set of qualifiers as are used in the ICF to rate the level of disability.

The Activities & Participation categories are for the most part more general than those of OntoCarer Social Action. Though, d530 Toileting, d550 Eating, d560 Drinking, categories are directly comparable with the Social Action roles of Toileter, Eater, and Drinker. So, in these cases the ICF categories could be cited as providing validity support for the corresponding Social Action roles.

Another limitation of the Activities & Participation categories is that they can only be given one rating for the whole category, even though it covers a number of actions in its descriptions’.

When we compare the Activities & Participation Education categories with OntoCarer, the difference in the two classifications becomes more apparent.

In the case of Activities & Participation the education categories are distinguished by the different levels of education over time, which roughly correspond to the different types of organisation at each stage.

- Roles are not distinguished in the descriptions, and the activities are only described from the user side in the organisation, not the provider side. In particular, assisting actions that are prominent in the Social Action ontology are not included in the ICF classifications.
- The descriptions of activities are mostly more general in the Activities & Participation descriptions than in the Social Action ontology. In the Social Action Student role, there are specific actions such as: TakeNotesAction, SeeLectureAction, HearLectureaction, AskQuestionsAction, AnswerQuestionsAction, etc.
- Whereas in the Activities & Participation description for d830 Higher education it refers to general activities such as “Engaging in the activities of advanced educational programmes” and “learning all aspects of the curriculum required for degrees”

While the ICF Body Structures and ICF Body Functions classifications contain a hierarchy of highly specific categories, which could be usefully included in an OntoCarer application to describe and classify individuals for their respective domains, the Activities & Participation categories would be much less useful. They are not organised around organisations, they cover some organisational areas but not others, and they only cover user activities within organisations not the provider and assister roles and actions within organisations, and those actions form part of general descriptions lacking the specificity of the OntoCarer role and Social Action categories. Consequently, OntoCarer’s specific and detailed set of roles and social actions and assistive roles and actions are better suited as a set of classifications for identifying and providing assistance. It is also the case that OntoCarer’s Ontological Framework provides a better alternative and supplement to the ICF for creating an assistive social network and a software application for the planning of assistance in organisations, due to its specific and detailed set of organisational roles and social actions, its assister roles and actions, and its ability to model an organisation building where the assistance is provided.

8.8 Summary

This chapter is mainly concerned with the evaluation of the OntoCarer Ontological Framework, which is concerned with the verification and validation of the

Framework. Where verification is concerned with whether an ontology meets the goals, requirements, and standards of the project and its methodology. The validation of an ontology is concerned with whether it correctly models those aspects of the world it is intended to model.

The OntoCarer Verification Process consists of checking the Goals and the 6 Levels of Verification primarily for their completeness, consistency, and conciseness, and other related checks upon the build process. These are described and examples of the verification checks for various scenarios are given. The verification checks were completed successfully.

Four validation methods are described, which are: Sources, Correspondences and Comparisons, Functionality, Simulations. Their role in the OntoCarer project is considered with sources, functionality and simulation playing a role in validating the top-level ontologies and the education college domain level ontologies.

The requirements for an OntoCarer data model are described that can provide the required functionality and act as a suitable simulation of an organisation in order to validate the Ontological Framework. These requirements include ensuring that the model is representative of: the organisation, agents and their profiles, including the range of impairments and disabilities represented. The data model should implement the OntoCarer Assistance Data Structure in order to facilitate the scenarios of the OntoCarer Assistance Lifecycle and forming an assistive social network.

The OntoCarer CollegeModel DataModel is described. The OntoCarer CollegeModel data model represents a college organisation in the education domain. It is intended to simulate the organisation, building and agents of such an educational college, albeit on a smaller scale. The college building and agent profiles are described.

The OntoCarer Software Application is described. This is the software that implements the functionality of the Organisation Agent, which identifies the need for assistance, finds the assistance, plans and directs the assistance, using the ontologies of the OntoCarer Ontological Framework and the CollegeModel.

The requirements for the OntoCarer software application are listed and its use case depicted. The steps of the OntoCarer Assistance Algorithm are listed. This is followed by a demonstration of the universal applicability of the OntoCarer Ontological Framework to facilitating the OntoCarer Assistance lifecycle. This is done by demonstrating the application of the OntoCarer Assistance Algorithm to the Core OntoCarer Assistance Data Structure to show how they facilitate the steps

involved in: making a desired action an intention, identifying the need for assistance, finding the assistance, selecting the assistance, directing and monitoring the assistance until completion.

There then follows tables and descriptions for each of the seven assistance scenarios which are executed by the software application. Then there is a series of sequence diagrams with descriptions that follows through the sequence of events for Scenario 4 which involves providing assistance to a student in the college café who needs assistance with using a drinking utensil to drink from.

The OntoCarer Functional Software Architecture is depicted and its constituents described. Followed by an evaluation of the OntoCarer Software Architecture as a BDI Agent Architecture through comparison with Wooldridge's (Wooldridge, 1999) BDI Agent Architecture, concluding that the OntoCarer Software Architecture is such a BDI Agent Architecture.

Finally, the WHO ICF classification is evaluated in relation to the OntoCarer Ontological Framework. The relationship of the ICF to OntoCarer is described, and the interest in making OntoCarer ontologies compatible with it. The limitations of the ICF Activities and Participation classifications in relation to OntoCarer's purpose of providing assistance in organisations is justified. Use is made of the ICF Body Structures and Body Functions classifications in validating the classes of the OntoCarer Body Components and Body Abilities ontologies.

Chapter 9 Discussions, Conclusions and Further Work

This chapter aims to consider whether and what extent the prospectus set out at the beginning of the project and described in the introductory chapter to this thesis was met. This includes discussing: the motivations for the project, the aim and objectives of the project, and the contributions of the project. Some observations are also offered discussing the potential completeness of the ontologies in the framework and the universality of the ‘OntoCarer Assistance Lifecycle’. Finally, the potential for where further work on developing this research could take place is outlined.

9.1 Discussions and Conclusions

9.1.1 Motivations – Discussions and Conclusions

The motivations for embarking on this project were both theoretical and practical.

The theoretical interest stemmed from an interest in agents and agency. In particular the work of Michael Bratman (Bratman, 1987) who developed a theory of practical reasoning based on agent’s beliefs, desires and intentions. This BDI theory of agents was taken up by the artificial intelligence research community and developed by researchers such as Michael Wooldridge (Wooldridge, 1999) (Wooldridge, 2000) amongst others as a paradigm for software agents. Such that the most widely used AI textbook (Russell and Norvig, 1995) adopts an agent based approach to artificial intelligence. This interest in agents was also accompanied by an interest in impairments to agency in the form of disabilities and how they might be assisted.

This revealed a limitation of existing BDI theory in that it only applied to agents capable of implementing their own intentions in their own actions. This provided the motivation for this research to investigate the possible extension of BDI theory to human agents with disabilities that require assistance to implement their intentions and how this may be provided through a software agent, one that also has a BDI architecture, that identifies the need for assistance then finds and directs the assistance until completion. Having identified this gap in the existing research the other theoretical motivation was to find a suitable formal representation for the elements involved which included not just the BDI concepts but also the agents, their actions, the organisations and their buildings, etc., so that these elements could be processed in a by a computer program to automate the process of identifying and planning the assistance. The languages of the Semantic Web were chosen for these formal representations.

These theoretical motivations were satisfied in the construction of the OntoCarer Ontological Framework with its formal representations of the elements involved in the BDI representations in the languages of the Semantic Web OWL, RDFS, and RDF. The OWL representations of the seven top-level ontologies which modelled the agents, their desires, intentions, impairments and assisters in the organisation they inhabited (Chapter 6). In addition the creation of the software application described in Chapter 8 that implements the BDI Architecture of the Organisation Agent that mediated between the assisted and assister agents and implements the assistance lifecycle.

The practical motivations were to engage in research that may have benefits in the field of assistive technologies, which in this project was by constructing an implementation of an assistive social network that provides assistance for people with disabilities by which they may have their needs identified and assistance directed to them from a community of assisters in an organisation. Such a prototype assistive network was created for a simulated organisation and implemented using the OntoCarer Ontological Framework of ontologies and a software application that implemented the Organisation Agent that planned and directed the assistance.

What the scope is for this prototype being adopted for providing an assistive social network in actual organisations is unknown. In the section on Further Work later in this chapter, consideration is given as to how the prototype may be developed further to make the possibility of such an assistive network become a practical reality in the future. There are also organisational issues to be addressed as well as technical issues in creating such an assistive network, including the recruiting and training of such assisters, which are outside the scope of this project.

9.1.2 Aim and Objectives – Discussions and Conclusions

The project Aim and Objectives were set out in Chapter 1. The main aim of the project was the construction of an ontological framework with the purpose of being used in a software application to create an assistive social network for organisations and BDI agents, which identifies the need for assistance with disabilities and then directs and provides the relevant assistance to satisfy those intentions.

The project objectives concerned the specific tasks and concrete elements to be constructed whereby the project aim was to be realised. There were five project objectives. These were: firstly to construct an ontological framework of interrelated top-level ontologies in OWL that can represent organisations, their buildings and agents and be compatible with ICF (World Health Organisation, 2001) classifications. The second objective was to extend BDI theory to include people with disabilities and to create Semantic Web representations of the BDI concepts involved. The third objective was to create domain extensions to the top-level ontologies for a well understood type of organisation. The fourth objective was to create a representative model in RDF of an organisation and its agents belonging to the selected organisation domain to form a case study that can be used in a software application to provide assistance to those agents with disabilities and also used to validate the ontologies used in the framework. The final objective was to create a software application that can use the RDF model of an organisation and its agents to successfully perform the Assistance Lifecycle, and in doing so validate the OntoCarer Ontological Framework.

The aim of the project was met. An Ontological Framework of seven interrelated and integrated ontologies were created, which are: Agent ontology, Social Action ontology, Body Components ontology, Body Abilities ontology, Organisation ontology, and OntoCarer-Link-Ontology and are

described in Chapter 6 and 7. A software application was created which is described in Chapter 8 that creates an assistive social network of BDI agents that performs the Assistive Lifecycle for those agents with impairments and disabilities in the organisation that identifies the need for assistance, finds and selects the assistance, then directs and monitors the assistance until successful completion.

The objectives of the project were met. These will now be briefly summarised for each of the five objectives.

The first objective was to construct the OntoCarer Ontological Framework of ontologies which is described in Chapter 6. Another part of the first aim was to make the Ontological Framework compatible with the WHO ICF classification. This was done through defining an ICF compatible scale of impairments. Creating distinct Body Components and Body Abilities ontologies which corresponded to the ICF Body Structures and Body Functions classifications. Adding OWL properties in selected OntoCarer ontologies to be able to link to individuals of ICF classes if needed, to the OWL ICF representation (WHO and The National Center for Biomedical Ontology, 2001) Though, the role and significance of the ICF in the project must be qualified, as it changed over the course of the project and had a much more limited role than was envisaged at the start of the project. This changing role of the ICF in the project is discussed in more detail below.

The second objective was to extend BDI theory to include people with disabilities and to create Semantic Web representations of the BDI concepts involved. The form that the representations of the BDI concepts changed over the course of the project. An early version for representing BDI concepts in Semantic Web representations was formulated and presented in the conference paper (Vassilev, Ulman, et al, 2013). The representation in this paper uses reification in OWL as a correlate well to representations of propositional attitudes which beliefs, desires and intentions are. Whilst, superficially this was an attractive and intuitive solution to representing these concepts in the Semantic Web languages it had a number of flaws adding a lot of computational complexity for little or no value. The problems with this ‘reification’ approach are analysed in detail in Chapter 5. A simpler, more transparent and computationally effective solution was found. This used the triple form to link agents with their social actions and the social actions with their desire-intention level. With the desire-intention level being represented on a single numerical scale, taking advantage of the fact that an intention is also a desire. Allowing the scale to go from: no desire, to degrees of desire through to degrees of intention to the satisfaction of the intention. A separate solution was found for the representation of Belief. This depended upon analysing the functions of ‘belief’ and the roles ‘beliefs’ played in the OntoCarer system. The solution which is described in detail in Chapter 5 focused upon beliefs as the bearers of truth values and the subject – which in this case is the Organisation Agent holding some statements as true and others as false. As a consequence of this a solution to the problem of ‘belief revision’ needed to be found. Belief revision is concerned with handling the changes to what beliefs are held true and false as facts in the world change and the agent processes those changes. The solution to the representation of beliefs was found in the Organisation Agent and

how it stored the triples that represented statements about the world. The representation of beliefs was done in the software application by using a Java inner class to store each triple statement representing a fact with an associated truth value that could be updated and changed as the world changed, which in this case meant as the organisation and its elements changed.

The third objective was to create domain extensions to the top-level ontologies for a well understood type of organisation. This was done and is described in Chapter 7. The ‘well understood type of organisation’ was that of a college in the education domain. The seven top level ontologies were extended to include classes and properties so that such an RDF model of a college could be created that would allow for its use in a software application that could execute the Assistance Lifecycle for a number of representative scenarios (though not exhaustive) involving the identifying the need for assistance, to finding, selecting and then monitoring the assistance to completion. The domain extensions were sufficient to provide the range of: agents, roles and social actions specified and their assisters, along with that of a simulated college building, that could cover the range of scenarios specified. Even so the domain extensions were not exhaustive and were created within limitations that were specified in Chapter 1 and each of the respective domain ontology sections in Chapter 7.

The fourth objective of creating the RDF model of the simulated college organisation was met through creating such a model that included modelling the college building. Fifteen college agents along with their profiles that included their roles, social actions and any impairments. The college model also implemented the assistive social network through the properties linking the agent’s social actions with the social action assister actions that could provide the assistance when needed. The college model is described in Chapter 8. The simulated college was limited to fifteen agents due to time and resource constraints in constructing such a model. Though, the simulated college contained only fifteen agents along with their profiles and a comparatively modest college building in size the RDF/XML code to represent this was over 250 pages long (Appendix E).

The fifth objective was to create a software application that can use the RDF model of an organisation and its agents to successfully perform the Assistance Lifecycle, and in doing so validate the OntoCarer Ontological Framework. This was done by creating a software application in Java that successfully performed the actions of the Organisation Agent in carrying out the OntoCarer Assistance Lifecycle on the RDF college model for seven representative assistance scenarios. This software application is described in Chapter 8 along with its functional software architecture, which is also evaluated as a BDI architecture.

9.1.3 Contributions – Discussions and Conclusions

As a consequence of meeting the Aim and the objectives within the limitations described the three original contributions to knowledge were then satisfied, which involved firstly creating such an Ontological Framework of ontologies and a software application that provides the assistance through an assistive social network.

The second original contribution to knowledge which involved the extension of BDI theory to incorporate agents with disabilities and their assistance, with both BDI Semantic Web representations has been satisfied. The gap in the BDI research literature that did not take account of agents who because of an impairment resulting from a disability being able to fulfil their intentions could now be filled and represented within BDI theory. In addition a practical solution that used these representations and also involved a BDI software agent that also implemented a BDI agent architecture had been constructed that provided this assistance that could fulfil the assisted agent's intentions, and so satisfied this contribution to knowledge.

The third original contribution to knowledge involved developing an ontological framework of assistance that is compatible with the WHO ICF as well as adding to their functionality. This is also satisfied, though the role of the ICF in relation to the OntoCarer project did change significantly over the course of the project.

In the early phases of this project it was envisaged that the WHO ICF classifications would have much more significant role in the project than the actual role it played in the project. As the WHO ICF is a well established classification dealing with 'functionality, disability and health', it also contains comprehensive classifications of Body Structures and Body Functions along with an established scale for measuring impairments to functioning which could be useful to assessing the need for assistance.

In addition to this the ICF had been translated into an OWL ontology which meant that it could potentially integrate seamlessly when used with the OntoCarer OWL ontologies. It was envisaged that the ICF could be a foundation for the OntoCarer ontologies, but as the project and its goals for providing a framework for assistance developed it moved over time to a more peripheral position.

The assistance that OntoCarer provides through the Assistance Lifecycle is through social actions which are the kind of actions associated with organisational roles such as student and lecturer in a college organisation. While the ICF has a comprehensive Body Structures and Body Functions classifications this is not the case with the Activities and Participations classifications which is much more of a patchwork – this is discussed more in Chapter 8. Consequently there was a need to develop the OntoCarer Agent and Social Action ontologies to be able to provide detailed classifications of the agents, roles and the social actions belonging to those roles, so that agents in organisations could be given a profile that could include the social actions that may become intentions and if impaired then require assistance from assister actions and their assister agents.

Though the ICF includes an Environmental Factors classifications but it lacks the detailed classifications of buildings and building parts to be able create a model of an organisation's buildings in which an agent can be located, navigate around and the functions of its spaces be identified.

Other ontologies were needed, one that could provide the properties – the links between the assisted and the assisters so that an assistive social network could be formed, this was the OntoCarer-Link-Ontology. Also, an Organisation ontology to identify organisations and situation activities that take place within them. As these other ontologies grew the role of the ICF in the OntoCarer project became more peripheral.

The ICF compatible qualifier scale for indicating the degree of impairment has been retained. While it was contemplated adopting the ICF Body Structures and Body Functions classifications wholesale into the OntoCarer ontologies because of their comprehensive content and because they are likely to remain fixed as the body is unchanging, it was decided for other reasons to opt for a more flexible solution. The more flexible solution adopted was to have skeleton top-level OntoCarer Body Components and Body Abilities ontologies, which would give the OntoCarer Framework independence from the ICF. This would also allow flexibility in the specificity and level of detail included in the Body Components and Body Abilities ontologies, which only have a potential informational roles in the ‘Assistance Lifecycle’ and not a functional one. The ICF classes could still be used with the OntoCarer ontologies, either explicitly through dedicated OntoCarer properties to make the links to them or by relying on the fact there are no disjoints between the OntoCarer classes and the ICF OWL classes so links to useful ICF classes can still be made.

The ICF has moved from an envisaged central place in this project to a peripheral one. Though the OntoCarer ontologies are still compatible with the ICF classifications for those wishing to use both in conjunction with each other. The ICF also played a useful role in validating the OntoCarer Body domain ontologies, and the ICF classifications can also supplement the OntoCarer ontologies if it is considered useful.

9.1.4 Completeness and Universality – Discussions and Conclusions

Completeness for ontologies cannot be proved it is always possible that there may be a need for a new class or property in the ontology. Completeness can be aimed for by testing the ontology against many possible scenarios for the ontology’s use to find if there are gaps in its existing set of classes and properties. The Ontological Framework of top-level ontologies aims at completeness at least for the use cases in this project, in that it aims to have sufficient top-level classes to cover the Assistance Lifecycle for all organisations. Such that when the Core OntoCarer Data Structure has extensions in its classes into particular organisational domains such as particular organisational roles and social actions and corresponding assister roles belonging to an organisation the OntoCarer Assistance Algorithm will still be able to follow through the steps in the algorithm on the graph representing the particular relationships between the individual instances of agents, roles, social actions, assisting actions etc. Where the algorithm traces a path from a desire to becoming an intention, to identifying the need for assistance, to finding and selecting the assistance, to monitoring the assistance until completion. The argument for this in section 8.6.3 is that this Assistance Lifecycle is universal across

all organisations for the operation of the OntoCarer software application based upon the OntoCarer Assistance Algorithm and the Core OntoCarer Data Structure. In any actual or simulated organisation it does depend upon agents with their roles and social actions and assister actions instantiating these relationships for the algorithm to work in practice, without actual assisters available there cannot be actual assistance. This argument for universality does not stretch beyond this use case, as there may be other use cases where additional classes, properties and possibly new ontologies are needed. In this use case it is the dynamic provision of assistance to an agent's social actions that is performed. Other use cases not covered and which could form the basis of future work could include the timetabling of assistance including that of organisational assister aids (as distinct from personal assister aids such as a personal hearing aid). The timetabling of assistance is likely to require the use of additional ontologies for the use of dates and times, as discussed in the section on Further Work below.

9.2 Further Work

The potential for further work in this research falls in three areas. Firstly, developing aspects of the existing project that could not be developed because of time and resource limitations. These aspects would complete the functionality of the project and so would be more oriented to fulfilling the practical motivations for undertaking the project. The second area, is one that extends the scope of the OntoCarer Ontological Framework along two dimensions which might be described as horizontal and vertical. The horizontal dimension is to extend it to organisational domains other than the Educational domain. The vertical dimension is to extend other use cases of providing assistance, other than that of the dynamic providing of assistance for impaired social actions by other assisting agents. The third area is to broaden the concept of an assistive social network beyond that of assisting people with disabilities, to recognise that everyone whether they have a disability or not may need assistance and so provide assistive social networks that encompasses everyone.

In the first area of developing the existing OntoCarer project this could be done by the following projects.

Developing a functioning mobile phone app that can work as the client for the Organisation Agent. This app would be able to register the agent with the organisation, create the agent profile, provide updates on the desire-intention levels, and monitor and update location and floor positions. In order that such an app is easy to use for the disabled voice control should be available to control it.

The OntoCarer software application could be developed further to handle more complex scenarios. At present the scenarios operate at the level of the individual social action. It is likely that in a real situation related groups of social actions would become intentions as roles or sub-roles with the actions being sequenced in a particular order. In scenario 7 of the software application this already happens for the Toileter social actions, but in that case each action in the sequence is triggered individually rather than as a sub-role.

The second area – horizontal dimension involves extending OntoCarer into different organisation types beyond education. This means providing dynamic assistance for agents with disabilities for their impaired social actions in such organisations as: supermarkets, cinemas, restaurants, hospitals, benefit offices, shops, etc. Including many organisational workplaces including factories, offices, etc.

The second area – vertical dimension involves adding new types of use cases for assistance other than that characterised by the dynamic provision of assistance by agents for impaired social actions. This could be use cases for timetabled events. Currently the events that trigger a search for assistance are spontaneous real time events where an agent decides to form an intention to perform an action and when unable to perform the action because of disability a search for assistance is triggered. But, many events that occur in organisations are timetabled, scheduled well in advance and occurring on a regular basis. Events such as lectures and classes taking place in a college or university. For such scheduled events when it is known what persons will be attending both disabled and non-disabled and their respective roles, what their disabilities are, and what activities the event will involve then plans can be made to schedule the relevant assistance. In the case of a timetabled lecture, for example, it may mean informing the lecturer in advance that a particular student is deaf and can lip read, so they must face the student when talking. It may mean additional help is arranged in the form of a note taker for the lecture, or technical aids are arranged in advance to be installed for the lecture. Meetings and bookings are other types of events that are scheduled in advance for which assistance could be arranged depending upon the needs of the disabled persons attending.

Another example of a second area – vertical dimension use case is one involving Linked Data. Linked Data (Berners-Lee, 2006), plans involve different organisations sharing a data model created by one of the organisations and used by agents of a different organisation. That public data model (of the first organisation) may also be annotated by the secondary organisation for use in its plans.

An example of this may be a college (or other public organisation) that creates a semantic model of its building which can be used for navigation. The rooms, stairs, lifts and corridors are mapped. It may be used by its own agents and any other agents that registered with it for such purposes as providing a wheelchair friendly route. If the data model of the building is made publicly available following Linked Data principles then another organisation and its could use that data for its own plans. For example a fire service could use the data model of the college if there was a fire at the college in order to rescue people from the burning building. If the disabled persons' software agents were registered with the fire service as well then this could be used to form plans and send instructions to the disabled person's software agent as well as the firemen's software agents in order to facilitate their rescue from the burning building. It is also possible the data model and plans could be supplemented by smoke and heat sensors in formulating the rescue plans.

Finally the third area, the OntoCarer Ontological Framework could be extended to plan and provide assistance to those not conventionally considered disabled but who nevertheless need assistance. This is a category of persons that potentially includes all of us.

The ICF classification is considered an integration of the ‘medical model’ of disability and the ‘social model’ of disability. It provides these definitions of the two models:

“The medical model views disability as a problem of the person, directly caused by the disease, trauma or other health condition, which requires medical care provided in the form of individual treatment by professionals.”

“The social model of disability, on the other hand, sees the issue mainly as a socially created problem, and basically as a matter of the full integration of individuals in society. Disability is not an attribute of an individual, but rather a complex collection of conditions, many of which are created by the social environment. Hence the management of the problem requires social action, and it is the collective responsibility of society at large to make the environmental modifications necessary for the full participation of people with disabilities in all areas of social life.” (World Health Organisation, 2001)

OntoCarer although it includes body elements and their impairments, adopts a social model of disability in its approach to ameliorating the disabilities by attempting to search, find, plan and provide personalised assistance for a disabled person in a social and environmental context. This OntoCarer model of assistance could potentially be extended to everyone, people with disabilities and the able alike, in that there are many tasks and actions for which we lack the skills, knowledge and capability to perform but which we would need assistance with. From the point of view of the social model we are all limited and constrained, and in need in many circumstances of assistance. OntoCarer may be extended to help search, find, and plan assistance wherever we find ourselves in need of assistance, to help create an assistive society from assistive social networks.

9.3 Summary

This is the final chapter of this thesis. It considers what the initial motivations for the project were, what the aim and objectives of the project were and the contributions to knowledge that developed from them are. In doing so it discusses each of them considering whether and to what extent they were met, and other factors concerning that may have changed during the project, and forming some conclusions about them in the process. The potential for further work on the project is also discussed in three areas.

The theoretical and practical motivations for the project were discussed. The theoretical motivations sprang from the an interest in agents, in particular BDI agents found in the work of Michael Wooldridge (Wooldridge, 1999) amongst others. Within BDI theory there was a gap in that it only applied to agents that could implement their own intentions, which is not necessarily the case with a person with disabilities.

There was the potential here for a mediating BDI agent that could plan and coordinate human agents to provide assistance to those impaired agents that needed it to satisfy their intentions. A consequence of this there was the motivation to find a suitable formal representation for the BDI and the other elements involved, agents, actions, etc. A practical motivation was the construction of an assistive social network that may have benefits in the field of assistive technologies.

The aim and objectives were discussed and conclusions drawn. The conclusion was drawn that the aim of the project was met. An Ontological Framework was created and a software application that creates an assistive social network that performs the Assistive Lifecycle for those agents with impairments.

The five objectives were discussed. This included discussions of how the fulfilling of the objectives had changed over the course of the project. It concluded that the five objectives were met.

The contributions to knowledge were briefly discussed and it was concluded they were satisfied. There was also a discussion of the ‘compatibility of the OntoCarer Ontological Framework with the ICF’ and what this meant now as the role of the ICF in relation to the project had changed during its course.

There was a brief discussion of the completeness of the OntoCarer Ontological Framework top-level ontologies and what this meant, and what it implied given that completeness for ontologies cannot be proved. This was discussed in relation to the OntoCarer Assistance Algorithm for the OntoCarer Assistance Lifecycle being universal for other domains other than the education domain used in the case study, and what its limitations are.


Further work was considered in three areas: developing aspects of the project further, extending the scope of the project to other organisational domains and use cases such as scheduled assistance, and finally extending assistive social networks beyond persons with disabilities to create an assistive society.

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Appendix A

OntoCarer Software Application Description

OntoCarer software application class diagram & class descriptions

OntoCarer Framework - College software application

The description of the OntoCarer Software Application in Chapter 8 was concerned with its use to validate the ontologies of the OntoCarer Ontological Framework and also with validating the OntoCarer Software Architecture as a BDI Agent Architecture. The validation of the ontologies depended upon simulating a college in the CollegeModel and the functionality of the software application being able to use the ontologies and CollegeModel to detect the need for assistance in an agent and then find and direct the assisting agent to the assisted agent. This validation was done through seven different scenarios which involved a number of agents, with different disabilities and different roles in the college organisation. The agent profiles and scenarios were described along with the outcomes of executing the software application to find the assistance. The emphasis in this case was with the WHAT rather than the HOW, as the concern was with validating the Ontological Framework. The purpose of this appendix is to explain in more detail the constituents of the software and how it functions in terms of its execution.

OntoCarer Software Application Classes

The OntoCarer Software Application consists of a driver class - OntoCarerDriver and the application class OntoCarerPlanner which contains an inner class CurrentStatement, and a utility class (QueryUtility) to process SPARQL queries. The application also uses classes from the Jena class library to process the RDF and OWL data within a Java object oriented program.

Updates to agent location (and floor), and social action desire-intention levels are done in this prototype via reading the data from files rather than through a mobile phone app.

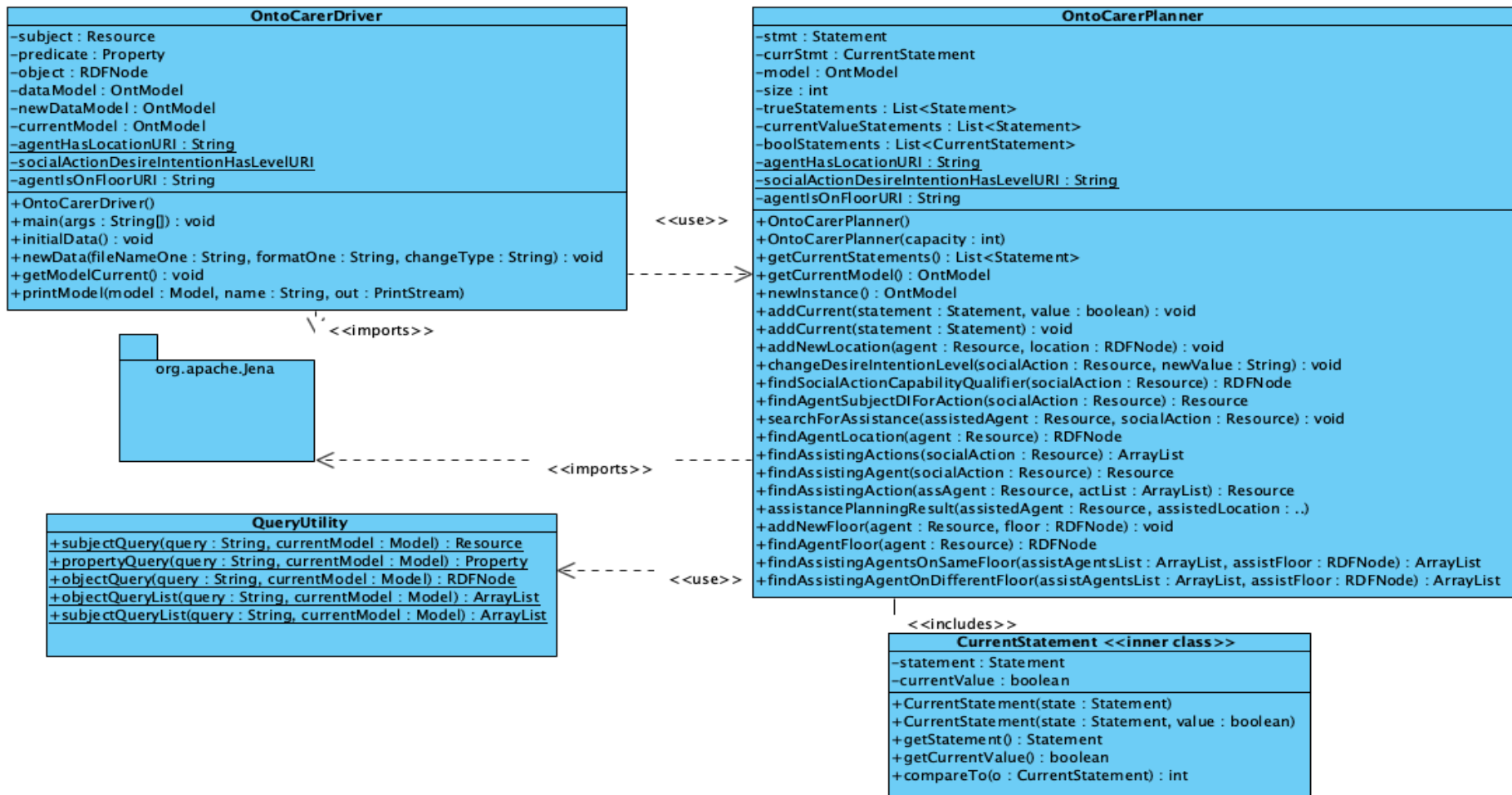


Figure 1.1 OntoCarer Software Application class diagram

OntoCarer Software Application Classes - attributes and methods

The OntoCarer Software Application class diagram consists of four classes, including the CurrentStatement inner class.

OntoCarerDriver class

The OntoCarerDriver class contains the main method which initiates the application.

It also contains methods for initialData to load the ontologies and CollegeModel holding the organisation agent profiles and building data. The newData method is used to load and handle data for changes to an agent's location or changes to the level of a desire-intention for a social action. There are also seven scenario methods (not depicted), each of which contains a number of calls to the newData method loading the initial and update data files for each of the scenarios.

OntoCarerDriver Attributes

```
private static String agentHasLocationURI =  
"http://www.OntoCarer.org/Agent.owl#agentHasLocation";  
private static String socialActionHasDesireIntentionLevelURI =  
"http://www.OntoCarer.org/SocialAction.owl#socialActionHasDesireIntentionLevel";  
private static String agentIsOnFloorURI = "http://www.OntoCarer.org/Agent.owl#agentIsOnFloor";
```

These three constants hold the URI's for OntoCarer properties which are used to find matches for the relevant property when iterating through the triples contained in the new data RDF/XML files, so that the update for a change of location, floor, or desire-intention level can be identified along with the subject and object in the triple to which the change applies.

private OntModel dataModel;

dataModel is a Jena OntModel and is used to hold the original data in the form of the ontologies and the CollegeModel, and any further updates to the data, for processing by the Jena methods

private OntModel newDataModel;

newDataModel is a Jena OntoModel that is used hold updates from RDF/XML files, which will be of a new location, new floor or change to a desire-intention level.

private OntModel currentModel;

currentModel is used to hold the filtered statements that currently have the associated value True, and so this can be considered a repository of beliefs held True by the Organisation Agent, and is used for SPARQL queries on the data.

private OntoCarerPlanner ontCP;

OntCP is a field that holds an instance of the OntoCarerPlanner class , and is used to call its methods from the OntoCarerDriver class.

private String objValue;

objValue is used to store an object value when iterating through triples and retrieving their values.

private Property predicate;

predicate is used to store a Property when iterating through triples and retrieving their values.

private Resource subject;

subject is used to store the subject of a triple when iterating through triples and retrieving their elements.

private RDFNode object;

object is used to store an object when iterating through triples and retrieving their elements.

OntoCarerDriver Methods

main method

The main method creates the OntoCarerDriver constructor and invokes it.

```
OntoCarerDriver ontD = new OntoCarerDriver();
```

OntoCarerDriver constructor

The OntoCarerDriver constructor is used to create an instance of the OntoCarerPlanner class, so that its methods can be invoked from OntoCarerDriver.

The initialData method is invoked to load the ontologies and CollegeModel into the program so they can be accessed and used.

The 7 scenario methods are invoked in sequence from scenario1() to scenario7().

initialData method

This method uses Jena's ModelFactory.createOntologyModel() to create an OntModel in the field dataModel. Then the OntoCarer ontologies and CollegeModel are read into dataModel.

The statements in dataModel are iterated through and passed to OntoCarerPlanner method addCurrent which will create a CurrentStement instance adding the statement with the associated truth value True, and then add the instance to the ArrayList boolStatements.

scenario methods

There are seven scenario methods, scenario1(), scenario2(), etc

Each scenario method contains a number of invocations of the newData method with an RDF/XML file as a parameter.

Each scenario method reads in data files using newData methods to set the location and floor of each of the 15 agents. Then it reads in a file that changes the desire-intention level of a social action belonging to one of the

agents that changes it from a desire to an intention. This will trigger the check on the capability of the social action and then the search for assistance etc.

If there are agent location changes these will also be in the form of files read into newData method calls.

When the assisting agent has completed the assistance that will also be communicated by reading in a file into newData that changes the desire-intention level to 10 indicating the assisting action is satisfied.

newData method

The newData method reads in a file of data that is used to update the data held. In particular the location of an agent, or the floor an agent is on, or the desire-intention level of a social action.

The method takes three String parameters; the name of the file, the format the file is in – usually RDF/XML, and the changeType – which indicates what type of data is being updated – location, floor, or desire-intention level.

The data is read into the dataModel and also into another ontModel newDataModel.

The statements in the newDataModel are processed according to the changeType.

The statements are iterated through until a match is found for the relevant property given the changeType parameter; agentHasLocation, agentIsOnFloor, socialActionHasDesireIntentionLevel. When a match is found then it is the subject and object of that statement which will be used to update the model, passing them to the OntoCarerPlanner relevant method. These will be: addNewLocation, addNewFloor, changeDesireIntentionLevel.

getModelCurrent method

The getModelCurrent method invokes the OntoCarerPlanner method getCurrentModel which returns an OntModel which is assigned to currentModel, and contains only statements that currently have the associated truth value True.

printModel method

The printModel is used to take a Model as parameter and output it in Turtle format.

OntoCarerPlanner class

The OntoCarerPlanner class is the primary application class and functions as the principal functionality of the Organisation Agent in this prototype application, handling the process of planning assistance.

OntoCarerPlanner does this by handling changes to an agent's location and changes to the desire-intention level of a social action, which can initiate the planning process.

The changes in an agent's location are handled in the addNewLocation method, and also changes to an agent's floor in the addNewFloor method.

The changes to the level of the desire-intention level are handled in the changeDesireIntentionLevel method.

When an agent changes the level of the desire-intention for a social action the process of planning for assistance begins. If the desire-intention value indicates that it has become an intention (5 to 9) then the social-action has to be queried to find if the agent is capable of performing the action (findSocialActionCapabilityQualifier method).

If the social action's qualifier is between 1 and 4 there is disability, so assistance need to be found (searchForAssistance method). A search is made for assisting actions (findAssistingActions method), these are stored in a list. The agents both assisted and assister to whom these actions belong must be found (findAgentSubjectDIForAction). Then the locations of these agents (findAgentLocation) found. When all this data has been gathered, then it is processed to find the best agent by the searchForAssistance method to provide the assistance for the agent its action that needs it.

The planning results are then communicated to the method assistancePlanningResult method.

CurrentStatement <<inner class>>

The CurrentStatement class is an inner class of OntoCarerPlanner class. It is used for creating CurrentStatement objects that hold a Statement and a Boolean value. The Boolean value indicates whether the Statement is currently true, or no longer true (false). Its objects are used to handle change in the microworld, so that when an agent changes location or a social action changes its desire-intention level the previous Statement's Boolean value is changed to false in the CurrentStatement, and a new CurrentStatement is created containing the new Statement and the value true.

OntoCarerPlanner Attributes

```
private static String agentHasLocationURI = "http://www.OntoCarer.org/Agent.owl#agentHasLocation";  
private static String socialActionHasDesireIntentionLevelURI =  
"http://www.OntoCarer.org/SocialAction.owl#socialActionHasDesireIntentionLevel";  
private static String agentIsOnFloorURI = "http://www.OntoCarer.org/Agent.owl#agentIsOnFloor";
```

These three constants hold the URI's for OntoCarer properties which are used to find matches for the relevant property when iterating through the triples contained in the new data RDF/XML files, so that the update for a change of location, floor, or desire-intention level can be identified along with the subject and object in the triple to which the change applies.

```
private CurrentStatement currStmt;
```

A field for holding an instance of CurrentStatement, which holds a Statement and its associated truth value

```
private Statement stmt;
```

A field for holding an instance of a Statement, which holds a triple

```
private int size=0;
```

An integer variable, used for setting the size of an ArrayList

```
private List<Statement> trueStatements;
```

A list of true Statements

```
private List<Statement> currentValueStatements;
```

A list of true Statement without the attached boolean value

private List<CurrentStatement> boolStatements;

A list of CurrentStatement containing all true and false Statements

private OntModel model = ModelFactory.createOntologyModel();

An OntModel model, whose methods are used to create new Statement to hold changes to location, floor and desire-intention level

private ArrayList assistingAgentsOnSameFloor = new ArrayList();

An ArrayList to hold a list of assisting agents on the same floor as the assisted agent

private ArrayList assistingAgentsOnDiffFloor = new ArrayList();

An ArrayList to hold a list of assisting agents on a different floor to the assisted agent

private Resource linkedAssistedSocialAction = null;

A variable to hold the assisted action linked to the assister action

private Resource linkedAssisterSocialAction = null;

A variable to hold the assister action linked to assisted action

OntoCarerPlanner Constructors

The OntoCarerPlanner has two constructors which both create an ArrayList boolStatements of CurrentStatement and an ArrayList trueStatements of true Statement.

OntoCarerPlanner Methods

getCurrentStatements method

The getCurrentStatements method creates a new instance of trueStatements list and iterates through the list of boolStatements list that holds a list of CurrentStatement that contain a Statement and their boolean values and extracts the true Statements and assigns them to the list trueStatements and returns this list of Statement that are currently true.

getCurrentModel method

The getCurrentModel method returns an up to date OntModel of true Statements. It uses getCurrentStatements method to get a list of true Statements (without the associated Boolean values) then iterates through this list of Statements adding them to the Model currentModel and then returns this OntModel.

newInstance method

newInstanceModel method creates a new instance of an OntModel class and returns it.

addCurrent method

addCurrent method takes a Statement and a boolean value as parameters and creates an of CurrentStatement

inner class passing these parameters to it and adding the instance to the list boolStatements.

There is a second version of the method that only takes a single parameter Statement and the boolean value defaults to True.

addNewLocation method

The addNewLocation is used for changing the location of an agent. The addNewLocation method takes an agent and location as parameters then iterates through the list of boolStatements CurrentStatements searching for a Statement that contains the agent parameter as subject and the property that is 'agentHasLocation' and whose associated boolean value is True. When it finds a match then the existing Statement's Boolean value is changed to False and a new Statement is created with the new location for the agent, as object in the triple and is added to the list boolStatements using the method addCurrent which creates a new instance of CurrentStatement wrapping the Statement with the value True in it.

addNewFloor method

The addNewFloor method is used for changing the floor of an agent. It works in a similar way to the addNewLocation method. It takes an agent and floor parameters and searches the list of CurrentStatement in boolStatements list to find a match in a Statement for the agent, the property 'agentIsOnFloor' where the Statement has an associated value of True. When it finds a match then the existing Statement's Boolean value is changed to False and a new Statement is created with the new floor for the agent as object in the triple and is added to the list boolStatements using the method addCurrent which creates a new instance of CurrentStatement wrapping the Statement with the value True in it.

changeDesireIntentionLevel method

The method changeDesireIntention changes the value of the desire-intention level for a social action. The method takes a socialAction Resource parameter and String for the new level. It then searches the list of CurrentStatements in boolStatements list for a Statement that has the social action as subject and a property 'socialActionHsDesireIntentionHasLevel' and an associated Boolean value of true. When it finds the match it sets the Boolean value of the existing Statement to false, and creates a new Statement where the desire-intention level of the object is set to the new value. This Statement is then passed to the addCurrent method which creates a new CurrentStatement using the Statement and the Boolean value true, and adds it to the boolStatements list. Check if the new social action level is 10 indicating the desire-intention is satisfied. If it is 10 then set its level back to 1 so it can begin the cycle again, and check if there is a linked assisted action which it is assisting. If there is a linked assisting action then it will also be satisfied by the assistance so set its value to 10 also. Then having been satisfied set the linked action back to 1 also.

Check if the new social action level is in the range 5 to 9, indicating it has become an intention. If it is an intention then check the capability qualifier for the social action to check if the action is capable of being performed without assistance. The capability check is done by passing the social action to the findSocialActionCapabilityQualifier which returns the qualifier for the social action. If the qualifier is in the range 1 to 4 then the agent needs assistance to perform the action. If it does need assistance, first find the agent the social action belongs to by calling the method

findSubjectDIFor Action passing the social action as parameter and it will return the agent it belongs to. Then call the method searchForAssistance with the parameters the assisted social agent, the assisted social action, its qualifier and desire-intention level.

findSocialActionCapabilityQualifier method

This method takes a social action as parameter and find the capability level (qualifier) of the social action and returns it. It finds the qualifier by creating a SPARQL query string using the social action as subject, socialActionHasQualifier as property, and searching for the matching object. This query is passed to the QueryUtility class objectQuery method, along with the currentModel which holds the Statements currently held to be true. The result of the query the capability qualifier is returned from the method.

findAgentSubjectDIForAction method

This method takes a social action as parameter and finds the agent that has the social action and returns it. It finds the agent by creating a SPARQL query string using the social action as object, agentHasSocialAction as property, and searching for the matching subject. This query is passed to the QueryUtility class subjectQuery method, along with the currentModel which holds the Statements currently held to be true. The result of the query the agent that has the social action is returned from the method.

searchForAssistance method

This method searches for assisting actions to assist a social action that needs assistance. It first finds all the social action assisting actions that can provide assistance to the social action that needs this and adds them to the assistingActionsList. Then for each assisting action in the list find the agent it belongs to and add that to the assistingAgentsList. Then for each agent on the list find the location of each agent and add it to the assistingAgentsLocationList. This procedure is followed for compiling a list of floors the assisting agents are on – assistingAgentsFloorList. The best agent to provide the assistance is then sought, by looking for the nearest assisting agent that can provide the required assistance to the agent that needs it. This is done by first comparing each of the assisting agents' locations with the assisted agent's location. If a match is found then the assisted agent is in the same location so that assisting agent is selected and its assisting action is selected too. If no assisting agent is in the same location then a search is made for an assisting agent is made on the same floor as the assisted agent. This is done by passing the assistingAgentsList and the assistedFloor to the findAssistingAgentsOnSameFloor method and it returns an assistingAgentsOnSameFloorList, from which the first agent is selected, provided the list is not empty. This assisting agent is then used to find its assisting action in this case. If the list is empty then a search is made for assisting agents on different floors. This is done by invoking the findAssistingAgentsOnDifferentFloor passing the assistingAgentsList and the assistedFloor. This returns a list of assisting agents and the first one is selected, and the its assisting action is the one selected, if the list is not empty. If the list is empty then no assistance is available, and this is reported.

When the best assisting action is selected then the assisted and assisting actions are assigned to the variables linkedAssistedSocialAction and linkedAssisterSocialAction. These linked variables are used when the assisting

action is successfully performed and so its desire-intention level changed to 10 – the satisfied level then the desire-intention level of the assisted action needs to be changed to 10 also. The next step after selecting the assisting action is for the Organisation Agent to change the desire-intention level of the assisting action to make it become an intention by invoking the `changeDesireIntentionLevel` method with `assistingAction` and the desire-intention level 9. This will result in the capability of the assisting action also being checked for its capability.

The `assistancePlanningResult` method is called with the parameters – `assistedAgent`, `assistedLocation`, `assistedFloor`, `assistedSocialAction`, `assistedSocialActionLevel`, `assistedSocialActionQualifier`, `nearestAssistingAgent`, `nearestAssistingLocation`, `assistingFloor`, `assistingAction`.

assistancePlanningResult method

This method outputs the results of the search for assistance.

findAssistingAgentsOnSameFloor method

This method takes the list of assisting agents and the floor the assisted agent is on and finds those assisting agents who are on the same floor as the assisted agent. It does this by iterating through the list of assisted agents and finds which floor they are on, if it is the same as the assisted agent then that assisting agent is added to a list. The list of assisting agents on the same floor as the assisted agent is returned by the method.

findAssistingAgentsOnDifferentFloor method

This method takes the list of assisting agents and the floor the assisted agent is on and finds those assisting agents who are on a different floor as the assisted agent. It does this by iterating through the list of assisted agents and finds which floor they are on, if it is different to the assisted agent then that assisting agent is added to a list. The list of assisting agents on a different floor as the assisted agent is returned by the method.

findAgentLocation method

This method takes an agent as parameter. It creates a SPARQL query string with the agent as subject, `agentHasLocation` as property, and the object is a query variable for finding matches. The `getCurrentModel` is called to get an up to date model of true statements. The query and `currentModel` are passed to the `QueryUtility` class `objectQuery` method which will return the location of the agent.

findAgentFloor method

This method takes an agent as parameter. It creates a SPARQL query string with the agent as subject, `agentIsOnFloor` as property, and the object is a query variable for finding matches. The `getCurrentModel` is called to get an up to date model of true statements. The query and `currentModel` are passed to the `QueryUtility` class `objectQuery` method which will return the floor of the agent.

findAssistingActions method

This method takes a social action as parameter. It creates a SPARQL query string with the social action as subject, `assistedAssistedByAssister` as property, and the object is a query variable for finding matches. The

getCurrentModel is called to get an up to date model of true statements. The query and currentModel are passed to the QueryUtility class objectQueryList method which will return the list of assisting actions.

findAssistingAgent method

This method takes a social action as parameter, which will be the assisting action. It creates a SPARQL query string with the assisting social action as object, agentHasSocialAction as property, and the subject is a query variable for finding matches. The getCurrentModel is called to get an up to date model of true statements. The query and currentModel are passed to the QueryUtility class subjectQuery method which will return the assisting agent, which is then returned from the method.

findAgentSocialActions method

This method takes an agent as parameter. It creates a SPARQL query string with the agent as subject, agentHasSocialAction as property, and the object is a query variable for finding matches. The getCurrentModel is called to get an up to date model of true statements. The query and currentModel are passed to the QueryUtility class objectQueryList method which will return the list of actions.

findAssistingAction method

This method is used to find the assisting action that belongs to an assisting agent from the list of assisting actions. It takes as parameters the assisting agent and a list of assisting actions.

The list of assisting actions is iterated through, and for each assisting action the assisting agent it belongs to is found by invoking the findAssistingAgent method using the assisting action as parameter to the method. Then the assisting agent returned by findAssistingAgent is compared with the assisting agent passed to findAssistingAction method, if there is a match then that assisting action is the one that belongs to that assisting agent so can be returned by the method.

CurrentStatement <<inner class>> Attributes

private final Statement statement;

The field statement holds the Statement that is to be given an associated truth value.

private boolean currentValue;

The field currentValue holds a boolean value which is either true or false. If it is true then it means the associated statement is held to be currently true and if false then the statement is now no longer held to be true.

CurrentStatement Constructors

There are two CurrentStatement constructors. One constructor takes two parameters a Statement and a boolean value. These are assigned to the two variables of the same type. The second constructor takes a single parameter which is a Statement. This Statement is assigned to the statement variable and currentValue is given a default value of true.

CurrentStatement methods

The CurrentStatement inner class contains three methods.

getStatement method

This method returns the Statement held in the variable statement.

getCurrentValue method

This method returns the boolean value in the variable currentValue.

setCurrentValue method

This method is used to change the boolean value contained in the variable currentValue. This method is used for belief revision, in particular for changing a statement from being held true to false when a fact is updated.

QueryUtility class

The QueryUtility class contains generic methods for performing queries on Statements. The queries find matches for particular query statements passed to the methods along with a current Model of true Statements. The queries search for matches on parts of Statements; those parts being the subject, property or object of a Statement. Hence there are subjectQuery, propertyQuery, and objectQuery methods. In the case of querying for multiple results on Statements, these are: subjectQueryList, and objectQueryList methods.

QueryUtility methods

subjectQuery method

The subjectQuery method is a generic method used to find matches for a query where the subject of a triple is a variable looking for matches in the statements in the model, on the rest of the query which includes a specific property and object, returning the matching subject if one is found.

The subjectQuery method is a static method that takes two parameters which are queryRequest which is a string holding the SPARQL query, and model which is a Model.

The Model passed to the method will be currentModel which holds all the statements currently held to be true by the Organisation Agent.

The queryRequest is appended with the PREFIX headers to a StringBuffer queryStr and this is used to create a Query instance query by the create method of the QueryFactory class. This query instance is then passed with the model to the create method of QueryExecutionFactory to return a QueryExecution instance qexec. This qexec can be used to get a ResultSet from the SPARQL query. In this case the ResultSet response gets the match for the subject of the query, if there is one and returns it from the method.

propertyQuery method

The propertyQuery method is a generic method used to find matches for a query where the property is a variable looking for matches on the subject and object which are specified in the query, on the statements in the model. Then returning that property if one is found that matches the query.

objectQuery method

The objectQuery method is a generic method used to find matches for a query where the object is a variable looking for matches on the subject and property which are specified in the query, on the statements in the model. Then returning that object if one is found that matches the query.

subjectQueryList method

This is a generic method which takes a query and a model and finds all the matches for the subject variable and adds them to an ArrayList returning the list from the method.

The method functions like the subjectQuery method but instead of retrieving a single subject from the ResultSet response it iterates through the matching statements using response.hasNext() to test if there is another result, getting the next solution using response.nextSolution, then getting the matching subject and adding it to the ArrayList subjectList. When the loop has iterated through all the solutions found, then the subjectList is returned by the method.

objectQueryList

This generic method functions like subjectQueryList to find all the objects that match the query and then store them in an ArrayList objectList and return it from the method.

Appendix B

OntoCarer Application Sequence Diagrams

OntoCarer Sequence Diagrams

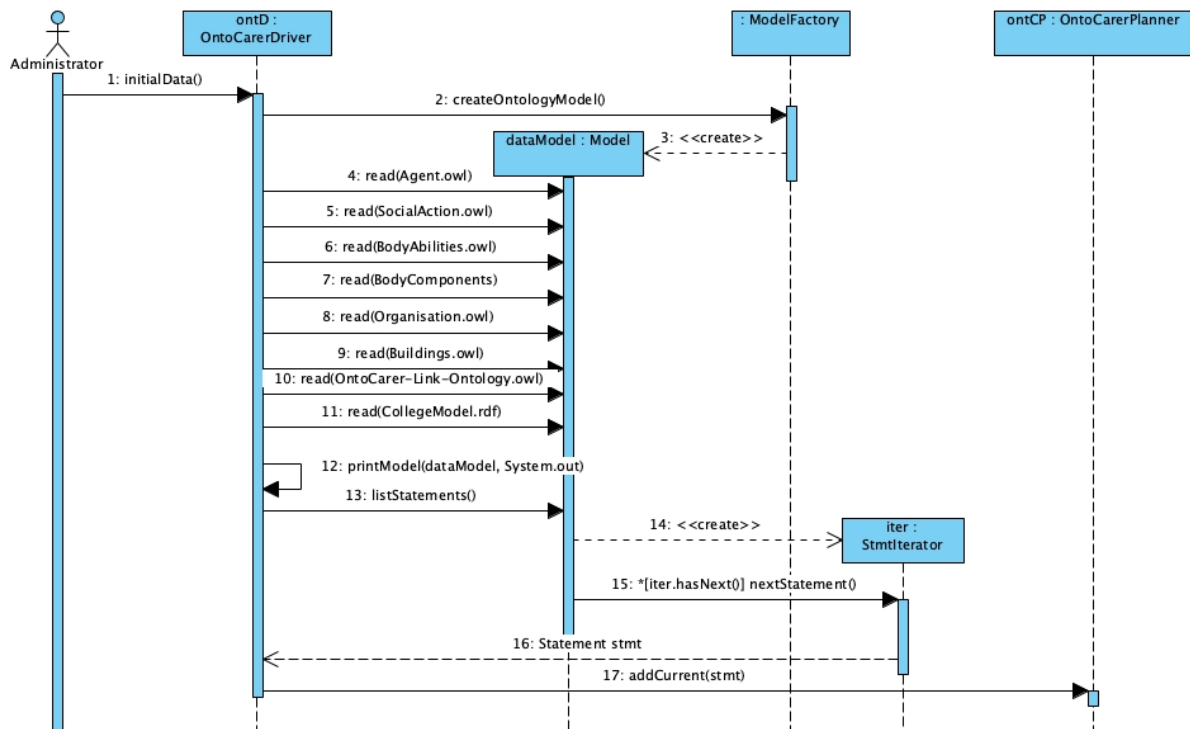


Figure B.1 OntoCarer Initialisation sequence diagram

OntoCarer Sequence diagram: Initialisation Sequence

The Initialisation sequence depicts the reading in of the ontology and College data from files into Models, and the storing of these Statements in CurrentStatement objects each with a Boolean value true, in the list boolStatements, to indicate that each Statement is currently true.

1. `initialData()`
The initialData method is invoked
2. `createOntologyModel()`
This method is invoked on the static class ModelFactory.
3. `ontModel`
The method creates and returns an OntModel for holding OWL ontologies. The OntoModel dataModel is used as a knowledgebase for holding the seven OntoCarer ontologies and the instance data in the CollegeModel.rdf, file and for querying, reasoning with and modifying the data.
4. `read(Agent.owl)`
The Agent OWL ontology is read into dataModel.
5. `read(SocialAction.owl)`
The SocialAction.owl OWL ontology is read into dataModel.
6. `read(BodyAbilities.owl)`
The BodyAbilities.owl OWL ontology is read into dataModel.
7. `read(BodyComponents.owl)`
The BodyComponents.owl OWL ontology is read into dataModel.
8. `read(Organisation.owl)`

The Organisation.owl OWL ontology is read into dataModel.

9. read(Buildings.owl)

The Buildings.owl OWL ontology is read into dataModel.

10. read(OntoCarer-Link-Ontology.owl)

The OntoCarer-Link-Ontology.owl OWL ontology is read into dataModel.

11. read(Collegemodel.rdf)

The CollegeModel.rdf which contains the individuals representing the college organisation, its building, and the agents with their profiles is read into dataModel.

12. printModel(dataModel, "printing dataModel", System.out)

The printModel method is invoked passing the dataModel which is now holding the ontologies and the college data, and prints the statements out in Turtle format.

13. listStatements()

The listStatements method is invoked on the dataModel.

```
StmtIterator iter = dataModel.listStatements()
```

This returns a statement iterator to enable the statements in the dataModel to be iterated through.

14. The StmtIterator iter is created

15. * [iter.hasNext()] nextStatement()

While there are more statements to be iterated through in the dataModel, then retrieve the next statement

16. Statement

Store the retrieved Statement in stmt variable

17. addCurrent(stmt)

Invoke the addCurrent method on the ontCP object which is an instance of the OntoCarerPlanner class. The addCurrent method is used to add the stmt Statement as a field of a CurrentStatement class instance along with the boolean value true as another field of the object. The addCurrent method then creates the CurrentStatement instance and adds it to the list boolStatements which contains other CurrentStatement instances, each of which holds a Statement and its associated boolean value.

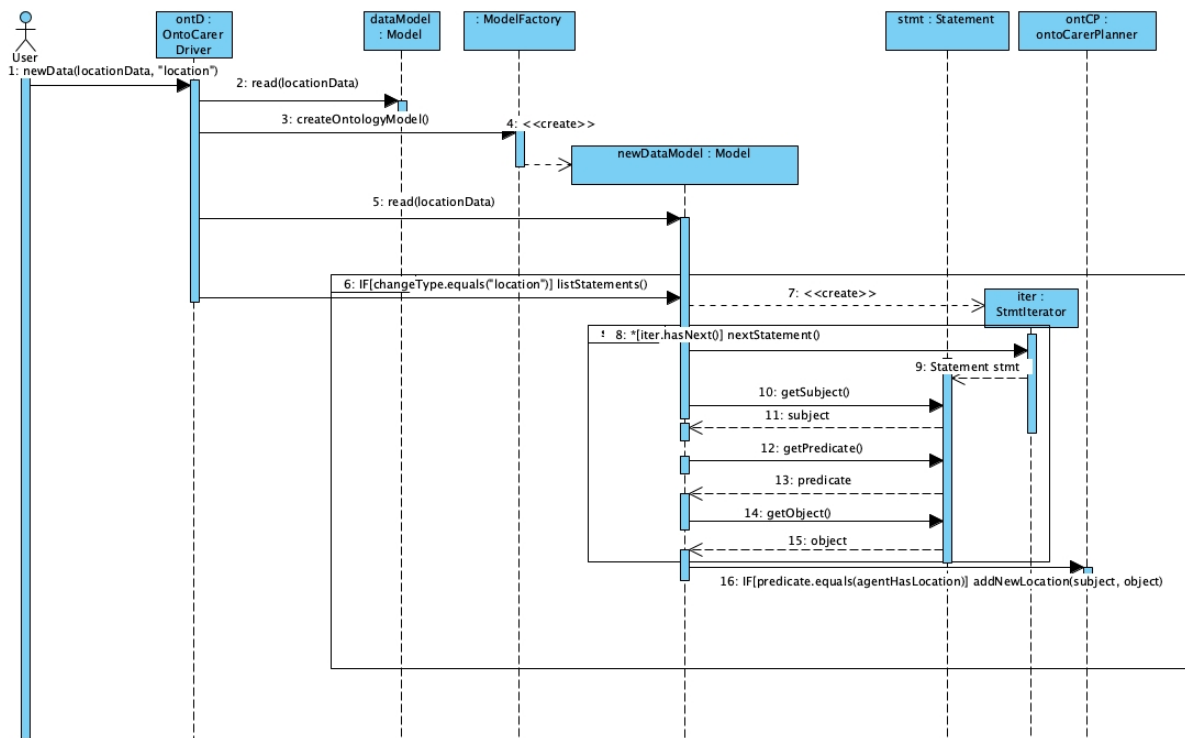


Figure B.2 OntoCarer Change Location sequence diagram

OntoCarer Sequence diagram: Change Location Sequence

The Change Location sequence depicts the Actor who is a user changing location in the building, this initiates a sequence to find the existing Statement recording the location of the agent and mark that Statement as false, and to create a new location Statement and then adds it in a CurrentStatement object to boolStatements list.

1. newData(locationData, "RDF/XML", "location")

The newData method is invoked with an RDF/XML file locationData that is used to update the location of an agent in the college building. The file contains an RDF Statement giving the (new) location of the agent. The String parameter "location" indicates what type of change is being made to distinguish it from a change of building floor, or a change in the desire-intention level of a social action.

2. dataModel.read(locationData)

The new data of the agent's new location is read in and its statements added to the data in dataModel.

3. ModelFactory.createOntologyModel()

The createOntologyModel method is invoked to create a new OntModel.

4. The OntModel created is stored in the field newDataModel.

This Model will be used to hold and process the locationData statements.

5. read(locationData)

The locationData is read into newDataModel.

6. if(changeType.equals("location"))

This condition checks the changeType parameter for a match with the string "location", if there is a match then the locationData file contains an update to an agent's location.

7. The StmtIterator iter is created

8.*[iter.hasNext()] nextStatement()

While there are more statements to be iterated through in the dataModel, retrieve the next statement.

9.The retrieved Statement is stored stmt variable

10.getSubject()

The getSubject method is invoked on the stmt Statement to retrieve the subject of the triple.

11.subject

The subject is returned.

12.getPredicate()

The getPredicate method is invoked on the stmt Statement to retrieve the predicate of the triple.

13. predicate

The predicate is returned.

14.getObject()

The getObject method is invoked on the stmt Statement to retrieve the object of the triple.

15. object

The object is returned.

16. if(predicate.equals(agentHasLocation)) ontCP.addNewLocation(subject.object)

A check is made on each predicate retrieved from each Statement in newDataModel to find a match for the predicate 'agentHasLocation'. When a match is found that is the Statement for the new agent location. The addNewLocation method of ontCP (an instance of OntoCarerPlanner class) is invoked, and is passed the subject of the matched Statement which is the agent, and the object which is the new location of the agent, in order to create and add a new statement of the agent's location.

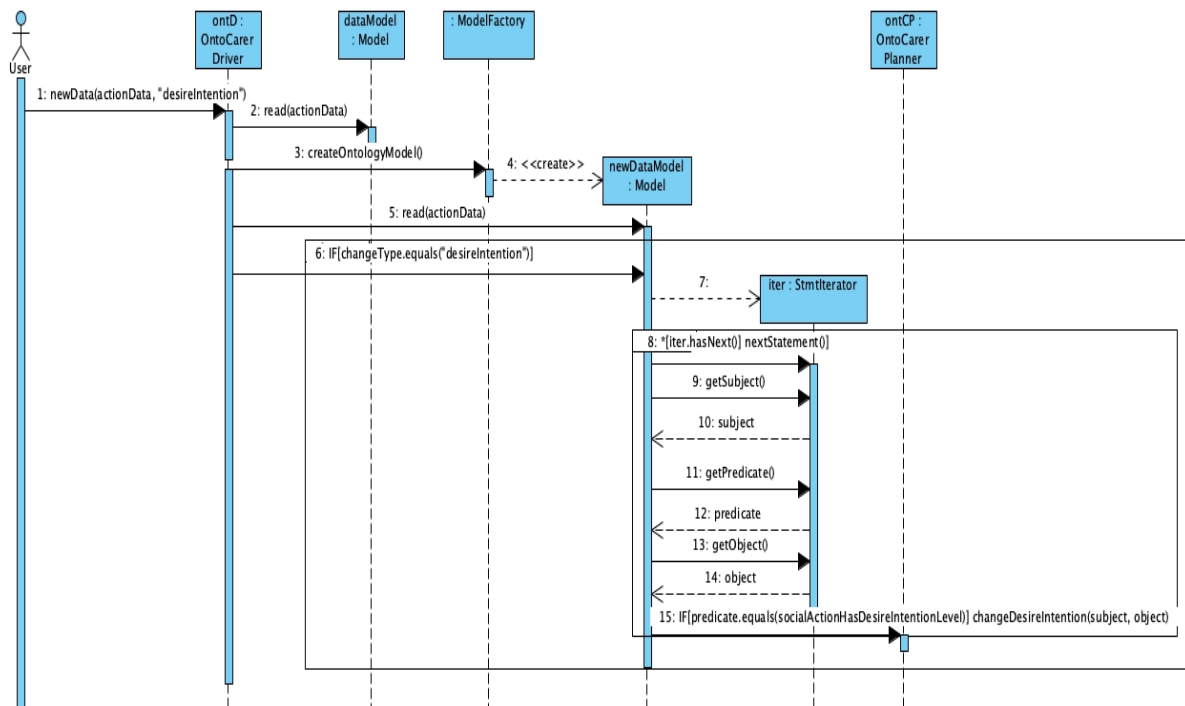


Figure B.3 Change Desire-Intention: initiate change sequence diagram

1. OntoCarer Change Desire-Intention Sequence diagram: initiate change

This is the first of five sequence diagrams showing the sequence of events that follow from a change in the desire-intention level for a social action that makes it an intention, and that intention being one that requires assistance. With subsequent diagrams showing how that assistance is found.

The actionData (which contains Statements, including the change to the desire-intention level of a social action) is read into a Model. The actionData Statements are searched for a match on the predicate 'socialActionhasDesireIntentionLevel'. When a predicate match is found the method changeDesireIntention is invoked, passing the social action and new desire-intention value of the matching Statement to that method.

The Message Sequence:

1. newData(actionData, "RDF/XML", "desireIntention")

The newData method is invoked with an RDF/XML file actionData that is used to update the desire-intention level of a social action. The String parameter "desireIntention" indicates what type of change is being made to distinguish it from a change of location or a change in the floor an agent is on.

2. dataModel.read(actionData)

The new data of the social action's desire-intention level is read in and its statements added to the data in dataModel.

3. ModelFactory.createOntologyModel()

The createOntologyModel method is invoked to create a new OntModel

4. The OntModel created is stored in the newDataModel

This Model will be used to hold and process the actionData statements.

5. read(actionData)

The actionData is read into newDataModel

6. IF(changeType.equals("desireIntention"))

This condition checks the changeType parameter for a match with the string "desireIntention", if there is a match then the actionData file contains an update to a social action's desire-intention level.

7. The StmtIterator is created

8. *[iter.hasNext()] nextStatement()

While there are more statements to be iterated through in the dataModel, gets the next statement. The retrieved Statement is stored stmt variable

9. getSubject()

The getSubject method is invoked on the stmt Statement to retrieve the subject of the triple.

subject

10. subject

The subject is returned.

11. getPredicate()

The getPredicate method is invoked on the stmt Statement to retrieve the predicate of the triple.

12. predicate

The predicate is returned.

13. getObject()

The getObject method is invoked on the stmt Statement to retrieve the object of the triple.

object

14. object

The object is returned

15. if (predicate.equals(socialActionHasDesireIntentionLevel))

ontCP.changeDesireIntention(subject.object)

A check is made on each predicate in each Statement in newDataModel to find a match for the predicate 'socialActionHasDesireIntentionLevel'. When a match is found that is the Statement for the updated desire-intention level. The changeDesireIntention method of ontCP (an instance of OntoCarerPlanner class) is invoked, and is passed the subject of the matched Statement which is the social action, and the object which is the new desire-intention level, in order to create and add a new statement of the social action's desire-intention level.

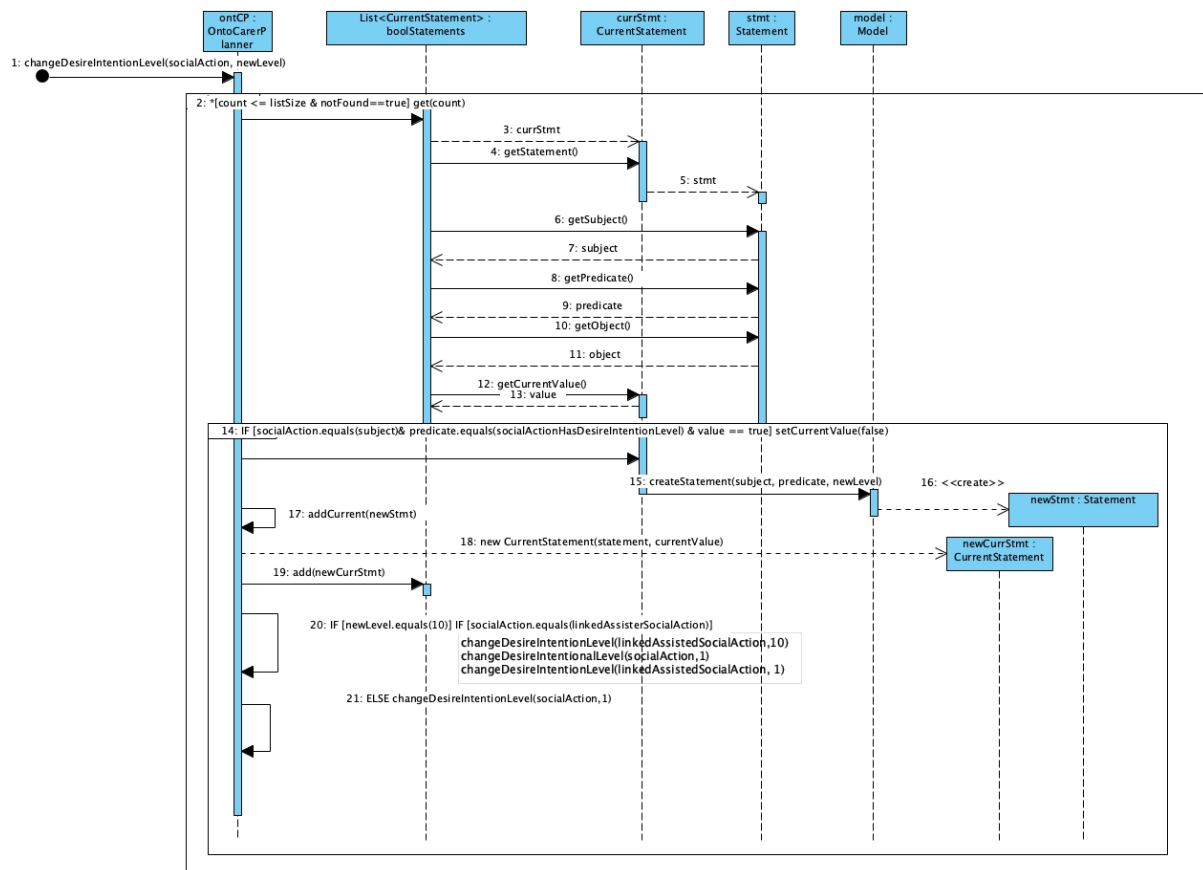


Figure B.4 Change Desire-Intention: change desire-intention level sequence diagram

2. . OntoCarer Change Desire-Intention Sequence diagram: change desire-intention level

The method changeDesireIntentionLevel takes as parameters the social action and its new desire-intention level and searches for the existing Statement that records the level of desire-intention for the social action, changes its associated Boolean value to 'false'.

A new Statement is created for the social action with the new desire-intention value. This Statement is passed to the method addCurrent, where it is included with the associated value 'true' in a new CurrentStatement and added to boolStatements list.

Then this new desire-intention value (newValue) is tested to find if the new social-action desire-intention level is 10, which indicates the intention is satisfied. If it is 10, then it is also checked to find if it is also a linkedAssisterSocialAction i.e. if it an assister social action and it is linked to a social action it is assisting, in which case by being satisfied it is also satisfying the social action it is assisting. In which case the assisted social action will have its desire-intention level changed to 10 also. Then both the social assister action and the social action it is assisting will have their desire-intention levels reset back to 1, to begin the assisting cycle again.

The Message Sequence:

1. `changeDesireIntentionLevel(socialAction, newLevel)`
The method `changeDesireIntentionLevel` is invoked on `ontCP` which is an instance of the `OntoCarerPlanner` class.
2. `while(count <= size & notFound==true)`
Iterate through the `boolStatements` `get(count)`
3. `CurrentStatement`
A `CurrentStatement` instance is retrieved from the `boolStatements` list and assigned to `currStmt`.
4. `getStatement()`
The `getStatement` method is invoked on the retrieved `CurrentStatement` instance in the variable `currStmt`.
5. `Statement`
A `Statement` is retrieved from the `CurrentStatement` instance in `currStmt` and stored in `stmt`.
6. `getSubject()`
`getSubject()` is invoked on the `Statement` `stmt`.
7. `subject`
The subject of `stmt` is retrieved.
8. `getPredicate()`
`getPredicate()` is invoked on the `Statement` `stmt`.
9. `predicate`
The predicate of `stmt` is retrieved.
10. `getObject()`
`getObject()` is invoked on the `Statement` `stmt`.
11. `object`
The object of `stmt` is retrieved.
12. `getCurrentValue()`
`getCurrentValue` is invoked on the `currStmt` instance of `CurrentStatement`
13. `Boolean value`
The truth value is returned of the associated `Statement` stored in the instance of `CurrentStatement` `currStmt`.

14. IF (socialAction.equals(subject) & predicate.equals("socialActionHasDesireIntentionLevel") & value==true) setCurrentValue(false)

If there is a match in the Statement stored in the CurrentStatement instance currStmt whereby its subject matches the social action passed as parameter to the changeDesireIntentionLevel method, and the predicate matches 'socialActionHasDesireIntentionLevel' and with the associated value of 'true', then the correct Statement has been found to update, so the associated truth value is changed to 'false' to indicate that is no longer the current level of desire-intention.

15. model.createStatement(subject, predicate, newLevel)

A new Statement is created for the social action, with the updated level of desire-intention as the object of the triple.

16. <<create>>

The new Statement is assigned to the variable newStmt.

17. addCurrent(newStmt)

The addCurrent method is called passing the new Statement in newStmt.

18. new CurrentStatement(statement, currentValue)

A new CurrentStatement instance is created with the Statement newStmt assigned to a Statement field and an associated truth value of 'true'

19. add(newCurrStmt)

The new CurrentStatement instance is added to the boolStatements list.

20. IF(newLevel.equals(10))

if the new level of desire-intention is 10 (i.e. the action is satisfied) then check

if(socialAction.equals(linkedAssisterSocialAction))

if that action is a social assister action that is linked to a social action it is assisting. If it is, then changeDesireIntentionLevel(linkedAssistedSocialAction, 10)

When an action is satisfied (10) then it is reset back to desire-intention level 1 to begin the cycle again so:

changeDesireIntentionLevel(socialAction, 1)

changeDesireIntentionLevel(linkedAssistedSocialAction, 1)

21. ELSE

changeDesireIntentionLevel(socialAction, 1)

Else the social action is not a linked assister action so only reset its desire-intention level back to 1.

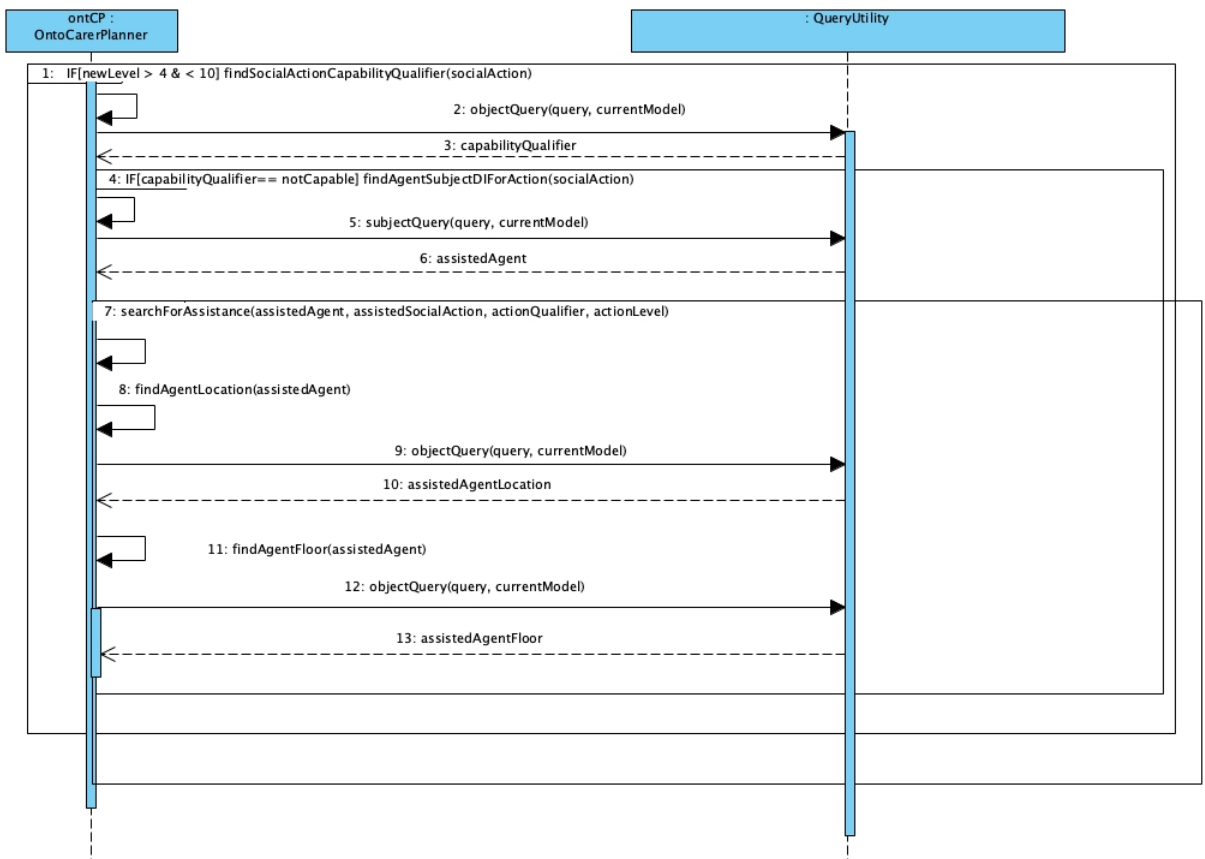


Figure B.5 Change Desire-Intention: check capability & search for assistance sequence diagram

3. . OntoCarer Change Desire-Intention Sequence diagram : check capability & search for assistance

If the desire-intention level is between 5 and 9 then the social action has become an intention. Having become an intention the next step is to check if the social action is capable of being performed or is in need of assistance. If the capability level is between 1 and 4 then assistance is needed, so the searchForAssistance method is invoked. The first step is find the location of the assisted agent, as this will be used when finding the nearest assisting agent. The next step is to find which building floor the assisted agent is on, as this may also be used to find the nearest agent able to provide assistance.

The Message Sequence:

1. IF(newLevel > 4 & < 10) findSocialActionCapabilityQualifier(socialAction)

If the new desire-intention level is between 5 and 9 it is an intention to perform the social action, so find if the social action is capable of being performed without assistance by finding its capability qualifier.

2.objectQuery(query, currentModel)

A query to find the qualifier of the social action is formulated and is sent with the currentModel to the objectQuery method of the QueryUtility class. The qualifier is in the object position of the triple.

3. capabilityQualifier

The capabilityQualifier for the social action is returned by the query method.

4. IF(capabilityQualifier==notCapable) findAgentSubjectDIForAction(socialAction)

If the capabilityQualifier is in the range 1 to 4 the social action is not capable and needs assistance. The method findAgentSubjectDIForAction is invoked, passing the social action that need assistance, in order to find the agent it belongs to who need assistance.

5. subjectQuery(query, currentModel)

A query to find the assisted agent which is the subject of the Statement where the object is the social action that requires assistance.

6. assistedAgent

The agent whose social action requires assistance.

7. searchForAssistance(assistedAgent, assistedSocialAction, actionQualifier, actionLevel)

The searchForAssistance method is invoked with parameters; assistedAgent, assistedSocialAction, actionQualifier. This method finds the nearest assisting action and its assisting agent for the disabled social action and the agent it belongs to.

8. findAgentLocation(assistedAgent)

The method findAgentLocation is invoked, with the parameter assistedAgent in order to find its location, so that the nearest agent capable of providing assistance to it can then be found.

9. objectQuery(query, currentModel)

A query to find the location of the assisted agent, where the location is in the object position of the Statement.

10. assistedAgentLocation

The location of the assisted agent is returned by the query method.

11. findAgentFloor(assistedAgent)

The method findAgentFloor is invoked with the parameter assistedAgent, in order to find which floor the assistedAgent is on, in order to find a relevant assisting agent on the same floor, if it is not at the same location.

12. objectQuery(query, currentModel)

A query to find the floor the assisted agent is on, which will be in the object position of the Statement.

13. assistedAgentFloor

The floor the assisted agent on is returned by the query method.

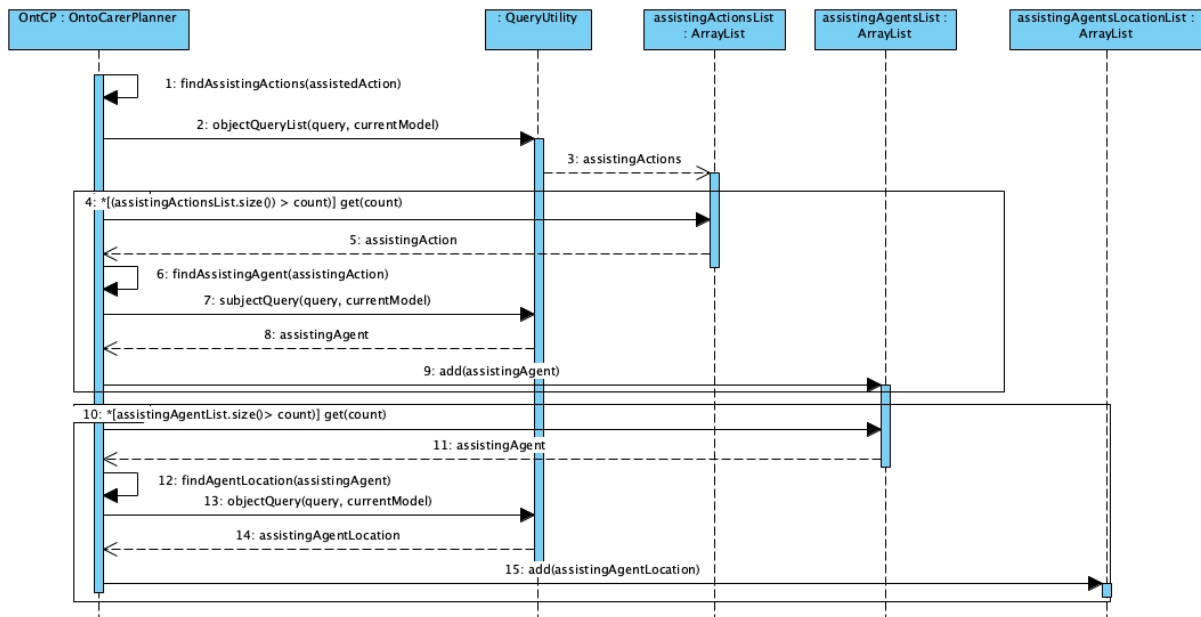


Figure B.6 Change Desire-Intention: continue search for assistance sequence diagram

4. . OntoCarer Change Desire-Intention Sequence diagram: continue search for assistance

The search for assistance continues. The findAssistingActions method is invoked passing the social action that needs assistance to the method. A query is created to find the assisting actions and is passed to objectQueryList with a currentModel. The objectQueryList returns a list of all the assisting actions, which is returned as assistingActionsList from the findAssistingActions method.

The assistingActionsList is iterated through retrieving each assisting action in turn to pass it to the findAssistingAgent method, to find which agent the action belongs to.

The findAssistingAgent method uses the QueryUtility class method subjectQuery to find the assisting agent and return it. Each assisting agent is then added to the assistingAgentsList.

The assistingAgentsList is then used to find the locations of the assisting agents by iterating through the list and then performing an object query on each agent to find the agent's location and returning it. The agent's location is then added to the assistingAgentsLocationList.

The Message Sequence:

1. findAssistingActions(assistedAction)
The search for assistance continues, by invoking the findAssistingActions method which takes an assistedAction as a parameter and finds all the actions that can assist it.
2. objectQueryList(query, currentModel)
The objectQueryList method is invoked, which finds all the assisting actions for the assisted action and returns them as a list.
3. assistingActions
The assistingActions list returned by the query method.
4. *[(assistingActionsList.size()) > count] get(count)
Iterate through the assistingActions list and retrieve each assisting action.
5. assistingAction
An assisting action is returned from the list, at each iteration.

6. `findAssistingAgent(assistingAction)`
Each assisting action is used as parameter to the method `findAssistingAction` to find the assisting agent it belongs to.
7. `subjectQuery(query, currentModel)`
A `subjectQuery` is created and executed which returns the matching subject of the Statement which is the assisting agent.
8. `assistingAgent`
The assisting agent belonging to the assisting action is returned.
9. `add(assistingAgent)`
Each assisting agent is added to the `assistingAgentsList`.
10. `*[(assistingAgentsList.size()) > count] get(count)`
Iterate through the list of assisting agents in order to retrieve each assisting agent.
11. `assistingAgent`
An assisting agent is returned from the list at each iteration.
12. `findAgentLocation(assistingAgent)`
The method `findAgentLocation` is invoked for each assisting agent, with the aim of finding their location in order to find the nearest assisting agent.
13. `objectQuery(query, currentModel)`
An `objectQuery` is created and executed which returns the matching object of the Statement which is the agent's location.
14. `assistingAgentLocation`
An assisting agent location is returned from the list at each iteration.
15. `add(assistingAgentLocation)`
Each assisting agent location is added to the list `assistingAgentLocations`.

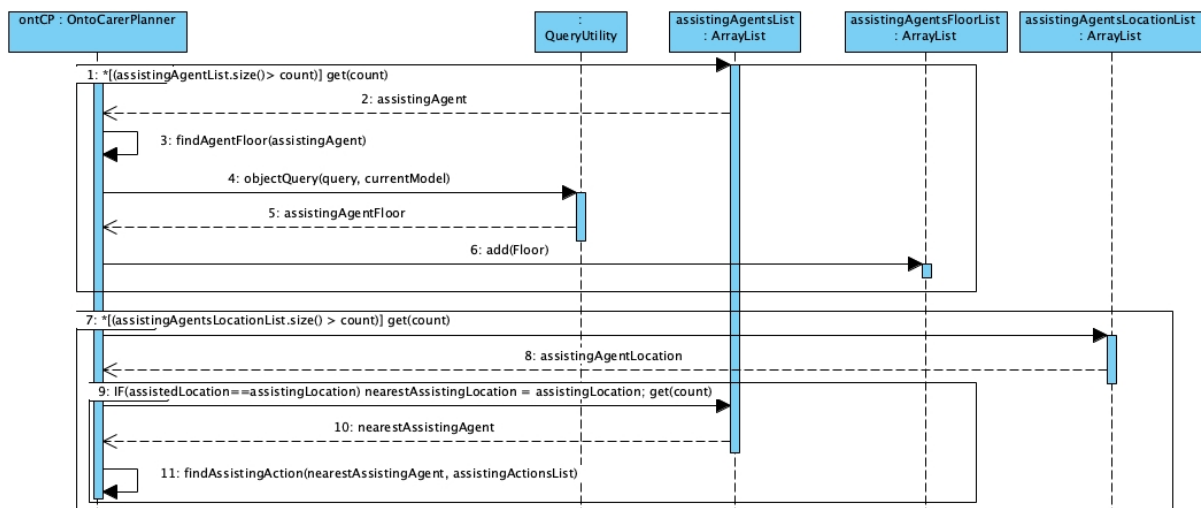


Figure B.7 Change Desire-Intention: check if assistance found sequence diagram

5. . OntoCarer Change Desire-Intention Sequence diagram: check if assistance found

Having found all the assisting agents and their locations, then the next step is find the floors of each of these agents. This is done by iterating through the `assistingAgentsList` getting each agent and passing it the `findAgentFloor` method. This then creates a query and passes it with the `currentModel` to the `objectQuery` method, which returns that agent's floor, it is added to the `assistingAgentsFloorList`.

Each of the locations of the agents capable of providing the needed assisting action are iterated through and retrieved. Each of these locations is matched against the assisted agent's location. If they are both in the same location, then the nearest agent capable of providing the required assistance has been found. The nearest assisting agent's assisting action is then retrieved. That assisting agent and its relevant assisting action is the one selected to provide the assistance.

The Message Sequence:

1. `*[(assistingAgentList.size() > count)] get(count)`
Iterate through the list of assisting agents and retrieve each assisting agent with the aim of using it to find the building floor the agent is on.
2. `assistingAgent`
An assisting agent is returned from the list at each iteration.
3. `findAgentFloor(assistingAgent)`
The `findAgentFloor` method is invoked passing an `assistingAgent` as parameter.
4. `objectQuery(query, currentModel)`
An `objectQuery` is created and executed to find a match in the object position where the assisting agent's floor is declared.
5. `assistingAgentFloor`
An assisting agent floor position is returned from the list at each iteration.
6. `add(Floor)`
An assisting agent's floor position is added to the `assistingAgentFloorList` at each iteration.
7. `*[(assistingAgentsLocationList.size() > count)] get(count)`
8. Iterate through the list of assisting agent's locations and retrieve each assisting agent location with the aim of using it to compare with the location of the assisted agent.
9. `assistingAgentLocation`
An assisting agent location is returned from the list at each iteration.
10. `IF(assistedLocation==assistingLocation) nearestAssistingLocation; get(count)`
If the assisted agent's location is the same as the particular assisting agent's location that is being checked, then that is the nearest assisting location. That nearest assisting agent is retrieved from the `assistingAgentsList`.
11. `nearestAssistingAgent`
The nearest assisting agent is returned from the list.
12. `findAssistingAction(nearestAssistingAgent, assistingActionsList)`
The particular assisting action that can assist the assisted action that belongs to the assisted action is retrieved using the `findAssistingAction` method which takes as parameters the selected nearest assisting agent and the list of assisting actions that can provide the relevant assistance for the action that needs it.

The message sequence depicted in the sequence diagrams above stops at the point where the nearest assisting agent is found at the same location as the assisted agent. In the case that an assisting agent is not found at the same location then in the OntoCarer program the search will go on to try to find an assisting agent on the same floor, and if not found there then to search the rest of the building. If no assisting agent can be found then the assisting agent is informed that no assistance can be found.

Directing the assistance

When the particular assisting action is returned from the findAssistingAction method then the Organisation Agent has all the required elements of data to direct the agents that are involved in providing assistance and being assisted, for the simplest case where the assisted agent and assisting agent are in the same building location. These relevant pieces of information are: assistedAgent, assistedAction, assistedActionLevel (desire-intention level), assistedActionQualifier (capability qualifier), assistingAgentLocation, nearestAssistingAgent, assistingAction.

When the optimal assisting social action is found then the assisted social action and the assisting action are linked:

linkedAssistedSocialAction = assistedSocialAction;

linkedAssisterSocialAction = assistingAction;

They are linked so that when the assisting social action is satisfied (level 10) then the linked assisted social action can have its desire-intention level can then be set to a satisfied level 10 too.

Having found the optimal assisting social action, the Organisation Agent then makes that action an intention by invoking the changeDesireIntention method for the assistingAction with the new desire-intention level moved from a desire to an intention level (5 to 9).

The assistancePlanningResult method is then invoked which contains all the elements for directing the assistance:

assistedAgent, assistedLocation, assistedFloor, assistedSocialAction, assistedSocialActionLevel, assistedSocialActionQualifier, nearestAssistingAgent, nearestAssistingLocation, assistingFloor, assistingAction.

Appendix C

OntoCarer Software Application

OntoCarerDriver.java

OntoCarerPlanner.java

QueryUtility.java

```

package OntoCarer;

import java.io.PrintStream;
import java.net.MalformedURLException;
import java.io.IOException;
import org.apache.jena.ontology.OntModel;
import org.apache.jena.rdf.model.Model;
import org.apache.jena.rdf.model.ModelFactory;
import org.apache.jena.rdf.model.Property;
import org.apache.jena.rdf.model.RDFNode;
import org.apache.jena.rdf.model.Resource;
import org.apache.jena.rdf.model.Statement;
import org.apache.jena.rdf.model.StmtIterator;
import org.apache.jena.util.FileManager;

/**
 * @author Michael Ulman
 * OntoCarerDriver uses OntCarerPlanner
 * OntoCarerDriver is the driver program for the OntoCarer application
 * It loads the ontologies and data (agents and college building) into the      *model
 * It also loads updates to the data. Updates to changes to an agent's *location and floor and changes
to an agent's desires and intentions *towards their actions.
 */

public class OntoCarerDriver {

private static String agentHasLocationURI =
"http://www.OntoCarer.org/Agent.owl#agentHasLocation";
private static String socialActionHasDesireIntentionLevelURI =
"http://www.OntoCarer.org/SocialAction.owl#socialActionHasDesireIntentionLevel";
private static String agentsIsOnFloorURI = "http://www.OntoCarer.org/Agent.owl#agentsIsOnFloor";

private OntModel dataModel; //used to read in original data from a file
private OntModel newDataModel;//used read in updates from a file
private OntModel currentModel;//used to hold all statements that are currently true

private OntoCarerPlanner ontCP;
private String objValue;
private Property predicate;

```

```

private Resource subject;
private RDFNode object;

public OntoCarerDriver() throws IOException
{ System.out.println("OntoCarerDriver constructor called");
    ontCP = new OntoCarerPlanner();
    initialData();
    scenario1();
    scenario2();
    scenario3();
    scenario4();
    scenario5();
    scenario6();
    scenario7();
}

/**
 * printModel method - prints a model to the terminal in TURTLE    *format
 * The printing of the model is prefaced and terminated with a
 *printed message
 */

private void printModel(Model model, String name, PrintStream out) {
    out.println(String.format("Starting %1$s...", name));
    model.write(out, "TURTLE");
    out.println(String.format("End of %1$s.", name));
}

/**
 * initialData method reads the initial input files containing the *ontologies and the CollegeModel, in file
format in RDF/XML.
 * Creates the Model dataModel and reads the data from the files into it. *Gets the statements from the
dataModel, and iterates through them and adds *each statement to the List in ontCP
(OntoCarerPlanner)
 * with the boolean value True - to indicate that each statement is *currently true*/
public void initialData() throws IOException
{System.out.println("initialData method called");
System.out.println("creating OntologyModel and assigning it to dataModel");
dataModel = ModelFactory.createOntologyModel();

```

```

//reading the ontologies into dataModel

System.out.println("LOADING Agent ONTOLOGY");
dataModel.read(FileManager.get().open("/Users/michaelulman/Documents/ Ontologies/Agent.owl"),
null, "RDF/XML");

System.out.println("LOADING SocialAction ONTOLOGY");
dataModel.read(FileManager.get().open("/Users/michaelulman/Documents/Ontologies/SocialAction.o
wl"), null, "RDF/XML");

System.out.println("LOADING BodyAbilities ONTOLOGY");
dataModel.read(FileManager.get().open("/Users/michaelulman/Documents/Ontologies/BodyAbilities.o
wl"), null, "RDF/XML");

System.out.println("LOADING BodyComponents ONTOLOGY");
dataModel.read(FileManager.get().open("/Users/michaelulman/Documents/Ontologies/BodyCompone
nts.owl"), null, "RDF/XML");

System.out.println("LOADING Organisations ONTOLOGY");
dataModel.read(FileManager.get().open("/Users/michaelulman/Documents/Ontologies/Organisation.o
wl"), null, "RDF/XML");

System.out.println("LOADING Buildings ONTOLOGY");
dataModel.read(FileManager.get().open("/Users/michaelulman/Documents/Ontologies/Buildings.owl")
, null, "RDF/XML");

System.out.println("LOADING OntoCarer-Link-Ontology ONTOLOGY");
dataModel.read(FileManager.get().open("/Users/michaelulman/Documents/Ontologies/OntoCarer-
Link-Ontology.owl"), null, "RDF/XML");

//reading the CollegeModel into dataModel
System.out.println("reading CollegeModel data into data Model");
dataModel.read(FileManager.get().open("/Users/michaelulman/Documents/Ontologies/CollegeModel.r
df"), null, "RDF/XML");

printModel(dataModel, "printing dataModel", System.out);

StmtIterator iter = dataModel.listStatements();
//Get the statements from the dataModel and add statements to List in ontCP with the boolean value
true

```



```

System.out.println("iterate through statements in dataModel ");
while(iter.hasNext())
    { Statement stmt = iter.nextStatement();
      ontCP.addCurrent(stmt);

    }
}

/**
 * • newData method takes in a file of data that updates the model.
 * • The format is RDF/XML, and the changeType
 * • parameter indicates whether the change is to the agent's location
 * • or to the level of a desire-intention instance
 * that an agent has - typically to perform a social-action.
 * Depending upon the changeType, the particular ontCP method is called,
 * passing the subject and object to the method
 * to add the new current statement, and make the previous statement
 * 'past' i.e. false
 * @param fileNameOne
 * @param "RDF/XML"
 * @param changeType
 */

public void newData(String fileNameOne, String formatOne, String changeType)
{
//add statements to dataModel which holds all the statements
dataModel.read(FileManager.get().open(fileNameOne), null, formatOne);
System.out.println("read newData into dataModel from filename "+ fileNameOne);

newDataModel = ModelFactory.createOntologyModel();
//add new statements to newDataModel
newDataModel.read(FileManager.get().open(fileNameOne), null, formatOne);

//check the value of parameter changeType for location or floor or desireIntention
    if(changeType.equals("location"))
        {System.out.println("change type is LOCATION");
          StmtIterator iter = newDataModel.listStatements();

```

```

while(iter.hasNext())
{Statement stmt = iter.nextStatement();
subject = stmt.getSubject();
predicate = stmt.getPredicate();
object = stmt.getObject();
String predicateURI = predicate.getURI();
objValue = object.toString();
if(predicateURI.equals(agentHasLocationURI))
    {System.out.println("match found for agentHasLocation");
    ontCP.addNewLocation(subject,object);}
    }
}

if(changeType.equals("floor"))
    {System.out.println("change type is FLOOR");
    StmtIterator iter = newDataModel.listStatements();
    while(iter.hasNext())
        {Statement stmt = iter.nextStatement();
        subject = stmt.getSubject();
        predicate = stmt.getPredicate();
        object = stmt.getObject();
        String predicateURI = predicate.getURI();
        objValue = object.toString();
        if(predicateURI.equals(agentIsOnFloorURI))
            {System.out.println("match found for agentIsOnFloor");
            ontCP.addNewFloor(subject,object);}
        }
    }// end while
} //end if

if(changeType.equals("desireIntention"))
    {System.out.println("change type is DESIRE-INTENTION value");
    StmtIterator iter = newDataModel.listStatements();

while(iter.hasNext())
    {Statement stmt = iter.nextStatement();
    subject = stmt.getSubject();
    predicate = stmt.getPredicate();

```

```

        object = stmt.getObject();
        String predicateURI = predicate.getURI();
        objValue = object.toString();
        if(predicateURI.equals(socialActionHasDesireIntentionLevelURI))
            {System.out.println("match found for socialActionHasDesireIntentionLevel");
            System.out.println("with subject " +subject+ "and value "+objValue+"");
            ontCP.changeDesireIntentionLevel(subject, objValue);
            }

        }//end while
    }//end if

    System.out.println("END of newData method");

}

/**
 *
 * • getModelCurrent method, creates a new Model, gets the current *
 * • model(i.e. all statements with value true)
 * • from ontCP.getCurrentModel assigns the Model to currentModel, then
 * • prints the Model to the terminal using
 * • printModel
 */

public void getModelCurrent()
{ System.out.println("getModelCurrent is called");
  currentModel = ModelFactory.createOntologyModel();
  currentModel = (OntModel) ontCP.getCurrentModel();
  printModel(currentModel, "printing currentModel", System.out);
}

/**
 * All agents locations and floor positions set
 * agent1 a deaf student in the largeLectureTheatre1
 * initiates intention for social action takeNotesFromSpeaker
 * capability is checked, assistance searched for and found, best
 * assister chosen,
 * assistance is initiated including intention triggered, capability
checked,

```

```
* assistance messaged to the agents, assistance directed, delivered,  
* with assister and assisted intentions satisfied.  
* desire-intentions for the social actions reset  
*  
*/
```

```
public void scenario1()  
{ System.out.println("scenario1 called");  
    //load new data for agents location and floor,  
    //then change of desire-intention level of a social action
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent1Scenario1Location1.rdf", "RDF/XML",  
"location");
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent1Scenario1FloorPosition1.rdf",  
"RDF/XML", "floor");
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent2Scenario1Location1.rdf", "RDF/XML",  
"location");
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent2Scenario1FloorPosition1.rdf",  
"RDF/XML", "floor");
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent3Scenario1Location1.rdf", "RDF/XML",  
"location");
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent3Scenario1FloorPosition1.rdf",  
"RDF/XML", "floor");
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent4Scenario1Location1.rdf", "RDF/XML",  
"location");
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent4Scenario1FloorPosition1.rdf",  
"RDF/XML", "floor");
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent5Scenario1Location1.rdf", "RDF/XML",  
"location");
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent5Scenario1FloorPosition1.rdf",  
"RDF/XML", "floor");
```

newData("/Users/michaelulman/Documents/Ontologies/agent6Scenario1Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent6Scenario1FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent7Scenario1Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent7Scenario1FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent8Scenario1Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent8Scenario1FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent9Scenario1Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent9Scenario1FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent10Scenario1Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent10Scenario1FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent11Scenario1Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent11Scenario1FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent12Scenario1Location1.rdf", "RDF/XML",
"location");

```

newData("/Users/michaelulman/Documents/Ontologies/agent12Scenario1FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent13Scenario1Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent13Scenario1FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent14Scenario1Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent14Scenario1FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent15Scenario1Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent15Scenario1FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent1Scenario1SocialActionDIchange1.rdf",
"RDF/XML", "desireIntention");

newData("/Users/michaelulman/Documents/Ontologies/agent6Scenario1SocialActionDIchange1.rdf",
"RDF/XML", "desireIntention");

}

/**
* All agents locations and floor positions set
* agent4 a blind lecturer in the largeLectureTheatre1
* initiates intention for social action navigateToLibrary
* capability is checked, assistance searched for and found, best assister
* chosen,
* assistance is initiated including intention triggered, capability
*checked,
* assistance messaged to the agents, assistance directed, delivered,
* with assister and assisted intentions satisfied.
* desire-intentions for the social actions reset

```

```

*
*/

public void scenario2()
{ System.out.println("scenario2 called");
//load new data for agents location and floor,
//then change of desire-intention level of a social action

newData("/Users/michaelulman/Documents/Ontologies/agent1Scenario2Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent1Scenario2FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent2Scenario2Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent2Scenario2FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent3Scenario2Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent3Scenario2FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent4Scenario2Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent4Scenario2FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent5Scenario2Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent5Scenario2FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent6Scenario2Location1.rdf", "RDF/XML",
"location");

```

newData("/Users/michaelulman/Documents/Ontologies/agent6Scenario2FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent7Scenario2Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent7Scenario2FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent8Scenario2Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent8Scenario2FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent9Scenario2Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent9Scenario2FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent10Scenario2Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent10Scenario2FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent11Scenario2Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent11Scenario2FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent12Scenario2Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent12Scenario2FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent13Scenario2Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent13Scenario2FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent14Scenario2Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent14Scenario2FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent15Scenario2Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent15Scenario2FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent4Scenario2SocialActionDIchange1.rdf",
"RDF/XML", "desireIntention");

newData("/Users/michaelulman/Documents/Ontologies/agent12Scenario2Location2.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent12Scenario2Location3.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent4Scenario2Location2.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent12Scenario2Location4.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent4Scenario2Location3.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent12Scenario2Location5.rdf", "RDF/XML",
"location");

```

newData("/Users/michaelulman/Documents/Ontologies/agent4Scenario2Location4.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent12Scenario2SocialActionDlchange1.rdf"
, "RDF/XML", "desireIntention");
    }

/**
 * All agents locations and floor positions set
 * agent4 blind lecturer in library1
 * initiates intention for social action searchLibraryCatalogue
 * capability is checked, assistance searched for and found, best assister
 * chosen,
 * assistance is initiated including intention triggered, capability
 * checked,
 * assistance messaged to the agents, assistance directed, delivered,
 * with assister and assisted intentions satisfied.
 * desire-intentions for the social actions reset
 *
 */

public void scenario3()
{ System.out.println("scenario3 called");
    //load new data for agents location and floor,
    //then change of desire-intention level of a social action

newData("/Users/michaelulman/Documents/Ontologies/agent1Scenario3Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent1Scenario3FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent2Scenario3Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent2Scenario3FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent3Scenario3Location1.rdf", "RDF/XML",
"location");

```

newData("/Users/michaelulman/Documents/Ontologies/agent3Scenario3FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent4Scenario3Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent4Scenario3FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent5Scenario3Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent5Scenario3FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent6Scenario3Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent6Scenario3FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent7Scenario3Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent7Scenario3FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent8Scenario3Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent8Scenario3FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent9Scenario3Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent9Scenario3FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent10Scenario3Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent10Scenario3FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent11Scenario3Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent11Scenario3FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent12Scenario3Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent12Scenario3FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent13Scenario3Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent13Scenario3FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent14Scenario3Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent14Scenario3FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent15Scenario3Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent15Scenario3FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent4Scenario3SocialActionDIchange1.rdf",
"RDF/XML", "desireIntention");

newData("/Users/michaelulman/Documents/Ontologies/agent8Scenario3SocialActionDIchange1.rdf",
"RDF/XML", "desireIntention");

```
}
```

```
/**
```

```
* All agents locations and floor positions set  
* agent7 student with disabled hands in cafe1  
* initiates intention for social action useDrinkingUtensil  
* capability is checked, assistance searched for and found, best assister  
* chosen,  
* assistance is initiated including intention triggered, capability  
* checked,  
* assistance messaged to the agents, assistance directed, delivered,  
* with assister and assisted intentions satisfied.  
* desire-intentions for the social actions reset  
*  
*  
*/
```

```
public void scenario4()
```

```
{ System.out.println("scenario4 called");
```

```
    //load new data for agents location and floor,
```

```
    //then change of desire-intention level of a social action
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent1Scenario4Location1.rdf", "RDF/XML",  
"location");
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent1Scenario4FloorPosition1.rdf",  
"RDF/XML", "floor");
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent2Scenario4Location1.rdf", "RDF/XML",  
"location");
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent2Scenario4FloorPosition1.rdf",  
"RDF/XML", "floor");
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent3Scenario4Location1.rdf", "RDF/XML",  
"location");
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent3Scenario4FloorPosition1.rdf",  
"RDF/XML", "floor");
```

newData("/Users/michaelulman/Documents/Ontologies/agent4Scenario4Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent4Scenario4FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent5Scenario4Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent5Scenario4FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent6Scenario4Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent6Scenario4FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent7Scenario4Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent7Scenario4FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent8Scenario4Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent8Scenario4FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent9Scenario4Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent9Scenario4FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent10Scenario4Location1.rdf", "RDF/XML",
"location");

```
newData("/Users/michaelulman/Documents/Ontologies/agent10Scenario4FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent11Scenario4Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent11Scenario4FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent12Scenario4Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent12Scenario4FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent13Scenario4Location1.rdf", "RDF/XML",
"location");
newData("/Users/michaelulman/Documents/Ontologies/agent13Scenario4FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent14Scenario4Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent14Scenario4FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent15Scenario4Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent15Scenario4FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent7Scenario4SocialActionDIchange1.rdf",
"RDF/XML", "desireIntention");

newData("/Users/michaelulman/Documents/Ontologies/agent9Scenario4SocialActionDIchange1.rdf",
"RDF/XML", "desireIntention");

}
```

```

/**
 * All agents locations and floor positions set
 * agent7 student with disabled hands in computerRoom1
 * initiates intention for social action submitAssignment
 * capability is checked, assistance searched for and found, best assister
 * chosen,
 * assistance is initiated including intention triggered, capability
 * checked,
 * assistance messaged to the agents, assistance directed, delivered,
 * with assister and assisted intentions satisfied.
 * desire-intentions for the social actions reset
 *
 *
 */

public void scenario5()
{ System.out.println("scenario5 called");
    //load new data for agents location and floor,
    //then change of desire-intention level of a social action
newData("/Users/michaelulman/Documents/Ontologies/agent1Scenario5Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent1Scenario5FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent2Scenario5Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent2Scenario5FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent3Scenario5Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent3Scenario5FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent4Scenario5Location1.rdf", "RDF/XML",
"location");

```


newData("/Users/michaelulman/Documents/Ontologies/agent4Scenario5FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent5Scenario5Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent5Scenario5FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent6Scenario5Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent6Scenario5FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent7Scenario5Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent7Scenario5FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent8Scenario5Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent8Scenario5FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent9Scenario5Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent9Scenario5FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent10Scenario5Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent10Scenario5FloorPosition1.rdf",
"RDF/XML", "floor");

```
newData("/Users/michaelulman/Documents/Ontologies/agent11Scenario5Location1.rdf", "RDF/XML",  
"location");
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent11Scenario5FloorPosition1.rdf",  
"RDF/XML", "floor");
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent12Scenario5Location1.rdf", "RDF/XML",  
"location");
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent12Scenario5FloorPosition1.rdf",  
"RDF/XML", "floor");
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent13Scenario5Location1.rdf", "RDF/XML",  
"location");
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent13Scenario5FloorPosition1.rdf",  
"RDF/XML", "floor");
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent14Scenario5Location1.rdf", "RDF/XML",  
"location");
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent14Scenario5FloorPosition1.rdf",  
"RDF/XML", "floor");
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent15Scenario5Location1.rdf", "RDF/XML",  
"location");
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent15Scenario5FloorPosition1.rdf",  
"RDF/XML", "floor");
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent7Scenario5SocialActionDIchange1.rdf",  
"RDF/XML", "desireIntention");
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent5Scenario5SocialActionDIchange1.rdf",  
"RDF/XML", "desireIntention");
```

```
}
```

```
/**
```

```
* All agents locations and floor positions set
```

```

* agent7 student with disabled hands in registry1
* initiates intention for social action payCourseFees
* capability is checked, assistance searched for and found, best assister
* chosen,
* assistance is initiated including intention triggered, capability
* checked,
* assistance messaged to the agents, assistance directed, delivered,
* with assister and assisted intentions satisfied.
* desire-intentions for the social actions reset
*
*
*/

```

```
public void scenario6()
```

```
{ System.out.println("scenario6 called");
```

```
    //load new data for agents location and floor,
```

```
    //then change of desire-intention level of a social action
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent1Scenario6Location1.rdf", "RDF/XML",
"location");
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent1Scenario6FloorPosition1.rdf",
"RDF/XML", "floor");
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent2Scenario6Location1.rdf", "RDF/XML",
"location");
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent2Scenario6FloorPosition1.rdf",
"RDF/XML", "floor");
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent3Scenario6Location1.rdf", "RDF/XML",
"location");
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent3Scenario6FloorPosition1.rdf",
"RDF/XML", "floor");
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent4Scenario6Location1.rdf", "RDF/XML",
"location");
```

```
newData("/Users/michaelulman/Documents/Ontologies/agent4Scenario6FloorPosition1.rdf",
"RDF/XML", "floor");
```

newData("/Users/michaelulman/Documents/Ontologies/agent5Scenario6Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent5Scenario6FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent6Scenario6Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent6Scenario6FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent7Scenario6Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent7Scenario6FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent8Scenario6Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent8Scenario6FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent9Scenario6Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent9Scenario6FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent10Scenario6Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent10Scenario6FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent11Scenario6Location1.rdf", "RDF/XML",
"location");

```

newData("/Users/michaelulman/Documents/Ontologies/agent11Scenario6FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent12Scenario6Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent12Scenario6FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent13Scenario6Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent13Scenario6FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent14Scenario6Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent14Scenario6FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent15Scenario6Location1.rdf", "RDF/XML",
"location");
newData("/Users/michaelulman/Documents/Ontologies/agent15Scenario6FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent7Scenario6SocialActionDIchange1.rdf",
"RDF/XML", "desireIntention");

newData("/Users/michaelulman/Documents/Ontologies/agent10Scenario6SocialActionDIchange1.rdf"
, "RDF/XML", "desireIntention");

}

```

```
/**
```

- * All agents locations and floor positions set
- * agent10 bursar with disabled legs in disabledToilet2
- * initiates intention for social action removeRelevantClothes
- * capability is checked, assistance searched for and found, best assister
- * chosen,

```

* assistance is initiated including intention triggered, capability
* checked,
* assistance messaged to the agents, assistance directed, delivered,
* with assister and assisted intentions satisfied.
* desire-intentions for the social actions reset
* These steps are repeated for agent10 initiating the intentions for social * actions
* cleanSelfAfterToilet
* restoreRelevantClothesAfterToilet
*/

```

```

public void scenario7()
{ System.out.println("scenario7 called");
  //load new data for agents location and floor,
  //then change of desire-intention level of a social action

```

```

newData("/Users/michaelulman/Documents/Ontologies/agent1Scenario7Location1.rdf", "RDF/XML",
"location");

```

```

newData("/Users/michaelulman/Documents/Ontologies/agent1Scenario7FloorPosition1.rdf",
"RDF/XML", "floor");

```

```

newData("/Users/michaelulman/Documents/Ontologies/agent2Scenario7Location1.rdf", "RDF/XML",
"location");

```

```

newData("/Users/michaelulman/Documents/Ontologies/agent2Scenario7FloorPosition1.rdf",
"RDF/XML", "floor");

```

```

newData("/Users/michaelulman/Documents/Ontologies/agent3Scenario7Location1.rdf", "RDF/XML",
"location");

```

```

newData("/Users/michaelulman/Documents/Ontologies/agent3Scenario7FloorPosition1.rdf",
"RDF/XML", "floor");

```

```

newData("/Users/michaelulman/Documents/Ontologies/agent4Scenario7Location1.rdf", "RDF/XML",
"location");

```

```

newData("/Users/michaelulman/Documents/Ontologies/agent4Scenario7FloorPosition1.rdf",
"RDF/XML", "floor");

```

```

newData("/Users/michaelulman/Documents/Ontologies/agent5Scenario7Location1.rdf", "RDF/XML",
"location");

```

newData("/Users/michaelulman/Documents/Ontologies/agent5Scenario7FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent6Scenario7Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent6Scenario7FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent7Scenario7Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent7Scenario7FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent8Scenario7Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent8Scenario7FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent9Scenario7Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent9Scenario7FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent10Scenario7Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent10Scenario7FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent11Scenario7Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent11Scenario7FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent12Scenario7Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent12Scenario7FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent13Scenario7Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent13Scenario7FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent14Scenario7Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent14Scenario7FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent15Scenario7Location1.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent15Scenario7FloorPosition1.rdf",
"RDF/XML", "floor");

newData("/Users/michaelulman/Documents/Ontologies/agent10Scenario7SocialActionDIchange1.rdf"
, "RDF/XML", "desireIntention");

newData("/Users/michaelulman/Documents/Ontologies/agent6Scenario7Location2.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent6Scenario7Location3.rdf", "RDF/XML",
"location");

newData("/Users/michaelulman/Documents/Ontologies/agent10Scenario7SocialActionDIchange1.rdf"
, "RDF/XML", "desireIntention");

newData("/Users/michaelulman/Documents/Ontologies/agent6Scenario7SocialActionDIchange2.rdf",
"RDF/XML", "desireIntention");

newData("/Users/michaelulman/Documents/Ontologies/agent10Scenario7SocialActionDIchange2.rdf"
, "RDF/XML", "desireIntention");


```

newData("/Users/michaelulman/Documents/Ontologies/agent6Scenario7SocialActionDIchange3.rdf",
"RDF/XML", "desireIntention");

newData("/Users/michaelulman/Documents/Ontologies/agent10Scenario7SocialActionDIchange3.rdf"
, "RDF/XML", "desireIntention");

}

/**
 * The main method that creates an instance of the containing class
 * OntoCarerDriver, then calls the methods to input the data
 * initialData inputs the ontologies and the CollegeModel of the college
 * building and the individual agents and their profiles
 * newData inputs data updates to the model, first - to agent7 location then * level of an agent7 desire-
intention
 *
 * @param args
 * @throws MalformedURLException
 */

public static void main(String[] args) throws MalformedURLException, IOException
{
    OntoCarerDriver ontD = new OntoCarerDriver();

    System.out.println("OntoCarerDriver main method completed");
}

} //End of OntoCarerDriver class
package OntoCarer;

import java.util.Iterator;
import java.util.ArrayList;
import java.util.List;
import org.apache.jena.ontology.OntModel;
import org.apache.jena.rdf.model.Model;
import org.apache.jena.rdf.model.ModelFactory;
import org.apache.jena.rdf.model.Property;
import org.apache.jena.rdf.model.RDFNode;
import org.apache.jena.rdf.model.Resource;
import org.apache.jena.rdf.model.Statement;

```

```

/**
 * OntoCarerPlanner class is the application program for the implementation * of the OntoCarer
Planning scenarios
 * @author Michael Ulman
 *
 */

public class OntoCarerPlanner {
private static String agentHasLocationURI =
"http://www.OntoCarer.org/Agent.owl#agentHasLocation";

private static String socialActionHasDesireIntentionLevelURI =
"http://www.OntoCarer.org/SocialAction.owl#socialActionHasDesireIntention
Level";

private static String agentsOnFloorURI = "http://www.OntoCarer.org/Agent.owl#agentsOnFloor";

private CurrentStatement currStmnt;
private Statement stmt;
private int size=0;
private List<Statement> trueStatements;//list of true Statements
private List<Statement> currentValueStatements; //list of true Statements without attached boolean
value
private List<CurrentStatement> boolStatements; //list of CurrentStatements containing all true and
false Statements
private OntModel model = ModelFactory.createOntologyModel();

private ArrayList agentActionsList = new ArrayList();
private ArrayList assistingActionsList = new ArrayList();
private ArrayList assistingAgentsOnSameFloor = new ArrayList();
private ArrayList assistingAgentsOnDiffFloor = new ArrayList();
private Resource linkedAssistedSocialAction = null;
private Resource linkedAssisterSocialAction = null;

/**
 * CurrentStatement inner class wraps a Statement and associates a
 * boolean value with it indicating whether it is currentValue (true) or
 * past (false)

```

* This inner class is based on the utility class TemporalTripleIndex class * (from Semantic Web Programming, (Hebler et al, 2009) p462-463)

* which is used to in that case to store statements by timestamp for

* retrieval (rather than by boolean values) using the Calendar class

*/

```
private class CurrentStatement implements Comparable<CurrentStatement>
```

```
{
```

```
/**
```

```
* The Statement this CurrentStatement instance wraps up
```

```
*/
```

```
private final Statement statement;
```

```
/**
```

```
* The boolean value associated with this CurrentStatement.
```

```
*/
```

```
private boolean currentValue;
```

```
public CurrentStatement(Statement state)
```

```
{
```

```
    statement = state;
```

```
    currentValue = true;
```

```
}
```

```
public CurrentStatement(Statement state, boolean value)
```

```
{
```

```
    statement = state;
```

```
    currentValue = value;
```

```
}
```

```
public Statement getStatement()
```

```
{
```

```
    return statement;
```

```
}
```

```
public boolean getCurrentValue()
```

```
{
```

```
    return currentValue;
```

```
}
```

```

public void setCurrentValue(boolean value)
{
    currentValue = value;
}

@Override
public int compareTo(CurrentStatement o)
{
    // TODO Auto-generated method stub
    return 0;
}

} // End of private class CurrentStatement

//OntoCarerPlanner default constructor
public OntoCarerPlanner()
{
    this(500);
}
//OntoCarerPlanner instance created, with lists of capacity 500 created

}

/**
 * OntoCarerPlanner constructor creates a new OntoCarerPlanner instance with * the initial capacities
of the lists
 * boolStatements is a list that holds statements with their boolean value - * true or false
 * trueStatements is a list that holds statements, and is used for holding
 * only true statements
 * when extracted using the method getCurrentStatements
 *
 * @param capacity initial capacity of the index
 */

public OntoCarerPlanner(int capacity)
{
    size=capacity;
    boolStatements = new ArrayList<CurrentStatement>(capacity);
    trueStatements = new ArrayList<Statement>(size);
}

```

```

}

/**
 * getCurrentStatements method
 * creates a new instance of trueStatements list
 * iterates through the list of boolStatements list that holds a list of
 * CurrentStatement each of which contain a Statement and their boolean
 * value extracts the true Statements and assigns them to the list
 * trueStatements and returns this list
 * @return
 */

public List<Statement> getCurrentStatements()
{
    System.out.println("getCurrentStatements method executed");
    trueStatements = new ArrayList<Statement>(size);
    int size = boolStatements.size()-1;
    int count=0;
    System.out.println("all Statements retrieved from boolStatements");
    while( count <= size)
    {
        currStmt = boolStatements.get(count);
        if(currStmt.getCurrentValue())
        {
            stmt = currStmt.getStatement();
            trueStatements.add(stmt);
        }
        count++;
    }

    System.out.println("Only true Statements are extracted from all Statements");
    System.out.println("getCurrentStatements method returns an array of true Statements");
    return trueStatements;
}

/**
 * getCurrentModel returns an up to date OntModel of true statements
 * getCurrentModel method creates a new Model to return from the method
 * creates a new list to hold Statements
 * gets the list of true Statements (without boolean values) from
 * getCurrentStatements(), and

```

```

* iterates through the list adding them to the Model currentModel and then * returns this OntModel
* @return
*/

public OntModel getCurrentModel()
{
    System.out.println("getCurrentModel called");
    OntModel currentModel = newInstance();
    System.out.println("size of currentModel is" + size);
    currentValueStatements = new ArrayList<Statement>(size);
    System.out.println("getCurrentStatements method is called from
getCurrentModel");
    currentValueStatements = getCurrentStatements();

    for(Statement s : currentValueStatements)
    {
        currentModel = (OntModel) currentModel.add(s);
    }

    System.out.println("currentModel is populated with true Statements and returned from
getCurrentModel");

    return currentModel;
}

/**
* newInstance method creates a new instance of OntModel class and returns
* it
* @return
*/

public static OntModel newInstance()
{
    System.out.println("newInstance() method called and new OntModel created and returned");

    OntModel tmpModel = ModelFactory.createOntologyModel();
    return tmpModel;
}

```

```

/**
 * addCurrent method takes a Statement and a boolean value as parameters and
 * creates an instance of CurrentStatement inner class passing these
 * parameters to it
 * and adding the instance to the list boolStatements
 * @param statement
 * @param currentValue
 */

public void addCurrent(Statement statement, boolean currentValue)
{
    System.out.println("addCurrent method invoked" );
    System.out.println("Create new CurrentStatement to wrap the statement and
    boolean value");

    CurrentStatement newCurrStmt = new CurrentStatement(statement, currentValue);

    boolStatements.add(newCurrStmt);
}

/**
 * addCurrent method (as above addCurrent method - with default boolean
 * value true)
 * @param statement
 */

public void addCurrent(Statement statement)
{
    System.out.println("addCurrent method called with Statement " + statement+
    "passed to it");

    CurrentStatement newCurrStmt = new CurrentStatement(statement, true);
    System.out.println(" new CurrentStatement " +newCurrStmt+ " created and
    added to boolStatements list");

    boolStatements.add(newCurrStmt);
}

/**
 * addNewLocation method is used for changing the location of an agent.

```

```

* addNewLocation method takes an agent Resource and location RDFNode as
* parameters then iterates through the list of boolStatements searching for * the a statement with the
agent parameter, the predicate for
* agentHasLocation, and the value true - which indicates a statement held
* as currently true. When it finds a match then the existing statement's
* value is changed to false and a new statement is created with the new
* location for the agent as object and added to boolStatements using the
* method addCurrent which creates a CurrentStatement and adds the value
* true to it
* @param agent
* @param location
*/
public void addNewLocation(Resource agent, RDFNode location)
{ System.out.println("addNewLocation method called");
  System.out.println("agent value is "+agent+ " new location value is
"+location);

  int size = boolStatements.size()-1;
  boolean notFound = true;
  String agentString = agent.toString();
  int count=0;

  System.out.println("Iterate through the Statements and their subject,
predicate and object in boolStatements list");

  while( count <= size & notFound==true)
  {
      currStmt = boolStatements.get(count);
      Statement stmt = currStmt.getStatement();
      System.out.println("Statement is"+stmt);
      Resource subject = stmt.getSubject();
      String subjectString = subject.getURI();
      Property predicate = stmt.getPredicate();
      String predicateURI = predicate.getURI();
      RDFNode object = stmt.getObject();

      stmt=null;

      boolean value = currStmt.getCurrentValue();

```



```
//if a match for the agent and the predicate agentHasLocation, with the //value is true is found then the
statement for the previous location of
//agent has been found
```

```
if(agentString.equals(subjectString) &
predicateURI.equals(agentHasLocationURI)& value==true)
    {
        System.out.println("Condition finds match found for agent " +
subject + " and agentHasLocation with value true ");

        System.out.println("where the previous location is " + object + "
its Statement value is changed to false");

        notFound = false;
        currStmt.setCurrentValue(false);
        //change the value of the previous location statement to false

        Statement newStmt = model.createStatement(agent, predicate, location);
        //create new agent location statement

        System.out.println("New Statement of agent's location is " + newStmt);
        System.out.println("The new agent location Statement is passed to
addCurrent method");

        addCurrent(newStmt);
        }//end if

        count++;
    }// end while

} //end of addNewLocation method

//start of addNewFloor method
public void addNewFloor(Resource agent, RDFNode floor)
{
    System.out.println("addNewFloor method called");
    System.out.println("agent value is "+agent+ " new floor value is "+ floor);

    int size = boolStatements.size()-1;
```

```

boolean notFound = true;
String agentString = agent.toString();
String newFloor = floor.toString();
int count=0;

while( count <= size & notFound==true)
{
    currStmt = boolStatements.get(count);
    Statement stmt = currStmt.getStatement();
    Resource subject = stmt.getSubject();
    String subjectString = subject.getURI();
    Property predicate = stmt.getPredicate();
    String predicateURI = predicate.getURI();
    RDFNode object = stmt.getObject();
    String currentFloor = object.toString();

    stmt=null;

    boolean value = currStmt.getCurrentValue();

    // if a match for the agent and the predicate agentsOnFloor,
    //with the value is true is found then the statement for the
    //previous floor of agent has been found

    if(agentString.equals(subjectString) &
predicateURI.equals(agentsOnFloorURI)& value==true)
        { System.out.println("Current floor of agent " + subject + "
is " + currentFloor);

notFound = false;
        if(!(newFloor.equals(currentFloor)))
            {
                currStmt.setCurrentValue(false);
                //change the value of the previous floor statement to false

Statement newStmt = model.createStatement(agent, predicate, floor);
                //create new agent floor statement
                System.out.println("New statement of agent's floor is " + newStmt);
            }
        }
}

```

```

        addCurrent(newStmnt);
    }
    else
    {
        System.out.println("Floor of the agent has not changed");
    }

    }//end if

    count++;

    }// end while

} //end of addNewFloor method

/**
 * changeDesireIntention changes the value that sets the level of desire
 * intention for a social action.
 * changeDesireIntention method takes a desireIntention Resource parameter
 * and a newValue String parameter then searches for a match for the same
 * social action subject in the Statement of the CurrentStatements in the
 * list of boolStatements along with the predicate URI for
 * socialActionDesireIntentionHasLevel and the boolean value true
 * when it finds the match it sets the value of the existing statement to
 * false and creates a new statement for the social action with a new level * value for the object this is
 * then added to the list of boolStatements
 * using addCurrent method which creates a CurrentStatement containing the
 * new Statement and the value true.
 * The new level is checked. If it is 10 then set the level back to 1, and
 * check if there is a linked assisted action and if so change its
 * desire-intention level to 10 as the satisfying of the social action
 * assister action means the action it is assisting will also be satisfied.
 * Then change the linked social action level back to 1 also.
 * Check if the new level indicates the social action has become an
 * intention (level 5 to 9), if it is an intention check the capability
 * qualifier by passing the social action to the method
 * findSocialActionCapabilityQualifier which returns the qualifier for that * social action. If the qualifier is
 * in the range 1 to 4 then the agent
 * needs assistance to perform the action.
 * First find the assisted agent to whom the social action belongs to by

```

```

* calling the method findSubjectDIForAction with the social action as
* parameter which returns the (assisted) agent. Then call the method
* searchForAssistance passing the the assisted agent, assisted social
* action with its qualifier and desire-intention level as parameters.
* @param socialAction
* @param newValue
*/

```

```

public void changeDesireIntentionLevel(Resource socialAction, String newValue)
{
    System.out.println("changeDesireIntention method called");
    System.out.println("with parameters socialAction instance value is "+
socialAction + " new desire-intention level value is "+newValue);

    Resource assistedSocialAction;
    String newSocialActionLevel = newValue;
    int size = boolStatements.size()-1;
    boolean notFound = true;
    String socialActionString = socialAction.toString();

    int count=0;

    System.out.println("Iterate through the Statements and their subject,
predicate and object in boolStatements list");

    while( count <= size & notFound==true)
        { currStmt = boolStatements.get(count);
          Statement stmt = currStmt.getStatement();
          Resource subject = stmt.getSubject();
          String subjectString = subject.getURI();
          Property predicate = stmt.getPredicate();
          String predicateURI = predicate.getURI();
          RDFNode object = stmt.getObject();
          boolean value = currStmt.getCurrentValue();

          //find the existing statement with the social action subject an
          //predicate socialActionHasDesireIntentionLevel and boolean value true

```

```

if(socialActionString.equals(subjectString)
  & predicateURI.equals(socialActionHasDesireIntentionLevelURI)
  & value == true)
{ System.out.println("Condition finds match for Social Action
  " + subject + " and socialActionHasDesireIntentionLevel
  & true");

      System.out.println("where the previous level is " + object +
" its Statement value is changed to false");

notFound = false;
      currStmt.setCurrentValue(false);
      Statement newStmt = model.createStatement(subject,
predicate, newSocialActionLevel);

      System.out.println("New statement of Social Action desire
intention is" + newStmt);

System.out.println("The new Statement of Social action level
is passed to addCurrent method");

addCurrent(newStmt);
//check if the new value is 10 indicating the social action
//is now satisfied

      if(newSocialActionLevel.equals("10^^http://www.w3.org/2001/XMLSchema#integer"))
      { //if the social action is an assister social action
        //linked to another social action it is assisting

if(socialAction.equals(linkedAssisterSocialAction))
      {
          //if the assisting social action is complete then
          //the social action it is assisting is also //satisfied

          changeDesireIntentionLevel(linkedAssistedSocial
Action,"10^^http://www.w3.org/2001/
XMLSchema#integer" );

          System.out.println();
          //once both assister and assisted actions are

```

```

//satisfied then their desire intention levels can
//be set back to 1

changeDesireIntentionLevel(socialAction,"1^^http://www.w3.org/2001
/XMLSchema#integer" );

changeDesireIntentionLevel(linkedAssistedSocialAction,"1^^http://ww
w.w3.org/2001/XMLSchema#integer" );

//add messages of changes
linkedAssisterSocialAction=null;
linkedAssistedSocialAction=null;

}
else
{
System.out.println("Social action " + socialAction+ " is performed and the intention satisfied at level
10");
System.out.println("Social action " + socialAction+ " is set back to desire-intention level 1");

changeDesireIntentionLevel(socialAction,"1^^http://www.w3.org/2001
/XMLSchema#integer" );

}
}

//check if the new value triggers the socialAction becoming an intention
if((((newSocialActionLevel.equals("9^^http://www.w3.org/2001/
/XMLSchema#integer")) ||
(newSocialActionLevel.equals("8^^http://www.w3.org/2001/XMLSchema#integer")) ||
(newSocialActionLevel.equals("7^^http://www.w3.org/2001/XMLSchema#integer")) ||
(newSocialActionLevel.equals("6^^http://www.w3.org/2001/XMLSchema#intege")
|| (newSocialActionLevel.equals("5^^http://www.w3.org/2001/XMLSchema#integer")))))
{System.out.println("Social Action level " +newSocialActionLevel + "
triggers condition for intention for " + subject);
System.out.println("findSocialActionCapabilityQualifier method called with
parameter "+ socialAction);

RDFNode socialActionQualifier = findSocialActionCapabilityQualifier(socialAction);

```

```

String saQualifierString = socialActionQualifier.toString();

System.out.println("socialAction Qualifier value is "+ saQualifierString);

if((saQualifierString.equals("1^http://www.w3.org/2001/XMLSchema#integer"))||
(saQualifierString.equals("2^http://www.w3.org/2001/XMLSchema#integer")) ||
(saQualifierString.equals("3^http://www.w3.org/2001/XMLSchema#integer" )) ||
(saQualifierString.equals("4^http://www.w3.org/2001/XMLSchema#integer")))
{System.out.println("Social Action capability qualifier is 1 to 4, so the
agent needs assistance to perform the action");
Resource assistedAgent = findAgentSubjectDIForAction(subject );
//finds the assisted agent that wants to perform the action

System.out.println("assistedAgent is "+assistedAgent );
assistedSocialAction = subject;

System.out.println("searchForAssistance method call with parameters
assistedAgent "+assistedAgent+ " & assistedSocialAction
"+assistedSocialAction );
searchForAssistance(assistedAgent, assistedSocialAction,
socialActionQualifier, newSocialActionLevel);
//assisted agent and the social action it intends
    }//end of, IF not capable condition 4
    }//end of, IF social action level match 5 to 9
    }//end of, IF socialActionDesireIntentionLevelURI condition

    count++;
} // end of, while loop

} //end of changeDesireIntention method

//finds the capability level (qualifier) of the social action & returns it
public RDFNode findSocialActionCapabilityQualifier(Resource socialAction)
{System.out.println("findSocialActionCapabilityQualifier method
executing");
System.out.println("SocialAction parameter is "+socialAction);

String subjectString = socialAction.getURI();

```

```

String delims = "#";
String[] tokens = subjectString.split(delims);
String action = tokens[1];
System.out.println("action is " + action);
String query = "select DISTINCT ?object where{CollegeModel:" + action + "
SocialAction:socialActionHasQualifier ?object}";
System.out.println("Query string is " +query);

OntModel currentModel = (OntModel) getCurrentModel();
RDFNode capabilityQualifier = QueryUtility.objectQuery(query,currentModel);
System.out.println("Result of query is - capability qualifier is "+ capabilityQualifier);

return capabilityQualifier;
}

```

```

//finds the agent that has the social action
public Resource findAgentSubjectDIForAction(Resource socialAction )
{ System.out.println("findAgentSubjectDIForAction method called");

        String socialActionString = socialAction.getURI();
        String delims = "#";
        String[] tokens = socialActionString.split(delims);
        String action = tokens[1];

        OntModel currentModel = (OntModel) getCurrentModel();
        System.out.println("socialActionString is " + socialActionString);

        String query = "select DISTINCT ?subject where{?subject
agent:agentHasSocialAction CollegeModel:" + action + " }";

        System.out.println("query string is " + query);
        Resource agent = QueryUtility.subjectQuery(query, currentModel);
        System.out.println("Agent that has the social action is "+ agent);

return agent;

} //end of findAgentSubjectDIForAction method

```



```

//searches for assisting agents and finds the nearest agent able to provide //the needed assistance
public void searchForAssistance(Resource assAgent, Resource socAction, RDFNode sAQualifier,
String sALevel)
{System.out.println("searchForAssistance method called ");
Resource assistedAgent = assAgent;
Resource assistedSocialAction = socAction;
RDFNode assistedSocialActionQualifier = sAQualifier;
String assistedSocialActionLevel = sALevel;
RDFNode nearestAssistingLocation=null;
String nearestAssistingLocationString=null;
ArrayList assistingAgentsList = new ArrayList();
ArrayList assistingAgentsLocationList = new ArrayList();
ArrayList assistingAgentsFloorList = new ArrayList();
ArrayList assistingAgentsOnSameFloorList = new ArrayList();
ArrayList assistingAgentsOnDiffFloorList = new ArrayList();
Resource assistingAgent=null;
Resource assistingAction=null;

RDFNode assistedLocation = findAgentLocation(assistedAgent);
//finds the location of the agent needing assistance

RDFNode assistedFloor = findAgentFloor(assistedAgent);
RDFNode assistingFloor = null;
String assistedFloorString = assistedFloor.toString();
String assistedLocationString = assistedLocation.toString();
System.out.println("The agent is "+assistedAgent+ " at location " +
assistedLocation);

System.out.println("findAssistingActions method called with action " +
assistedSocialAction);

ArrayList assistingActionsList =
findAssistingActions(assistedSocialAction);
//for the action needing assistance finds all the instances of assisting
//actions for it

```

```

Iterator iter = assistingActionsList.iterator();
while (iter.hasNext())
{
System.out.println("Social Action assistance actions " + iter.next());
}

int count = 0;
System.out.println("size of assistingActionsList is "+ assistingActionsList.size());
System.out.println("Iterate through assistingActionsList");
while(assistingActionsList.size() > count)
{
    assistingAction = (Resource) assistingActionsList.get(count);
    //for each assisting action find which agent it belongs to
    assistingAgent = (Resource) findAssistingAgent(assistingAction);
    System.out.println("Assisting agent found "+ assistingAgent + " and added
to assistingAgentsList");
    assistingAgentsList.add(assistingAgent);
    //add the assisting agent to the list of assisting agents
        count++;
}

//find the location of each agent and add it to assistingAgentsLocationList
count = 0;
System.out.println("size of assistingAgentsList is "+ assistingAgentsList.size());

System.out.println("Iterate through assistingAgentsList");
while(assistingAgentsList.size() > count)
{System.out.println("Assisting Agents list count is "+count);
    assistingAgent = (Resource) assistingAgentsList.get(count);

    System.out.println("findAgentLocation method called for assisting agent "
+ assistingAgent);

    RDFNode location = findAgentLocation(assistingAgent);
    //find the locations of each assisting agent
    System.out.println("Assisting agent location found at "+ location + " and
add this location to assistingAgentsLocationList");

    assistingAgentsLocationList.add(location);
    //add the locations of each assisting agent

```

```

count++;
}

//find the floor of each assisting agent and add it to //assistingAgentsFloorList
count = 0;
System.out.println("size of assistingAgentsList is "+ assistingAgentsList.size());

System.out.println("Iterate through assisitingAgentsList");
while(assistingAgentsList.size() > count)
{
    assistingAgent = (Resource) assistingAgentsList.get(count);

    System.out.println("findAgentFloor method called for assisting agent "
+ assistingAgent);
    RDFNode floor = findAgentFloor(assistingAgent);

    //find the locations of each assisting agent
    System.out.println("Assisting agent location found at "+ floor + " and
add this floor to assistingAgentFloorList");

    assistingAgentsFloorList.add(floor);
    //add the locations of each assisting agent

    count++;
}

//find the best assisting agent to assist the assisted agent
count = 0;
RDFNode assistingLocation;
Resource nearestAssistingAgent=null;
boolean found = false;
System.out.println("size of assistingAgentsLocationList is "+
assistingAgentsLocationList.size());

System.out.println(" Iterate through assistingAgentsLocationList");
while(assistingAgentsLocationList.size() > count)
{
    assistingLocation = (RDFNode) assistingAgentsLocationList.get(count);
    String assistingLocationString = assistingLocation.toString();

```

```

System.out.println("Compare assisted location "+assistedLocationString+
" with assisting location " + assistingLocationString);

if(assistedLocationString.equals(assistingLocationString))
//find the nearest assisting agent i.e. in the same location
{
    nearestAssistingLocationString = assistingLocationString;
    nearestAssistingLocation = assistingLocation;
    nearestAssistingAgent = (Resource) assistingAgentsList.get(count);
    System.out.println("Nearest Assisting agent found-> " +
nearestAssistingAgent + " at location-> " +
assistingLocationString);

    found = true;
//use assistingActionsList to find a match between nearestAssistingAgent //and assisting action on
assistingActionsList pass agent as parameter use //predicate agentHasSocialAction find and return
the assisting social //action
    System.out.println("findAssistingAction method called");
    assistingAction = findAssistingAction(nearestAssistingAgent,
assistingActionsList);
} //end if

    count++;
} //end while

//if assisting agent is not in the same location find one that is on the //same floor
if(found==false)
{ assistedFloor = findAgentFloor(assistedAgent);
assistingAgentsOnSameFloorList.clear();
assistingAgentsOnSameFloorList =
findAssistingAgentsOnSameFloor(assistingAgentsList, assistedFloor);
if(assistingAgentsOnSameFloorList != null)
    {System.out.println("An assisting agent on the same floor s FOUND");
    nearestAssistingAgent = (Resource)
assistingAgentsOnSameFloorList.get(0);
System.out.println("Assisting agent on same floor is " +
nearestAssistingAgent);
    assistingFloor = assistedFloor;
    //find the location of the assisting agent and make that the

```

```

//nearestAssistingLocation
    nearestAssistingLocation = findAgentLocation(nearestAssistingAgent);
    System.out.println("Nearest assisting location is" +
nearestAssistingLocation);
    assistingAction = findAssistingAction(nearestAssistingAgent,
assistingActionsList);
found = true;
    } //end if
} //end if

if(found==false)
{
    assistedFloor = findAgentFloor(assistedAgent);
    assistingAgentsOnDiffFloorList.clear();
    assistingAgentsOnDiffFloorList =
findAssistingAgentsOnDifferentFloor(assistingAgentsList,
assistedFloor);

    if(assistingAgentsOnDiffFloorList != null)
    {
        nearestAssistingAgent = (Resource)
assistingAgentsOnDiffFloorList.get(0);

        assistingFloor = findAgentFloor(nearestAssistingAgent);
        //find the location of the assisting agent and make that the
//nearestAssistingLocation
        nearestAssistingLocation = findAgentLocation(nearestAssistingAgent);
        assistingAction = findAssistingAction(nearestAssistingAgent,
assistingActionsList);

        found = true;
    }
}

    System.out.println("calling assistancePlanningResult");
    if(found==true)
    { linkedAssistedSocialAction = assistedSocialAction;
        linkedAssisterSocialAction = assistingAction;
    }
}

```

```

changeDesireIntentionLevel(assistingAction,
"9^http://www.w3.org/2001/XMLSchema#integer");
assistancePlanningResult(assistedAgent, assistedLocation ,
assistedFloor, assistedSocialAction, assistedSocialActionLevel,
assistedSocialActionQualifier, nearestAssistingAgent, nearestAssistingLocation,
assistingFloor, assistingAction);
}
if(found==false)
{//need to pair assisted and assisting actions and poss agents for
//processing of assisting so both go to 10 and then 1 again
System.out.println("Assisting agent NOT found ");
System.out.println("Assistance for social action "+ assistedSocialAction+ " for agent "+
assistedAgent+ "at location " + assistedLocation+ " is not available" );

//send message to assisted agent that assistance is not available //for the action
}

} //end of searchForAssistance method

```

```

public void assistancePlanningResult(Resource assistedAgent, RDFNode assistedLocation ,
RDFNode assistedFloor, Resource assistedAction, String assistedSocialActionLevel, RDFNode
assistedCapability, Resource selectedAssistingAgent, RDFNode assistingLocation, RDFNode
assistingFloor, Resource assistingAction)
{System.out.println(" assistancePlanningResult method executing\n");
System.out.println("The ASSISTED agent "+ assistedAgent+ " is LOCATED at "+ assistedLocation+
and has the SOCIAL ACTION "+assistedAction+"\n" );
System.out.println("The ASSISTED social action "+ assistedAction+" has INTENTION level "+
assistedSocialActionLevel+ " and CAPABILITY qualifier "+assistedCapability+"\n");

System.out.println("The selected ASSISTING agent is "+selectedAssistingAgent + " at LOCATION
"+assistingLocation+" providing ASSISTING SOCIAL ACTION "+ assistingAction+"\n");

}

```

```

public ArrayList findAssistingAgentsOnSameFloor(ArrayList assistAgentsList, RDFNode assistFloor)
{ System.out.println("findAssistingAgentsOnSameFloor method executing");
assistingAgentsOnSameFloor.clear();
String assistFloorString = assistFloor.toString();
Resource assistingAgent;

```

```

RDFNode agentFloor;
int count = 0;

//iterate through assistingAgentsList, find its floor using
//findAgentFloor, compare with assisting floor and iterate
System.out.println("assistingAgentsList size is "+
assistAgentsList.size() );

while(assistAgentsList.size() > count)
{System.out.println("count is "+ count);
assistAgent = (Resource) assistAgentsList.get(count);
System.out.println("assistingAgent is "+ assistAgent);
agentFloor = (RDFNode) findAgentFloor(assistAgent);
String agentFloorString = agentFloor.toString();
System.out.println("Assisting agent is on floor "+agentFloorString);
System.out.println("Assisted agent is on floor "+ assistFloorString);

//System.out.println("Compare assisted agent's floor "+assistFloor+ " with assisting agent's
floor " + agentFloorString);

if(assistFloorString.equals(agentFloorString))
{ System.out.println("floors match");
//find the nearest assisting agent i.e. in the same location
assistAgentsOnSameFloor.add(assistAgent);
System.out.println("Match found -Assisting agent "+assistAgent + " is on floor "+
assistFloorString);
}
else
{
System.out.println("Floors do not match");}

count++;
}
System.out.println("End of findAssistingAgentsOnSameFloor method ");
return assistAgentsOnSameFloor; }

public ArrayList findAssistingAgentsOnDifferentFloor(ArrayList assistAgentsList, RDFNode
assistFloor)
{
System.out.println("findAssistingAgentsOnDifferentFloor method

```

```

executing");
assistingAgentsOnDiffFloor.clear();
String assistFloorString = assistFloor.toString();
Resource assistingAgent;
RDFNode agentFloor;
int count = 0;
//iterate through assistingAgentsList, find its floor using
//findAgentFloor, compare with assisting floor and iterate

    while(assistAgentsList.size() > count)
    {
        assistingAgent = (Resource) assistAgentsList.get(count);
        agentFloor = (RDFNode) findAgentFloor(assistingAgent);
        String agentFloorString = agentFloor.toString();

        System.out.println("Compare assisted agent's floor "+assistFloor+ "
with assisting agent's floor " + agentFloorString);

        if(!(assistFloorString.equals(agentFloorString)))
        //find the nearest assisting agent i.e. in the same location
            assistingAgentsOnDiffFloor.add(assistingAgent);

count++;

    }
return assistingAgentsOnDiffFloor;
}

//finds the location of the agent in the building and returns it
public RDFNode findAgentLocation(Resource agent)
{System.out.println("findAgentLocation method called with agent"+
agent);
    String subjectString = agent.getURI();
    String delims = "#";
    String[] tokens = subjectString.split(delims);
    String agentString = tokens[1];
    System.out.println("agent is " + agentString);
    String query = "select DISTINCT ?object where{CollegeModel:" +
agentString + " agent:agentHasLocation ?object}";
    System.out.println("Query string is " + query);

```



```

    Model currentModel = (OntModel) getCurrentModel();
    RDFNode agentLocation =
QueryUtility.objectQuery(query,currentModel);
    System.out.println("Agent location is "+ agentLocation);
    return agentLocation;
}

//finds the floor of the agent in the building and returns it
public RDFNode findAgentFloor(Resource agent)
{System.out.println("findAgentFloor method called with agent"+ agent);
String subjectString = agent.getURI();
String delims = "#";
String[] tokens = subjectString.split(delims);
String agentString = tokens[1];
System.out.println("agent is " + agentString);
String query = "select DISTINCT ?object where{CollegeModel:" +
agentString + " agent:agentIsOnFloor ?object}";
System.out.println("Query string is " + query);

Model currentModel = (OntModel) getCurrentModel();
RDFNode agentFloor = QueryUtility.objectQuery(query,currentModel);
System.out.println("Agent floor is "+ agentFloor);

return agentFloor;
}

```

```

//finds a list of assisting actions, using the social action that requires //assistance
public ArrayList findAssistingActions(Resource socialAction)
{ System.out.println("findAssistingActions method called to return
Arraylist");
String subjectString = socialAction.getURI();
String delims = "#";
String[] tokens = subjectString.split(delims);
String action = tokens[1];
System.out.println("action is " + action);
String query = "select DISTINCT ?object where{CollegeModel:" + action +
OntoCarer-Link-Ontology:assistedAssistedByAssister ?object}";
System.out.println("Query string is " +query);
Model currentModel = getCurrentModel();

```

```

assistingActionsList = QueryUtility.objectQueryList(query, currentModel);

System.out.println("findAssistingActions - ArrayList assistingActionsList
returned");

return assistingActionsList;

//finds the assisting agent from its assisting social action
public Resource findAssistingAgent(Resource socialAction)
{ System.out.println("findAssistingAgent method executed");
  String objectString = socialAction.getURI();
  String delims = "[#]";
  String[] tokens = objectString.split(delims);
  String action = tokens[1];
  System.out.println("action is " + action);
  String query = "select DISTINCT ?subject where{?subject
agent:agentHasSocialAction CollegeModel:" + action + " }";

  System.out.println("Query string is " + query);
  Model currentModel = getCurrentModel();
  Resource assistingAgent = QueryUtility.subjectQuery(query, currentModel);

  System.out.println("findAssistingAgent - assistingAgent returned");

  return assistingAgent;
}

// find the list of Social Actions that an agent has
public ArrayList findAgentSocialActions(Resource agent)
{
  System.out.println("findAgentSocialActions method called to return Arraylist");
  String subjectString = agent.getURI();
  String delims = "[#]";
  String[] tokens = subjectString.split(delims);
  String agentActor = tokens[1];
  System.out.println("action is " + agentActor);
  String query = "select DISTINCT ?object where{CollegeModel: + agentActor
+ agent:agentHasSocialAction ?object}";
  System.out.println("Query string is " + query);

```

```

Model currentModel = getCurrentModel();
agentActionsList = QueryUtility.objectQueryList(query, currentModel);

return agentActionsList;
}
//finds the assisting social action in the list that belongs to the //assisting agent
public Resource findAssistingAction(Resource assAgent, ArrayList actList)
{ System.out.println("findAssistingAction method executing ");
Resource assistingAgent = assAgent;
Resource assisterAgent=null;
Resource assisterAction=null;
ArrayList actionsList = actList;
Resource assistingAction=null;
String assistingAgentURI;
String assisterAgentURI;

Iterator iter = actionsList.iterator();
while (iter.hasNext())
{
System.out.println("Social Action assistance actions " + iter.next());
}

int count = 0;
while(actionsList.size() > count)
{ System.out.println("count is "+ count);
assisterAction = (Resource) actionsList.get(count);
//for each assisting action find which agent it belongs to
System.out.println("Assister action from actionsList" + assisterAction);
assisterAgent = findAssistingAgent(assisterAction);
System.out.println("assisting agent is "+assistingAgent+" assister agent
is "+assisterAgent);
//convert to strings and compare
assistingAgentURI= assistingAgent.getURI();
assisterAgentURI=assisterAgent.getURI();

if(assistingAgentURI==assisterAgentURI)
// if the assisting agent is the one being sought
{System.out.println("Match found for assisterAgent " + assisterAgent +
" and assisterAction " + assisterAction);
}
}
}

```

```

        assistingAction = assisterAction;
    }
    count++;
}
System.out.println("Assisting action found "+ assistingAction + " ");
return assistingAction;
}
} //end of OntoCarerPlanner class

```

```

package OntoCarer;
import java.util.ArrayList;
import org.apache.jena.query.Query;
import org.apache.jena.query.QueryExecution;
import org.apache.jena.query.QueryExecutionFactory;
import org.apache.jena.query.QueryFactory;
import org.apache.jena.query.QuerySolution;
import org.apache.jena.query.ResultSet;
import org.apache.jena.rdf.model.Model;
import org.apache.jena.rdf.model.Property;
import org.apache.jena.rdf.model.RDFNode;
import org.apache.jena.rdf.model.Resource;

/**
 * QueryUtility class is a class containing static methods for processing
 * SPARQL queries, taking in a query string and a Model upon
 * which the query is performed. The methods are generic methods designed to
 * find the element or elements that match query where the query
 * variable is in a specific position in the RDF Statements in the Model.
 *
 * @author Michael Ulman
 *
 */

public class QueryUtility
{
    public static Resource subjectQuery(String queryRequest, Model model)
    {
        Resource subject = null;
        System.out.println("subjectQuery called");
    }
}

```

```

StringBuffer queryStr = new StringBuffer();

queryStr.append("PREFIX rdfs" + ": <" + "http://www.w3.org/2000/01/rdf-
schema#" + "> ");
queryStr.append("PREFIX rdf" + ": <" + "http://www.w3.org/1999/02/22-
rdf-syntax-ns#" + "> ");
queryStr.append("PREFIX owl" + ": <" + "http://www.w3.org/2002/07/owl#"
+ "> ");
queryStr.append("PREFIX xsd" + ": <" +
"http://www.w3.org/2001/XMLSchema#" + "> ");
queryStr.append("PREFIX agent" + ": <" +
"http://www.OntoCarer.org/Agent.owl#" + "> ");
queryStr.append("PREFIX Buildings" + ": <" +
"http://www.OntoCarer.org/Buildings.owl#" + "> ");
queryStr.append("PREFIX BodyAbilities" + ": <" +
"http://www.OntoCarer.org/BodyAbilities.owl#" + "> ");
queryStr.append("PREFIX BodyComponents" + ": <" +
"http://www.OntoCarer.org/BodyComponents.owl#" + "> ");
queryStr.append("PREFIX Organisations" + ": <" +
"http://www.OntoCarer.org/Organisations.owl#" + "> ");
queryStr.append("PREFIX SocialAction" + ": <" +
"http://www.OntoCarer.org/SocialAction.owl#" + "> ");
queryStr.append("PREFIX CollegeModel" + ": <" +
"http://www.OntoCarer.org/CollegeModel.rdf#" + "> ");
queryStr.append("PREFIX OntoCarer-Link-Ontology" + ": <" +
"http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#" + "> ");

queryStr.append(queryRequest);
System.out.println("Query String is " + queryStr);
Query query = QueryFactory.create(queryStr.toString());
QueryExecution qexec = QueryExecutionFactory.create(query, model);
try {
    ResultSet response = qexec.execSelect();
    System.out.println("query response got");
    if(!(response.hasNext()))
        System.out.println("response "+ response.hasNext());
    while( response.hasNext())
    { System.out.println("response loop entered");
        QuerySolution soln = response.nextSolution();
        subject = soln.getResource("?subject");
    }
}

```

```

        if( subject != null )
        { System.out.println( "subject is " + subject.toString() );
          }
        else
            System.out.println("No subjects found!");
        }
        return subject;
    }

    finally {
        qexec.close();}
    }
}

```

```

public static Property propertyQuery(String queryRequest, Model model)
{
    Property predicate = null;
    System.out.println("propertyQuery called");
    StringBuffer queryStr = new StringBuffer();

    queryStr.append("PREFIX CollegeModel" + ": <" +
"http://www.OntoCarer.org/CollegeModel.rdf#" + "> ");
        queryStr.append("PREFIX rdfs" + ": <" +
"http://www.w3.org/2000/01/rdf-schema#" + "> ");
        queryStr.append("PREFIX rdf" + ": <" +
"http://www.w3.org/1999/02/22-rdf-syntax-ns#" + "> ");
        queryStr.append("PREFIX owl" + ": <" +
"http://www.w3.org/2002/07/owl#" + "> ");
        queryStr.append("PREFIX xsd" + ": <" +
"http://www.w3.org/2001/XMLSchema#" + "> ");
        queryStr.append("PREFIX agent" + ": <" +
"http://www.OntoCarer.org/Agent.owl#" + "> ");
        queryStr.append("PREFIX Buildings" + ": <" +
"http://www.OntoCarer.org/Buildings.owl#" + "> ");
        queryStr.append("PREFIX BodyAbilities" + ": <" +
"http://www.OntoCarer.org/BodyAbilities.owl#" + "> ");
        queryStr.append("PREFIX BodyComponents" + ": <" +
"http://www.OntoCarer.org/BodyComponents.owl#" + "> ");
        queryStr.append("PREFIX Organisations" + ": <" +
"http://www.OntoCarer.org/Organisations.owl#" + "> ");

```

```

        queryStr.append("PREFIX SocialAction" + ": <" +
"http://www.OntoCarer.org/SocialAction.owl#"+"> ");
        queryStr.append("PREFIX CollegeModel" + ": <" +
"http://www.OntoCarer.org/CollegeModel.rdf#"+"> ");
        queryStr.append("PREFIX OntoCarer-Link-Ontology" + ": <" +
"http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#"+"> ");

```

```

queryStr.append(queryRequest);
Query query = QueryFactory.create(queryStr.toString());
System.out.println("Query created");
QueryExecution qexec = QueryExecutionFactory.create(query, model);

```

```

System.out.println("Query executed");
try {
    ResultSet response = qexec.execSelect();
    System.out.println("query response got");
    if(!(response.hasNext()))
        System.out.println("response "+ response.hasNext());
    while( response.hasNext()){
        System.out.println("response loop entered");
        QuerySolution soln = response.nextSolution();
        predicate = (Property) soln.get("?predicate");
        if( predicate != null ){
            System.out.println( "predicate is " +
predicate.toString() );
        }
        else
            System.out.println("No predicate found!");
        }
    return predicate;
}

finally {
    System.out.println("query closed");
    qexec.close();}
}

```

```

public static RDFNode objectQuery(String queryRequest, Model model)
{ RDFNode object = null;
  System.out.println("objectQuery called");
  StringBuffer queryStr = new StringBuffer();

  queryStr.append("PREFIX rdfs" + ": <" + "http://www.w3.org/2000/01/rdf-schema#" + "> ");
  queryStr.append("PREFIX rdf" + ": <" + "http://www.w3.org/1999/02/22-rdf-syntax-ns#" + "> ");
  queryStr.append("PREFIX owl" + ": <" + "http://www.w3.org/2002/07/owl#" + "> ");
  queryStr.append("PREFIX xsd" + ": <" + "http://www.w3.org/2001/XMLSchema#" + "> ");
  queryStr.append("PREFIX agent" + ": <" + "http://www.OntoCarer.org/Agent.owl#" + "> ");
  queryStr.append("PREFIX Buildings" + ": <" + "http://www.OntoCarer.org/Buildings.owl#" + "> ");
  queryStr.append("PREFIX BodyAbilities" + ": <" + "http://www.OntoCarer.org/BodyAbilities.owl#" + "> ");
  queryStr.append("PREFIX BodyComponents" + ": <" + "http://www.OntoCarer.org/BodyComponents.owl#" + "> ");
  queryStr.append("PREFIX Organisations" + ": <" + "http://www.OntoCarer.org/Organisations.owl#" + "> ");
  queryStr.append("PREFIX SocialAction" + ": <" + "http://www.OntoCarer.org/SocialAction.owl#" + "> ");
  queryStr.append("PREFIX CollegeModel" + ": <" + "http://www.OntoCarer.org/CollegeModel.rdf#" + "> ");
  queryStr.append("PREFIX OntoCarer-Link-Ontology" + ": <" + "http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#" + "> ");

  queryStr.append(queryRequest);
  System.out.println("Query String is " + queryStr);
  Query query = QueryFactory.create(queryStr.toString());
  System.out.println("Query created is " + query);
  QueryExecution qexec = QueryExecutionFactory.create(query, model);
  System.out.println("Query executed");
  try {
    ResultSet response = qexec.execSelect();
    System.out.println("query response got" + response);
    if(!response.hasNext())
      System.out.println("response has NO VALUES "+ response.hasNext());
  }
}

```



```

while( response.hasNext()){
    System.out.println("response loop entered");
    QuerySolution soln = response.nextSolution();
    object = soln.get("?object");
    if( object != null )
    {
        System.out.println( "object is " + object.toString() );
    }
    else
        System.out.println("No objects found!");
    }
    return object;
}
finally {
    qexec.close();
}
} //end of objectQuery method

```

//method to return a collection of subjects that match

```

public static ArrayList subjectQueryList(String queryRequest, Model model)
{
    System.out.println("subjectQueryList called with query " + queryRequest);
    Resource subject = null;
    ArrayList subjectList = new ArrayList();
    StringBuffer queryStr = new StringBuffer();

    queryStr.append("PREFIX CollegeModel" + ": <" + defaultNameSpace + "> ");
    queryStr.append("PREFIX rdfs" + ": <" + "http://www.w3.org/2000/01/rdf-
schema#" + "> ");
    queryStr.append("PREFIX rdf" + ": <" + "http://www.w3.org/1999/02/22-rdf-
syntax-ns#" + "> ");
    queryStr.append("PREFIX owl" + ": <" + "http://www.w3.org/2002/07/owl#" +
"> ");
    queryStr.append("PREFIX xsd" + ": <" + "http://www.w3.org/2001/XMLSchema#"
+ "> ");
    queryStr.append("PREFIX agent" + ": <" +
"http://www.OntoCarer.org/Agent.owl#" + "> ");
    queryStr.append("PREFIX Buildings" + ": <" +
"http://www.OntoCarer.org/Buildings.owl#" + "> ");
    queryStr.append("PREFIX BodyAbilities" + ": <" +

```

```

"http://www.OntoCarer.org/BodyAbilities.owl#" + "> ");
queryStr.append("PREFIX BodyComponents" + ": <" +
"http://www.OntoCarer.org/BodyComponents.owl#" + "> ");
queryStr.append("PREFIX Organisations" + ": <" +
"http://www.OntoCarer.org/Organisations.owl#" + "> ");
queryStr.append("PREFIX SocialAction" + ": <" +
"http://www.OntoCarer.org/SocialAction.owl#" + "> ");
queryStr.append("PREFIX CollegeModel" + ": <" +
"http://www.OntoCarer.org/CollegeModel.rdf#" + "> ");
queryStr.append("PREFIX OntoCarer-Link-Ontology" + ": <" +
"http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#" + "> ");

queryStr.append(queryRequest);
Query query = QueryFactory.create(queryStr.toString());
System.out.println("Query created");
QueryExecution qexec = QueryExecutionFactory.create(query, model);
System.out.println("Query executed");
    try {
        ResultSet response = qexec.execSelect();
        System.out.println("query response got");
        if(!response.hasNext())
            System.out.println("response "+ response.hasNext());
        while( response.hasNext()){
            System.out.println("response loop entered");
            QuerySolution soln = response.nextSolution();
            subject = soln.getResource("?subject");
            if( subject != null ){
                System.out.println( "subject is " + subject.toString() );
                subjectList.add(subject);
            }
            else
                System.out.println("No objects found! or all objects found now");
        }
        return subjectList;
    }
    finally
    {
        qexec.close();
    }
}

```

```

//method to return a collection of objects that match the query
public static ArrayList objectQueryList(String queryRequest, Model model)
{
    System.out.println("objectQueryList called with query " + queryRequest);
    RDFNode object = null;
    ArrayList objectList = new ArrayList();
    StringBuffer queryStr = new StringBuffer();
    queryStr.append("PREFIX CollegeModel" + ": <" + "http://www.OntoCarer.org/CollegeModel.rdf#" + ">" + ">");
    queryStr.append("PREFIX rdfs" + ": <" + "http://www.w3.org/2000/01/rdf-schema#" + ">" + "> ");
    queryStr.append("PREFIX rdf" + ": <" + "http://www.w3.org/1999/02/22-rdf-syntax-ns#" + ">" + "> ");
    queryStr.append("PREFIX owl" + ": <" + "http://www.w3.org/2002/07/owl#" + ">" + "> ");
    queryStr.append("PREFIX xsd" + ": <" + "http://www.w3.org/2001/XMLSchema#" + ">" + "> ");
    queryStr.append("PREFIX agent" + ": <" + "http://www.OntoCarer.org/Agent.owl#" + ">" + "> ");
    queryStr.append("PREFIX Buildings" + ": <" + "http://www.OntoCarer.org/Buildings.owl#" + ">" + "> ");
    queryStr.append("PREFIX BodyAbilities" + ": <" + "http://www.OntoCarer.org/BodyAbilities.owl#" + ">" + "> ");
    queryStr.append("PREFIX BodyComponents" + ": <" + "http://www.OntoCarer.org/BodyComponents.owl#" + ">" + "> ");
    queryStr.append("PREFIX Organisations" + ": <" + "http://www.OntoCarer.org/Organisations.owl#" + ">" + "> ");
    queryStr.append("PREFIX SocialAction" + ": <" + "http://www.OntoCarer.org/SocialAction.owl#" + ">" + "> ");
    queryStr.append("PREFIX CollegeModel" + ": <" + "http://www.OntoCarer.org/CollegeModel.rdf#" + ">" + "> ");
    queryStr.append("PREFIX OntoCarer-Link-Ontology" + ": <" + "http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#" + ">" + "> ");
    System.out.println("prefixes added to query string");
    queryStr.append(queryRequest);
    Query query = QueryFactory.create(queryStr.toString());
    System.out.println("Query created");
    QueryExecution qexec = QueryExecutionFactory.create(query, model);
    System.out.println("Query executed");
    try {
        ResultSet response = qexec.execSelect();
        System.out.println("query response got");
        if(!(response.hasNext()))

```

```

        System.out.println("response "+ response.hasNext());
    while( response.hasNext()){
        System.out.println("response loop entered");
        QuerySolution soln = response.nextSolution();
        object = soln.get("?object");
        if( object != null ){
            System.out.println( "object is " + object.toString() );
            objectList.add(object);
        }
        else
            System.out.println("No objects found or all objects found now");
    }
    return objectList;
}
finally
{ System.out.println("objectQueryList query closed");
  qexec.close();
}
}
} //end of objectQueryList method
} // end of QueryUtility class

```

Appendix D

OntoCarer OWL Ontological Framework Ontologies – With Education Domain Extensions

Agent.owl

BodyComponents.owl

BodyAbilities.owl

SocialAction.owl

Organisation.owl

Buildings.owl

OntoCarer-Link-Ontology.owl

Agent.owl Ontology

@prefix : <http://www.OntoCarer.org/Agent.owl#> .

@prefix owl: <http://www.w3.org/2002/07/owl#> .

@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .

@prefix xml: <http://www.w3.org/XML/1998/namespace> .

@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .

@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .

@prefix Buildings: <http://www.OntoCarer.org/Buildings.owl#> .

@base <http://www.OntoCarer.org/Agent.owl> .

<http://www.OntoCarer.org/Agent.owl> rdf:type owl:Ontology ;

owl:imports

<file:/Users/michaelulman/Documents/Ontologies/BodyAbilities.owl> ,

<file:/Users/michaelulman/Documents/Ontologies/BodyComponents.owl> ,

<file:/Users/michaelulman/Documents/Ontologies/Buildings.owl> ,

<file:/Users/michaelulman/Documents/Ontologies/Organisation.owl> ,

<file:/Users/michaelulman/Documents/Ontologies/SocialAction.owl> .

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Object Properties

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http://www.OntoCarer.org/Agent.owl#agentHasAssistedRole

:agentHasAssistedRole rdf:type owl:ObjectProperty ;
 rdfs:subPropertyOf :agentHasRole ;
 rdfs:domain :Agent ;
 rdfs:range :AssistedRole .

http://www.OntoCarer.org/Agent.owl#agentHasAssisterRole

:agentHasAssisterRole rdf:type owl:ObjectProperty ;
 rdfs:subPropertyOf :agentHasRole ;
 rdfs:domain :Agent ;
 rdfs:range :AssisterRole .

http://www.OntoCarer.org/Agent.owl#agentHasBasicFunctionRole

:agentHasBasicFunctionRole rdf:type owl:ObjectProperty ;
 rdfs:subPropertyOf :agentHasRole ;
 rdfs:domain :Agent ;
 rdfs:range :BasicFunctionRole .

http://www.OntoCarer.org/Agent.owl#agentHasBodyAbility

:agentHasBodyAbility rdf:type owl:ObjectProperty ;
 rdfs:domain :Agent ;
 rdfs:range <http://www.OntoCarer.org/BodyAbilities.owl#BodyAbility> .

http://www.OntoCarer.org/Agent.owl#agentHasBodyComponent

:agentHasBodyComponent rdf:type owl:ObjectProperty ;
 rdfs:domain :Agent ;
 rdfs:range <http://www.OntoCarer.org/BodyComponents.owl#BodyComponent> .

http://www.OntoCarer.org/Agent.owl#agentHasBodyFunction

:agentHasBodyFunction rdf:type owl:ObjectProperty ;
 rdfs:domain :Agent ;

rdfs:range <http://www.OntoCarer.org/BodyAbilities.owl#BodyAbility> .

```
### http://www.OntoCarer.org/Agent.owl#agentHasBodyStructure
:agentHasBodyStructure rdf:type owl:ObjectProperty ;
    rdfs:domain :Agent ;
    rdfs:range <http://www.OntoCarer.org/BodyAbilities.owl#BodyAbility> .
```

```
### http://www.OntoCarer.org/Agent.owl#agentHasCooperatorRole
:agentHasCooperatorRole rdf:type owl:ObjectProperty ;
    rdfs:subPropertyOf :agentHasRole ;
    rdfs:domain :Agent ;
    rdfs:range :CooperatorRole .
```

```
### http://www.OntoCarer.org/Agent.owl#agentHasGoal
:agentHasGoal rdf:type owl:ObjectProperty ;
    rdfs:domain :Agent ;
    rdfs:range :Goal .
```

```
### http://www.OntoCarer.org/Agent.owl#agentHasLocation
:agentHasLocation rdf:type owl:ObjectProperty ;
    rdfs:domain :Agent ;
    rdfs:range Buildings:Location .
```

```
### http://www.OntoCarer.org/Agent.owl#agentHasOrganisationMembership
:agentHasOrganisationMembership rdf:type owl:ObjectProperty ;
    rdfs:domain :Agent ;
    rdfs:range <http://www.OntoCarer.org/Organisation.owl#Organisation> .
```

```
### http://www.OntoCarer.org/Agent.owl#agentHasParticipation
:agentHasParticipation rdf:type owl:ObjectProperty ;
    rdfs:domain :Agent .
```

```
### http://www.OntoCarer.org/Agent.owl#agentHasProviderRole
```

:agentHasProviderRole rdf:type owl:ObjectProperty ;
 rdfs:subPropertyOf :agentHasRole ;
 rdfs:domain :Agent ;
 rdfs:range :ProviderRole .

http://www.OntoCarer.org/Agent.owl#agentHasRole

:agentHasRole rdf:type owl:ObjectProperty ;
 rdfs:domain :Agent ;
 rdfs:range :Role .

http://www.OntoCarer.org/Agent.owl#agentHasRoleAssister

:agentHasRoleAssister rdf:type owl:ObjectProperty ;
 rdfs:domain :Agent ;
 rdfs:range :RoleAssister .

http://www.OntoCarer.org/Agent.owl#agentHasRoleAssisterAid

:agentHasRoleAssisterAid rdf:type owl:ObjectProperty ;
 rdfs:subPropertyOf :agentHasRoleAssister ;
 rdfs:domain :Agent ;
 rdfs:range :RoleAssisterAid .

http://www.OntoCarer.org/Agent.owl#agentHasRoleAssisterRole

:agentHasRoleAssisterRole rdf:type owl:ObjectProperty ;
 rdfs:subPropertyOf :agentHasAssisterRole ,
 :agentHasRoleAssister ;
 rdfs:domain :Agent ;
 rdfs:range :RoleAssisterRole .

http://www.OntoCarer.org/Agent.owl#agentHasSocialAction

:agentHasSocialAction rdf:type owl:ObjectProperty ;
 rdfs:domain :Agent ;
 rdfs:range <http://www.OntoCarer.org/SocialAction.owl#SocialAction> .

http://www.OntoCarer.org/Agent.owl#agentHasSocialActionAssisterAction


```
:agentHasSocialActionAssisterAction rdf:type owl:ObjectProperty ;
    rdfs:subPropertyOf :agentHasSocialAction ;
    rdfs:domain :Agent ;
    rdfs:range
<http://www.OntoCarer.org/SocialAction.owl#SocialActionAssisterAction> .
```

```
### http://www.OntoCarer.org/Agent.owl#agentHasUserRole
```

```
:agentHasUserRole rdf:type owl:ObjectProperty ;
    rdfs:subPropertyOf :agentHasRole ;
    rdfs:domain :Agent ;
    rdfs:range :UserRole .
```

```
### http://www.OntoCarer.org/Agent.owl#agentInSituationActivity
```

```
:agentInSituationActivity rdf:type owl:ObjectProperty ;
    rdfs:domain :Agent ;
    rdfs:range <http://www.OntoCarer.org/Organisation.owl#SituationActivity> .
```

```
### http://www.OntoCarer.org/Agent.owl#agentIsInBuilding
```

```
:agentIsInBuilding rdf:type owl:ObjectProperty ;
    rdfs:domain :Agent ;
    rdfs:range Buildings:Building .
```

```
### http://www.OntoCarer.org/Agent.owl#agentIsInBuildingSpace
```

```
:agentIsInBuildingSpace rdf:type owl:ObjectProperty ;
    rdfs:domain :Agent ;
    rdfs:range Buildings:BuildingSpace .
```

```
### http://www.OntoCarer.org/Agent.owl#agentIsInCorridor
```

```
:agentIsInCorridor rdf:type owl:ObjectProperty ;
    rdfs:domain :Agent ;
    rdfs:range Buildings:Corridor .
```

```
### http://www.OntoCarer.org/Agent.owl#agentIsInOrganisation
```

```
:agentIsInOrganisation rdf:type owl:ObjectProperty ;
```

rdfs:domain :Agent ;
rdfs:range <http://www.OntoCarer.org/Organisation.owl#Organisation> .

http://www.OntoCarer.org/Agent.owl#agentsInRoom
:agentsInRoom rdf:type owl:ObjectProperty ;
rdfs:domain :Agent ;
rdfs:range Buildings:Room .

http://www.OntoCarer.org/Agent.owl#agentsOnFloor
:agentsOnFloor rdf:type owl:ObjectProperty ;
rdfs:domain :Agent ;
rdfs:range Buildings:Floor .

http://www.OntoCarer.org/Agent.owl#agentsOnStairs
:agentsOnStairs rdf:type owl:ObjectProperty ;
rdfs:domain :Agent ;
rdfs:range Buildings:Stairs .

http://www.OntoCarer.org/Agent.owl#assistedRoleHasAgent
:assistedRoleHasAgent rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleHasAgent .

http://www.OntoCarer.org/Agent.owl#assisterRoleHasAgent
:assisterRoleHasAgent rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleHasAgent .

http://www.OntoCarer.org/Agent.owl#basicFunctionRoleHasAgent
:basicFunctionRoleHasAgent rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleHasAgent .

http://www.OntoCarer.org/Agent.owl#cooperatorRoleHasAgent
:cooperatorRoleHasAgent rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf :roleHasAgent .

http://www.OntoCarer.org/Agent.owl#providerRoleHasAgent
:providerRoleHasAgent rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleHasAgent .

http://www.OntoCarer.org/Agent.owl#roleAssisterRoleHasAgent
:roleAssisterRoleHasAgent rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :assisterRoleHasAgent .

<http://www.OntoCarer.org/Agent.owl#roleAssisterRoleHasSocialActionAssisterAction>
Action
:roleAssisterRoleHasSocialActionAssisterAction rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf :roleHasSocialAction ;
rdfs:domain :RoleAssisterRole ;
rdfs:range <<http://www.OntoCarer.org/SocialAction.owl#SocialActionAssisterAction>> .

http://www.OntoCarer.org/Agent.owl#roleHasAgent
:roleHasAgent rdf:type owl:ObjectProperty ;
rdfs:domain :Role ;
rdfs:range :Agent .

http://www.OntoCarer.org/Agent.owl#roleHasParticipation
:roleHasParticipation rdf:type owl:ObjectProperty ;
rdfs:domain :Role .

http://www.OntoCarer.org/Agent.owl#roleHasRoleAssister
:roleHasRoleAssister rdf:type owl:ObjectProperty ;
rdfs:domain :Role ;
rdfs:range :RoleAssister .

http://www.OntoCarer.org/Agent.owl#roleHasRoleAssisterAid
:roleHasRoleAssisterAid rdf:type owl:ObjectProperty ;

```
    rdfs:subPropertyOf :roleHasRoleAssister ;
    rdfs:domain :Role ;
    rdfs:range :RoleAssisterAid .
```

```
### http://www.OntoCarer.org/Agent.owl#roleHasRoleAssisterRole
:roleHasRoleAssisterRole rdf:type owl:ObjectProperty ;
    rdfs:subPropertyOf :roleHasRoleAssister ;
    rdfs:domain :Role ;
    rdfs:range :RoleAssisterRole .
```

```
### http://www.OntoCarer.org/Agent.owl#roleHasSocialAction
:roleHasSocialAction rdf:type owl:ObjectProperty ;
    rdfs:domain :Role ;
    rdfs:range <http://www.OntoCarer.org/SocialAction.owl#SocialAction> .
```

```
### http://www.OntoCarer.org/Agent.owl#roleHasSubRole
:roleHasSubRole rdf:type owl:ObjectProperty ;
    rdfs:domain :Role ;
    rdfs:range :Role .
```

```
### http://www.OntoCarer.org/Agent.owl#userRoleHasAgent
:userRoleHasAgent rdf:type owl:ObjectProperty ;
    rdfs:subPropertyOf :roleHasAgent .
```

```
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# Data properties
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```
### http://www.OntoCarer.org/Agent.owl#agentHasInformation
:agentHasInformation rdf:type owl:DatatypeProperty ;
    rdfs:domain :Agent ;
    rdfs:range xsd:string .
```

```
### http://www.OntoCarer.org/Agent.owl#assistedRoleHasInformation
```

:assistedRoleHasInformation rdf:type owl:DatatypeProperty ;
 rdfs:domain :AssistedRole ;
 rdfs:range xsd:string .

http://www.OntoCarer.org/Agent.owl#assisterRoleHasInformation
:assisterRoleHasInformation rdf:type owl:DatatypeProperty ;
 rdfs:domain :AssisterRole ;
 rdfs:range xsd:string .

http://www.OntoCarer.org/Agent.owl#automataHasInformation
:automataHasInformation rdf:type owl:DatatypeProperty ;
 rdfs:domain :Automata ;
 rdfs:range xsd:string .

http://www.OntoCarer.org/Agent.owl#goalHasDesireIntentionalLevel
:goalHasDesireIntentionalLevel rdf:type owl:DatatypeProperty ;
 rdfs:domain :Goal ;
 rdfs:range xsd:integer .

http://www.OntoCarer.org/Agent.owl#goalHasInformation
:goalHasInformation rdf:type owl:DatatypeProperty ;
 rdfs:domain :Goal ;
 rdfs:range xsd:string .

http://www.OntoCarer.org/Agent.owl#goalHasRanking
:goalHasRanking rdf:type owl:DatatypeProperty ;
 rdfs:domain :Goal ;
 rdfs:range xsd:integer .

http://www.OntoCarer.org/Agent.owl#mobileAutomataHasInformation
:mobileAutomataHasInformation rdf:type owl:DatatypeProperty ;
 rdfs:domain :MobileAutomata ;

rdfs:range xsd:string .

```
### http://www.OntoCarer.org/Agent.owl#organisationAgentHasInformation
:organisationAgentHasInformation rdf:type owl:DatatypeProperty ;
    rdfs:domain :OrganisationAgent ;
    rdfs:range xsd:string .
```

```
### http://www.OntoCarer.org/Agent.owl#personHasFirstName
:personHasFirstName rdf:type owl:DatatypeProperty ;
    rdfs:domain :Person ;
    rdfs:range xsd:string .
```

```
### http://www.OntoCarer.org/Agent.owl#personHasInformation
:personHasInformation rdf:type owl:DatatypeProperty ;
    rdfs:domain :Person ;
    rdfs:range xsd:string .
```

```
### http://www.OntoCarer.org/Agent.owl#personHasLastName
:personHasLastName rdf:type owl:DatatypeProperty ;
    rdfs:domain :Person ;
    rdfs:range xsd:string .
```

```
### http://www.OntoCarer.org/Agent.owl#providerRoleHasInformation
:providerRoleHasInformation rdf:type owl:DatatypeProperty ;
    rdfs:domain :ProviderRole ;
    rdfs:range xsd:string .
```

```
### http://www.OntoCarer.org/Agent.owl#robotAutomataHasInformation
:robotAutomataHasInformation rdf:type owl:DatatypeProperty ;
    rdfs:domain :RobotAutomata ;
    rdfs:range xsd:string .
```

```
### http://www.OntoCarer.org/Agent.owl#roleAssisterAidHasInformation
```

```
:roleAssisterAidHasInformation rdf:type owl:DatatypeProperty ;  
    rdfs:domain :RoleAssisterAid ;  
    rdfs:range xsd:string .
```

```
### http://www.OntoCarer.org/Agent.owl#roleAssisterHasInformation  
:roleAssisterHasInformation rdf:type owl:DatatypeProperty ;  
    rdfs:domain :RoleAssister ;  
    rdfs:range xsd:string .
```

```
### http://www.OntoCarer.org/Agent.owl#roleAssisterRoleHasInformation  
:roleAssisterRoleHasInformation rdf:type owl:DatatypeProperty ;  
    rdfs:domain :RoleAssisterRole ;  
    rdfs:range xsd:string .
```

```
### http://www.OntoCarer.org/Agent.owl#roleHasDesireIntentionalLevel  
:roleHasDesireIntentionalLevel rdf:type owl:DatatypeProperty ;  
    rdfs:domain :Role ;  
    rdfs:range xsd:integer .
```

```
### http://www.OntoCarer.org/Agent.owl#roleHasInformation  
:roleHasInformation rdf:type owl:DatatypeProperty ;  
    rdfs:domain :Role ;  
    rdfs:range xsd:string .
```

```
### http://www.OntoCarer.org/Agent.owl#roleHasRanking  
:roleHasRanking rdf:type owl:DatatypeProperty ;  
    rdfs:domain :Role ;  
    rdfs:range xsd:integer .
```

```
### http://www.OntoCarer.org/Agent.owl#softwareAutomataHasInformation  
:softwareAutomataHasInformation rdf:type owl:DatatypeProperty ;  
    rdfs:domain :SoftwareAutomata ;  
    rdfs:range xsd:string .
```

```
### http://www.OntoCarer.org/Agent.owl#userRoleHasInformation
:userRoleHasInformation rdf:type owl:DatatypeProperty ;
    rdfs:domain :UserRole ;
    rdfs:range xsd:string .
```

```
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```

```
# Classes
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```
### http://www.OntoCarer.org/Agent.owl#Agent
:Agent rdf:type owl:Class ;
    rdfs:subClassOf owl:Thing ;
    owl:disjointWith :RoleAssisterAid .
```

```
### http://www.OntoCarer.org/Agent.owl#AssistedRole
:AssistedRole rdf:type owl:Class ;
    rdfs:subClassOf :Role .
```

```
### http://www.OntoCarer.org/Agent.owl#AssisterRole
:AssisterRole rdf:type owl:Class ;
    rdfs:subClassOf :Role ,
        :RoleAssister .
```

```
### http://www.OntoCarer.org/Agent.owl#Automata
:Automata rdf:type owl:Class ;
    rdfs:subClassOf :Agent .
```

```
### http://www.OntoCarer.org/Agent.owl#BasicFunctionRole
:BasicFunctionRole rdf:type owl:Class ;
    rdfs:subClassOf :Role .
```

```
### http://www.OntoCarer.org/Agent.owl#BursarProviderRole
:BursarProviderRole rdf:type owl:Class ;
    rdfs:subClassOf :ProviderRole .
```



```
### http://www.OntoCarer.org/Agent.owl#BursarProviderRoleAssisterAid
:BursarProviderRoleAssisterAid rdf:type owl:Class ;
    rdfs:subClassOf :RoleAssisterAid .
```

```
### http://www.OntoCarer.org/Agent.owl#BursarProviderRoleAssisterRole
:BursarProviderRoleAssisterRole rdf:type owl:Class ;
    rdfs:subClassOf :RoleAssisterRole .
```

```
### http://www.OntoCarer.org/Agent.owl#CafeAssistantProviderRole
:CafeAssistantProviderRole rdf:type owl:Class ;
    rdfs:subClassOf :ProviderRole .
```

```
### http://www.OntoCarer.org/Agent.owl#CafeAssistantProviderRoleAssisterAid
:CafeAssistantProviderRoleAssisterAid rdf:type owl:Class ;
    rdfs:subClassOf :RoleAssisterAid .
```

```
### http://www.OntoCarer.org/Agent.owl#CafeAssistantProviderRoleAssisterRole
:CafeAssistantProviderRoleAssisterRole rdf:type owl:Class ;
    rdfs:subClassOf :RoleAssisterRole .
```

```
### http://www.OntoCarer.org/Agent.owl#CafeUserRole
:CafeUserRole rdf:type owl:Class ;
    rdfs:subClassOf :UserRole .
```

```
### http://www.OntoCarer.org/Agent.owl#CafeUserRoleAssisterAid
:CafeUserRoleAssisterAid rdf:type owl:Class ;
    rdfs:subClassOf :RoleAssisterAid .
```

```
### http://www.OntoCarer.org/Agent.owl#CafeUserRoleAssisterRole
:CafeUserRoleAssisterRole rdf:type owl:Class ;
    rdfs:subClassOf :RoleAssisterRole .
```

```
### http://www.OntoCarer.org/Agent.owl#CareWorkerProviderAssisterRole
:CareWorkerProviderAssisterRole rdf:type owl:Class ;
    rdfs:subClassOf :AssisterRole ,
        :ProviderRole .
```

```
### http://www.OntoCarer.org/Agent.owl#CareWorkerProviderAssisterRoleAssisterAid
:CareWorkerProviderAssisterRoleAssisterAid rdf:type owl:Class ;
    rdfs:subClassOf :RoleAssisterAid .
```

```
### http://www.OntoCarer.org/Agent.owl#CareWorkerProviderAssisterRoleAssisterRole
:CareWorkerProviderAssisterRoleAssisterRole rdf:type owl:Class ;
    rdfs:subClassOf :RoleAssisterRole .
```

```
### http://www.OntoCarer.org/Agent.owl#CooperatorRole
:CooperatorRole rdf:type owl:Class ;
    rdfs:subClassOf :Role .
```

```
### http://www.OntoCarer.org/Agent.owl#DeafAssistedRole
:DeafAssistedRole rdf:type owl:Class ;
    rdfs:subClassOf :AssistedRole .
```

```
### http://www.OntoCarer.org/Agent.owl#DeafAssistedRoleAssisterAid
:DeafAssistedRoleAssisterAid rdf:type owl:Class ;
    rdfs:subClassOf :RoleAssisterAid .
```

```
### http://www.OntoCarer.org/Agent.owl#DeafAssistedRoleAssisterRole
:DeafAssistedRoleAssisterRole rdf:type owl:Class ;
    rdfs:subClassOf :RoleAssisterRole .
```

```
### http://www.OntoCarer.org/Agent.owl#DresserBasicFunctionRole
:DresserBasicFunctionRole rdf:type owl:Class ;
    rdfs:subClassOf :BasicFunctionRole .
```

```
### http://www.OntoCarer.org/Agent.owl#DresserBasicFunctionRoleAssisterRole
:DresserBasicFunctionRoleAssisterRole rdf:type owl:Class ;
      rdfs:subClassOf :RoleAssisterRole .
```

```
### http://www.OntoCarer.org/Agent.owl#DresserRoleAssisterAid
:DresserRoleAssisterAid rdf:type owl:Class ;
      rdfs:subClassOf :RoleAssisterAid .
```

```
### http://www.OntoCarer.org/Agent.owl#DrinkerBasicFunctionRole
:DrinkerBasicFunctionRole rdf:type owl:Class ;
      rdfs:subClassOf :BasicFunctionRole .
```

```
### http://www.OntoCarer.org/Agent.owl#DrinkerBasicFunctionRoleAssisterRole
:DrinkerBasicFunctionRoleAssisterRole rdf:type owl:Class ;
      rdfs:subClassOf :RoleAssisterRole .
```

```
### http://www.OntoCarer.org/Agent.owl#DrinkerRoleAssisterAid
:DrinkerRoleAssisterAid rdf:type owl:Class ;
      rdfs:subClassOf :RoleAssisterAid .
```

```
### http://www.OntoCarer.org/Agent.owl#EaterBasicFunctionRole
:EaterBasicFunctionRole rdf:type owl:Class ;
      rdfs:subClassOf :BasicFunctionRole .
```

```
### http://www.OntoCarer.org/Agent.owl#EaterBasicFunctionRoleAssisterRole
:EaterBasicFunctionRoleAssisterRole rdf:type owl:Class ;
      rdfs:subClassOf :RoleAssisterRole .
```

```
### http://www.OntoCarer.org/Agent.owl#EaterRoleAssisterAid
:EaterRoleAssisterAid rdf:type owl:Class ;
      rdfs:subClassOf :RoleAssisterAid .
```

http://www.OntoCarer.org/Agent.owl#Goal

:Goal rdf:type owl:Class ;
rdfs:subClassOf owl:Thing .

http://www.OntoCarer.org/Agent.owl#InformationAssistantProviderRole

:InformationAssistantProviderRole rdf:type owl:Class ;
rdfs:subClassOf :ProviderRole .

http://www.OntoCarer.org/Agent.owl#InformationAssistantProviderRoleAssisterAid

:InformationAssistantProviderRoleAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :RoleAssisterAid .

http://www.OntoCarer.org/Agent.owl#InformationAssistantProviderRoleAssisterRole

:InformationAssistantProviderRoleAssisterRole rdf:type owl:Class ;
rdfs:subClassOf :RoleAssisterRole .

http://www.OntoCarer.org/Agent.owl#InformationSeekerUserRole

:InformationSeekerUserRole rdf:type owl:Class ;
rdfs:subClassOf :UserRole .

http://www.OntoCarer.org/Agent.owl#InformationSeekerUserRoleAssisterAid

:InformationSeekerUserRoleAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :RoleAssisterAid .

http://www.OntoCarer.org/Agent.owl#InformationSeekerUserRoleAssisterRole

:InformationSeekerUserRoleAssisterRole rdf:type owl:Class ;
rdfs:subClassOf :RoleAssisterRole .

http://www.OntoCarer.org/Agent.owl#LecturerProviderRole

:LecturerProviderRole rdf:type owl:Class ;

rdfs:subClassOf :ProviderRole .

http://www.OntoCarer.org/Agent.owl#LecturerProviderRoleAssisterRole
:LecturerProviderRoleAssisterRole rdf:type owl:Class ;
rdfs:subClassOf :RoleAssisterRole .

http://www.OntoCarer.org/Agent.owl#LibrarianProviderRoleAssisterAid
:LibrarianProviderRoleAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :RoleAssisterAid .

http://www.OntoCarer.org/Agent.owl#LibraryAssistantProviderRole
:LibraryAssistantProviderRole rdf:type owl:Class ;
rdfs:subClassOf :ProviderRole .

http://www.OntoCarer.org/Agent.owl#LibraryAssistantProviderRoleAssisterAid
:LibraryAssistantProviderRoleAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :RoleAssisterAid .

http://www.OntoCarer.org/Agent.owl#LibraryAssistantProviderRoleAssisterRole
:LibraryAssistantProviderRoleAssisterRole rdf:type owl:Class ;
rdfs:subClassOf :RoleAssisterRole .

http://www.OntoCarer.org/Agent.owl#LibraryUserRole
:LibraryUserRole rdf:type owl:Class ;
rdfs:subClassOf :UserRole .

http://www.OntoCarer.org/Agent.owl#LibraryUserRoleAssisterRole
:LibraryUserRoleAssisterRole rdf:type owl:Class ;
rdfs:subClassOf :RoleAssisterRole .

http://www.OntoCarer.org/Agent.owl#MobileAutomata
:MobileAutomata rdf:type owl:Class ;
rdfs:subClassOf :SoftwareAutomata .

```
### http://www.OntoCarer.org/Agent.owl#OrganisationAgent
:OrganisationAgent rdf:type owl:Class ;
    rdfs:subClassOf :SoftwareAutomata .
```

```
### http://www.OntoCarer.org/Agent.owl#Person
:Person rdf:type owl:Class ;
    rdfs:subClassOf :Agent .
```

```
### http://www.OntoCarer.org/Agent.owl#ProviderRole
:ProviderRole rdf:type owl:Class ;
    rdfs:subClassOf :Role .
```

```
### http://www.OntoCarer.org/Agent.owl#RegistrarProviderRole
:RegistrarProviderRole rdf:type owl:Class ;
    rdfs:subClassOf :ProviderRole .
```

```
### http://www.OntoCarer.org/Agent.owl#RegistrarProviderRoleAssisterAid
:RegistrarProviderRoleAssisterAid rdf:type owl:Class ;
    rdfs:subClassOf :RoleAssisterAid .
```

```
### http://www.OntoCarer.org/Agent.owl#RegistrarProviderRoleAssisterRole
:RegistrarProviderRoleAssisterRole rdf:type owl:Class ;
    rdfs:subClassOf :RoleAssisterRole .
```

```
### http://www.OntoCarer.org/Agent.owl#RobotAutomata
:RobotAutomata rdf:type owl:Class ;
    rdfs:subClassOf :Automata .
```

```
### http://www.OntoCarer.org/Agent.owl#Role
:Role rdf:type owl:Class ;
    rdfs:subClassOf owl:Thing ;
    owl:disjointWith :RoleAssisterAid .
```

http://www.OntoCarer.org/Agent.owl#RoleAssister
:RoleAssister rdf:type owl:Class .

http://www.OntoCarer.org/Agent.owl#RoleAssisterAid
:RoleAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :RoleAssister .

http://www.OntoCarer.org/Agent.owl#RoleAssisterRole
:RoleAssisterRole rdf:type owl:Class ;
rdfs:subClassOf :AssisterRole ,
:Role .

http://www.OntoCarer.org/Agent.owl#SecurityGuardProviderRole
:SecurityGuardProviderRole rdf:type owl:Class ;
rdfs:subClassOf :ProviderRole .

http://www.OntoCarer.org/Agent.owl#SecurityGuardProviderRoleAssisterAid
:SecurityGuardProviderRoleAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :RoleAssisterAid .

http://www.OntoCarer.org/Agent.owl#SecurityGuardProviderRoleAssisterRole
:SecurityGuardProviderRoleAssisterRole rdf:type owl:Class ;
rdfs:subClassOf :RoleAssisterRole .

http://www.OntoCarer.org/Agent.owl#SignerCooperatorRole
:SignerCooperatorRole rdf:type owl:Class ;
rdfs:subClassOf :CooperatorRole .

http://www.OntoCarer.org/Agent.owl#SignerCooperatorRoleAssisterRole
:SignerCooperatorRoleAssisterRole rdf:type owl:Class ;
rdfs:subClassOf :RoleAssisterRole .

http://www.OntoCarer.org/Agent.owl#SignerRoleAssisterAid
:SignerRoleAssisterAid rdf:type owl:Class ;
 rdfs:subClassOf :RoleAssisterAid .

http://www.OntoCarer.org/Agent.owl#SignerTranslatorCooperatorRole
:SignerTranslatorCooperatorRole rdf:type owl:Class ;
 rdfs:subClassOf :SignerCooperatorRole .

<http://www.OntoCarer.org/Agent.owl#SignerTranslatorCooperatorRoleAssisterRole>
Role
:SignerTranslatorCooperatorRoleAssisterRole rdf:type owl:Class ;
 rdfs:subClassOf :RoleAssisterRole .

http://www.OntoCarer.org/Agent.owl#SignerTranslatorRoleAssisterAid
:SignerTranslatorRoleAssisterAid rdf:type owl:Class ;
 rdfs:subClassOf :RoleAssisterAid .

http://www.OntoCarer.org/Agent.owl#SoftwareAutomata
:SoftwareAutomata rdf:type owl:Class ;
 rdfs:subClassOf :Automata .

http://www.OntoCarer.org/Agent.owl#StudentUserRole
:StudentUserRole rdf:type owl:Class ;
 rdfs:subClassOf :UserRole .

http://www.OntoCarer.org/Agent.owl#StudentUserRoleAssisterAid
:StudentUserRoleAssisterAid rdf:type owl:Class ;
 rdfs:subClassOf :RoleAssisterAid .


```
### http://www.OntoCarer.org/Agent.owl#StudentUserRoleAssisterRole
:StudentUserRoleAssisterRole rdf:type owl:Class ;
    rdfs:subClassOf :RoleAssisterRole .
```

```
### http://www.OntoCarer.org/Agent.owl#TechnicianProviderRole
:TechnicianProviderRole rdf:type owl:Class ;
    rdfs:subClassOf :ProviderRole .
```

```
### http://www.OntoCarer.org/Agent.owl#TechnicianProviderRoleAssisterAid
:TechnicianProviderRoleAssisterAid rdf:type owl:Class ;
    rdfs:subClassOf :RoleAssisterAid .
```

```
### http://www.OntoCarer.org/Agent.owl#TechnicianProviderRoleAssisterRole
:TechnicianProviderRoleAssisterRole rdf:type owl:Class ;
    rdfs:subClassOf :RoleAssisterRole .
```

```
### http://www.OntoCarer.org/Agent.owl#ToileterBasicFunctionRole
:ToileterBasicFunctionRole rdf:type owl:Class ;
    rdfs:subClassOf :BasicFunctionRole .
```

```
### http://www.OntoCarer.org/Agent.owl#ToileterBasicFunctionRoleAssisterRole
:ToileterBasicFunctionRoleAssisterRole rdf:type owl:Class ;
    rdfs:subClassOf :RoleAssisterRole .
```

```
### http://www.OntoCarer.org/Agent.owl#ToileterRoleAssisterAid
:ToileterRoleAssisterAid rdf:type owl:Class ;
    rdfs:subClassOf :RoleAssisterAid .
```

```
### http://www.OntoCarer.org/Agent.owl#UserRole
:UserRole rdf:type owl:Class ;
    rdfs:subClassOf :Role .
```

```
### http://www.OntoCarer.org/Agent.owl#WasherBasicFunctionRole
:WasherBasicFunctionRole rdf:type owl:Class ;
    rdfs:subClassOf :BasicFunctionRole .
```

```
### http://www.OntoCarer.org/Agent.owl#WasherBasicFunctionRoleAssisterRole
:WasherBasicFunctionRoleAssisterRole rdf:type owl:Class ;
    rdfs:subClassOf :RoleAssisterRole .
```

```
### http://www.OntoCarer.org/Agent.owl#WasherRoleAssisterAid
:WasherRoleAssisterAid rdf:type owl:Class ;
    rdfs:subClassOf :RoleAssisterAid .
```

```
### Generated by the OWL API (version 4.5.9.2019-02-01T07:24:44Z)
https://github.com/owlcs/owlapi
```

BodyComponents.owl

```
@prefix : <http://www.OntoCarer.org/BodyComponents.owl#> .
@prefix owl: <http://www.w3.org/2002/07/owl#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix xml: <http://www.w3.org/XML/1998/namespace> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@base <http://www.OntoCarer.org/BodyComponents.owl> .
```

```
<http://www.OntoCarer.org/BodyComponents.owl> rdf:type owl:Ontology ;
    owl:imports
<file:/Users/michaelulman/Documents/Ontologies/Agent.owl> .
```

```
#####
# Object Properties
#####
```

```
### http://www.OntoCarer.org/BodyComponents.owl#bodyComponentAssisterHasAgent
:bodyComponentAssisterHasAgent rdf:type owl:ObjectProperty ;
    rdfs:domain :BodyComponentAssister ;
    rdfs:range <http://www.OntoCarer.org/Agent.owl#Agent> .
```

```
### http://www.OntoCarer.org/BodyComponents.owl#bodyComponentHasPerson
:bodyComponentHasPerson rdf:type owl:ObjectProperty ;
    rdfs:domain :BodyComponent ;
    rdfs:range <http://www.OntoCarer.org/Agent.owl#Person> .
```

```
#####
# Data properties
#####
```

```
### http://www.OntoCarer.org/BodyComponents.owl#bodyComponentAssisterHasInformation
:bodyComponentAssisterHasInformation rdf:type owl:DatatypeProperty ;
    rdfs:domain :BodyComponentAssister ;
    rdfs:range xsd:string .
```

```
### http://www.OntoCarer.org/BodyComponents.owl#bodyComponentHasInformation
:bodyComponentHasInformation rdf:type owl:DatatypeProperty ;
    rdfs:domain :BodyComponent ;
    rdfs:range xsd:string .
```

```
### http://www.OntoCarer.org/BodyComponents.owl#bodyComponentHasQualifier
:bodyComponentHasQualifier rdf:type owl:DatatypeProperty ;
    rdfs:domain :BodyComponent ;
    rdfs:range xsd:integer .
```

```
#####
# Classes
#####
```

```
### http://www.OntoCarer.org/BodyComponents.owl#ArmComonentAssister
:ArmComonentAssister rdf:type owl:Class ;
    rdfs:subClassOf :BodyComponentAssister .
```

```
### http://www.OntoCarer.org/BodyComponents.owl#ArmComponent
:ArmComponent rdf:type owl:Class ;
    rdfs:subClassOf :BodyComponent .
```

```
### http://www.OntoCarer.org/BodyComponents.owl#BodyComponent
:BodyComponent rdf:type owl:Class .
```

```
### http://www.OntoCarer.org/BodyComponents.owl#BodyComponentAssister
:BodyComponentAssister rdf:type owl:Class .
```

```
### http://www.OntoCarer.org/BodyComponents.owl#BrainComponent
:BrainComponent rdf:type owl:Class ;
    rdfs:subClassOf :BodyComponent .
```

```
### http://www.OntoCarer.org/BodyComponents.owl#BrainComponentAssister
:BrainComponentAssister rdf:type owl:Class ;
    rdfs:subClassOf :BodyComponentAssister .
```

```
### http://www.OntoCarer.org/BodyComponents.owl#CardiovascularComponent
:CardiovascularComponent rdf:type owl:Class ;
    rdfs:subClassOf :BodyComponent .
```

```
### http://www.OntoCarer.org/BodyComponents.owl#CardiovascularComponentAssister
:CardiovascularComponentAssister rdf:type owl:Class ;
```

rdfs:subClassOf :BodyComponentAssister .

http://www.OntoCarer.org/BodyComponents.owl#DigestiveComponent
:DigestiveComponent rdf:type owl:Class ;
rdfs:subClassOf :BodyComponent .

http://www.OntoCarer.org/BodyComponents.owl#DigestiveComponentAssister
:DigestiveComponentAssister rdf:type owl:Class ;
rdfs:subClassOf :BodyComponentAssister .

http://www.OntoCarer.org/BodyComponents.owl#EarComponent
:EarComponent rdf:type owl:Class ;
rdfs:subClassOf :BodyComponent .

http://www.OntoCarer.org/BodyComponents.owl#EarComponentAssister
:EarComponentAssister rdf:type owl:Class ;
rdfs:subClassOf :BodyComponentAssister .

http://www.OntoCarer.org/BodyComponents.owl#EyeComponent
:EyeComponent rdf:type owl:Class ;
rdfs:subClassOf :BodyComponent .

http://www.OntoCarer.org/BodyComponents.owl#EyeComponentAssister
:EyeComponentAssister rdf:type owl:Class ;
rdfs:subClassOf :BodyComponentAssister .

http://www.OntoCarer.org/BodyComponents.owl#FootComponent
:FootComponent rdf:type owl:Class ;
rdfs:subClassOf :BodyComponent .

http://www.OntoCarer.org/BodyComponents.owl#FootComponentAssister
:FootComponentAssister rdf:type owl:Class ;
rdfs:subClassOf :BodyComponentAssister .

http://www.OntoCarer.org/BodyComponents.owl#HandComponent
:HandComponent rdf:type owl:Class ;
rdfs:subClassOf :BodyComponent .

http://www.OntoCarer.org/BodyComponents.owl#HandComponentAssister
:HandComponentAssister rdf:type owl:Class ;
rdfs:subClassOf :BodyComponentAssister .

http://www.OntoCarer.org/BodyComponents.owl#LeftArmComponent
:LeftArmComponent rdf:type owl:Class ;
rdfs:subClassOf :ArmComponent .

http://www.OntoCarer.org/BodyComponents.owl#LeftEarComponent
:LeftEarComponent rdf:type owl:Class ;

```

rdfs:subClassOf :EarComponent .

### http://www.OntoCarer.org/BodyComponents.owl#LeftEyeComponent
:LeftEyeComponent rdf:type owl:Class ;
  rdfs:subClassOf :EyeComponent .

### http://www.OntoCarer.org/BodyComponents.owl#LeftFootComponent
:LeftFootComponent rdf:type owl:Class ;
  rdfs:subClassOf :FootComponent .

### http://www.OntoCarer.org/BodyComponents.owl#LeftHandComponent
:LeftHandComponent rdf:type owl:Class ;
  rdfs:subClassOf :HandComponent .

### http://www.OntoCarer.org/BodyComponents.owl#LeftLegComponent
:LeftLegComponent rdf:type owl:Class ;
  rdfs:subClassOf :LegComponent .

### http://www.OntoCarer.org/BodyComponents.owl#LegComponent
:LegComponent rdf:type owl:Class ;
  rdfs:subClassOf :BodyComponent .
### http://www.OntoCarer.org/BodyComponents.owl#LegComponentAssister
:LegComponentAssister rdf:type owl:Class ;
  rdfs:subClassOf :BodyComponentAssister .

### http://www.OntoCarer.org/BodyComponents.owl#MouthComponent
:MouthComponent rdf:type owl:Class ;
  rdfs:subClassOf :BodyComponent .

### http://www.OntoCarer.org/BodyComponents.owl#MouthComponentAssister
:MouthComponentAssister rdf:type owl:Class ;
  rdfs:subClassOf :BodyComponentAssister .

### http://www.OntoCarer.org/BodyComponents.owl#NoseComponent
:NoseComponent rdf:type owl:Class ;
  rdfs:subClassOf :BodyComponent .

### http://www.OntoCarer.org/BodyComponents.owl#NoseComponentAssister
:NoseComponentAssister rdf:type owl:Class ;
  rdfs:subClassOf :BodyComponentAssister .

### http://www.OntoCarer.org/BodyComponents.owl#RespiratoryComponent
:RespiratoryComponent rdf:type owl:Class ;
  rdfs:subClassOf :BodyComponent .

### http://www.OntoCarer.org/BodyComponents.owl#RespiratoryComponentAssister
:RespiratoryComponentAssister rdf:type owl:Class ;
  rdfs:subClassOf :BodyComponentAssister .

```

```
### http://www.OntoCarer.org/BodyComponents.owl#RightArmComponent
:RightArmComponent rdf:type owl:Class ;
    rdfs:subClassOf :ArmComponent .
```

```
### http://www.OntoCarer.org/BodyComponents.owl#RightEarComponent
:RightEarComponent rdf:type owl:Class ;
    rdfs:subClassOf :EarComponent .
```

```
### http://www.OntoCarer.org/BodyComponents.owl#RightEyeComponent
:RightEyeComponent rdf:type owl:Class ;
    rdfs:subClassOf :EyeComponent .
```

```
### http://www.OntoCarer.org/BodyComponents.owl#RightFootComponent
:RightFootComponent rdf:type owl:Class ;
    rdfs:subClassOf :FootComponent .
```

```
### http://www.OntoCarer.org/BodyComponents.owl#RightHandComponent
:RightHandComponent rdf:type owl:Class ;
    rdfs:subClassOf :HandComponent .
```

```
### http://www.OntoCarer.org/BodyComponents.owl#RightLegComponent
:RightLegComponent rdf:type owl:Class ;
    rdfs:subClassOf :LegComponent .
```

```
### Generated by the OWL API (version 4.5.9.2019-02-01T07:24:44Z)
https://github.com/owlcs/owlapi
```

BodyAbilities.owl

```
@prefix : <http://www.OntoCarer.org/BodyAbilities.owl#> .
@prefix owl: <http://www.w3.org/2002/07/owl#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix xml: <http://www.w3.org/XML/1998/namespace> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@base <http://www.OntoCarer.org/BodyAbilities.owl> .

<http://www.OntoCarer.org/BodyAbilities.owl> rdf:type owl:Ontology ;
      owl:imports
<file:/Users/michaelulman/Documents/Ontologies/Agent.owl> .

#####
# Object Properties
#####

### http://www.OntoCarer.org/BodyAbilities.owl#bodyAbilityAssisterHasAgent
:bodyAbilityAssisterHasAgent rdf:type owl:ObjectProperty ;
      rdfs:domain :BodyAbilityAssister ;
      rdfs:range <http://www.OntoCarer.org/Agent.owl#Agent> .

### http://www.OntoCarer.org/BodyAbilities.owl#bodyAbilityHasPerson
:bodyAbilityHasPerson rdf:type owl:ObjectProperty ;
      rdfs:domain :BodyAbility ;
      rdfs:range <http://www.OntoCarer.org/Agent.owl#Person> .

#####
```

```

# Data properties
#####

### http://www.OntoCarer.org/BodyAbilities.owl#bodyAbilityAssisterHasInformation
:bodyAbilityAssisterHasInformation rdf:type owl:DatatypeProperty ;
    rdfs:domain :BodyAbilityAssister ;
    rdfs:range xsd:string .

### http://www.OntoCarer.org/BodyAbilities.owl#bodyAbilityHasInformation
:bodyAbilityHasInformation rdf:type owl:DatatypeProperty ;
    rdfs:domain :BodyAbility ;
    rdfs:range xsd:string .

### http://www.OntoCarer.org/BodyAbilities.owl#bodyAbilityHasQualifier
:bodyAbilityHasQualifier rdf:type owl:DatatypeProperty ;
    rdfs:domain :BodyAbility ;
    rdfs:range xsd:integer .

#####
# Classes
#####

### http://www.OntoCarer.org/BodyAbilities.owl#ArmMovementAbility
:ArmMovementAbility rdf:type owl:Class ;
    rdfs:subClassOf :BodyAbility .

### http://www.OntoCarer.org/BodyAbilities.owl#ArmMovementAbilityAssister
:ArmMovementAbilityAssister rdf:type owl:Class ;
    rdfs:subClassOf :BodyAbilityAssister .

### http://www.OntoCarer.org/BodyAbilities.owl#BodyAbility
:BodyAbility rdf:type owl:Class .

### http://www.OntoCarer.org/BodyAbilities.owl#BodyAbilityAssister
:BodyAbilityAssister rdf:type owl:Class .

### http://www.OntoCarer.org/BodyAbilities.owl#BreathingAbility
:BreathingAbility rdf:type owl:Class ;
    rdfs:subClassOf :BodyAbility .

### http://www.OntoCarer.org/BodyAbilities.owl#BreathingAbilityAssister
:BreathingAbilityAssister rdf:type owl:Class ;
    rdfs:subClassOf :BodyAbilityAssister .

### http://www.OntoCarer.org/BodyAbilities.owl#DrinkingAbility

```


:DrinkingAbility rdf:type owl:Class ;
 rdfs:subClassOf :BodyAbility .

http://www.OntoCarer.org/BodyAbilities.owl#DrinkingAbilityAssister
:DrinkingAbilityAssister rdf:type owl:Class ;
 rdfs:subClassOf :BodyAbilityAssister .

http://www.OntoCarer.org/BodyAbilities.owl#EatingAbility
:EatingAbility rdf:type owl:Class ;
 rdfs:subClassOf :BodyAbility .

http://www.OntoCarer.org/BodyAbilities.owl#EatingAbilityAssister
:EatingAbilityAssister rdf:type owl:Class ;
 rdfs:subClassOf :BodyAbilityAssister .

http://www.OntoCarer.org/BodyAbilities.owl#FaecalExcretionAbility
:FaecalExcretionAbility rdf:type owl:Class ;
 rdfs:subClassOf :BodyAbility .

http://www.OntoCarer.org/BodyAbilities.owl#FaecalExcretionAbilityAssister
:FaecalExcretionAbilityAssister rdf:type owl:Class ;
 rdfs:subClassOf :BodyAbilityAssister .

http://www.OntoCarer.org/BodyAbilities.owl#HandDexterityAbility
:HandDexterityAbility rdf:type owl:Class ;
 rdfs:subClassOf :BodyAbility .

http://www.OntoCarer.org/BodyAbilities.owl#HandDexterityAbilityAssister
:HandDexterityAbilityAssister rdf:type owl:Class ;
 rdfs:subClassOf :BodyAbilityAssister .

http://www.OntoCarer.org/BodyAbilities.owl#HandMovementAbility
:HandMovementAbility rdf:type owl:Class ;
 rdfs:subClassOf :BodyAbility .

http://www.OntoCarer.org/BodyAbilities.owl#HandMovementAbilityAssister
:HandMovementAbilityAssister rdf:type owl:Class ;
 rdfs:subClassOf :BodyAbilityAssister .

http://www.OntoCarer.org/BodyAbilities.owl#HearingAbility
:HearingAbility rdf:type owl:Class ;
 rdfs:subClassOf :BodyAbility .

http://www.OntoCarer.org/BodyAbilities.owl#HearingAbilityAssister
:HearingAbilityAssister rdf:type owl:Class ;
 rdfs:subClassOf :BodyAbilityAssister .

http://www.OntoCarer.org/BodyAbilities.owl#SeeingAbility

:SeeingAbility rdf:type owl:Class ;
rdfs:subClassOf :BodyAbility .

http://www.OntoCarer.org/BodyAbilities.owl#SeeingAbilityAssister
:SeeingAbilityAssister rdf:type owl:Class ;
rdfs:subClassOf :BodyAbilityAssister .

http://www.OntoCarer.org/BodyAbilities.owl#SleepingAbility
:SleepingAbility rdf:type owl:Class ;
rdfs:subClassOf :BodyAbility .

http://www.OntoCarer.org/BodyAbilities.owl#SleepingAbilityAssister
:SleepingAbilityAssister rdf:type owl:Class ;
rdfs:subClassOf :BodyAbilityAssister .

http://www.OntoCarer.org/BodyAbilities.owl#SmellingAbility
:SmellingAbility rdf:type owl:Class ;
rdfs:subClassOf :BodyAbility .

http://www.OntoCarer.org/BodyAbilities.owl#SmellingAbilityAssister
:SmellingAbilityAssister rdf:type owl:Class ;
rdfs:subClassOf :BodyAbilityAssister .

http://www.OntoCarer.org/BodyAbilities.owl#SpeakingAbility
:SpeakingAbility rdf:type owl:Class ;
rdfs:subClassOf :BodyAbility .

http://www.OntoCarer.org/BodyAbilities.owl#SpeakingAbilityAssister
:SpeakingAbilityAssister rdf:type owl:Class ;
rdfs:subClassOf :BodyAbilityAssister .

http://www.OntoCarer.org/BodyAbilities.owl#StandingAbility
:StandingAbility rdf:type owl:Class ;
rdfs:subClassOf :BodyAbility .

http://www.OntoCarer.org/BodyAbilities.owl#StandingAbilityAssister
:StandingAbilityAssister rdf:type owl:Class ;
rdfs:subClassOf :BodyAbilityAssister .

http://www.OntoCarer.org/BodyAbilities.owl#TastingAbility
:TastingAbility rdf:type owl:Class ;
rdfs:subClassOf :BodyAbility .

http://www.OntoCarer.org/BodyAbilities.owl#TastingAbilityAssister
:TastingAbilityAssister rdf:type owl:Class ;
rdfs:subClassOf :BodyAbilityAssister .

http://www.OntoCarer.org/BodyAbilities.owl#ThinkingAbility

:ThinkingAbility rdf:type owl:Class ;
rdfs:subClassOf :BodyAbility .

http://www.OntoCarer.org/BodyAbilities.owl#ThinkingAbilityAssister
:ThinkingAbilityAssister rdf:type owl:Class ;
rdfs:subClassOf :BodyAbilityAssister .

http://www.OntoCarer.org/BodyAbilities.owl#TouchingAbility
:TouchingAbility rdf:type owl:Class ;
rdfs:subClassOf :BodyAbility .

http://www.OntoCarer.org/BodyAbilities.owl#TouchingAbilityAssister
:TouchingAbilityAssister rdf:type owl:Class ;
rdfs:subClassOf :BodyAbilityAssister .

http://www.OntoCarer.org/BodyAbilities.owl#UrinatingAbility
:UrinatingAbility rdf:type owl:Class ;
rdfs:subClassOf :BodyAbility .

http://www.OntoCarer.org/BodyAbilities.owl#UrinatingAbilityAssister
:UrinatingAbilityAssister rdf:type owl:Class ;
rdfs:subClassOf :BodyAbilityAssister .

http://www.OntoCarer.org/BodyAbilities.owl#WalkingAbility
:WalkingAbility rdf:type owl:Class ;
rdfs:subClassOf :BodyAbility .

http://www.OntoCarer.org/BodyAbilities.owl#WalkingAbilityAssister
:WalkingAbilityAssister rdf:type owl:Class ;
rdfs:subClassOf :BodyAbilityAssister .

Generated by the OWL API (version 4.5.9.2019-02-01T07:24:44Z)
<https://github.com/owlcs/owlapi>

SocialAction.owl

```
@prefix : <http://www.OntoCarer.org/SocialAction.owl#> .
@prefix owl: <http://www.w3.org/2002/07/owl#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix xml: <http://www.w3.org/XML/1998/namespace> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@base <http://www.OntoCarer.org/SocialAction.owl> .

<http://www.OntoCarer.org/SocialAction.owl> rdf:type owl:Ontology ;
      owl:imports <file:/Users/michaelulman/Documents/Ontologies/Agent.owl>
.

#####
# Object Properties
#####

### http://www.OntoCarer.org/SocialAction.owl#socialActionAssisterActionHasAgent
:socialActionAssisterActionHasAgent rdf:type owl:ObjectProperty ;
   rdfs:domain :SocialActionAssisterAction ;
   rdfs:range <http://www.OntoCarer.org/Agent.owl#Agent> .

### http://www.OntoCarer.org/SocialAction.owl#socialActionAssisterActionInRole
```

:socialActionAssisterActionInRole rdf:type owl:ObjectProperty .

http://www.OntoCarer.org/SocialAction.owl#socialActionAssisterAidHasAgent
:socialActionAssisterAidHasAgent rdf:type owl:ObjectProperty ;
rdfs:domain :SocialActionAssisterAid ;
rdfs:range <http://www.OntoCarer.org/Agent.owl#Agent> .

http://www.OntoCarer.org/SocialAction.owl#socialActionAssisterAidHasInformation
:socialActionAssisterAidHasInformation rdf:type owl:ObjectProperty .

http://www.OntoCarer.org/SocialAction.owl#socialActionAssisterHasAgent
:socialActionAssisterHasAgent rdf:type owl:ObjectProperty ;
rdfs:domain :SocialActionAssister ;
rdfs:range <http://www.OntoCarer.org/Agent.owl#Agent> .

http://www.OntoCarer.org/SocialAction.owl#socialActionHasAgent
:socialActionHasAgent rdf:type owl:ObjectProperty ;
rdfs:domain :SocialAction ;
rdfs:range <http://www.OntoCarer.org/Agent.owl#Agent> .

http://www.OntoCarer.org/SocialAction.owl#socialActionInRole
:socialActionInRole rdf:type owl:ObjectProperty ;
rdfs:domain :SocialAction ;
rdfs:range <http://www.OntoCarer.org/Agent.owl#Role> .

Data properties
#####

http://www.OntoCarer.org/SocialAction.owl#socialActionAssisterActionHasInformation
:socialActionAssisterActionHasInformation rdf:type owl:DatatypeProperty ;
rdfs:domain :SocialActionAssisterAction ;
rdfs:range xsd:string .

<http://www.OntoCarer.org/SocialAction.owl#socialActionAssisterAidHasInformation>
:socialActionAssisterAidHasInformation rdf:type owl:DatatypeProperty .

<http://www.OntoCarer.org/SocialAction.owl#socialActionAssisterHasInformation>
:socialActionAssisterHasInformation rdf:type owl:DatatypeProperty ;
rdfs:domain :SocialActionAssister ;
rdfs:range xsd:string .

<http://www.OntoCarer.org/SocialAction.owl#socialActionHasDesireIntentionLevel>
:socialActionHasDesireIntentionLevel rdf:type owl:DatatypeProperty ;
rdfs:domain :SocialAction ;
rdfs:range xsd:integer .

```
### http://www.OntoCarer.org/SocialAction.owl#socialActionHasInformation
:socialActionHasInformation rdf:type owl:DatatypeProperty ;
    rdfs:domain :SocialAction ;
    rdfs:range xsd:string .
```

```
### http://www.OntoCarer.org/SocialAction.owl#socialActionHasQualifier
:socialActionHasQualifier rdf:type owl:DatatypeProperty ;
    rdfs:domain :SocialAction ;
    rdfs:range xsd:integer .
```

```
#####
# Classes
#####
```

```
### http://www.OntoCarer.org/SocialAction.owl#AnswerQuestionsSocialAction
:AnswerQuestionsSocialAction rdf:type owl:Class ;
    rdfs:subClassOf :SocialAction .
```

```
### http://www.OntoCarer.org/SocialAction.owl#AnswerQuestionsSocialActionAssisterAction
:AnswerQuestionsSocialActionAssisterAction rdf:type owl:Class ;
    rdfs:subClassOf :SocialActionAssisterAction .
```

```
### http://www.OntoCarer.org/SocialAction.owl#AnswerQuestionsSocialActionAssisterAid
:AnswerQuestionsSocialActionAssisterAid rdf:type owl:Class ;
    rdfs:subClassOf :SocialActionAssisterAid .
```

```
### http://www.OntoCarer.org/SocialAction.owl#AskQuestionsSocialAction
:AskQuestionsSocialAction rdf:type owl:Class ;
    rdfs:subClassOf :SocialAction .
```

```
### http://www.OntoCarer.org/SocialAction.owl#AskQuestionsSocialActionAssisterAction
:AskQuestionsSocialActionAssisterAction rdf:type owl:Class ;
    rdfs:subClassOf :SocialActionAssisterAction .
```

```
### http://www.OntoCarer.org/SocialAction.owl#AskQuestionsSocialActionAssisterAid
:AskQuestionsSocialActionAssisterAid rdf:type owl:Class ;
    rdfs:subClassOf :SocialActionAssisterAid .
```

```
### http://www.OntoCarer.org/SocialAction.owl#CheckOutLibraryBookSocialAction
:CheckOutLibraryBookSocialAction rdf:type owl:Class ;
    rdfs:subClassOf :SocialAction .
```

<http://www.OntoCarer.org/SocialAction.owl#CheckOutLibraryBookSocialAction>
AssisterAction
:CheckOutLibraryBookSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#CheckOutLibraryBookSocialAction>
AssisterAid
:CheckOutLibraryBookSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#CleanSelfAfterToiletSocialAction>
:CleanSelfAfterToiletSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#CleanSelfAfterToiletSocialAction>
AssisterAction
:CleanSelfAfterToiletSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#CleanSelfAfterToiletSocialAction>
AssisterAid
:CleanSelfAfterToiletSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#DeliverAssisterAidSocialAction>
:DeliverAssisterAidSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#DeliverAssisterAidSocialAction>
AssisterAction
:DeliverAssisterAidSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#DeliverAssisterAidSocialAction>
AssisterAid
:DeliverAssisterAidSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#DeliverCafeFoodOrderSocialAction>
:DeliverCafeFoodOrderSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#DeliverCafeFoodOrderSocialAction>
AssisterAid
:DeliverCafeFoodOrderSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#DeliverEquipmentSocialAction>
:DeliverEquipmentSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#DeliverEquipmentSocialAction>
AssisterAction
:DeliverEquipmentSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#DeliverEquipmentSocialAction>
AssisterAid
:DeliverEquipmentSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#DoPracticalTasksSocialAction>
:DoPracticalTasksSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#DoPracticalTasksSocialAction>
AssisterAction
:DoPracticalTasksSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#DoPracticalTasksSocialAction>
AssisterAid
:DoPracticalTasksSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#DrySelfSocialAction>
:DrySelfSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#DrySelfSocialActionAssisterAction>
:DrySelfSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#DrySelfSocialActionAssisterAid>
:DrySelfSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#EnrolOnCourseSocialAction>
:EnrolOnCourseSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#EnrolOnCourseSocialActionAssisterAction>
:EnrolOnCourseSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#EnrolOnCourseSocialActionAssisterAid>
:EnrolOnCourseSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#EnrolStudentOnCourseSocialAction>
:EnrolStudentOnCourseSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#EnrolStudentOnCourseSocialActionAssisterAction>
AssisterAction
:EnrolStudentOnCourseSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#EnrolStudentOnCourseSocialActionAssisterAid>
AssisterAid
:EnrolStudentOnCourseSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#ExitTeachingRoomSocialAction>
:ExitTeachingRoomSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#ExitTeachingRoomSocialActionAssisterAction>
AssisterAction
:ExitTeachingRoomSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#ExitTeachingRoomSocialActionAssisterAid>
AssisterAid
:ExitTeachingRoomSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#ExitToiletSocialActionAssisterAction>
Action
:ExitToiletSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#ExitToiletSocialActionAssisterAid>
:ExitToiletSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#FeedSelfSocialAction>
:FeedSelfSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#FeedSelfSocialActionAssisterAction>
AssisterAction
:FeedSelfSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#FeedSelfSocialActionAssisterAid>
:FeedSelfSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#FindAnswersSocialAction>
:FindAnswersSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#FindAnswersSocialActionAssisterAction>
:FindAnswersSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#FindAnswersSocialActionAssisterAid>
:FindAnswersSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#FindBookOnShelvesSocialAction>
:FindBookOnShelvesSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#FindBookOnShelvesSocialActionAssisterAction>
:FindBookOnShelvesSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#FindBookOnShelvesSocialActionAssisterAid>
:FindBookOnShelvesSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#FindInformationToAnswerQuestionsSocialAction>
:FindInformationToAnswerQuestionsSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#FindInformationToAnswerQuestionsSocialActionAssisterAction>
:FindInformationToAnswerQuestionsSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#FindInformationToAnswerQuestionsSocialActionAssisterAid>
:FindInformationToAnswerQuestionsSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#FindLibrarySocialAction>
:FindLibrarySocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#FindLibrarySocialActionAssisterAction>
:FindLibrarySocialActionAssisterAction

:FindLibrarySocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#FindLibrarySocialActionAssisterAid>

:FindLibrarySocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#FindTeachingRoomSocialAction>
:FindTeachingRoomSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#FindTeachingRoomSocialActionAssisterAction>
:FindTeachingRoomSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#FindTeachingRoomSocialActionAssisterAid>

:FindTeachingRoomSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#FindToiletSocialAction>
:FindToiletSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#FindToiletSocialActionAssisterAction>

:FindToiletSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#FindToiletSocialActionAssisterAid>
:FindToiletSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#HearLectureSocialAction>
:HearLectureSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#HearLectureSocialActionAssisterAction>

:HearLectureSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#HearLectureSocialActionAssisterAid>

:HearLectureSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#MakeCafeFoodOrderSocialAction>

:MakeCafeFoodOrderSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#MakeCafeFoodOrderSocialActionAssisterAction>
:MakeCafeFoodOrderSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#MakeCafeFoodOrderSocialActionAssisterAid>
AssisterAid
:MakeCafeFoodOrderSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#MakeSignLanguageSocialAction>
:MakeSignLanguageSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#MakeSignLanguageSocialActionAssisterAction>
AssisterAction
:MakeSignLanguageSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#MakeSignLanguageSocialActionAssisterAid>
AssisterAid
:MakeSignLanguageSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#NavigateToLibrarySocialAction>
:NavigateToLibrarySocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#NavigateToLibrarySocialActionAssisterAction>
:NavigateToLibrarySocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#NavigateToLibrarySocialActionAssisterAid>
AssisterAid
:NavigateToLibrarySocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#NavigateToTeachingRoomSocialAction>
Action
:NavigateToTeachingRoomSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#NavigateToTeachingRoomSocialActionAssisterAction>
ActionAssisterAction
:NavigateToTeachingRoomSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#NavigateToTeachingRoomSocialActionAssisterAid>
ActionAssisterAid

:NavigateToTeachingRoomSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#NavigateToToiletSocialAction>
:NavigateToToiletSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#NavigateToToiletSocialActionAssisterAction>
:NavigateToToiletSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#NavigateToToiletSocialActionAssisterAid>
:NavigateToToiletSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#PayCourseFeesSocialActionAssisterAid>
:PayCourseFeesSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#PayCourseFeesSocialAction>
:PayCourseFeesSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#PayCourseFeesSocialActionAssisterAction>
:PayCourseFeesSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#PayForCafeFoodOrderSocialAction>
:PayForCafeFoodOrderSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#PayForCafeFoodOrderSocialActionAssisterAction>
:PayForCafeFoodOrderSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#PayForCafeFoodOrderSocialActionAssisterAid>
:PayForCafeFoodOrderSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#ProcessCheckOutLibraryBookSocialActionAssisterAction>
:ProcessCheckOutLibraryBookSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#ProcessCheckOutLibraryBookSocialActionAssisterAid>
:ProcessCheckOutLibraryBookSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#ProcessCheckoutLibraryBookSocialAction>
:ProcessCheckoutLibraryBookSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#ProcessReturnOfLibraryBookSocialAction>
:ProcessReturnOfLibraryBookSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#ProcessReturnOfLibraryBookSocialActionAssisterAction>
:ProcessReturnOfLibraryBookSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#PutClothesOnSocialAction>
:PutClothesOnSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#PutClothesOnSocialActionAssisterAction>
:PutClothesOnSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#PutClothesOnSocialActionAssisterAid>
:PutClothesOnSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#RemoveClothesActionSocialActionAssisterAction>
:RemoveClothesActionSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#RemoveClothesActionSocialActionAssisterAid>
:RemoveClothesActionSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#RemoveClothesSocialAction>
:RemoveClothesSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#RemoveRelevantClothesSocialAction>
:RemoveRelevantClothesSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#RemoveRelevantClothesSocialActionAssisterAction>
:RemoveRelevantClothesSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#RemoveRelevantSocialActionAssisterAid>
AssisterAid
:RemoveRelevantSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#RestoreRelevantClothesSocialAction>
Action
:RestoreRelevantClothesSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#RestoreRelevantClothesSocialActionAssisterAction>
ActionAssisterAction
:RestoreRelevantClothesSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#RestoreRelevantSocialActionAssisterAid>
:RestoreRelevantSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#ReturnOfLibraryBookSocialAction>
:ReturnOfLibraryBookSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#ReturnOfLibraryBookSocialActionAssisterAction>
AssisterAction
:ReturnOfLibraryBookSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#ReturnOfLibraryBookSocialActionAssisterAid>
AssisterAid
:ReturnOfLibraryBookSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#SearchCatalogueForItemSocialAction>
Action
:SearchCatalogueForItemSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#SearchCatalogueForItemSocialActionAssisterAction>
ActionAssisterAction

:SearchCatalogueForItemSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#SearchCatalogueForItemSocialActionAssisterAid>

:SearchCatalogueForItemSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#SeeCafeFoodMenuSocialAction>

:SeeCafeFoodMenuSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#SeeCafeFoodMenuSocialActionAssisterAction>

:SeeCafeFoodMenuSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#SeeCafeFoodMenuSocialActionAssisterAid>

:SeeCafeFoodMenuSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#SeeLectureSocialAction>

:SeeLectureSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#SeeLectureSocialActionAssisterAction>

:SeeLectureSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#SeeLectureSocialActionAssisterAid>

:SeeLectureSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#SeeSignLanguageActionSocialAction>

:SeeSignLanguageActionSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#SeeSignLanguageActionSocialActionAssisterAction>

:SeeSignLanguageActionSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#SeeSignLanguageActionSocialActionAssisterAid>

:SeeSignLanguageActionSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#SetUpAssisterAidSocialAction>
:SetUpAssisterAidSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#SetUpAssisterAidSocialActionAssisterAction>
AssisterAction
:SetUpAssisterAidSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#SetUpAssisterAidSocialActionAssisterAid>
AssisterAid
:SetUpAssisterAidSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#SetUpEquipmentSocialAction>
:SetUpEquipmentSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#SetUpEquipmentSocialActionAssisterAction>
AssisterAction
:SetUpEquipmentSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#SetUpEquipmentSocialActionAssisterAid>
AssisterAid
:SetUpEquipmentSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#ShowLectureSlidesSocialAction>
:ShowLectureSlidesSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#ShowLectureSlidesSocialActionAssisterAction>
AssisterAction
:ShowLectureSlidesSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#ShowLectureSlidesSocialActionAssisterAid>
AssisterAid
:ShowLectureSlidesSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#SocialAction>
:SocialAction rdf:type owl:Class ;
rdfs:subClassOf owl:Thing .

<http://www.OntoCarer.org/SocialAction.owl#SocialActionAssister>
:SocialActionAssister rdf:type owl:Class .

<http://www.OntoCarer.org/SocialAction.owl#SocialActionAssisterAction>
:SocialActionAssisterAction rdf:type owl:Class ;
 rdfs:subClassOf :SocialAction ,
 :SocialActionAssister .

<http://www.OntoCarer.org/SocialAction.owl#SocialActionAssisterAid>
:SocialActionAssisterAid rdf:type owl:Class ;
 rdfs:subClassOf :SocialActionAssister .

<http://www.OntoCarer.org/SocialAction.owl#SpeakLectureSocialAction>
:SpeakLectureSocialAction rdf:type owl:Class ;
 rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#SpeakLectureSocialActionAssisterAction>
:SpeakLectureSocialActionAssisterAction rdf:type owl:Class ;
 rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#SpeakLectureSocialActionAssisterAid>
:SpeakLectureSocialActionAssisterAid rdf:type owl:Class ;
 rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#SubmitAssignmentSocialAction>
:SubmitAssignmentSocialAction rdf:type owl:Class ;
 rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#SubmitAssignmentSocialActionAssisterAction>
:SubmitAssignmentSocialActionAssisterAction rdf:type owl:Class ;
 rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#SubmitAssignmentSocialActionAssisterAid>
:SubmitAssignmentSocialActionAssisterAid rdf:type owl:Class ;
 rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#TakeCafeFoodOrderSocialAction>
:TakeCafeFoodOrderSocialAction rdf:type owl:Class ;
 rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#TakeCafeFoodOrderSocialActionAssisterAction>
:TakeCafeFoodOrderSocialActionAssisterAction rdf:type owl:Class ;
 rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#TakeCafeFoodOrderSocialActionAssisterAid>

:TakeCafeFoodOrderSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#TakeNotesFromSpeakerSocialAction>

:TakeNotesFromSpeakerSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#TakeNotesFromSpeakerSocialActionAssisterAction>

:TakeNotesFromSpeakerSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#TakeNotesFromSpeakerSocialActionAssisterAid>

:TakeNotesFromSpeakerSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#TakeNotesFromTextSocialAction>

:TakeNotesFromTextSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#TakeNotesFromTextSocialActionAssisterAction>

:TakeNotesFromTextSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#TakeNotesFromTextSocialActionAssisterAid>

:TakeNotesFromTextSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#TakePaymentForCafeFoodOrderSocialAction>

:TakePaymentForCafeFoodOrderSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#TakePaymentForCafeFoodOrderSocialActionAssisterAid>

:TakePaymentForCafeFoodOrderSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#TakePaymentForCourseFeesSocialAction>

:TakePaymentForCourseFeesSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#TakePaymentForCourseFees>
SocialActionAssisterAction
:TakePaymentForCourseFeesSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#TakePaymentForCourseFees>
SocialActionAssisterAid
:TakePaymentForCourseFeesSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#TakeSecurityAction>
SocialAction
:TakeSecurityActionSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#TakeSecurityActionSocial>
ActionAssisterAction
:TakeSecurityActionSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#TakeSecurityActionSocial>
ActionAssisterAid
:TakeSecurityActionSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#TranslateSignLanguageTo>
SpokenLanguageSocialAction
:TranslateSignLanguageToSpokenLanguageSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#TranslateSignLanguageTo>
SpokenLanguageSocialActionAssisterAction
:TranslateSignLanguageToSpokenLanguageSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#TranslateSignLanguageTo>
SpokenLanguageSocialActionAssisterAid
:TranslateSignLanguageToSpokenLanguageSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#TranslateSpokenLanguageTo>
SignLanguageSocialAction
:TranslateSpokenLanguageToSignLanguageSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#TranslateSpokenLanguageTo>
SignLanguageSocialActionAssisterAction

:TranslateSpokenLanguageToSignLanguageSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#TranslateSpokenLanguageToSignLanguageSocialActionAssisterAid>
:TranslateSpokenLanguageToSignLanguageSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#UnderstandSignLanguageSocialAction>
:UnderstandSignLanguageSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#UnderstandSignLanguageSocialActionAssisterAction>
:UnderstandSignLanguageSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#UnderstandSignLanguageSocialActionAssisterAid>
:UnderstandSignLanguageSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#UseCutlerySocialAction>
:UseCutlerySocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#UseCutlerySocialActionAssisterAction>
:UseCutlerySocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#UseCutlerySocialActionAssisterAid>
:UseCutlerySocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#UseCutleryToFeedSocialAction>
:UseCutleryToFeedSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#UseCutleryToFeedSocialActionAssisterAction>
:UseCutleryToFeedSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#UseCutleryToFeedSocialAction>
AssisterAid
:UseCutleryToFeedSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#UseDrinkingUtensilSocialAction>
:UseDrinkingUtensilSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#UseDrinkingUtensilSocialAction>
AssisterAction
:UseDrinkingUtensilSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#UseDrinkingUtensilSocialAction>
AssisterAid
:UseDrinkingUtensilSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#WashSelfSocialAction>
:WashSelfSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#WashSelfSocialActionAssister>
Action
:WashSelfSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#WashSelfSocialActionAssisterAid>
:WashSelfSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#WriteAssignmentSocialAction>
:WriteAssignmentSocialAction rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#WriteAssignmentSocialAction>
AssisterAction
:WriteAssignmentSocialActionAssisterAction rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction .

<http://www.OntoCarer.org/SocialAction.owl#WriteAssignmentSocialAction>

AssisterAid
:WriteAssignmentSocialActionAssisterAid rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

<http://www.OntoCarer.org/SocialAction.owl#HearQuestions&Answers>
SocialAction
<[http://www.OntoCarer.org/SocialAction.owl#HearQuestions&AnswersSocial
Action](http://www.OntoCarer.org/SocialAction.owl#HearQuestions&AnswersSocialAction)> rdf:type owl:Class ;
rdfs:subClassOf :SocialAction .

<http://www.OntoCarer.org/SocialAction.owl#HearQuestions&Answers>
SocialActionAssisterAction
<[http://www.OntoCarer.org/SocialAction.owl#HearQuestions&AnswersSocial
ActionAssisterAction](http://www.OntoCarer.org/SocialAction.owl#HearQuestions&AnswersSocialActionAssisterAction)> rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAction
.

<http://www.OntoCarer.org/SocialAction.owl#HearQuestions&Answers>
SocialActionAssisterAid
<<http://www.OntoCarer.org/SocialAction.owl#HearQuestions&AnswersSocialActionAssisterAid>>
rdf:type owl:Class ;
rdfs:subClassOf :SocialActionAssisterAid .

Generated by the OWL API (version 4.5.9.2019-02-01T07:24:44Z)
<https://github.com/owlcs/owlapi>

Organisation.owl

@prefix : <<http://www.OntoCarer.org/Organisation.owl#>> .

```

@prefix owl: <http://www.w3.org/2002/07/owl#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix xml: <http://www.w3.org/XML/1998/namespace> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@base <http://www.OntoCarer.org/Organisation.owl> .

<http://www.OntoCarer.org/Organisation.owl> rdf:type owl:Ontology ;
      owl:imports <file:/Users/michaelulman/Documents/Ontologies/Agent.owl>
,
      <file:/Users/michaelulman/Documents/Ontologies/Buildings.owl> .

```

```

#####
# Object Properties
#####

```

```

### http://www.OntoCarer.org/Organisation.owl#organisationHasAgent
:organisationHasAgent rdf:type owl:ObjectProperty ;
  rdfs:domain :Organisation ;
  rdfs:range <http://www.OntoCarer.org/Agent.owl#Agent> .

```

```

### http://www.OntoCarer.org/Organisation.owl#organisationHasBuilding
:organisationHasBuilding rdf:type owl:ObjectProperty ;
  rdfs:domain :Organisation ;
  rdfs:range <http://www.OntoCarer.org/Buildings.owl#Building> .

```

```

### http://www.OntoCarer.org/Organisation.owl#organisationHasRole
:organisationHasRole rdf:type owl:ObjectProperty ;
  rdfs:domain :Organisation ;
  rdfs:range <http://www.OntoCarer.org/Agent.owl#Role> .

```

```

### http://www.OntoCarer.org/Organisation.owl#organisationHasSituationActivity
:organisationHasSituationActivity rdf:type owl:ObjectProperty ;
  rdfs:domain :Organisation ;
  rdfs:range :SituationActivity .

```

```

### http://www.OntoCarer.org/Organisation.owl#situationActivityHasAgent
:situationActivityHasAgent rdf:type owl:ObjectProperty ;
  rdfs:domain :SituationActivity ;
  rdfs:range <http://www.OntoCarer.org/Agent.owl#Agent> .

```

```

### http://www.OntoCarer.org/Organisation.owl#situationActivityHasLocation
:situationActivityHasLocation rdf:type owl:ObjectProperty ;
  rdfs:domain :SituationActivity ;
  rdfs:range <http://www.OntoCarer.org/Buildings.owl#Location> .

```

```

### http://www.OntoCarer.org/Organisation.owl#situationActivityHas
Organisation
:situationActivityHasOrganisation rdf:type owl:ObjectProperty ;
  rdfs:domain :SituationActivity ;
  rdfs:range :Organisation .

```



```
### http://www.OntoCarer.org/Organisation.owl#situationActivityHasRoom
:situationActivityHasRoom rdf:type owl:ObjectProperty ;
    rdfs:domain :SituationActivity ;
    rdfs:range <http://www.OntoCarer.org/Buildings.owl#Room> .
```

```
#####
# Data properties
#####
```

```
### http://www.OntoCarer.org/Organisation.owl#organisationHasInformation
:organisationHasInformation rdf:type owl:DatatypeProperty ;
    rdfs:domain :Organisation ;
    rdfs:range xsd:string .
```

```
### http://www.OntoCarer.org/Organisation.owl#organisationHasName
:organisationHasName rdf:type owl:DatatypeProperty ;
    rdfs:domain :Organisation ;
    rdfs:range xsd:string .
```

```
### http://www.OntoCarer.org/Organisation.owl#situationActivityHasInformation
:situationActivityHasInformation rdf:type owl:DatatypeProperty ;
    rdfs:domain :SituationActivity ;
    rdfs:range xsd:string .
```

```
#####
# Classes
#####
```

```
### http://www.OntoCarer.org/Organisation.owl#AskingForInformationSituation
:AskingForInformationSituation rdf:type owl:Class ;
    rdfs:subClassOf :SituationActivity .
```

```
### http://www.OntoCarer.org/Organisation.owl#BathingSituation
:BathingSituation rdf:type owl:Class ;
    rdfs:subClassOf :SituationActivity .
```

```
### http://www.OntoCarer.org/Organisation.owl#CollegeOrganisation
:CollegeOrganisation rdf:type owl:Class ;
    rdfs:subClassOf :EducationOrganisation .
```

```
### http://www.OntoCarer.org/Organisation.owl#CookingSituation
:CookingSituation rdf:type owl:Class ;
    rdfs:subClassOf :SituationActivity .
```

```
### http://www.OntoCarer.org/Organisation.owl#DrinkingSituation
:DrinkingSituation rdf:type owl:Class ;
    rdfs:subClassOf :SituationActivity .
```

```
### http://www.OntoCarer.org/Organisation.owl#EatingSituation
```

:EatingSituation rdf:type owl:Class ;
rdfs:subClassOf :SituationActivity .

http://www.OntoCarer.org/Organisation.owl#EducationOrganisation
:EducationOrganisation rdf:type owl:Class ;
rdfs:subClassOf :Organisation .

http://www.OntoCarer.org/Organisation.owl#JuniorSchoolOrganisation
:JuniorSchoolOrganisation rdf:type owl:Class ;
rdfs:subClassOf :SchoolOrganisation .

http://www.OntoCarer.org/Organisation.owl#LectureSituation
:LectureSituation rdf:type owl:Class ;
rdfs:subClassOf :SituationActivity .

http://www.OntoCarer.org/Organisation.owl#ListeningRadioSituation
:ListeningRadioSituation rdf:type owl:Class ;
rdfs:subClassOf :SituationActivity .

http://www.OntoCarer.org/Organisation.owl#MeetingSituation
:MeetingSituation rdf:type owl:Class ;
rdfs:subClassOf :SituationActivity .

http://www.OntoCarer.org/Organisation.owl#Organisation
:Organisation rdf:type owl:Class .

http://www.OntoCarer.org/Organisation.owl#PlayingSportSituation
:PlayingSportSituation rdf:type owl:Class ;
rdfs:subClassOf :SituationActivity .

http://www.OntoCarer.org/Organisation.owl#PrimarySchoolOrganisation
:PrimarySchoolOrganisation rdf:type owl:Class ;
rdfs:subClassOf :SchoolOrganisation .

http://www.OntoCarer.org/Organisation.owl#ReadingSituation
:ReadingSituation rdf:type owl:Class ;
rdfs:subClassOf :SituationActivity .

http://www.OntoCarer.org/Organisation.owl#SchoolOrganisation
:SchoolOrganisation rdf:type owl:Class ;
rdfs:subClassOf :EducationOrganisation .

http://www.OntoCarer.org/Organisation.owl#SecondarySchoolOrganisation
:SecondarySchoolOrganisation rdf:type owl:Class ;
rdfs:subClassOf :SchoolOrganisation .

http://www.OntoCarer.org/Organisation.owl#ServingSituation
:ServingSituation rdf:type owl:Class ;

rdfs:subClassOf :SituationActivity .

http://www.OntoCarer.org/Organisation.owl#ShoppingSituation
:ShoppingSituation rdf:type owl:Class ;
rdfs:subClassOf :SituationActivity .

http://www.OntoCarer.org/Organisation.owl#ShoweringSituation
:ShoweringSituation rdf:type owl:Class ;
rdfs:subClassOf :SituationActivity .

http://www.OntoCarer.org/Organisation.owl#SittingSituation
:SittingSituation rdf:type owl:Class ;
rdfs:subClassOf :SituationActivity .

http://www.OntoCarer.org/Organisation.owl#SituationActivity
:SituationActivity rdf:type owl:Class .

http://www.OntoCarer.org/Organisation.owl#SleepingSituation
:SleepingSituation rdf:type owl:Class ;
rdfs:subClassOf :SituationActivity .

http://www.OntoCarer.org/Organisation.owl#SocialisingSituation
:SocialisingSituation rdf:type owl:Class ;
rdfs:subClassOf :SituationActivity .

http://www.OntoCarer.org/Organisation.owl#StandingSituation
:StandingSituation rdf:type owl:Class ;
rdfs:subClassOf :SituationActivity .

http://www.OntoCarer.org/Organisation.owl#TeachingSituation
:TeachingSituation rdf:type owl:Class ;
rdfs:subClassOf :SituationActivity .

http://www.OntoCarer.org/Organisation.owl#ToiletingSituation
:ToiletingSituation rdf:type owl:Class ;
rdfs:subClassOf :SituationActivity .

http://www.OntoCarer.org/Organisation.owl#TravellingSituation
:TravellingSituation rdf:type owl:Class ;
rdfs:subClassOf :SituationActivity .

http://www.OntoCarer.org/Organisation.owl#UndressingSituation
:UndressingSituation rdf:type owl:Class ;
rdfs:subClassOf :SituationActivity .

http://www.OntoCarer.org/Organisation.owl#UniversityOrganisation
:UniversityOrganisation rdf:type owl:Class ;
rdfs:subClassOf :EducationOrganisation .

```
### http://www.OntoCarer.org/Organisation.owl#WaitingSituation
:WaitingSituation rdf:type owl:Class ;
    rdfs:subClassOf :SituationActivity .
```

```
### http://www.OntoCarer.org/Organisation.owl#Washingsituation
:Washingsituation rdf:type owl:Class ;
    rdfs:subClassOf :SituationActivity .
```

```
### http://www.OntoCarer.org/Organisation.owl#WatchingFilmSituation
:WatchingFilmSituation rdf:type owl:Class ;
    rdfs:subClassOf :SituationActivity .
```

```
### http://www.OntoCarer.org/Organisation.owl#WatchingTVSituation
:WatchingTVSituation rdf:type owl:Class ;
    rdfs:subClassOf :SituationActivity .
```

```
### http://www.OntoCarer.org/Organisation.owl#WebSurfingSituation
:WebSurfingSituation rdf:type owl:Class ;
    rdfs:subClassOf :SituationActivity .
```

```
### http://www.OntoCarer.org/Organisation.owl#WritingSituation
:WritingSituation rdf:type owl:Class ;
    rdfs:subClassOf :SituationActivity .
```

```
### Generated by the OWL API (version 4.5.9.2019-02-01T07:24:44Z)
https://github.com/owlcs/owlapi
```

Buildings.owl

@prefix : <http://www.OntoCarer.org/Buildings.owl#> .

@prefix owl: <http://www.w3.org/2002/07/owl#> .

@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .

@prefix xml: <http://www.w3.org/XML/1998/namespace> .

@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .

@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .

@base <http://www.OntoCarer.org/Buildings.owl> .

<http://www.OntoCarer.org/Buildings.owl> rdf:type owl:Ontology ;
owl:imports <file:/Users/michaelulman/Documents/Ontologies/Agent.owl> ,

<file:/Users/michaelulman/Documents/Ontologies/Organisation.owl> .

#####

Object Properties

#####

http://www.OntoCarer.org/Buildings.owl#buildingBelongsToOrganisation
:buildingBelongsToOrganisation rdf:type owl:ObjectProperty ;
rdfs:domain :Building ;
rdfs:range <http://www.OntoCarer.org/Organisation.owl#Organisation> .

http://www.OntoCarer.org/Buildings.owl#buildingHasAgent
:buildingHasAgent rdf:type owl:ObjectProperty ;
rdfs:domain :Building ;
rdfs:range <http://www.OntoCarer.org/Agent.owl#Agent> .

http://www.OntoCarer.org/Buildings.owl#buildingHasAssistingFeatures
:buildingHasAssistingFeatures rdf:type owl:ObjectProperty ;
rdfs:domain :Building ;
rdfs:range :AssistingFeatures .

http://www.OntoCarer.org/Buildings.owl#buildingHasBuildingPassage
:buildingHasBuildingPassage rdf:type owl:ObjectProperty ;
rdfs:domain :Building ;
rdfs:range :BuildingPassage .

http://www.OntoCarer.org/Buildings.owl#buildingHasCorridor
:buildingHasCorridor rdf:type owl:ObjectProperty ;
rdfs:domain :Building ;
rdfs:range :Corridor .

http://www.OntoCarer.org/Buildings.owl#buildingHasDoor
:buildingHasDoor rdf:type owl:ObjectProperty ;
rdfs:domain :Building ;
rdfs:range :Door .

http://www.OntoCarer.org/Buildings.owl#buildingHasEntrance
:buildingHasEntrance rdf:type owl:ObjectProperty ;
rdfs:domain :Building ;
rdfs:range :Entrance .

http://www.OntoCarer.org/Buildings.owl#buildingHasEscalator
:buildingHasEscalator rdf:type owl:ObjectProperty ;
 rdfs:domain :Building ;
 rdfs:range :Escalator .

http://www.OntoCarer.org/Buildings.owl#buildingHasExit
:buildingHasExit rdf:type owl:ObjectProperty ;
 rdfs:domain :Building ;
 rdfs:range :Exit .

http://www.OntoCarer.org/Buildings.owl#buildingHasFireExit
:buildingHasFireExit rdf:type owl:ObjectProperty .

http://www.OntoCarer.org/Buildings.owl#buildingHasJunction
:buildingHasJunction rdf:type owl:ObjectProperty ;
 rdfs:domain :Building ;
 rdfs:range :Junction .

http://www.OntoCarer.org/Buildings.owl#buildingHasLift
:buildingHasLift rdf:type owl:ObjectProperty ;
 rdfs:domain :Building ;
 rdfs:range :Lift .

http://www.OntoCarer.org/Buildings.owl#buildingHasPortal
:buildingHasPortal rdf:type owl:ObjectProperty ;
 rdfs:domain :Building ;
 rdfs:range :Portal .

http://www.OntoCarer.org/Buildings.owl#buildingHasRoom
:buildingHasRoom rdf:type owl:ObjectProperty ;
 rdfs:domain :Building ;
 rdfs:range :Room .

http://www.OntoCarer.org/Buildings.owl#buildingHasStairs
:buildingHasStairs rdf:type owl:ObjectProperty ;
 rdfs:domain :Building ;
 rdfs:range :Stairs .

http://www.OntoCarer.org/Buildings.owl#buildingPassageHasAgent
:buildingPassageHasAgent rdf:type owl:ObjectProperty ;
 rdfs:domain :BuildingPassage ;
 rdfs:range <http://www.OntoCarer.org/Agent.owl#Agent> .

http://www.OntoCarer.org/Buildings.owl#buildingPassageHasAssistingFeatures
:buildingPassageHasAssistingFeatures rdf:type owl:ObjectProperty ;
 rdfs:domain :BuildingPassage ;
 rdfs:range :AssistingFeatures .

```
### http://www.OntoCarer.org/Buildings.owl#buildingPassageHasEntrance
:buildingPassageHasEntrance rdf:type owl:ObjectProperty ;
    rdfs:domain :BuildingPassage ;
    rdfs:range :Entrance .
```

```
### http://www.OntoCarer.org/Buildings.owl#buildingPassageHasExit
:buildingPassageHasExit rdf:type owl:ObjectProperty ;
    rdfs:domain :BuildingPassage ;
    rdfs:range :Exit .
```

```
### http://www.OntoCarer.org/Buildings.owl#buildingPassageHasFireExit
:buildingPassageHasFireExit rdf:type owl:ObjectProperty ;
    rdfs:domain :BuildingPassage ;
    rdfs:range :FireExit .
```

```
### http://www.OntoCarer.org/Buildings.owl#buildingPassageHasFloor
:buildingPassageHasFloor rdf:type owl:ObjectProperty ;
    rdfs:domain :BuildingPassage ;
    rdfs:range :Floor .
```

```
### http://www.OntoCarer.org/Buildings.owl#buildingPassageHasPortal
:buildingPassageHasPortal rdf:type owl:ObjectProperty ;
    rdfs:domain :BuildingPassage ;
    rdfs:range :Portal .
```

```
### http://www.OntoCarer.org/Buildings.owl#buildingPassageHasSurfaceOrientation
:buildingPassageHasSurfaceOrientation rdf:type owl:ObjectProperty ;
    rdfs:domain :BuildingPassage ;
    rdfs:range :SurfaceOrientation .
```

```
### http://www.OntoCarer.org/Buildings.owl#buildingSpaceHasAgent
:buildingSpaceHasAgent rdf:type owl:ObjectProperty ;
    rdfs:domain :BuildingSpace ;
    rdfs:range <http://www.OntoCarer.org/Agent.owl#Agent> .
```

```
### http://www.OntoCarer.org/Buildings.owl#buildingSpaceHasSituationActivity
:buildingSpaceHasSituationActivity rdf:type owl:ObjectProperty ;
    rdfs:domain :BuildingSpace ;
    rdfs:range <http://www.OntoCarer.org/Organisation.owl#SituationActivity> .
```

```
### http://www.OntoCarer.org/Buildings.owl#buildingSpaceHasSurfaceOrientation
:buildingSpaceHasSurfaceOrientation rdf:type owl:ObjectProperty ;
    rdfs:domain :BuildingSpace ;
    rdfs:range :SurfaceOrientation .
```

```
### http://www.OntoCarer.org/Buildings.owl#corridorHasAgent
:corridorHasAgent rdf:type owl:ObjectProperty ;
    rdfs:domain :Corridor ;
    rdfs:range <http://www.OntoCarer.org/Agent.owl#Agent> .
```

http://www.OntoCarer.org/Buildings.owl#corridorHasAssistingFeatures
:corridorHasAssistingFeatures rdf:type owl:ObjectProperty ;
 rdfs:domain :Corridor ;
 rdfs:range :AssistingFeatures .

http://www.OntoCarer.org/Buildings.owl#corridorHasEscalator
:corridorHasEscalator rdf:type owl:ObjectProperty ;
 rdfs:domain :Corridor ;
 rdfs:range :Escalator .

http://www.OntoCarer.org/Buildings.owl#corridorHasExit
:corridorHasExit rdf:type owl:ObjectProperty ;
 rdfs:domain :Corridor ;
 rdfs:range :Exit .

http://www.OntoCarer.org/Buildings.owl#corridorHasFireExit
:corridorHasFireExit rdf:type owl:ObjectProperty ;
 rdfs:domain :Corridor ;
 rdfs:range :FireExit .

http://www.OntoCarer.org/Buildings.owl#corridorHasHandrail
:corridorHasHandrail rdf:type owl:ObjectProperty ;
 rdfs:domain :Corridor ;
 rdfs:range :Handrail .

http://www.OntoCarer.org/Buildings.owl#corridorHasLift
:corridorHasLift rdf:type owl:ObjectProperty ;
 rdfs:domain :Corridor ;
 rdfs:range :Lift .

http://www.OntoCarer.org/Buildings.owl#corridorHasPortal
:corridorHasPortal rdf:type owl:ObjectProperty ;
 rdfs:domain :Corridor ;
 rdfs:range :Portal .

http://www.OntoCarer.org/Buildings.owl#corridorHasRoom
:corridorHasRoom rdf:type owl:ObjectProperty ;
 rdfs:domain :Corridor ;
 rdfs:range :Room .

http://www.OntoCarer.org/Buildings.owl#corridorHasStairs
:corridorHasStairs rdf:type owl:ObjectProperty ;
 rdfs:domain :Corridor ;
 rdfs:range :Stairs .

http://www.OntoCarer.org/Buildings.owl#corridorHasWheelchairLift
:corridorHasWheelchairLift rdf:type owl:ObjectProperty ;
 rdfs:domain :Corridor ;
 rdfs:range :WheelchairLift .

http://www.OntoCarer.org/Buildings.owl#corridorHasWheelchairRamp
:corridorHasWheelchairRamp rdf:type owl:ObjectProperty ;
 rdfs:domain :Corridor ;
 rdfs:range :WheelchairRamp .

http://www.OntoCarer.org/Buildings.owl#corridorHasWindow
:corridorHasWindow rdf:type owl:ObjectProperty ;
 rdfs:domain :Corridor ;
 rdfs:range :Window .

http://www.OntoCarer.org/Buildings.owl#corridorIsOnFloor
:corridorIsOnFloor rdf:type owl:ObjectProperty ;
 rdfs:domain :Corridor ;
 rdfs:range :Floor .

http://www.OntoCarer.org/Buildings.owl#escalatorHasAgent
:escalatorHasAgent rdf:type owl:ObjectProperty ;
 rdfs:domain :Escalator ;
 rdfs:range <http://www.OntoCarer.org/Agent.owl#Agent> .

http://www.OntoCarer.org/Buildings.owl#escalatorHasAssistingFeatures
:escalatorHasAssistingFeatures rdf:type owl:ObjectProperty ;
 rdfs:domain :Escalator ;
 rdfs:range :AssistingFeatures .

http://www.OntoCarer.org/Buildings.owl#escalatorHasBottomFloor
:escalatorHasBottomFloor rdf:type owl:ObjectProperty ;
 rdfs:domain :Escalator ;
 rdfs:range :Floor .

http://www.OntoCarer.org/Buildings.owl#escalatorHasSurfaceOrientation
:escalatorHasSurfaceOrientation rdf:type owl:ObjectProperty ;
 rdfs:domain :Escalator ;
 rdfs:range :SurfaceOrientation .

http://www.OntoCarer.org/Buildings.owl#escalatorHasTopFloor
:escalatorHasTopFloor rdf:type owl:ObjectProperty ;
 rdfs:domain :Escalator ;
 rdfs:range :Floor .

http://www.OntoCarer.org/Buildings.owl#fireExitHasCorridor
:fireExitHasCorridor rdf:type owl:ObjectProperty ;
 rdfs:domain :FireExit ;
 rdfs:range :Corridor .

http://www.OntoCarer.org/Buildings.owl#fireExitHasRoom
:fireExitHasRoom rdf:type owl:ObjectProperty ;
 rdfs:domain :FireExit ;
 rdfs:range :Room .

```
### http://www.OntoCarer.org/Buildings.owl#floorHasAgent
:floorHasAgent rdf:type owl:ObjectProperty ;
  rdfs:domain :Floor ;
  rdfs:range <http://www.OntoCarer.org/Agent.owl#Agent> .
```

```
### http://www.OntoCarer.org/Buildings.owl#floorHasAssistingFeatures
:floorHasAssistingFeatures rdf:type owl:ObjectProperty ;
  rdfs:domain :Floor ;
  rdfs:range :AssistingFeatures .
```

```
### http://www.OntoCarer.org/Buildings.owl#floorHasCorridor
:floorHasCorridor rdf:type owl:ObjectProperty ;
  rdfs:domain :Floor ;
  rdfs:range :Corridor .
```

```
### http://www.OntoCarer.org/Buildings.owl#floorHasFireExit
:floorHasFireExit rdf:type owl:ObjectProperty ;
  rdfs:domain :Floor ;
  rdfs:range :FireExit .
```

```
### http://www.OntoCarer.org/Buildings.owl#floorHasRoom
:floorHasRoom rdf:type owl:ObjectProperty ;
  rdfs:domain :Floor ;
  rdfs:range :Room .
```

```
### http://www.OntoCarer.org/Buildings.owl#floorHasSurfaceOrientation
:floorHasSurfaceOrientation rdf:type owl:ObjectProperty ;
  rdfs:domain :Floor ;
  rdfs:range :SurfaceOrientation .
```

```
### http://www.OntoCarer.org/Buildings.owl#junctionHasAgent
:junctionHasAgent rdf:type owl:ObjectProperty ;
  rdfs:domain :Junction ;
  rdfs:range <http://www.OntoCarer.org/Agent.owl#Agent> .
```

```
### http://www.OntoCarer.org/Buildings.owl#junctionHasCorridor
:junctionHasCorridor rdf:type owl:ObjectProperty ;
  rdfs:domain :Junction ;
  rdfs:range :Corridor .
```

```
### http://www.OntoCarer.org/Buildings.owl#liftHasAgent
:liftHasAgent rdf:type owl:ObjectProperty ;
  rdfs:domain :Lift ;
  rdfs:range <http://www.OntoCarer.org/Agent.owl#Agent> .
```

```
### http://www.OntoCarer.org/Buildings.owl#liftHasAssistingFeatures
```

```

:liftHasAssistingFeatures rdf:type owl:ObjectProperty ;
    rdfs:domain :Lift ;
    rdfs:range :AssistingFeatures .

### http://www.OntoCarer.org/Buildings.owl#liftHasBottomFloor
:liftHasBottomFloor rdf:type owl:ObjectProperty ;
    rdfs:domain :Lift ;
    rdfs:range :Floor .

### http://www.OntoCarer.org/Buildings.owl#liftHasHandrail
:liftHasHandrail rdf:type owl:ObjectProperty ;
    rdfs:domain :Lift ;
    rdfs:range :Handrail .

### http://www.OntoCarer.org/Buildings.owl#liftHasIntermediateFloor
:liftHasIntermediateFloor rdf:type owl:ObjectProperty ;
    rdfs:domain :Lift ;
    rdfs:range :Floor .

### http://www.OntoCarer.org/Buildings.owl#liftHasTopFloor
:liftHasTopFloor rdf:type owl:ObjectProperty ;
    rdfs:domain :Lift ;
    rdfs:range :Floor .

### http://www.OntoCarer.org/Buildings.owl#locationHasAgent
:locationHasAgent rdf:type owl:ObjectProperty ;
    rdfs:domain :Location ;
    rdfs:range <http://www.OntoCarer.org/Agent.owl#Agent> .

### http://www.OntoCarer.org/Buildings.owl#locationHasAssistingFeatures
:locationHasAssistingFeatures rdf:type owl:ObjectProperty ;
    rdfs:domain :Location ;
    rdfs:range :AssistingFeatures .

### http://www.OntoCarer.org/Buildings.owl#locationHasBuilding
:locationHasBuilding rdf:type owl:ObjectProperty ;
    rdfs:domain :Location ;
    rdfs:range :Building .

### http://www.OntoCarer.org/Buildings.owl#locationHasBuildingSpace
:locationHasBuildingSpace rdf:type owl:ObjectProperty ;
    rdfs:domain :Location ;
    rdfs:range :BuildingSpace .

### http://www.OntoCarer.org/Buildings.owl#portalHasAssistingFeatures
:portalHasAssistingFeatures rdf:type owl:ObjectProperty ;
    rdfs:domain :Portal ;
    rdfs:range :AssistingFeatures .

```

```
### http://www.OntoCarer.org/Buildings.owl#portalHasCorridor
:portalHasCorridor rdf:type owl:ObjectProperty ;
    rdfs:domain :Portal ;
    rdfs:range :Corridor .
```

```
### http://www.OntoCarer.org/Buildings.owl#portalHasRoom
:portalHasRoom rdf:type owl:ObjectProperty ;
    rdfs:domain :Portal ;
    rdfs:range :Room .
```

```
### http://www.OntoCarer.org/Buildings.owl#roomFloorHasSurfaceOrientation
:roomFloorHasSurfaceOrientation rdf:type owl:ObjectProperty ;
    rdfs:domain :RoomFloor ;
    rdfs:range :SurfaceOrientation .
```

```
### http://www.OntoCarer.org/Buildings.owl#roomHasAgent
:roomHasAgent rdf:type owl:ObjectProperty ;
    rdfs:domain :Room ;
    rdfs:range <http://www.OntoCarer.org/Agent.owl#Agent> .
```

```
### http://www.OntoCarer.org/Buildings.owl#roomHasAssistingFeatures
:roomHasAssistingFeatures rdf:type owl:ObjectProperty ;
    rdfs:domain :Room ;
    rdfs:range :AssistingFeatures .
```

```
### http://www.OntoCarer.org/Buildings.owl#roomHasCeiling
:roomHasCeiling rdf:type owl:ObjectProperty ;
    rdfs:domain :Room ;
    rdfs:range :Ceiling .
```

```
### http://www.OntoCarer.org/Buildings.owl#roomHasDoor
:roomHasDoor rdf:type owl:ObjectProperty ;
    rdfs:domain :Room ;
    rdfs:range :Door .
```

```
### http://www.OntoCarer.org/Buildings.owl#roomHasEntrance
:roomHasEntrance rdf:type owl:ObjectProperty ;
    rdfs:domain :Room ;
    rdfs:range :Entrance .
```

```
### http://www.OntoCarer.org/Buildings.owl#roomHasExit
:roomHasExit rdf:type owl:ObjectProperty ;
    rdfs:domain :Room ;
    rdfs:range :Exit .
```

```
### http://www.OntoCarer.org/Buildings.owl#roomHasFireExit
```

:roomHasFireExit rdf:type owl:ObjectProperty ;
rdfs:domain :Room ;
rdfs:range :FireExit .

http://www.OntoCarer.org/Buildings.owl#roomHasPortal
:roomHasPortal rdf:type owl:ObjectProperty ;
rdfs:domain :Room ;
rdfs:range :Portal .

http://www.OntoCarer.org/Buildings.owl#roomHasRoomFloor
:roomHasRoomFloor rdf:type owl:ObjectProperty ;
rdfs:domain :Room ;
rdfs:range :RoomFloor .

http://www.OntoCarer.org/Buildings.owl#roomHasSituationActivity
:roomHasSituationActivity rdf:type owl:ObjectProperty ;
rdfs:domain :Stairs ;
rdfs:range <http://www.OntoCarer.org/Organisation.owl#SituationActivity> .

http://www.OntoCarer.org/Buildings.owl#roomHasWindow
:roomHasWindow rdf:type owl:ObjectProperty ;
rdfs:domain :Room ;
rdfs:range :Window .

http://www.OntoCarer.org/Buildings.owl#roomsInBuilding
:roomsInBuilding rdf:type owl:ObjectProperty ;
rdfs:domain :Room ;
rdfs:range :Building .

http://www.OntoCarer.org/Buildings.owl#roomsInCorridor
:roomsInCorridor rdf:type owl:ObjectProperty ;
rdfs:domain :Room ;
rdfs:range :Corridor .

http://www.OntoCarer.org/Buildings.owl#roomsOnFloor
:roomsOnFloor rdf:type owl:ObjectProperty ;
rdfs:domain :Room ;
rdfs:range :Floor .

http://www.OntoCarer.org/Buildings.owl#stairsHasAgent
:stairsHasAgent rdf:type owl:ObjectProperty ;
rdfs:domain :Stairs ;
rdfs:range <http://www.OntoCarer.org/Agent.owl#Agent> .

http://www.OntoCarer.org/Buildings.owl#stairsHasAssistingFeatures
:stairsHasAssistingFeatures rdf:type owl:ObjectProperty ;
rdfs:domain :Stairs ;
rdfs:range :AssistingFeatures .

```
### http://www.OntoCarer.org/Buildings.owl#stairsHasBottomCorridor
:stairsHasBottomCorridor rdf:type owl:ObjectProperty ;
    rdfs:domain :Stairs ;
    rdfs:range :Corridor .
```

```
### http://www.OntoCarer.org/Buildings.owl#stairsHasBottomFloor
:stairsHasBottomFloor rdf:type owl:ObjectProperty ;
    rdfs:domain :Stairs ;
    rdfs:range :Floor .
```

```
### http://www.OntoCarer.org/Buildings.owl#stairsHasHandrail
:stairsHasHandrail rdf:type owl:ObjectProperty ;
    rdfs:domain :Stairs ;
    rdfs:range :Handrail .
```

```
### http://www.OntoCarer.org/Buildings.owl#stairsHasIntermediateCorridor
:stairsHasIntermediateCorridor rdf:type owl:ObjectProperty ;
    rdfs:domain :Stairs ;
    rdfs:range :Corridor .
```

```
### http://www.OntoCarer.org/Buildings.owl#stairsHasIntermediateFloor
:stairsHasIntermediateFloor rdf:type owl:ObjectProperty ;
    rdfs:domain :Stairs ;
    rdfs:range :Floor .
```

```
### http://www.OntoCarer.org/Buildings.owl#stairsHasTopCorridor
:stairsHasTopCorridor rdf:type owl:ObjectProperty ;
    rdfs:domain :Stairs ;
    rdfs:range :Corridor .
```

```
### http://www.OntoCarer.org/Buildings.owl#stairsHasTopFloor
:stairsHasTopFloor rdf:type owl:ObjectProperty ;
    rdfs:domain :Stairs ;
    rdfs:range :Floor .
```

```
### http://www.OntoCarer.org/Buildings.owl#stairsHasWheelchairLift
:stairsHasWheelchairLift rdf:type owl:ObjectProperty ;
    rdfs:domain :Stairs ;
    rdfs:range :WheelchairLift .
```

```
### http://www.OntoCarer.org/Buildings.owl#surfaceHasSurfaceOrientation
:surfaceHasSurfaceOrientation rdf:type owl:ObjectProperty ;
    rdfs:domain :Surface ;
    rdfs:range :SurfaceOrientation .
```

```
#####
# Data properties
```

#####

http://www.OntoCarer.org/Buildings.owl#CorridorHasFloorNumber
:CorridorHasFloorNumber rdf:type owl:DatatypeProperty ;
 rdfs:domain :Corridor ;
 rdfs:range xsd:integer .

http://www.OntoCarer.org/Buildings.owl#assistingFeaturesHasInformation
:assistingFeaturesHasInformation rdf:type owl:DatatypeProperty ;
 rdfs:domain :AssistingFeatures ;
 rdfs:range xsd:string .

http://www.OntoCarer.org/Buildings.owl#buildingHasAddress
:buildingHasAddress rdf:type owl:DatatypeProperty ;
 rdfs:domain :Building ;
 rdfs:range xsd:string .

http://www.OntoCarer.org/Buildings.owl#buildingHasInformation
:buildingHasInformation rdf:type owl:DatatypeProperty ;
 rdfs:domain :Building ;
 rdfs:range xsd:string .

http://www.OntoCarer.org/Buildings.owl#buildingHasNumberOfFloors
:buildingHasNumberOfFloors rdf:type owl:DatatypeProperty ;
 rdfs:domain :Building ;
 rdfs:range xsd:integer .

http://www.OntoCarer.org/Buildings.owl#buildingPartHasInformation
:buildingPartHasInformation rdf:type owl:DatatypeProperty ;
 rdfs:domain :BuildingPart ;
 rdfs:range xsd:string .

http://www.OntoCarer.org/Buildings.owl#buildingPassageHasInformation
:buildingPassageHasInformation rdf:type owl:DatatypeProperty ;
 rdfs:domain :BuildingPassage ;
 rdfs:range xsd:string .

<http://www.OntoCarer.org/Buildings.owl#buildingSpaceElementHasInformation>
:buildingSpaceElementHasInformation rdf:type owl:DatatypeProperty ;
 rdfs:domain :BuildingSpaceElement ;
 rdfs:range xsd:string .

http://www.OntoCarer.org/Buildings.owl#buildingSpaceHasInformation
:buildingSpaceHasInformation rdf:type owl:DatatypeProperty ;
 rdfs:domain :BuildingSpace ;
 rdfs:range xsd:string .

http://www.OntoCarer.org/Buildings.owl#corridorHasInformation
:corridorHasInformation rdf:type owl:DatatypeProperty ;
 rdfs:domain :Corridor ;

rdfs:range xsd:string .

http://www.OntoCarer.org/Buildings.owl#escalatorBottomHasFloorNumber
:escalatorBottomHasFloorNumber rdf:type owl:DatatypeProperty ;
rdfs:domain :Escalator ;
rdfs:range xsd:integer .

http://www.OntoCarer.org/Buildings.owl#escalatorTopHasFloorNumber
:escalatorTopHasFloorNumber rdf:type owl:DatatypeProperty ;
rdfs:domain :Escalator ;
rdfs:range xsd:integer .

http://www.OntoCarer.org/Buildings.owl#floorHasFloorNumber
:floorHasFloorNumber rdf:type owl:DatatypeProperty ;
rdfs:domain :Floor ;
rdfs:range xsd:integer .

http://www.OntoCarer.org/Buildings.owl#liftBottomHasFloorNumber
:liftBottomHasFloorNumber rdf:type owl:DatatypeProperty ;
rdfs:domain :Lift ;
rdfs:range xsd:integer .

http://www.OntoCarer.org/Buildings.owl#liftHasFloorNumber
:liftHasFloorNumber rdf:type owl:DatatypeProperty ;
rdfs:domain :Lift ;
rdfs:range xsd:integer .

http://www.OntoCarer.org/Buildings.owl#liftIntermediateHasFloorNumber
:liftIntermediateHasFloorNumber rdf:type owl:DatatypeProperty ;
rdfs:domain :Lift ;
rdfs:range xsd:integer .

http://www.OntoCarer.org/Buildings.owl#liftTopHasFloorNumber
:liftTopHasFloorNumber rdf:type owl:DatatypeProperty ;
rdfs:domain :Lift ;
rdfs:range xsd:integer .

http://www.OntoCarer.org/Buildings.owl#locationHasInformation
:locationHasInformation rdf:type owl:DatatypeProperty ;
rdfs:domain :Location ;
rdfs:range xsd:string .

http://www.OntoCarer.org/Buildings.owl#portalHasFloorNumber
:portalHasFloorNumber rdf:type owl:DatatypeProperty ;
rdfs:domain :Portal ;
rdfs:range xsd:integer .

http://www.OntoCarer.org/Buildings.owl#portalHasInformation
:portalHasInformation rdf:type owl:DatatypeProperty ;

rdfs:domain :Portal ;
rdfs:range xsd:string .

http://www.OntoCarer.org/Buildings.owl#roomHasInformation
:roomHasInformation rdf:type owl:DatatypeProperty ;
rdfs:domain :Room ;
rdfs:range xsd:string .

http://www.OntoCarer.org/Buildings.owl#roomHasRoomName
:roomHasRoomName rdf:type owl:DatatypeProperty ;
rdfs:domain :Room ;
rdfs:range xsd:integer .

http://www.OntoCarer.org/Buildings.owl#slopingHasDegree
:slopingHasDegree rdf:type owl:DatatypeProperty ;
rdfs:domain :Sloping ;
rdfs:range xsd:integer .

http://www.OntoCarer.org/Buildings.owl#stairsBottomHasFloorNumber
:stairsBottomHasFloorNumber rdf:type owl:DatatypeProperty ;
rdfs:domain :Stairs ;
rdfs:range xsd:integer .

http://www.OntoCarer.org/Buildings.owl#stairsHasFloorNumber
:stairsHasFloorNumber rdf:type owl:DatatypeProperty ;
rdfs:domain :Stairs ;
rdfs:range xsd:integer .

http://www.OntoCarer.org/Buildings.owl#stairsHasStepsNumber
:stairsHasStepsNumber rdf:type owl:DatatypeProperty ;
rdfs:domain :Stairs ;
rdfs:range xsd:integer .

http://www.OntoCarer.org/Buildings.owl#stairsIntermediateHasFloorNumber
:stairsIntermediateHasFloorNumber rdf:type owl:DatatypeProperty ;
rdfs:domain :Stairs ;
rdfs:range xsd:integer .

http://www.OntoCarer.org/Buildings.owl#stairsTopHasFloorNumber
:stairsTopHasFloorNumber rdf:type owl:DatatypeProperty ;
rdfs:domain :Stairs ;
rdfs:range xsd:integer .

http://www.OntoCarer.org/Buildings.owl#surfaceOrientationHasInformation
:surfaceOrientationHasInformation rdf:type owl:DatatypeProperty ;
rdfs:domain :SurfaceOrientation ;
rdfs:range xsd:string .

```
#####  
# Classes  
#####
```

```
### http://www.OntoCarer.org/Buildings.owl#AdministrationRoom  
:AdministrationRoom rdf:type owl:Class ;  
rdfs:subClassOf :Room .
```

```
### http://www.OntoCarer.org/Buildings.owl#ArtRoom  
:ArtRoom rdf:type owl:Class ;  
rdfs:subClassOf :Room .
```

```
### http://www.OntoCarer.org/Buildings.owl#AssistingFeatures  
:AssistingFeatures rdf:type owl:Class ;  
rdfs:subClassOf :BuildingPart .
```

```
### http://www.OntoCarer.org/Buildings.owl#Building  
:Building rdf:type owl:Class .
```

```
### http://www.OntoCarer.org/Buildings.owl#BuildingPart  
:BuildingPart rdf:type owl:Class .
```

```
### http://www.OntoCarer.org/Buildings.owl#BuildingPassage  
:BuildingPassage rdf:type owl:Class ;  
rdfs:subClassOf :BuildingSpace .
```

```
### http://www.OntoCarer.org/Buildings.owl#BuildingSpace  
:BuildingSpace rdf:type owl:Class ;  
rdfs:subClassOf :BuildingPart .
```

```
### http://www.OntoCarer.org/Buildings.owl#BuildingSpaceElement  
:BuildingSpaceElement rdf:type owl:Class ;  
rdfs:subClassOf :BuildingPart .
```

```
### http://www.OntoCarer.org/Buildings.owl#BursaryRoom  
:BursaryRoom rdf:type owl:Class ;  
rdfs:subClassOf :Room .
```

```
### http://www.OntoCarer.org/Buildings.owl#CafeRoom  
:CafeRoom rdf:type owl:Class ;  
rdfs:subClassOf :Room .
```

```
### http://www.OntoCarer.org/Buildings.owl#CareersRoom  
:CareersRoom rdf:type owl:Class ;  
rdfs:subClassOf :Room .
```

```
### http://www.OntoCarer.org/Buildings.owl#CashiersRoom  
:CashiersRoom rdf:type owl:Class ;
```

rdfs:subClassOf :Room .

http://www.OntoCarer.org/Buildings.owl#Ceiling
:Ceiling rdf:type owl:Class ;
rdfs:subClassOf :Surface .

http://www.OntoCarer.org/Buildings.owl#ChangingRoom
:ChangingRoom rdf:type owl:Class ;
rdfs:subClassOf :Room .

http://www.OntoCarer.org/Buildings.owl#ClassRoom
:ClassRoom rdf:type owl:Class ;
rdfs:subClassOf :Room .

http://www.OntoCarer.org/Buildings.owl#CoffeeBarRoom
:CoffeeBarRoom rdf:type owl:Class ;
rdfs:subClassOf :Room .

http://www.OntoCarer.org/Buildings.owl#CollegeBuilding
:CollegeBuilding rdf:type owl:Class ;
rdfs:subClassOf :Building .

http://www.OntoCarer.org/Buildings.owl#ComputerRoom
:ComputerRoom rdf:type owl:Class ;
rdfs:subClassOf :Room .

http://www.OntoCarer.org/Buildings.owl#Corner
:Corner rdf:type owl:Class ;
rdfs:subClassOf :BuildingSpaceElement .

http://www.OntoCarer.org/Buildings.owl#Corridor
:Corridor rdf:type owl:Class ;
rdfs:subClassOf :BuildingPassage .

http://www.OntoCarer.org/Buildings.owl#DisabledToiletRoom
:DisabledToiletRoom rdf:type owl:Class ;
rdfs:subClassOf :ToiletRoom .

http://www.OntoCarer.org/Buildings.owl#Door
:Door rdf:type owl:Class ;
rdfs:subClassOf :Portal .

http://www.OntoCarer.org/Buildings.owl#Entrance
:Entrance rdf:type owl:Class ;
rdfs:subClassOf :Portal .

http://www.OntoCarer.org/Buildings.owl#Escalator

:Escalator rdf:type owl:Class ;
 rdfs:subClassOf :BuildingPassage .

http://www.OntoCarer.org/Buildings.owl#Exit
:Exit rdf:type owl:Class ;
 rdfs:subClassOf :Portal .

http://www.OntoCarer.org/Buildings.owl#FemaleChangingRoom
:FemaleChangingRoom rdf:type owl:Class ;
 rdfs:subClassOf :ChangingRoom .

http://www.OntoCarer.org/Buildings.owl#FemaleToiletRoom
:FemaleToiletRoom rdf:type owl:Class ;
 rdfs:subClassOf :ToiletRoom .

http://www.OntoCarer.org/Buildings.owl#FireExit
:FireExit rdf:type owl:Class ;
 rdfs:subClassOf :Exit .

http://www.OntoCarer.org/Buildings.owl#Floor
:Floor rdf:type owl:Class ;
 rdfs:subClassOf :Surface .

http://www.OntoCarer.org/Buildings.owl#GymRoom
:GymRoom rdf:type owl:Class ;
 rdfs:subClassOf :Room .

http://www.OntoCarer.org/Buildings.owl#HallRoom
:HallRoom rdf:type owl:Class ;
 rdfs:subClassOf :Room .

http://www.OntoCarer.org/Buildings.owl#Handrail
:Handrail rdf:type owl:Class ;
 rdfs:subClassOf :AssistingFeatures .

http://www.OntoCarer.org/Buildings.owl#Horizontal
:Horizontal rdf:type owl:Class ;
 rdfs:subClassOf :SurfaceOrientation .

http://www.OntoCarer.org/Buildings.owl#Junction
:Junction rdf:type owl:Class ;
 rdfs:subClassOf :BuildingPassage .

http://www.OntoCarer.org/Buildings.owl#JuniorSchoolBuilding
:JuniorSchoolBuilding rdf:type owl:Class ;
 rdfs:subClassOf :SchoolBuilding .

http://www.OntoCarer.org/Buildings.owl#LaboratoryRoom

:LaboratoryRoom rdf:type owl:Class ;
 rdfs:subClassOf :Room .

http://www.OntoCarer.org/Buildings.owl#LectureTheatreRoom
:LectureTheatreRoom rdf:type owl:Class ;
 rdfs:subClassOf :Room .

http://www.OntoCarer.org/Buildings.owl#LibraryRoom
:LibraryRoom rdf:type owl:Class ;
 rdfs:subClassOf :Room .

http://www.OntoCarer.org/Buildings.owl#Lift
:Lift rdf:type owl:Class ;
 rdfs:subClassOf :BuildingPassage .

http://www.OntoCarer.org/Buildings.owl#Location
:Location rdf:type owl:Class .

http://www.OntoCarer.org/Buildings.owl#MaleChangingRoom
:MaleChangingRoom rdf:type owl:Class ;
 rdfs:subClassOf :ChangingRoom .

http://www.OntoCarer.org/Buildings.owl#MaleToiletRoom
:MaleToiletRoom rdf:type owl:Class ;
 rdfs:subClassOf :ToiletRoom .

http://www.OntoCarer.org/Buildings.owl#ManagementRoom
:ManagementRoom rdf:type owl:Class ;
 rdfs:subClassOf :Room .

http://www.OntoCarer.org/Buildings.owl#MeetingRoom
:MeetingRoom rdf:type owl:Class ;
 rdfs:subClassOf :Room .

http://www.OntoCarer.org/Buildings.owl#OfficeRoom
:OfficeRoom rdf:type owl:Class ;
 rdfs:subClassOf :Room .

http://www.OntoCarer.org/Buildings.owl#Portal
:Portal rdf:type owl:Class ;
 rdfs:subClassOf :BuildingPassage .

http://www.OntoCarer.org/Buildings.owl#PrimarySchoolBuilding
:PrimarySchoolBuilding rdf:type owl:Class ;
 rdfs:subClassOf :SchoolBuilding .

http://www.OntoCarer.org/Buildings.owl#ReceptionRoom
:ReceptionRoom rdf:type owl:Class ;
 rdfs:subClassOf :Room .

http://www.OntoCarer.org/Buildings.owl#RegistryRoom
:RegistryRoom rdf:type owl:Class ;
 rdfs:subClassOf :Room .

http://www.OntoCarer.org/Buildings.owl#RestaurantRoom
:RestaurantRoom rdf:type owl:Class ;
 rdfs:subClassOf :Room .

http://www.OntoCarer.org/Buildings.owl#Room
:Room rdf:type owl:Class ;
 rdfs:subClassOf :BuildingSpace .

http://www.OntoCarer.org/Buildings.owl#RoomFloor
:RoomFloor rdf:type owl:Class ;
 rdfs:subClassOf :Floor .

http://www.OntoCarer.org/Buildings.owl#SchoolBuilding
:SchoolBuilding rdf:type owl:Class ;
 rdfs:subClassOf :Building .

http://www.OntoCarer.org/Buildings.owl#SecondarySchoolBuilding
:SecondarySchoolBuilding rdf:type owl:Class ;
 rdfs:subClassOf :SchoolBuilding .

http://www.OntoCarer.org/Buildings.owl#SeminarRoom
:SeminarRoom rdf:type owl:Class ;
 rdfs:subClassOf :Room .

http://www.OntoCarer.org/Buildings.owl#Sloping
:Sloping rdf:type owl:Class ;
 rdfs:subClassOf :SurfaceOrientation .

http://www.OntoCarer.org/Buildings.owl#SportsHallRoom
:SportsHallRoom rdf:type owl:Class ;
 rdfs:subClassOf :Room .

http://www.OntoCarer.org/Buildings.owl#StaffRoom
:StaffRoom rdf:type owl:Class ;
 rdfs:subClassOf :Room .

http://www.OntoCarer.org/Buildings.owl#Stairs
:Stairs rdf:type owl:Class ;
 rdfs:subClassOf :BuildingPassage .

http://www.OntoCarer.org/Buildings.owl#Step
:Step rdf:type owl:Class ;

rdfs:subClassOf :BuildingSpaceElement .

http://www.OntoCarer.org/Buildings.owl#StudentServicesRoom
:StudentServicesRoom rdf:type owl:Class ;
rdfs:subClassOf :Room .

http://www.OntoCarer.org/Buildings.owl#Surface
:Surface rdf:type owl:Class ;
rdfs:subClassOf :BuildingSpaceElement .

http://www.OntoCarer.org/Buildings.owl#SurfaceOrientation
:SurfaceOrientation rdf:type owl:Class .

http://www.OntoCarer.org/Buildings.owl#TechnicalServicesRoom
:TechnicalServicesRoom rdf:type owl:Class ;
rdfs:subClassOf :Room .

http://www.OntoCarer.org/Buildings.owl#ToiletRoom
:ToiletRoom rdf:type owl:Class ;
rdfs:subClassOf :Room .

http://www.OntoCarer.org/Buildings.owl#UniversityBuilding
:UniversityBuilding rdf:type owl:Class ;
rdfs:subClassOf :Building .

http://www.OntoCarer.org/Buildings.owl#Vertical
:Vertical rdf:type owl:Class ;
rdfs:subClassOf :SurfaceOrientation .

http://www.OntoCarer.org/Buildings.owl#Wall
:Wall rdf:type owl:Class ;
rdfs:subClassOf :Surface .

http://www.OntoCarer.org/Buildings.owl#WheelchairLift
:WheelchairLift rdf:type owl:Class ;
rdfs:subClassOf :AssistingFeatures .

http://www.OntoCarer.org/Buildings.owl#WheelchairRamp
:WheelchairRamp rdf:type owl:Class ;
rdfs:subClassOf :AssistingFeatures .

http://www.OntoCarer.org/Buildings.owl#Window
:Window rdf:type owl:Class ;
rdfs:subClassOf :BuildingSpaceElement .

Generated by the OWL API (version 4.5.9.2019-02-01T07:24:44Z)
<https://github.com/owlcs/owlapi>

OntoCarer-Link-Ontology.owl

@prefix : <http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#> .

@prefix owl: <http://www.w3.org/2002/07/owl#> .

@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .

@prefix xml: <http://www.w3.org/XML/1998/namespace> .

@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .

@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .

@base <http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl> .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl> rdf:type owl:Ontology .

#####

Object Properties

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[http://www.OntoCarer.org/OntoCarer-Link-](http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#TranslateSignLanguageToSpokenLanguageSocialActionAssistedBy)

[Ontology.owl#TranslateSignLanguageToSpokenLanguageSocialActionAssistedBy](http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#TranslateSignLanguageToSpokenLanguageSocialActionAssistedBy)

TranslateSignLanguageToSpokenLanguageSocialActionAssisterAction

:TranslateSignLanguageToSpokenLanguageSocialActionAssistedByTranslateSign
LanguageToSpokenLanguageSocialActionAssisterAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#answerQuestionsSocialActionAssistedByAnswerQuestionsSocialActionAssister>
:answerQuestionsSocialActionAssistedByAnswerQuestionsSocialActionAssister rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#answerQuestionsSocialActionAssistedByAnswerQuestionsSocialActionAssisterAction>
:answerQuestionsSocialActionAssistedByAnswerQuestionsSocialActionAssister
Action rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#answerQuestionsSocialActionAssistedByAnswerQuestionsSocialActionAssisterAid>
:answerQuestionsSocialActionAssistedByAnswerQuestionsSocialActionAssister
Aid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#answerQuestionsSocialActionAssisterActionOfAnswerQuestionsSocialAction>
:answerQuestionsSocialActionAssisterActionOfAnswerQuestionsSocialAction rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#answerQuestionsSocialActionAssisterAidOfAnswerQuestionsSocialAction>
:answerQuestionsSocialActionAssisterAidOfAnswerQuestionsSocialAction rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterAidOfSocialAction
.

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#answerQuestionsSocialActionAssisterOfAnswerQuestionsSocialAction>
:answerQuestionsSocialActionAssisterOfAnswerQuestionsSocialAction
rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#armComponentAssistedByArmComponentAssister>
:armComponentAssistedByArmComponentAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyComponentAssistedByBodyComponentAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#armComponentAssisterOfArmComponent>
:armComponentAssisterOfArmComponent rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyComponentAssisterOfBodyComponent .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#armMovementAbilityAssistedByArmMovementAbilityAssister>
:armMovementAbilityAssistedByArmMovementAbilityAssister
rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyAbilityAssistedByBodyAbilityAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#armMovementAbilityAssisterOfArmMovementAbility>
:armMovementAbilityAssisterOfArmMovementAbility rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyAbilityAssisterOfBodyAbility .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#askQuestionsSocialActionAssistedByAskQuestionsSocialActionAssister>
:askQuestionsSocialActionAssistedByAskQuestionsSocialActionAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#askQuestionsSocialActionAssistedByAskQuestionsSocialActionAssisterAction>
:askQuestionsSocialActionAssistedByAskQuestionsSocialActionAssisterAction rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#askQuestionsSocialActionAssistedByAskQuestionsSocialActionAssisterAid>
AssisterAid
:askQuestionsSocialActionAssistedByAskQuestionsSocialActionAssisterAid rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#askQuestionsSocialActionAssisterActionOfAskQuestionsSocialAction>
Action
:askQuestionsSocialActionAssisterActionOfAskQuestionsSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterActionOfSocialAction .

```
### http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#askQuestionsSocialActionAssisterAidOfAskQuestionsSocialAction
:askQuestionsSocialActionAssisterAidOfAskQuestionsSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterAidOfSocialAction .
```

```
### http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#askQuestionsSocialActionAssisterOfAskQuestionsSocialAction
:askQuestionsSocialActionAssisterOfAskQuestionsSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterOfSocialAction .
```

```
### http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#assistedAssistedByAssister
:assistedAssistedByAssister rdf:type owl:ObjectProperty ;
owl:inverseOf :assisterOfAssisted ;
rdfs:domain owl:Thing ;
rdfs:range owl:Thing .
```

```
### http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#assisterOfAssisted
:assisterOfAssisted rdf:type owl:ObjectProperty ;
rdfs:domain owl:Thing ;
rdfs:range owl:Thing .
```

```
### http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#bodyAbilityAssistedByBodyAbilityAssister
:bodyAbilityAssistedByBodyAbilityAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :assistedAssistedByAssister ;
owl:inverseOf :bodyAbilityAssisterOfBodyAbility ;
rdfs:domain <http://www.OntoCarer.org/BodyAbilities.owl#BodyAbility> ;
rdfs:range
<http://www.OntoCarer.org/BodyAbilities.owl#BodyAbilityAssister> .
```

```
### http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#bodyAbilityAssisterOfBodyAbility
:bodyAbilityAssisterOfBodyAbility rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :assisterOfAssisted ;
rdfs:domain <http://www.OntoCarer.org/BodyAbilities.owl#BodyAbilityAssister> ;
rdfs:range <http://www.OntoCarer.org/BodyAbilities.owl#BodyAbility> .
```

```
### http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#bodyComponentAssistedByBodyComponentAssister
:bodyComponentAssistedByBodyComponentAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :assistedAssistedByAssister ;
owl:inverseOf :bodyComponentAssisterOfBodyComponent ;
rdfs:domain
<http://www.OntoCarer.org/BodyComponents.owl#BodyComponent> ;
rdfs:range
<http://www.OntoCarer.org/BodyComponents.owl#BodyComponentAssister> .
```

```
### http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#bodyComponentAssisterOfBodyComponent
```

:bodyComponentAssisterOfBodyComponent rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :assisterOfAssisted ;
rdfs:domain
<http://www.OntoCarer.org/BodyComponents.owl#BodyComponentAssister> ;
rdfs:range
<http://www.OntoCarer.org/BodyComponents.owl#BodyComponent> .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#brainComponentAssistedByBrainComponentAssister
:brainComponentAssistedByBrainComponentAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:bodyComponentAssistedByBodyComponentAssister .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#brainComponentAssisterOfBrainComponent
:brainComponentAssisterOfBrainComponent rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyComponentAssisterOfBodyComponent .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#breathingAbilityAssistedByBreathingAbilityAssister
:breathingAbilityAssistedByBreathingAbilityAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyAbilityAssistedByBodyAbilityAssister .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#breathingAbilityAssisterOfBreathingAbility
:breathingAbilityAssisterOfBreathingAbility rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyAbilityAssisterOfBodyAbility .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#bursarProviderRoleAssistedByBursarProviderRoleAssisterAid
:bursarProviderRoleAssistedByBursarProviderRoleAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssisterAid .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#bursarProviderRoleAssistedByBursarProviderRoleAssisterRole
:bursarProviderRoleAssistedByBursarProviderRoleAssisterRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssisterRole .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#bursarProviderRoleAssistedByBursarRoleAssister
:bursarProviderRoleAssistedByBursarRoleAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssister .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#bursarProviderRoleAssisterAidOfBursarProviderRole
:bursarProviderRoleAssisterAidOfBursarProviderRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterAidOfRole .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#bursarProviderRoleAssisterOfBursarProviderRole
:bursarProviderRoleAssisterOfBursarProviderRole rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf :roleAssisterOfRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#bursarProviderRoleAssisterRoleOfBursarProviderRole> rdfs:subPropertyOf :roleAssisterRoleOfRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#cafeAssistantProviderRoleAssistedByCafeAssistantProviderRole> rdfs:subPropertyOf :roleAssistedByRoleAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#cafeAssistantProviderRoleAssistedByCafeAssistantRoleAssisterRole> rdfs:subPropertyOf :roleAssistedByRoleAssisterRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#cafeAssistantProviderRoleAssistedBycafeAssistantRoleAssister> rdfs:subPropertyOf :roleAssistedByRoleAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#cafeAssistantProviderRoleAssisterAidOfCafeAssistantProviderRole> rdfs:subPropertyOf :roleAssisterAidOfRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#cafeAssistantProviderRoleAssisterRoleOfCafeAssistantProviderRole> rdfs:subPropertyOf :roleAssisterRoleOfRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#cafeAssistantProviderRoleOfCafeAssistantProviderRole> rdfs:subPropertyOf :roleAssisterOfRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#cafeUserRoleAssistedByCafeUserRoleAssisterAid> rdfs:subPropertyOf :roleAssistedByRoleAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#cafeUserRoleAssistedByCafeUserRoleAssisterRole>
:cafeUserRoleAssistedByCafeUserRoleAssisterRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssisterRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#cafeUserRoleAssisterAidOfCafeUserRole>
:cafeUserRoleAssisterAidOfCafeUserRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterAidOfRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#cafeUserRoleAssisterRoleOfCafeUserRole>
:cafeUserRoleAssisterRoleOfCafeUserRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterRoleOfRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#cardioVascularAssisterOfCardiovascularComponent>
:cardioVascularAssisterOfCardiovascularComponent rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyComponentAssisterOfBodyComponent .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#cardiovascularComponentAssistedByCardioVascularAssister>
:cardiovascularComponentAssistedByCardioVascularAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:bodyComponentAssistedByBodyComponentAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#checkOutLibraryBookSocialActionAssistedByCheckOutLibraryBookSocialActionAssister>
:checkOutLibraryBookSocialActionAssistedByCheckOutLibraryBookSocialActionAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#checkOutLibraryBookSocialActionAssistedByCheckOutLibraryBookSocialActionAssisterAction>
:checkOutLibraryBookSocialActionAssistedByCheckOutLibraryBookSocialActionAssisterAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#checkOutLibraryBookSocialActionAssistedByCheckOutLibraryBookSocialActionAssisterAid>
:checkOutLibraryBookSocialActionAssistedByCheckOutLibraryBookSocialActionAssisterAid rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#checkOutLibraryBookSocialActionAssisterActionOfCheckOutLibraryBookSocialAction> rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf
:socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#checkOutLibraryBookSocialActionAssisterAidOfCheckOutLibraryBookSocialAction>

:checkOutLibraryBookSocialActionAssisterAidOfCheckOutLibraryBookSocialAction rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf
:socialActionAssisterAidOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#checkOutLibraryBookSocialActionAssisterOfCheckOutLibraryBookSocialAction>

:checkOutLibraryBookSocialActionAssisterOfCheckOutLibraryBookSocialAction rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf :socialActionAssisterOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#cleanSelfAfterToiletSocialActionAssistedByCleanSelfAfterToiletSocialActionAssister> rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#cleanSelfAfterToiletSocialActionAssistedByCleanSelfAfterToiletSocialActionAssisterAction> rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#cleanSelfAfterToiletSocialActionAssistedByCleanSelfAfterToiletSocialActionAssisterAid> rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#cleanSelfAfterToiletSocialActionAssisterActionOfCleanSelfAfterToiletSocialAction> rdf:type owl:ObjectProperty ;

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#deliverCafeFoodOrderSocialActionAssisterAidOfDeliverCafeFoodOrderSocialAction>

OrderSocialAction

:deliverCafeFoodOrderSocialActionAssisterAidOfDeliverCafeFoodOrderSocialAction rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf

:socialActionAssisterAidOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#deliverCafeFoodOrderSocialActionAssisterOfDeliverCafeFoodOrderSocialAction>

:deliverCafeFoodOrderSocialActionAssisterOfDeliverCafeFoodOrderSocialAction rdf:type

owl:ObjectProperty ;

rdfs:subPropertyOf

:socialActionAssisterOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#deliverEquipmentSocialActionAssistedByDeliverEquipmentSocialActionAssisterAction>

ActionAssisterAction

:deliverEquipmentSocialActionAssistedByDeliverEquipmentSocialActionAssisterAction rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf

:socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#deliverEquipmentSocialActionAssistedByDeliverEquipmentSocialActionAssisterAid>

ActionAssisterAid

:deliverEquipmentSocialActionAssistedByDeliverEquipmentSocialActionAssisterAid rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf

:socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#deliverEquipmentSocialActionAssisterActionOfDeliverEquipmentSocialAction>

SocialAction

:deliverEquipmentSocialActionAssisterActionOfDeliverEquipmentSocialAction rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf

:socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#deliverEquipmentSocialActionAssisterAidOfDeliverEquipmentSocialAction>

SocialAction

:deliverEquipmentSocialActionAssisterAidOfDeliverEquipmentSocialAction rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf

:socialActionAssisterAidOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#digestiveComponentAssistedByDigestiveComponentAssister>

:digestiveComponentAssistedByDigestiveComponentAssister rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf

:bodyComponentAssistedByBodyComponentAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#digestiveComponentAssisterOfDigestiveComponent>
:digestiveComponentAssisterOfDigestiveComponent rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf :bodyComponentAssisterOfBodyComponent .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#doPracticalTasksSocialActionAssistedByDoPracticalTasksSocialActionAssister>
ActionAssister
:doPracticalTasksSocialActionAssistedByDoPracticalTasksSocialActionAssister rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#doPracticalTasksSocialActionAssistedByDoPracticalTasksSocialActionAssisterAction>
ActionAssisterAction
:doPracticalTasksSocialActionAssistedByDoPracticalTasksSocialActionAssisterAction rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#doPracticalTasksSocialActionAssistedByDoPracticalTasksSocialActionAssisterAid>
ActionAssisterAid
:doPracticalTasksSocialActionAssistedByDoPracticalTasksSocialActionAssisterAid rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#doPracticalTasksSocialActionAssisterActionOfDoPracticalTasksSocialAction>
SocialAction
:doPracticalTasksSocialActionAssisterActionOfDoPracticalTasksSocialAction rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#doPracticalTasksSocialActionAssisterAidOfDoPracticalTasksSocialAction>
:doPracticalTasksSocialActionAssisterAidOfDoPracticalTasksSocialAction rdf:type owl:ObjectProperty
;
rdfs:subPropertyOf
:socialActionAssisterAidOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#doPracticalTasksSocialActionAssisterOfDoPracticalTasksSocialAction>
Action
:doPracticalTasksSocialActionAssisterOfDoPracticalTasksSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#dresserBasicFunctionRoleAssistedByDresserBasicFunctionRoleAssister>
:dresserBasicFunctionRoleAssistedByDresserBasicFunctionRoleAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#dresserBasicFunctionRoleAssistedByDresserBasicFunctionRoleAssisterAid>
AssisterAid
:dresserBasicFunctionRoleAssistedByDresserBasicFunctionRoleAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#dresserBasicFunctionRoleAssistedByDresserBasicFunctionRoleAssisterRole>
AssisterRole
:dresserBasicFunctionRoleAssistedByDresserBasicFunctionRoleAssisterRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssisterRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#dresserBasicFunctionRoleAssisterAidOfDresserBasicFunctionRole>
:dresserBasicFunctionRoleAssisterAidOfDresserBasicFunctionRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterAidOfRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#dresserBasicFunctionRoleAssisterRoleOfDresserBasicFunctionRole>
:dresserBasicFunctionRoleAssisterRoleOfDresserBasicFunctionRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterRoleOfRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#drinkerBasicFunctionRoleAssistedByDrinkerBasicFunctionRoleAssister>
Assister
:drinkerBasicFunctionRoleAssistedByDrinkerBasicFunctionRoleAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#drinkerBasicFunctionRoleAssistedByDrinkerBasicFunctionRoleAssisterAid>
AssisterAid
:drinkerBasicFunctionRoleAssistedByDrinkerBasicFunctionRoleAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#drinkerBasicFunctionRoleAssistedByDrinkerBasicFunctionRoleAssisterRole>
AssisterRole
:drinkerBasicFunctionRoleAssistedByDrinkerBasicFunctionRoleAssisterRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssisterRole .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#drinkerBasicFunctionRoleAssisterAidOfDrinkerBasicFunctionRole
:drinkerBasicFunctionRoleAssisterAidOfDrinkerBasicFunctionRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterAidOfRole .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#drinkerBasicFunctionRoleAssisterOfDrinkerBasicFunctionRole
:drinkerBasicFunctionRoleAssisterOfDrinkerBasicFunctionRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterOfRole .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#drinkerBasicFunctionRoleAssisterRoleOfDrinkerBasicFunctionRole
:drinkerBasicFunctionRoleAssisterRoleOfDrinkerBasicFunctionRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterRoleOfRole .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#drinkingAbilityAssistedByDrinkingAbilityAssister
:drinkingAbilityAssistedByDrinkingAbilityAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyAbilityAssistedByBodyAbilityAssister .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#drinkingAbilityAssisterOfdrinkingAbility
:drinkingAbilityAssisterOfdrinkingAbility rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyAbilityAssisterOfBodyAbility .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#drySelfSocialActionAssistedByDrySelfSocialActionAssister
:drySelfSocialActionAssistedByDrySelfSocialActionAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssistedBySocialActionAssister .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#drySelfSocialActionAssistedByDrySelfSocialActionAssisterAction
:drySelfSocialActionAssistedByDrySelfSocialActionAssisterAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#drySelfSocialActionAssistedByDrySelfSocialActionAssisterAid
:drySelfSocialActionAssistedByDrySelfSocialActionAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#drySelfSocialActionAssisterActionOfDrySelfSocialAction
:drySelfSocialActionAssisterActionOfDrySelfSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterActionOfSocialAction .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#drySelfSocialActionAssisterAidOfDrySelfSocialAction
:drySelfSocialActionAssisterAidOfDrySelfSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterAidOfSocialAction .

```
### http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#drySelfSocialActionAssisterOfDrySelfSocialAction
:drySelfSocialActionAssisterOfDrySelfSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterOfSocialAction .
```

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### http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#earComponentAssistedByEarComponentAssister
:earComponentAssistedByEarComponentAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyComponentAssistedByBodyComponentAssister .
```

```
### http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#earComponentAssisterOfEarComponent
:earComponentAssisterOfEarComponent rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyComponentAssisterOfBodyComponent .
```

```
### http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#eaterBasicFunctionRoleAssistedByEaterBasicFunctionRoleAssister
:eaterBasicFunctionRoleAssistedByEaterBasicFunctionRoleAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssister .
```

```
### http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#eaterBasicFunctionRoleAssistedByEaterBasicFunctionRoleAssisterAid
:eaterBasicFunctionRoleAssistedByEaterBasicFunctionRoleAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssisterAid .
```

```
### http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#eaterBasicFunctionRoleAssistedByEaterBasicFunctionRoleAssisterRole
:eaterBasicFunctionRoleAssistedByEaterBasicFunctionRoleAssisterRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssisterRole .
```

```
### http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#eaterBasicFunctionRoleAssisterAidOfEaterBasicFunctionRole
:eaterBasicFunctionRoleAssisterAidOfEaterBasicFunctionRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterAidOfRole .
```

```
### http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#eaterBasicFunctionRoleAssisterOfEaterBasicFunctionRole
:eaterBasicFunctionRoleAssisterOfEaterBasicFunctionRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterOfRole .
```

```
### http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#eaterBasicFunctionRoleAssisterRoleOfEaterBasicFunctionRole
:eaterBasicFunctionRoleAssisterRoleOfEaterBasicFunctionRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterRoleOfRole .
```

```
### http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#eatingAbilityAssistedByEatingAbilityAssister
:eatingAbilityAssistedByEatingAbilityAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyAbilityAssistedByBodyAbilityAssister .
```

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#eatingAbilityAssisterOfEatingAbility
:eatingAbilityAssisterOfEatingAbility rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyAbilityAssisterOfBodyAbility .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#enrolStudentOnCourseSocialActionAssistedByEnrolStudentOnCourseSocialActionAssisterAction
:enrolStudentOnCourseSocialActionAssistedByEnrolStudentOnCourseSocialActionAssisterAction
rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#enrolStudentOnCourseSocialActionAssistedByEnrolStudentOnCourseSocialActionAssisterAid
:enrolStudentOnCourseSocialActionAssistedByEnrolStudentOnCourseSocialActionAssisterAid
rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#enrolStudentOnCourseSocialActionAssisterActionOfEnrolStudentOnCourseSocialAction
:enrolStudentOnCourseSocialActionAssisterActionOfEnrolStudentOnCourseSocialAction rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#exitTeachingRoomSocialActionAssistedByExitTeachingRoomSocialActionAssisterAction>
:exitTeachingRoomSocialActionAssistedByExitTeachingRoomSocialActionAssisterAction rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#exitTeachingRoomSocialActionAssistedByExitTeachingRoomSocialActionAssisterAid>
:exitTeachingRoomSocialActionAssistedByExitTeachingRoomSocialActionAssisterAid rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#exitTeachingRoomSocialActionAssistedByexitTeachingRoomSocialActionAssister>
:exitTeachingRoomSocialActionAssistedByexitTeachingRoomSocialActionAssister rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#exitTeachingRoomSocialActionAssisterActionOfExitTeachingRoom>
SocialAction
:exitTeachingRoomSocialActionAssisterActionOfExitTeachingRoomSocialAction rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#exitTeachingRoomSocialActionAssisterOfExitTeachingRoomSocialAction>
Action
:exitTeachingRoomSocialActionAssisterOfExitTeachingRoomSocialAction rdf:type owl:ObjectProperty
;
rdfs:subPropertyOf :socialActionAssisterOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#exitTeachingRoomSocialActionAssisteraidOfExitTeachingRoom>
SocialAction
:exitTeachingRoomSocialActionAssisteraidOfExitTeachingRoomSocialAction rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterAidOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#faecalExcretionAbilityAssistedByFaecalExcretionAbilityAssister>
:faecalExcretionAbilityAssistedByFaecalExcretionAbilityAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyAbilityAssistedByBodyAbilityAssister
.

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#faecalExcretionAbilityAssisterOfFaecalExcretionAbility>
:faecalExcretionAbilityAssisterOfFaecalExcretionAbility rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyAbilityAssisterOfBodyAbility .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#feedSelfSocialActionAssistedByFeedSelfSocialActionAssister>
:feedSelfSocialActionAssistedByFeedSelfSocialActionAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssistedBySocialActionAssister
.

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#feedSelfSocialActionAssistedByFeedSelfSocialActionAssisterAction>
Action
:feedSelfSocialActionAssistedByFeedSelfSocialActionAssisterAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#feedSelfSocialActionAssistedByFeedSelfSocialActionAssisterAid>
:feedSelfSocialActionAssistedByFeedSelfSocialActionAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#feedSelfSocialActionAssisterActionOfFeedSelfSocialAction
:feedSelfSocialActionAssisterActionOfFeedSelfSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterActionOfSocialAction .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#feedSelfSocialActionAssisterAidOfFeedSelfSocialAction
:feedSelfSocialActionAssisterAidOfFeedSelfSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterAidOfSocialAction .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#feedSelfSocialActionAssisterOfFeedSelfSocialAction
:feedSelfSocialActionAssisterOfFeedSelfSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterOfSocialAction .

[http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#findAnswersSocialActionAssistedByFindAnswersSocialAction](http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#findAnswersSocialActionAssistedByFindAnswersSocialAction)
Assister
:findAnswersSocialActionAssistedByFindAnswersSocialActionAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssister .

[http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#findAnswersSocialActionAssistedByFindAnswersSocialAction](http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#findAnswersSocialActionAssistedByFindAnswersSocialAction)
AssisterAction
:findAnswersSocialActionAssistedByFindAnswersSocialActionAssisterAction rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

[http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#findAnswersSocialActionAssistedByFindAnswersSocialAction](http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#findAnswersSocialActionAssistedByFindAnswersSocialAction)
AssisterAid
:findAnswersSocialActionAssistedByFindAnswersSocialActionAssisterAid rdf:type owl:ObjectProperty
;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#findAnswersSocialActionAssisterActionOfFindAnswersSocialAction
:findAnswersSocialActionAssisterActionOfFindAnswersSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterActionOfSocialAction
.

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#findAnswersSocialActionAssisterAidOfFindAnswersSocialAction
:findAnswersSocialActionAssisterAidOfFindAnswersSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterAidOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#findAnswersSocialActionAssisterOfFindAnswersSocialAction>
:findAnswersSocialActionAssisterOfFindAnswersSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#findBookOnShelvesSocialActionAssistedByFindBookOnShelvesSocialActionAssister>
:findBookOnShelvesSocialActionAssistedByFindBookOnShelvesSocialAction
Assister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#findBookOnShelvesSocialActionAssistedByFindBookOnShelvesSocialActionAssisterAction>
:findBookOnShelvesSocialActionAssistedByFindBookOnShelvesSocialAction
AssisterAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#findBookOnShelvesSocialActionAssistedByFindBookOnShelvesSocialActionAssisterAid>
:findBookOnShelvesSocialActionAssistedByFindBookOnShelvesSocialAction
AssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#findBookOnShelvesSocialActionAssisterActionOfFindBookOnLibraryShelvesSocialAction>
:findBookOnShelvesSocialActionAssisterActionOfFindBookOnLibraryShelves
SocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#findBookOnShelvesSocialActionAssisterAidOfFindBookOnLibraryShelvesSocialAction>
:findBookOnShelvesSocialActionAssisterAidOfFindBookOnLibraryShelvesSocial
Action rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterAidOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#findBookOnShelvesSocialActionAssisterOfFindBookOnLibraryShelvesSocialAction>
:findBookOnShelvesSocialActionAssisterOfFindBookOnLibraryShelvesSocial
Action rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#findInformationToAnswerQuestionsSocialActionAssistedByFindInformationToAnswerQuestionsSocialActionAssisterAction>
:findInformationToAnswerQuestionsSocialActionAssistedByFindInformationToAnswerQuestionsSocialActionAssisterAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#findInformationToAnswerQuestionsSocialActionAssistedByFindInformationToAnswerQuestionsSocialActionAssisterAid>
:findInformationToAnswerQuestionsSocialActionAssistedByFindInformationToAnswerQuestionsSocialActionAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#findInformationToAnswerQuestionsSocialActionAssisterActionOfFindInformationToAnswerQuestionsSocialAction>
:findInformationToAnswerQuestionsSocialActionAssisterActionOfFindInformationToAnswerQuestionsSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#findLibrarySocialActionAssistedByFindLibrarySocialActionAssister>
:findLibrarySocialActionAssistedByFindLibrarySocialActionAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#findLibrarySocialActionAssistedByFindLibrarySocialActionAssisterAction>
:findLibrarySocialActionAssistedByFindLibrarySocialActionAssisterAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#findLibrarySocialActionAssistedByFindLibrarySocialActionAssisterAid>
:findLibrarySocialActionAssistedByFindLibrarySocialActionAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#findLibrarySocialActionAssisterActionOfFindLibrarySocialAction>
:findLibrarySocialActionAssisterActionOfFindLibrarySocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterActionOfSocialAction
.

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#findLibrarySocialActionAssisterAidOfFindLibrarySocialAction>
:findLibrarySocialActionAssisterAidOfFindLibrarySocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterAidOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#findLibrarySocialActionAssisterOfFindLibrarySocialAction>
:findLibrarySocialActionAssisterOfFindLibrarySocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterAidOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#findTeachingRoomSocialActionAssistedByFindTeachingRoomSocialActionAssister>
:findTeachingRoomSocialActionAssistedByFindTeachingRoomSocialActionAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssistedBySocialActionAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#findTeachingRoomSocialActionAssistedByFindTeachingRoomSocialActionAssisterAction>
:findTeachingRoomSocialActionAssistedByFindTeachingRoomSocialActionAssisterAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#findTeachingRoomSocialActionAssistedByFindTeachingRoomSocialActionAssisterAid>
:findTeachingRoomSocialActionAssistedByFindTeachingRoomSocialActionAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#findTeachingRoomSocialActionAssisterActionOfFindTeachingRoomSocialAction>
:findTeachingRoomSocialActionAssisterActionOfFindTeachingRoomSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#findTeachingRoomSocialActionAssisterAidOfFindTeachingRoomSocialAction>
:findTeachingRoomSocialActionAssisterAidOfFindTeachingRoomSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterAidOfSocialAction .

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### http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#findTeachingRoomSocialActionAssisterOfFindTeachingRoomSocialAction
:findTeachingRoomSocialActionAssisterOfFindTeachingRoomSocialAction rdf:type owl:ObjectProperty ;
                                rdfs:subPropertyOf :socialActionAssisterOfSocialAction .

### http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#findToiletSocialActionAssistedByFindToiletSocialActionAssisterAction
:findToiletSocialActionAssistedByFindToiletSocialActionAssisterAction rdf:type owl:ObjectProperty ;
                                rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

### http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#findToiletSocialActionAssistedBySocialActionAssister
:findToiletSocialActionAssistedBySocialActionAssister rdf:type owl:ObjectProperty ;
                                rdfs:subPropertyOf :socialActionAssistedBySocialActionAssister .

### http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#findToiletSocialActionAssistedBySocialActionAssisterAid
:findToiletSocialActionAssistedBySocialActionAssisterAid rdf:type owl:ObjectProperty ;
                                rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

### http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#findToiletSocialActionAssisterActionOfFindToiletSocialAction
:findToiletSocialActionAssisterActionOfFindToiletSocialAction rdf:type owl:ObjectProperty ;
                                rdfs:subPropertyOf :socialActionAssisterActionOfSocialAction .

### http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#findToiletSocialActionAssisterAidOfFindToiletSocialAction
:findToiletSocialActionAssisterAidOfFindToiletSocialAction rdf:type owl:ObjectProperty ;
                                rdfs:subPropertyOf :socialActionAssisterAidOfSocialAction .

### http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#findToiletSocialActionAssisterOfFindToiletSocialAction
:findToiletSocialActionAssisterOfFindToiletSocialAction rdf:type owl:ObjectProperty ;
                                rdfs:subPropertyOf :socialActionAssisterOfSocialAction .

### http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#footComponentAssistedByFootComponentAssister
:footComponentAssistedByFootComponentAssister rdf:type owl:ObjectProperty ;
                                rdfs:subPropertyOf :bodyComponentAssistedByBodyComponentAssister
.

### http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#footComponentAssisterOfFootComponent
:footComponentAssisterOfFootComponent rdf:type owl:ObjectProperty ;
                                rdfs:subPropertyOf :bodyComponentAssisterOfBodyComponent .

```

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#handDexterityAbilityAssistedByHandDexterityAbilityAssister
:handDexterityAbilityAssistedByHandDexterityAbilityAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyAbilityAssistedByBodyAbilityAssister .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#handDexterityAbilityAssisterOfHandDexterityAbility
:handDexterityAbilityAssisterOfHandDexterityAbility rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyAbilityAssisterOfBodyAbility .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#handMovementAbilityAssistedByHandMovementAbilityAssister
:handMovementAbilityAssistedByHandMovementAbilityAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyAbilityAssistedByBodyAbilityAssister .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#handMovementAbilityAssisterOfhandMovementAbility
:handMovementAbilityAssisterOfhandMovementAbility rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyAbilityAssisterOfBodyAbility .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#hearLectureSocialActionAssistedByHearLectureSocialActionAssister
:hearLectureSocialActionAssistedByHearLectureSocialActionAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssister .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#hearLectureSocialActionAssistedByHearLectureSocialActionAssisterAction
:hearLectureSocialActionAssistedByHearLectureSocialActionAssisterAction rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#hearLectureSocialActionAssistedByHearLectureSocialActionAssisterAid
:hearLectureSocialActionAssistedByHearLectureSocialActionAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#hearLectureSocialActionAssisterActionOfHearLectureSocialAction
:hearLectureSocialActionAssisterActionOfHearLectureSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterActionOfSocialAction
.

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#hearLectureSocialActionAssisterAidOfHearLectureSocialAction
:hearLectureSocialActionAssisterAidOfHearLectureSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterAidOfSocialAction .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#hearLectureSocialActionAssisterOfHearLectureSocialAction :hearLectureSocialActionAssisterOfHearLectureSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterOfSocialAction .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#hearingAbilityAssistedByHearingAbilityAssister :hearingAbilityAssistedByHearingAbilityAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyAbilityAssistedByBodyAbilityAssister .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#hearingAbilityAssisterOfHearingAbility :hearingAbilityAssisterOfHearingAbility rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyAbilityAssisterOfBodyAbility .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#informationAssistantProviderRoleAssistedByInformationAssistantProviderRoleAssister :informationAssistantProviderRoleAssistedByInformationAssistantProviderRoleAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssister .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#informationAssistantProviderRoleAssistedByInformationAssistantProviderRoleAssisterAid :informationAssistantProviderRoleAssistedByInformationAssistantProviderRoleAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssisterAid .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#informationAssistantProviderRoleAssistedByInformationAssistantProviderRoleAssisterRole :informationAssistantProviderRoleAssistedByInformationAssistantProviderRoleAssisterRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssisterRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#informationAssistantProviderRoleAssisterAidOfInformationAssistantProviderRole> :informationAssistantProviderRoleAssisterAidOfInformationAssistantProviderRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterAidOfRole .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#informationAssistantProviderRoleAssisterOfInformationAssistantProviderRole :informationAssistantProviderRoleAssisterOfInformationAssistantProviderRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterOfRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#informationAssistantProviderRoleAssisterRoleOfInformation>
AssistantProviderRole
:informationAssistantProviderRoleAssisterRoleOfInformationAssistantProviderRole rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterRoleOfRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#informationSeekerUserRoleAssistedByInformationSeekerUserRole>
Assister
:informationSeekerUserRoleAssistedByInformationSeekerUserRoleAssister rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#informationSeekerUserRoleAssistedByInformationSeekerUserRole>
AssisterAid
:informationSeekerUserRoleAssistedByInformationSeekerUserRoleAssisterAid rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#informationSeekerUserRoleAssistedByInformationSeekerUserRole>
AssisterRole
:informationSeekerUserRoleAssistedByInformationSeekerUserRoleAssisterRole rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssisterRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#informationSeekerUserRoleAssisterAidOfInformationSeekerUserRole>
Role
:informationSeekerUserRoleAssisterAidOfInformationSeekerUserRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterAidOfRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#informationSeekerUserRoleAssisterRoleOfInformationSeekerUserRole>
Role
:informationSeekerUserRoleAssisterRoleOfInformationSeekerUserRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterRoleOfRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#lecturerProviderRoleAssistedByLecturerProviderRoleAssister>
:lecturerProviderRoleAssistedByLecturerProviderRoleAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#lecturerProviderRoleAssistedByLecturerProviderRoleAssisterAid>
:lecturerProviderRoleAssistedByLecturerProviderRoleAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssisterAid .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#lecturerProviderRoleAssistedByLecturerProviderRoleAssisterRole
:lecturerProviderRoleAssistedByLecturerProviderRoleAssisterRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssisterRole .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#lecturerProviderRoleAssisterAidOfLecturerProviderRole
:lecturerProviderRoleAssisterAidOfLecturerProviderRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterAidOfRole .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#lecturerProviderRoleAssisterOfLecturerProviderRole
:lecturerProviderRoleAssisterOfLecturerProviderRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterOfRole .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#lecturerProviderRoleAssisterRoleOfLecturerProviderRole
:lecturerProviderRoleAssisterRoleOfLecturerProviderRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterRoleOfRole .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#legComponentAssistedByLegComponentAssister
:legComponentAssistedByLegComponentAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyComponentAssistedByBodyComponentAssister .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#legComponentAssisterOfLegComponent
:legComponentAssisterOfLegComponent rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyComponentAssisterOfBodyComponent .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#libraryAssistantProviderOfLibraryAssistantProviderRole
:libraryAssistantProviderOfLibraryAssistantProviderRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterOfRole .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#libraryAssistantProviderRoleAssistedByLibraryAssistantProviderRoleAssisterAid
:libraryAssistantProviderRoleAssistedByLibraryAssistantProviderRoleAssisterAid rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssisterAid
.

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#libraryAssistantProviderRoleAssistedBylibraryAssistantRoleAssister
:libraryAssistantProviderRoleAssistedBylibraryAssistantRoleAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#libraryAssistantProviderRoleAssisterAidOfLibraryAssistant>
ProviderRole
:libraryAssistantProviderRoleAssisterAidOfLibraryAssistantProviderRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterAidOfRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#libraryAssistantProviderRoleAssisterRoleOfLibraryAssistant>
ProviderRole
:libraryAssistantProviderRoleAssisterRoleOfLibraryAssistantProviderRole rdf:type owl:ObjectProperty ;
;
rdfs:subPropertyOf :roleAssisterRoleOfRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#libraryUserRoleAssistedByLibraryUserRoleAssisterAid>
:libraryUserRoleAssistedByLibraryUserRoleAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#libraryUserRoleAssistedByLibraryUserRoleAssisterRole>
:libraryUserRoleAssistedByLibraryUserRoleAssisterRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssisterRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#libraryUserRoleAssisterAidOfLibraryUserRole>
:libraryUserRoleAssisterAidOfLibraryUserRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterAidOfRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#libraryUserRoleAssisterRoleOfLibraryUserRole>
:libraryUserRoleAssisterRoleOfLibraryUserRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterRoleOfRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#makeCafeFoodOrderSocialActionAssistedActionOfMakeCafeFoodOrderSocialAction>
:makeCafeFoodOrderSocialActionAssistedActionOfMakeCafeFoodOrderSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#makeCafeFoodOrderSocialActionAssistedByMakeCafeFoodOrderSocialActionAssister>
:makeCafeFoodOrderSocialActionAssistedByMakeCafeFoodOrderSocialActionAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#makeCafeFoodOrderSocialActionAssistedByMakeCafeFoodOrderSocialActionAssisterAction>

:makeCafeFoodOrderSocialActionAssistedByMakeCafeFoodOrderSocialActionAssisterAction rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#makeCafeFoodOrderSocialActionAssistedByMakeCafeFoodOrderSocialActionAssisterAid>
:makeCafeFoodOrderSocialActionAssistedByMakeCafeFoodOrderSocialActionAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#makeCafeFoodOrderSocialActionAssisterAidOfMakeCafeFoodOrderSocialAction>
:makeCafeFoodOrderSocialActionAssisterAidOfMakeCafeFoodOrderSocialAction rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterAidOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#makeCafeFoodOrderSocialActionAssisterOfMakeCafeFoodOrderSocialAction>
:makeCafeFoodOrderSocialActionAssisterOfMakeCafeFoodOrderSocialAction rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterOfSocialAction .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#makeSignLanguageSocialActionAssisterActionOf_MakeSignLanguageSocialAction
:makeSignLanguageSocialActionAssisterActionOf_MakeSignLanguageSocialAction rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#makeSignLanguageSocialActionAssisterAidOfMakeSignLanguageSocialAction>
:makeSignLanguageSocialActionAssisterAidOfMakeSignLanguageSocialAction rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterAidOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#makeSignLanguageSocialActionCooperatesWithSeeSignLanguageSocialAction>
:makeSignLanguageSocialActionCooperatesWithSeeSignLanguageSocialAction rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionCooperatesWithSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#makeSignLanguageSocialActionCooperatesWithTranslateSign>

LanguageToSpokenLanguageSocialAction
:makeSignLanguageSocialActionCooperatesWithTranslateSignLanguageToSpoken
LanguageSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionCooperatesWithSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#makeSignLanguageSocialActionCooperatesWithTranslateSpokenLanguageToSignLanguageSocialAction>
:makeSignLanguageSocialActionCooperatesWithTranslateSpokenLanguageToSign
LanguageSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionCooperatesWithSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#makeSignLanguageSocialActionCooperatesWithUnderstandSignLanguageSocialAction>
:makeSignLanguageSocialActionCooperatesWithUnderstandSignLanguageSocial
Action rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionCooperatesWithSocialAction .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#makeSignLanguageSocialAction_AssistedBy_MakeSignLanguageSocialActionAssisterAction
:makeSignLanguageSocialAction_AssistedBy_MakeSignLanguageSocialAction
AssisterAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#makeSignLanguageSocialAction_AssistedBy_MakeSignLanguageSocialActionAssisterAid
:makeSignLanguageSocialAction_AssistedBy_MakeSignLanguageSocialActionAssisterAid rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#mouthComponentAssistedByMouthComponentAssister>
:mouthComponentAssistedByMouthComponentAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:bodyComponentAssistedByBodyComponentAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#mouthComponentAssisterOfMouthComponent>
:mouthComponentAssisterOfMouthComponent rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyComponentAssisterOfBodyComponent .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#navigateToLibrarySocialActionAssistedByNavigateToLibrarySocialActionAssister>
:navigateToLibrarySocialActionAssistedByNavigateToLibrarySocialAction

Assister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssister .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#navigateToLibrarySocialActionAssistedByNavigateToLibrarySocialActionAssisterAction
:navigateToLibrarySocialActionAssistedByNavigateToLibrarySocialAction
AssisterAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#navigateToLibrarySocialActionAssistedByNavigateToLibrarySocialActionAssisterAid
:navigateToLibrarySocialActionAssistedByNavigateToLibrarySocialAction
AssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#navigateToLibrarySocialActionAssisterActionOfNavigateToLibrarySocialAction
:navigateToLibrarySocialActionAssisterActionOfNavigateToLibrarySocialAction rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterActionOfSocialAction .

[http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#navigateToLibrarySocialActionAssisterAidOfNavigateToLibrary
SocialAction](http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#navigateToLibrarySocialActionAssisterAidOfNavigateToLibrarySocialAction)
:navigateToLibrarySocialActionAssisterAidOfNavigateToLibrarySocialAction rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterAidOfSocialAction .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#navigateToLibrarySocialActionAssisterOfNavigateToLibrarySocialAction
:navigateToLibrarySocialActionAssisterOfNavigateToLibrarySocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterOfSocialAction .

[http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#navigateToTeachingRoomSocialActionAssisterActionOfNavigateTo
TeachingRoomSocialAction](http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#navigateToTeachingRoomSocialActionAssisterActionOfNavigateToTeachingRoomSocialAction)
:navigateToTeachingRoomSocialActionAssisterActionOfNavigateToTeachingRoom
SocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterActionOfSocialAction .

[http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#navigateToTeachingRoomSocialActionAssisterAidOfNavigateTo
TeachingRoomSocialAction](http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#navigateToTeachingRoomSocialActionAssisterAidOfNavigateToTeachingRoomSocialAction)
:navigateToTeachingRoomSocialActionAssisterAidOfNavigateToTeachingRoom
SocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterAidOfSocialAction .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#navigateToTeachingRoomSocialActionAssisterOfNavigateToTeachingRoomSocialAction
:navigateToTeachingRoomSocialActionAssisterOfNavigateToTeachingRoomSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterOfSocialAction .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#navigateToTeachingRoomSocialActionNavigateToTeachingRoomSocialActionAssister
:navigateToTeachingRoomSocialActionNavigateToTeachingRoomSocialActionAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssister .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#navigateToTeachingRoomSocialActionNavigateToTeachingRoomSocialActionAssisterAction
:navigateToTeachingRoomSocialActionNavigateToTeachingRoomSocialActionAssisterAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#navigateToTeachingRoomSocialActionNavigateToTeachingRoomSocialActionAssisterAid
:navigateToTeachingRoomSocialActionNavigateToTeachingRoomSocialActionAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#navigateToToiletSocialActionAssistedByNavigateToToiletSocialActionAssister>
:navigateToToiletSocialActionAssistedByNavigateToToiletSocialActionAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssister .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#navigateToToiletSocialActionAssistedByNavigateToToiletSocialActionAssisterAction
:navigateToToiletSocialActionAssistedByNavigateToToiletSocialActionAssisterAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#navigateToToiletSocialActionAssistedByNavigateToToiletSocialActionAssisterAid>
:navigateToToiletSocialActionAssistedByNavigateToToiletSocialActionAssisterAid rdf:type owl:ObjectProperty ;

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                                rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

#### http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#navigateToToiletSocialActionAssisterActionOfNavigateToToiletSocialAction
:navigateToToiletSocialActionAssisterActionOfNavigateToToiletSocialAction rdf:type owl:ObjectProperty ;
                                rdfs:subPropertyOf
:socialActionAssisterActionOfSocialAction .

#### http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#navigateToToiletSocialActionAssisterAidOfNavigateToToiletSocialAction
:navigateToToiletSocialActionAssisterAidOfNavigateToToiletSocialAction rdf:type owl:ObjectProperty ;
                                rdfs:subPropertyOf
:socialActionAssisterAidOfSocialAction .

#### http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#navigateToToiletSocialActionAssisterOfNavigateToToiletSocialAction
:navigateToToiletSocialActionAssisterOfNavigateToToiletSocialAction rdf:type owl:ObjectProperty ;
                                rdfs:subPropertyOf :socialActionAssisterOfSocialAction .

#### http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#noseComponentAssistedByNoseComponentAssister
:noseComponentAssistedByNoseComponentAssister rdf:type owl:ObjectProperty ;
                                rdfs:subPropertyOf :bodyComponentAssistedByBodyComponentAssister
.

#### http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#noseComponentAssisterOfNoseComponent
:noseComponentAssisterOfNoseComponent rdf:type owl:ObjectProperty ;
                                rdfs:subPropertyOf :bodyComponentAssisterOfBodyComponent .

#### http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#payCourseFeesSocialActionAssistedByPayCourseFeesSocialActionAssister
:payCourseFeesSocialActionAssistedByPayCourseFeesSocialActionAssister rdf:type owl:ObjectProperty ;
                                rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssister .

#### http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#payCourseFeesSocialActionAssistedByPayCourseFeesSocialActionAssisterAction
:payCourseFeesSocialActionAssistedByPayCourseFeesSocialActionAssisterAction rdf:type owl:ObjectProperty ;

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OrderSocialAction
:payForCafeFoodOrderSocialActionAssisterActionOfPayForCafeFoodOrderSocial
Action rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#processCheckOutLibraryBookSocialActionAssistedByProcessCheckOutLibraryBookSocialActionAssister>
:processCheckOutLibraryBookSocialActionAssistedByProcessCheckOutLibraryBookSocialActionAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#processCheckOutLibraryBookSocialActionAssistedByProcessCheckOutLibraryBookSocialActionAssisterAction>
:processCheckOutLibraryBookSocialActionAssistedByProcessCheckOutLibraryBookSocialActionAssisterAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#processCheckOutLibraryBookSocialActionAssistedByProcessCheckOutLibraryBookSocialActionAssisterAid>
:processCheckOutLibraryBookSocialActionAssistedByProcessCheckOutLibraryBookSocialActionAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#processCheckOutLibraryBookSocialActionAssisterActionOfProcessCheckOutLibraryBookSocialAction>
:processCheckOutLibraryBookSocialActionAssisterActionOfProcessCheckOutLibraryBookSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#processCheckOutLibraryBookSocialActionAssisterAidOfProcessCheckOutLibraryBookSocialAction>
:processCheckOutLibraryBookSocialActionAssisterAidOfProcessCheckOutLibraryBookSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterAidOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#processCheckOutLibraryBookSocialActionAssisterOfProcessCheckOutLibraryBookSocialAction>
:processCheckOutLibraryBookSocialActionAssisterOfProcessCheckOutLibraryBookSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#processReturnOfLibraryBookSocialActionAssistedByProcessReturnOfLibraryBookSocialActionAssister>
:processReturnOfLibraryBookSocialActionAssistedByProcessReturnOfLibraryBookSocialActionAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#processReturnOfLibraryBookSocialActionAssistedByProcessReturnOfLibraryBookSocialActionAssisterAction>
:processReturnOfLibraryBookSocialActionAssistedByProcessReturnOfLibraryBookSocialActionAssisterAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#processReturnOfLibraryBookSocialActionAssistedByProcessReturnOfLibraryBookSocialActionAssisterAid>
:processReturnOfLibraryBookSocialActionAssistedByProcessReturnOfLibraryBookSocialActionAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#processReturnOfLibraryBookSocialActionAssisterActionOfProcessReturnOfLibraryBookSocialAction>
:processReturnOfLibraryBookSocialActionAssisterActionOfProcessReturnOfLibraryBookSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#processReturnOfLibraryBookSocialActionAssisterAidOfProcessReturnOfLibraryBookSocialAction>
:processReturnOfLibraryBookSocialActionAssisterAidOfProcessReturnOfLibraryBookSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterAidOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#processReturnOfLibraryBookSocialActionAssisterOfProcessReturnOfLibraryBookSocialAction>
:processReturnOfLibraryBookSocialActionAssisterOfProcessReturnOfLibraryBookSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#putClothesOnSocialActionAssistedByPutClothesOnSocialActionAssister>
:putClothesOnSocialActionAssistedByPutClothesOnSocialActionAssister rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf

:socialActionAssistedBySocialActionAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#putClothesOnSocialActionAssistedByPutClothesOnSocialActionAssisterAction>

:putClothesOnSocialActionAssistedByPutClothesOnSocialActionAssisterAction rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf

:socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#putClothesOnSocialActionAssistedByPutClothesOnSocialActionAssisterAid>

:putClothesOnSocialActionAssistedByPutClothesOnSocialActionAssisterAid rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf

:socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#putClothesOnSocialActionAssisterActionOfPutClothesOnSocialAction>

:putClothesOnSocialActionAssisterActionOfPutClothesOnSocialAction rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf

:socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#putClothesOnSocialActionAssisterAidOfPutClothesOnSocialAction>

:putClothesOnSocialActionAssisterAidOfPutClothesOnSocialAction rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf :socialActionAssisterAidOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#putClothesOnSocialActionAssisterOfPutClothesOnSocialAction>

:putClothesOnSocialActionAssisterOfPutClothesOnSocialAction rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf :socialActionAssisterOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#registrarProviderRoleAssistedByRegistrarProviderRoleAssisterAid>

:registrarProviderRoleAssistedByRegistrarProviderRoleAssisterAid rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf :roleAssistedByRoleAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#registrarProviderRoleAssistedByRegistrarProviderRoleAssisterRole>

:registrarProviderRoleAssistedByRegistrarProviderRoleAssisterRole rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf :roleAssistedByRoleAssisterRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#registrarProviderRoleAssistedByRegistrarRoleAssister>

:registrarProviderRoleAssistedByRegistrarRoleAssister rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf :roleAssistedByRoleAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#registrarProviderRoleAssisterAidOfRegistrarProviderRole>
:registrarProviderRoleAssisterAidOfRegistrarProviderRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterAidOfRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#registrarProviderRoleAssisterOfRegistrarProviderRole>
:registrarProviderRoleAssisterOfRegistrarProviderRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterOfRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#registrarProviderRoleAssisterRoleOfRegistrarProviderRole>
:registrarProviderRoleAssisterRoleOfRegistrarProviderRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterRoleOfRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#removeClothesActionSocialActionAssistedByRemoveClothesActionSocialActionAssisterAction>
:removeClothesActionSocialActionAssistedByRemoveClothesActionSocialActionAssisterAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#removeClothesActionSocialActionAssistedByRemoveClothesActionSocialActionAssisterAid>
:removeClothesActionSocialActionAssistedByRemoveClothesActionSocialActionAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#removeClothesActionSocialActionAssisterActionOfRemoveClothesActionSocialAction>
:removeClothesActionSocialActionAssisterActionOfRemoveClothesActionSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#removeClothesActionSocialActionAssisterAidOfRemoveClothesActionSocialAction>
:removeClothesActionSocialActionAssisterAidOfRemoveClothesActionSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterAidOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#removeClothesSocialActionAssistedByRemoveClothesSocialActionAssisterAction>
:removeClothesSocialActionAssistedByRemoveClothesSocialActionAssisterAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#removeClothesSocialActionAssisterActionOfRemoveClothesSocialAction>
:removeClothesSocialActionAssisterActionOfRemoveClothesSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#removeRelevantClothesSocialActionAssistedByRemoveRelevantClothesSocialActionAssister>
:removeRelevantClothesSocialActionAssistedByRemoveRelevantClothesSocialActionAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#removeRelevantClothesSocialActionAssistedByRemoveRelevantClothesSocialActionAssisterAction>
:removeRelevantClothesSocialActionAssistedByRemoveRelevantClothesSocialActionAssisterAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#removeRelevantClothesSocialActionAssistedByRemoveRelevantClothesSocialActionAssisterAid>
:removeRelevantClothesSocialActionAssistedByRemoveRelevantClothesSocialActionAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#removeRelevantClothesSocialActionAssisterActionOfRemoveRelevantClothesSocialAction>
:removeRelevantClothesSocialActionAssisterActionOfRemoveRelevantClothesSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#removeRelevantClothesSocialActionAssisterAidOfRemoveRelevantClothesSocialAction>
:removeRelevantClothesSocialActionAssisterAidOfRemoveRelevantClothesSocialAction rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf
 :socialActionAssisterAidOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#removeRelevantClothesSocialActionAssisterOfRemoveRelevantClothesSocialAction>
 :removeRelevantClothesSocialActionAssisterOfRemoveRelevantClothesSocialAction rdfs:type owl:ObjectProperty ;
 rdfs:subPropertyOf
 :socialActionAssisterOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#respiratoryComponentAssistedByRespiratoryComponentAssister>
 :respiratoryComponentAssistedByRespiratoryComponentAssister rdfs:type owl:ObjectProperty ;
 rdfs:subPropertyOf
 :bodyComponentAssistedByBodyComponentAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#respiratoryComponentAssisterOfRespiratoryComponent>
 :respiratoryComponentAssisterOfRespiratoryComponent rdfs:type owl:ObjectProperty ;
 rdfs:subPropertyOf :bodyComponentAssisterOfBodyComponent .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#restoreRelevantClothesSocialActionAssistedByRestoreRelevantClothesSocialActionAssister>
 :restoreRelevantClothesSocialActionAssistedByRestoreRelevantClothesSocialActionAssister rdfs:type owl:ObjectProperty ;
 rdfs:subPropertyOf
 :socialActionAssistedBySocialActionAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#restoreRelevantClothesSocialActionAssistedByRestoreRelevantClothesSocialActionAssisterAction>
 :restoreRelevantClothesSocialActionAssistedByRestoreRelevantClothesSocialActionAssisterAction rdfs:type owl:ObjectProperty ;
 rdfs:subPropertyOf
 :socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#restoreRelevantClothesSocialActionAssistedByRestoreRelevantClothesSocialActionAssisterAid>
 :restoreRelevantClothesSocialActionAssistedByRestoreRelevantClothesSocialActionAssisterAid rdfs:type owl:ObjectProperty ;
 rdfs:subPropertyOf
 :socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#restoreRelevantClothesSocialActionAssisterActionOfRestoreRelevantClothesSocialAction>
 :restoreRelevantClothesSocialActionAssisterActionOfRestoreRelevantClothesSocialAction rdfs:type owl:ObjectProperty ;

rdfs:subPropertyOf
 :socialActionAssisterActionOfSocialAction .

http://www.OntoCarer.org/OntoCarer-Link-
 Ontology.owl#restoreRelevantClothesSocialActionAssisterAidOfRestoreRelevantClothesSocialAction
 :restoreRelevantClothesSocialActionAssisterAidOfRestoreRelevantClothes
 SocialAction rdf:type owl:ObjectProperty ;
 rdfs:subPropertyOf
 :socialActionAssisterAidOfSocialAction .

[http://www.OntoCarer.org/OntoCarer-Link-
 Ontology.owl#restoreRelevantClothesSocialActionAssisterOfRestoreRelevant
 ClothesSocialAction](http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#restoreRelevantClothesSocialActionAssisterOfRestoreRelevantClothesSocialAction)
 :restoreRelevantClothesSocialActionAssisterOfRestoreRelevantClothesSocial
 Action rdf:type owl:ObjectProperty ;
 rdfs:subPropertyOf
 :socialActionAssisterOfSocialAction .

[http://www.OntoCarer.org/OntoCarer-Link-
 Ontology.owl#returnOfLibraryBookSocialActionAssistedByReturnOfLibraryBook
 SocialActionAssister](http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#returnOfLibraryBookSocialActionAssistedByReturnOfLibraryBookSocialActionAssister)
 :returnOfLibraryBookSocialActionAssistedByReturnOfLibraryBookSocialAction
 Assister rdf:type owl:ObjectProperty ;
 rdfs:subPropertyOf
 :socialActionAssistedBySocialActionAssister .

[http://www.OntoCarer.org/OntoCarer-Link-
 Ontology.owl#returnOfLibraryBookSocialActionAssistedByReturnOfLibraryBook
 SocialActionAssisterAction](http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#returnOfLibraryBookSocialActionAssistedByReturnOfLibraryBookSocialActionAssisterAction)
 :returnOfLibraryBookSocialActionAssistedByReturnOfLibraryBookSocialActionAssisterAction rdf:type
 owl:ObjectProperty ;
 rdfs:subPropertyOf
 :socialActionAssistedBySocialActionAssisterAction .

[http://www.OntoCarer.org/OntoCarer-Link-
 Ontology.owl#returnOfLibraryBookSocialActionAssistedByReturnOfLibraryBook
 SocialActionAssisterAid](http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#returnOfLibraryBookSocialActionAssistedByReturnOfLibraryBookSocialActionAssisterAid)
 :returnOfLibraryBookSocialActionAssistedByReturnOfLibraryBookSocialAction
 AssisterAid rdf:type owl:ObjectProperty ;
 rdfs:subPropertyOf
 :socialActionAssistedBySocialActionAssisterAid .

http://www.OntoCarer.org/OntoCarer-Link-
 Ontology.owl#returnOfLibraryBookSocialActionAssisterActionOfReturnOfLibraryBookSocialAction
 :returnOfLibraryBookSocialActionAssisterActionOfReturnOfLibraryBookSocial
 Action rdf:type owl:ObjectProperty ;
 rdfs:subPropertyOf
 :socialActionAssisterActionOfSocialAction .

[http://www.OntoCarer.org/OntoCarer-Link-
 Ontology.owl#returnOfLibraryBookSocialActionAssisterAidOfReturnOfLibrary
 BookSocialAction](http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#returnOfLibraryBookSocialActionAssisterAidOfReturnOfLibraryBookSocialAction)
 :returnOfLibraryBookSocialActionAssisterAidOfReturnOfLibraryBookSocial

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Action rdf:type owl:ObjectProperty ;
                                rdfs:subPropertyOf
:socialActionAssisterAidOfSocialAction .

### http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#returnOfLibraryBookSocialActionAssisterOfReturnOfLibraryBook
SocialAction
:returnOfLibraryBookSocialActionAssisterOfReturnOfLibraryBookSocialAction rdf:type
owl:ObjectProperty ;
                                rdfs:subPropertyOf :socialActionAssisterOfSocialAction
.

### http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#roleAssistedByRoleAssister
:roleAssistedByRoleAssister rdf:type owl:ObjectProperty ;
                                rdfs:subPropertyOf :assistedAssistedByAssister ;
                                owl:inverseOf :roleAssisterOfRole ;
                                rdfs:domain <http://www.OntoCarer.org/Agent.owl#Role> ;
                                rdfs:range <http://www.OntoCarer.org/Agent.owl#RoleAssister> .

### http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#roleAssistedByRoleAssisterAid
:roleAssistedByRoleAssisterAid rdf:type owl:ObjectProperty ;
                                rdfs:subPropertyOf :roleAssistedByRoleAssister .

### http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#roleAssistedByRoleAssisterRole
:roleAssistedByRoleAssisterRole rdf:type owl:ObjectProperty ;
                                rdfs:subPropertyOf :roleAssistedByRoleAssister ;
                                rdfs:domain <http://www.OntoCarer.org/Agent.owl#Role> ;
                                rdfs:range <http://www.OntoCarer.org/Agent.owl#RoleAssisterRole> .

### http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#roleAssisterAidOfRole
:roleAssisterAidOfRole rdf:type owl:ObjectProperty ;
                                rdfs:subPropertyOf :roleAssisterOfRole .

### http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#roleAssisterOfRole
:roleAssisterOfRole rdf:type owl:ObjectProperty ;
                                rdfs:subPropertyOf :assisterOfAssisted ;
                                rdfs:domain <http://www.OntoCarer.org/Agent.owl#RoleAssister> ;
                                rdfs:range <http://www.OntoCarer.org/Agent.owl#Role> .

### http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#roleAssisterRoleOfRole
:roleAssisterRoleOfRole rdf:type owl:ObjectProperty ;
                                rdfs:subPropertyOf :roleAssisterOfRole ;
                                rdfs:domain <http://www.OntoCarer.org/Agent.owl#RoleAssisterRole> ;
                                rdfs:range <http://www.OntoCarer.org/Agent.owl#Role> .

### http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#roleCooperatesWithRole
:roleCooperatesWithRole rdf:type owl:ObjectProperty ;
                                rdfs:subPropertyOf :cooperatorCooperatesWithCooperator ;
                                owl:inverseOf :roleCooperatesWithRole ;
                                rdfs:domain <http://www.OntoCarer.org/Agent.owl#Role> ;
                                rdfs:range <http://www.OntoCarer.org/Agent.owl#Role> .

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http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#searchCatalogueForItemSocialActionAssistedBySearchCatalogueForItemSocialActionAssister
:searchCatalogueForItemSocialActionAssistedBySearchCatalogueForItemSocialActionAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssister .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#searchCatalogueForItemSocialActionAssistedBySearchCatalogueForItemSocialActionAssisterAction
:searchCatalogueForItemSocialActionAssistedBySearchCatalogueForItemSocialActionAssisterAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#searchCatalogueForItemSocialActionAssistedBySearchCatalogueForItemSocialActionAssisterAid
:searchCatalogueForItemSocialActionAssistedBySearchCatalogueForItemSocialActionAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#searchCatalogueForItemSocialActionAssisterActionOfSearchCatalogueForItemSocialAction>
:searchCatalogueForItemSocialActionAssisterActionOfSearchCatalogueForItemSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterActionOfSocialAction .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#searchCatalogueForItemSocialActionAssisterAidOfSearchCatalogueForItemSocialAction
:searchCatalogueForItemSocialActionAssisterAidOfSearchCatalogueForItemSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterAidOfSocialAction .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#searchCatalogueForItemSocialActionAssisterOfSearchCatalogueForItemSocialAction
:searchCatalogueForItemSocialActionAssisterOfSearchCatalogueForItemSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#securityGuardProviderRoleAssistedBySecurityGuardProviderRoleAssister>

:securityGuardProviderRoleAssistedBySecurityGuardProviderRoleAssister rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#securityGuardProviderRoleAssistedBySecurityGuardProviderRoleAssisterAid>
AssisterAid
:securityGuardProviderRoleAssistedBySecurityGuardProviderRoleAssisterAid rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#securityGuardProviderRoleAssisterAidOfSecurityGuardProviderRole>
Role
:securityGuardProviderRoleAssisterAidOfSecurityGuardProviderRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterAidOfRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#securityGuardProviderRoleAssisterOfSecurityGuardProviderRole>
:securityGuardProviderRoleAssisterOfSecurityGuardProviderRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterOfRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#securityGuardProviderRoleAssisterRoleOfSecurityProviderGuardRole>
Role
:securityGuardProviderRoleAssisterRoleOfSecurityProviderGuardRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterRoleOfRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#securityProviderGuardRoleAssistedBySecurityGuardProviderRoleAssisterRole>
AssisterRole
:securityProviderGuardRoleAssistedBySecurityGuardProviderRoleAssisterRole rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssisterRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#seeCafeFoodMenuSocialActionAssistedBySeeCafeFoodMenuSocialActionAssister>
ActionAssister
:seeCafeFoodMenuSocialActionAssistedBySeeCafeFoodMenuSocialActionAssister rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#seeCafeFoodMenuSocialActionAssistedBySeeCafeFoodMenuSocialActionAssisterAction>
ActionAssisterAction
:seeCafeFoodMenuSocialActionAssistedBySeeCafeFoodMenuSocialActionAssisterAction rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#seeCafeFoodMenuSocialActionAssistedBySeeCafeFoodMenuSocialActionAssisterAid>
:seeCafeFoodMenuSocialActionAssistedBySeeCafeFoodMenuSocialActionAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#seeCafeFoodMenuSocialActionAssisterActionOfSeeCafeFoodMenuSocialAction>
:seeCafeFoodMenuSocialActionAssisterActionOfSeeCafeFoodMenuSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#seeCafeFoodOrderMenuSocialActionAssisterAidOfSeeCafeFoodOrderMenuSocialAction>
:seeCafeFoodOrderMenuSocialActionAssisterAidOfSeeCafeFoodOrderMenuSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterAidOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#seeCafeFoodOrderMenuSocialActionAssisterOfSeeCafeFoodOrderMenuSocialAction>
:seeCafeFoodOrderMenuSocialActionAssisterOfSeeCafeFoodOrderMenuSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#seeLectureSocialActionAssistedBySeeLectureSocialActionAssister>
:seeLectureSocialActionAssistedBySeeLectureSocialActionAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#seeLectureSocialActionAssistedBySeeLectureSocialActionAssisterAction>
:seeLectureSocialActionAssistedBySeeLectureSocialActionAssisterAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#seeLectureSocialActionAssistedBySeeLectureSocialActionAssisterAid>
:seeLectureSocialActionAssistedBySeeLectureSocialActionAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#seeLectureSocialActionAssisterActionOfSeeLectureSocialAction>
:seeLectureSocialActionAssisterActionOfSeeLectureSocialAction rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf :socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#seeLectureSocialActionAssisterAidOfSeeLectureSocialAction>
:seeLectureSocialActionAssisterAidOfSeeLectureSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterAidOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#seeLectureSocialActionAssisterOfSeeLectureSocialAction>
:seeLectureSocialActionAssisterOfSeeLectureSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#seeSignLanguageActionSocialActionAssistedBySeeSignLanguageActionSocialActionAssisterAction>
:seeSignLanguageActionSocialActionAssistedBySeeSignLanguageActionSocialActionAssisterAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#seeSignLanguageActionSocialActionAssistedBySeeSignLanguageActionSocialActionAssisterAid>
:seeSignLanguageActionSocialActionAssistedBySeeSignLanguageActionSocialActionAssisterAid
rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#seeSignLanguageActionSocialActionAssisterActionOfSeeSignLanguageActionSocialAction>
:seeSignLanguageActionSocialActionAssisterActionOfSeeSignLanguageActionSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#seeSignLanguageActionSocialActionAssisterAidOfSeeSignLanguageActionSocialAction>
:seeSignLanguageActionSocialActionAssisterAidOfSeeSignLanguageActionSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterAidOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#seeSignLanguageSocialActionCooperatesWithMakeSignLanguageSocialAction>
:seeSignLanguageSocialActionCooperatesWithMakeSignLanguageSocialAction rdf:type
owl:ObjectProperty ;

`rdfs:subPropertyOf`
`:socialActionCooperatesWithSocialAction .`

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#seeingAbilityAssistedBySeeingAbilityAssister>
`:seeingAbilityAssistedBySeeingAbilityAssister rdfs:type owl:ObjectProperty ;`
`rdfs:subPropertyOf :bodyAbilityAssistedByBodyAbilityAssister .`

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#seeingAbilityAssisterOfSeeingAbility>
`:seeingAbilityAssisterOfSeeingAbility rdfs:type owl:ObjectProperty ;`
`rdfs:subPropertyOf :bodyAbilityAssisterOfBodyAbility .`

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#setUpAssisterAidSocialActionAssistedBySetupAssisterAidSocialActionAssisterAction>
`:setUpAssisterAidSocialActionAssistedBySetupAssisterAidSocialActionAssisterAction rdfs:type owl:ObjectProperty ;`
`rdfs:subPropertyOf`
`:socialActionAssistedBySocialActionAssisterAction .`

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#setUpAssisterAidSocialActionAssistedBySetupAssisterAidSocialActionAssisterAid>
`:setUpAssisterAidSocialActionAssistedBySetupAssisterAidSocialActionAssisterAid rdfs:type owl:ObjectProperty ;`
`rdfs:subPropertyOf`
`:socialActionAssistedBySocialActionAssisterAid .`

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#setUpEquipmentSocialActionAssistedBySetupEquipmentSocialActionAssisterAction>
`:setUpEquipmentSocialActionAssistedBySetupEquipmentSocialActionAssisterAction rdfs:type owl:ObjectProperty ;`
`rdfs:subPropertyOf`
`:socialActionAssistedBySocialActionAssisterAction .`

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#setUpEquipmentSocialActionAssistedBySetupEquipmentSocialActionAssisterAid>
`:setUpEquipmentSocialActionAssistedBySetupEquipmentSocialActionAssisterAid rdfs:type owl:ObjectProperty ;`
`rdfs:subPropertyOf`
`:socialActionAssistedBySocialActionAssisterAid .`

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#setUpEquipmentSocialActionAssisterActionOf_SetUpEquipmentSocialAction
`:setUpEquipmentSocialActionAssisterActionOf_SetUpEquipmentSocialAction rdfs:type owl:ObjectProperty ;`
`rdfs:subPropertyOf`
`:socialActionAssisterActionOfSocialAction .`

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#setUpEquipmentSocialActionAssisterAidOfSetUpEquipmentSocialAction>
Action
:setUpEquipmentSocialActionAssisterAidOfSetUpEquipmentSocialAction rdf:type owl:ObjectProperty
;
rdfs:subPropertyOf :socialActionAssisterAidOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#setUpAssisterAidSocialActionAssisterActionOfSetupAssisterAid>
SocialAction
:setUpAssisterAidSocialActionAssisterActionOfSetupAssisterAidSocialAction rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#setUpAssisterAidSocialActionAssisterAidOfSetupAssisterAid>
SocialAction
:setUpAssisterAidSocialActionAssisterAidOfSetupAssisterAidSocialAction rdf:type owl:ObjectProperty
;
rdfs:subPropertyOf
:socialActionAssisterAidOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#showLectureSlidesSocialActionAssistedByShowLectureSlidesSocialActionAssisterAction>
n
:showLectureSlidesSocialActionAssistedByShowLectureSlidesSocialAction
AssisterAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#showLectureSlidesSocialActionAssistedByShowLectureSlidesSocialActionAssisterAid>
:showLectureSlidesSocialActionAssistedByShowLectureSlidesSocialAction
AssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#showLectureSlidesSocialActionAssisterActionOfShowLectureSocialAction>
:showLectureSlidesSocialActionAssisterActionOfShowLectureSocialAction rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#showLectureSlidesSocialActionAssisterAidOfShowLectureSlides>
SocialAction
:showLectureSlidesSocialActionAssisterAidOfShowLectureSlidesSocialAction rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterAidOfSocialAction .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#signerCooperatorRoleAssistedBySignerCooperaorRoleAssisterRole
:signerCooperatorRoleAssistedBySignerCooperaorRoleAssisterRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssisterRole .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#signerCooperatorRoleAssistedBySignerCooperatorRoleAssister
:signerCooperatorRoleAssistedBySignerCooperatorRoleAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssister .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#signerCooperatorRoleAssistedBySignerCooperatorRoleAssisterAid
:signerCooperatorRoleAssistedBySignerCooperatorRoleAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssisterAid .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#signerCooperatorRoleAssisterAidOfSignerCooperatorRole
:signerCooperatorRoleAssisterAidOfSignerCooperatorRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterAidOfRole .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#signerCooperatorRoleAssisterOfSignerCooperatorRole
:signerCooperatorRoleAssisterOfSignerCooperatorRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterOfRole .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#signerCooperatorRoleAssisterRoleOfSignerCooperatorRole
:signerCooperatorRoleAssisterRoleOfSignerCooperatorRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterRoleOfRole .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#signerCooperatorRoleCooperatesWithSignerCooperatorRole
:signerCooperatorRoleCooperatesWithSignerCooperatorRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleCooperatesWithRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#signerCooperatorRoleCooperatesWithSignerTranslatorCooperatorRole>
:signerCooperatorRoleCooperatesWithSignerTranslatorCooperatorRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleCooperatesWithRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#signerTranslatorCooperatorRoleAssistedBySignerTranslatorCooperatorRoleAssisterAid>
:signerTranslatorCooperatorRoleAssistedBySignerTranslatorCooperatorRoleAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:roleAssistedByRoleAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#signerTranslatorCooperatorRoleAssistedBySignerTranslatorCooperatorRoleAssisterRole>
:signerTranslatorCooperatorRoleAssistedBySignerTranslatorCooperatorRoleAssisterRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssisterRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#signerTranslatorCooperatorRoleAssisterAidOfSignerTranslatorCooperatorRole>
:signerTranslatorCooperatorRoleAssisterAidOfSignerTranslatorCooperatorRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterAidOfRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#signerTranslatorCooperatorRoleAssisterRoleOfSignerTranslatorCooperatorRole>
:signerTranslatorCooperatorRoleAssisterRoleOfSignerTranslatorCooperatorRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterRoleOfRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#sleepingAbilityAssistedBySleepingAbilityAssister>
:sleepingAbilityAssistedBySleepingAbilityAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyAbilityAssistedByBodyAbilityAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#sleepingAbilityAssisterOfSleepingAbility>
:sleepingAbilityAssisterOfSleepingAbility rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyAbilityAssisterOfBodyAbility .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#smellingAbilityAssistedBySmellingAbilityAssister>
:smellingAbilityAssistedBySmellingAbilityAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyAbilityAssistedByBodyAbilityAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#smellingAbilityAssisterOfsmellingAbility>
:smellingAbilityAssisterOfsmellingAbility rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyAbilityAssisterOfBodyAbility .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#socialActionAssistedBySocialActionAssister>
:socialActionAssistedBySocialActionAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :assistedAssistedByAssister ;
owl:inverseOf :socialActionAssisterOfSocialAction ;
rdfs:domain <<http://www.OntoCarer.org/SocialAction.owl#SocialAction>> ;
rdfs:range
<<http://www.OntoCarer.org/SocialAction.owl#SocialActionAssister>> .

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### http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#socialActionAssistedBySocialActionAssisterAction
:socialActionAssistedBySocialActionAssisterAction rdf:type owl:ObjectProperty ;
    rdfs:subPropertyOf :socialActionAssistedBySocialActionAssister ;
    owl:inverseOf :socialActionAssisterActionOfSocialAction ;
    rdfs:domain
<http://www.OntoCarer.org/SocialAction.owl#SocialAction> ;
    rdfs:range
<http://www.OntoCarer.org/SocialAction.owl#SocialActionAssisterAction> .
```

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### http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#socialActionAssistedBySocialActionAssisterAid
:socialActionAssistedBySocialActionAssisterAid rdf:type owl:ObjectProperty ;
    rdfs:subPropertyOf :socialActionAssistedBySocialActionAssister .
```

```
### http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#socialActionAssisterActionOfSocialAction
:socialActionAssisterActionOfSocialAction rdf:type owl:ObjectProperty ;
    rdfs:subPropertyOf :socialActionAssisterOfSocialAction ;
    rdfs:domain
<http://www.OntoCarer.org/SocialAction.owl#SocialActionAssister> ;
    rdfs:range <http://www.OntoCarer.org/SocialAction.owl#SocialAction> .
```

```
### http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#socialActionAssisterAidOfSocialAction
:socialActionAssisterAidOfSocialAction rdf:type owl:ObjectProperty ;
    rdfs:subPropertyOf :socialActionAssisterOfSocialAction .
```

```
### http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#socialActionAssisterOfSocialAction
:socialActionAssisterOfSocialAction rdf:type owl:ObjectProperty ;
    rdfs:subPropertyOf :assisterOfAssisted ;
    rdfs:domain
<http://www.OntoCarer.org/SocialAction.owl#SocialActionAssister> ;
    rdfs:range <http://www.OntoCarer.org/SocialAction.owl#SocialAction> .
```

```
### http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#socialActionCooperatesWithSocialAction
:socialActionCooperatesWithSocialAction rdf:type owl:ObjectProperty ;
    rdfs:subPropertyOf :cooperatorCooperatesWithCooperator ;
    owl:inverseOf :socialActionCooperatesWithSocialAction ;
    rdfs:domain <http://www.OntoCarer.org/SocialAction.owl#SocialAction> ;
    rdfs:range <http://www.OntoCarer.org/SocialAction.owl#SocialAction> .
```

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### http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#speakLectureSocialActionAssistedBySpeakLectureSocialAction
AssisterAction
:speakLectureSocialActionAssistedBySpeakLectureSocialActionAssisterAction rdf:type
owl:ObjectProperty ;
    rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .
```


<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#speakLectureSocialActionAssistedBySpeakLectureSocialActionAssisterAid>
:speakLectureSocialActionAssistedBySpeakLectureSocialActionAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#speakLectureSocialActionAssisterActionOfSpeakLectureSocialAction>
:speakLectureSocialActionAssisterActionOfSpeakLectureSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#speakLectureSocialActionAssisterAidOfSpeakLectureSocialAction>
:speakLectureSocialActionAssisterAidOfSpeakLectureSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterAidOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#speakingAbilityAssistedByspeakingAbilityAssister>
:speakingAbilityAssistedByspeakingAbilityAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyAbilityAssistedByBodyAbilityAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#speakingAbilityAssisterOfSpeakingAbility>
:speakingAbilityAssisterOfSpeakingAbility rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyAbilityAssisterOfBodyAbility .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#standingAbilityAssistedByStandingAbilityAssister>
:standingAbilityAssistedByStandingAbilityAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyAbilityAssistedByBodyAbilityAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#standingAbilityAssisterOfStandingAbility>
:standingAbilityAssisterOfStandingAbility rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyAbilityAssisterOfBodyAbility .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#studentUserRoleAssistedByStudentUserRoleAssister>
:studentUserRoleAssistedByStudentUserRoleAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#studentUserRoleAssistedByStudentUserRoleAssisterAid>
:studentUserRoleAssistedByStudentUserRoleAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#submitAssignmentSocialActionAssisterAidOfSubmitAssignment>
SocialAction
:submitAssignmentSocialActionAssisterAidOfSubmitAssignmentSocialAction rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterAidOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#submitAssignmentSocialActionAssisterOfSubmitAssignmentSocialAction>
Action
:submitAssignmentSocialActionAssisterOfSubmitAssignmentSocialAction rdf:type owl:ObjectProperty
;
rdfs:subPropertyOf :socialActionAssisterOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#takeCafeFoodOrderSocialActionAssistedByTakeCafeFoodOrderAssisterAction>
AssisterAction
:takeCafeFoodOrderSocialActionAssistedByTakeCafeFoodOrderAssisterAction rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#takeCafeFoodOrderSocialActionAssistedByTakeCafeFoodOrderAssisterAid>
AssisterAid
:takeCafeFoodOrderSocialActionAssistedByTakeCafeFoodOrderAssisterAid rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#takeCafeFoodOrderSocialActionAssistedByTakeCafeFoodOrderSocialActionAssisterAssister>
AssisterAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#takeCafeFoodOrderSocialActionAssisterActionOfTakeCafeFoodOrderSocialAction>
AssisterActionOfTakeCafeFoodOrderSocialAction rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#takeCafeFoodOrderSocialActionAssisterAidOfTakeCafeFoodOrderSocialAction>
SocialAction
:takeCafeFoodOrderSocialActionAssisterAidOfTakeCafeFoodOrderSocialAction rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterAidOfSocialAction .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#takeCafeFoodOrderSocialActionAssisterOfTakeCafeFoodOrderSocialAction :takeCafeFoodOrderSocialActionAssisterOfTakeCafeFoodOrderSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterOfSocialAction .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#takeNotesFromSpeakerSocialActionAssistedByTakeNotesFromSpeakerSocialActionAssister :takeNotesFromSpeakerSocialActionAssistedByTakeNotesFromSpeakerSocialActionAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssistedBySocialActionAssister .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#takeNotesFromSpeakerSocialActionAssistedByTakeNotesFromSpeakerSocialActionAssisterAction :takeNotesFromSpeakerSocialActionAssistedByTakeNotesFromSpeakerSocialActionAssisterAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssistedBySocialActionAssisterAction .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#takeNotesFromSpeakerSocialActionAssistedByTakeNotesFromSpeakerSocialActionAssisterAid :takeNotesFromSpeakerSocialActionAssistedByTakeNotesFromSpeakerSocialActionAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#takeNotesFromSpeakerSocialActionAssisterActionOfTakeNotesFromSpeakerSocialAction> :takeNotesFromSpeakerSocialActionAssisterActionOfTakeNotesFromSpeakerSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#takeNotesFromSpeakerSocialActionAssisterAidOfTakeNotesFromSpeakerSocialAction> :takeNotesFromSpeakerSocialActionAssisterAidOfTakeNotesFromSpeakerSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterAidOfSocialAction .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#takeNotesFromSpeakerSocialActionAssisterOfTakeNotesFromSpeakerSocialAction :takeNotesFromSpeakerSocialActionAssisterOfTakeNotesFromSpeakerSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterOfSocialAction .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#takeNotesFromTextSocialActionAssistedByTakeNotesFromTextSocialActionAssister :takeNotesFromTextSocialActionAssistedByTakeNotesFromTextSocialActionAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssistedBySocialActionAssister .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#takeNotesFromTextSocialActionAssistedByTakeNotesFromTextSocialActionAssisterAction :takeNotesFromTextSocialActionAssistedByTakeNotesFromTextSocialActionAssisterAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssistedBySocialActionAssisterAction .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#takeNotesFromTextSocialActionAssistedByTakeNotesFromTextSocialActionAssisterAid :takeNotesFromTextSocialActionAssistedByTakeNotesFromTextSocialActionAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssistedBySocialActionAssisterAid .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#takeNotesFromTextSocialActionAssisterActionOfTakeNotesFromTextSocialAction :takeNotesFromTextSocialActionAssisterActionOfTakeNotesFromTextSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#takeNotesFromTextSocialActionAssisterAidOfTakeNotesFromTextSocialAction> :takeNotesFromTextSocialActionAssisterAidOfTakeNotesFromTextSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterAidOfSocialAction .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#takeNotesFromTextSocialActionAssisterOfTakeNotesFromTextSocialAction :takeNotesFromTextSocialActionAssisterOfTakeNotesFromTextSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#takePaymentForCafeFoodOrderSocialActionAssistedByTakePaymentForCafeFoodOrderAssisterAction> :takePaymentForCafeFoodOrderSocialActionAssistedByTakePaymentForCafeFoodOrderAssisterAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#takePaymentForCafeFoodOrderSocialActionAssistedByTakePaymentForCafeFoodOrderAssisterAid>
:takePaymentForCafeFoodOrderSocialActionAssistedByTakePaymentForCafeFoodOrderAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#takePaymentForCafeFoodOrderSocialActionAssistedByTakePaymentForCafeFoodOrderSocialActionAssister>
:takePaymentForCafeFoodOrderSocialActionAssistedByTakePaymentForCafeFoodOrderSocialActionAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#takePaymentForCafeFoodOrderSocialActionAssisterActionOfTakePaymentForFoodOrderSocialAction>
:takePaymentForCafeFoodOrderSocialActionAssisterActionOfTakePaymentForFoodOrderSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#takePaymentForCafeFoodOrderSocialActionAssisterAidOfTakePaymentForFoodOrderSocialAction>
:takePaymentForCafeFoodOrderSocialActionAssisterAidOfTakePaymentForFoodOrderSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterAidOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#takePaymentForCafeFoodOrderSocialActionAssisterOfTakePaymentForFoodOrderSocialAction>
:takePaymentForCafeFoodOrderSocialActionAssisterOfTakePaymentForFoodOrderSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#takePaymentForCourseFeesSocialActionAssisterAidOfTakePaymentForCourseFeesSocialAction>
:takePaymentForCourseFeesSocialActionAssisterAidOfTakePaymentForCourseFeesSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterAidOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#takeSecurityActionSocialActionAssistedByTakeSecurityActionSocialActionAssisterAction>
:takeSecurityActionSocialActionAssistedByTakeSecurityActionSocialActionAssisterAction rdf:type owl:ObjectProperty ;


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### http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#technicianProviderRoleAssisterAidOfTechnicianProviderRole
:technicianProviderRoleAssisterAidOfTechnicianProviderRole rdf:type owl:ObjectProperty ;
    rdfs:subPropertyOf :roleAssisterAidOfRole .

### http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#technicianProviderRoleAssisterOfTechnicianProviderRole
:technicianProviderRoleAssisterOfTechnicianProviderRole rdf:type owl:ObjectProperty ;
    rdfs:subPropertyOf :roleAssisterOfRole .

### http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#technicianProviderRoleAssisterRoleOfTechnicianProviderRole
:technicianProviderRoleAssisterRoleOfTechnicianProviderRole rdf:type owl:ObjectProperty ;
    rdfs:subPropertyOf :roleAssisterRoleOfRole .

### http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#thinkingAbilityAssistedByThinkingAbilityAssister
:thinkingAbilityAssistedByThinkingAbilityAssister rdf:type owl:ObjectProperty ;
    rdfs:subPropertyOf :bodyAbilityAssistedByBodyAbilityAssister .

### http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#thinkingAbilityAssisterOfThinkingAbility
:thinkingAbilityAssisterOfThinkingAbility rdf:type owl:ObjectProperty ;
    rdfs:subPropertyOf :bodyAbilityAssisterOfBodyAbility .

### http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#toileterBasicFunctionRoleAssistedByToileterBasicFunctionRole
Assister
:toileterBasicFunctionRoleAssistedByToileterBasicFunctionRoleAssister rdf:type owl:ObjectProperty ;
    rdfs:subPropertyOf :roleAssistedByRoleAssister .

### http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#toileterBasicFunctionRoleAssistedByToileterBasicFunctionRole
AssisterAid
:toileterBasicFunctionRoleAssistedByToileterBasicFunctionRoleAssisterAid rdf:type
owl:ObjectProperty ;
    rdfs:subPropertyOf :roleAssistedByRoleAssisterAid .

### http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#toileterBasicFunctionRoleAssistedByToileterBasicFunctionRole
AssisterRole
:toileterBasicFunctionRoleAssistedByToileterBasicFunctionRoleAssisterRole rdf:type
owl:ObjectProperty ;
    rdfs:subPropertyOf :roleAssistedByRoleAssisterRole .

### http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#toileterBasicFunctionRoleAssisterAidOfToileterBasicFunction
Role
:toileterBasicFunctionRoleAssisterAidOfToileterBasicFunctionRole rdf:type owl:ObjectProperty ;
    rdfs:subPropertyOf :roleAssisterAidOfRole .

```


http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#toileterBasicFunctionRoleAssisterOfToileterBasicFunctionRole
:toileterBasicFunctionRoleAssisterOfToileterBasicFunctionRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterOfRole .

[http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#toileterBasicFunctionRoleAssisterRoleOfToileterBasicFunction
Role](http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#toileterBasicFunctionRoleAssisterRoleOfToileterBasicFunctionRole)
:toileterBasicFunctionRoleAssisterRoleOfToileterBasicFunctionRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterRoleOfRole .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#touchingAbilityAssistedByTouchingAbilityAssister
:touchingAbilityAssistedByTouchingAbilityAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyAbilityAssistedByBodyAbilityAssister .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#touchingAbilityAssisterOfTouchingAbility
:touchingAbilityAssisterOfTouchingAbility rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyAbilityAssisterOfBodyAbility .

[http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#translateSignLanguageToSpokenLanguageSocialActionAssistedBy
TranslateSignLanguageToSpokenLanguageSocialActionAssisterAid](http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#translateSignLanguageToSpokenLanguageSocialActionAssistedByTranslateSignLanguageToSpokenLanguageSocialActionAssisterAid)
:translateSignLanguageToSpokenLanguageSocialActionAssistedByTranslateSign
LanguageToSpokenLanguageSocialActionAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

[http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#translateSignLanguageToSpokenLanguageSocialActionAssister
ActionOfTranslateSignLanguageToSpokenLanguageSocialAction](http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#translateSignLanguageToSpokenLanguageSocialActionAssisterActionOfTranslateSignLanguageToSpokenLanguageSocialAction)
:translateSignLanguageToSpokenLanguageSocialActionAssisterActionOfTranslateSignLanguageToS
pokenLanguageSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterActionOfSocialAction .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#translateSignLanguageToSpokenLanguageSocialActionAssisterAidOfTranslateSignLan
guageToSpokenLanguageSocialAction
:translateSignLanguageToSpokenLanguageSocialActionAssisterAidOfTranslate
SignLanguageToSpokenLanguageSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterAidOfSocialAction .

http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#translateSignLanguageToSpokenLanguageSocialActionCooperatesWithMakeSignLang
uageSocialAction
:translateSignLanguageToSpokenLanguageSocialActionCooperatesWithMakeSignLanguageSocialAc
tion rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionCooperatesWithSocialAction .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#translateSignLanguageToSpokenLanguageSocialActionCooperatesWithMakeSignLanguageSocial_Action
:translateSignLanguageToSpokenLanguageSocialActionCooperatesWithMakeSignLanguageSocial_Action rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionCooperatesWithSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#translateSpokenLanguageToSignLanguageSocialActionAssistedByTranslateSpokenLanguageToSignLanguageSocialActionAssisterAction>
:translateSpokenLanguageToSignLanguageSocialActionAssistedByTranslateSpokenLanguageToSignLanguageSocialActionAssisterAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#translateSpokenLanguageToSignLanguageSocialActionAssistedByTranslateSpokenLanguageToSignLanguageSocialActionAssisterAid>
:translateSpokenLanguageToSignLanguageSocialActionAssistedByTranslateSpokenLanguageToSignLanguageSocialActionAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#translateSpokenLanguageToSignLanguageSocialActionAssisterActionOfTranslateSpokenLanguageToSignLanguageSocialAction>
:translateSpokenLanguageToSignLanguageSocialActionAssisterActionOfTranslateSpokenLanguageToSignLanguageSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#translateSpokenLanguageToSignLanguageSocialActionAssisterAidOfTranslateSpokenLanguageToSignLanguageSocialAction>
:translateSpokenLanguageToSignLanguageSocialActionAssisterAidOfTranslateSpokenLanguageToSignLanguageSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterAidOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#translateSpokenLanguageToSignLanguageSocialActionCooperatesWithMakeSignLanguageSocialAction>
:translateSpokenLanguageToSignLanguageSocialActionCooperatesWithMakeSignLanguageSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionCooperatesWithSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#understandSignLanguageSocialActionActionCooperatesWithMakeSignLanguageSocialAction>

:understandSignLanguageSocialActionActionCooperatesWithMakeSignLanguageSocialAction
rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf

:socialActionCooperatesWithSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#understandSignLanguageSocialActionAssistedByUnderstandSignLanguageSocialActionAssisterAction>

:understandSignLanguageSocialActionAssistedByUnderstandSignLanguageSocialActionAssisterAction rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf

:socialActionAssistedBySocialActionAssisterAction .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#understandSignLanguageSocialActionAssistedBy_UnderstandSignLanguageSocialActionAssisterAid

:understandSignLanguageSocialActionAssistedBy_UnderstandSignLanguageSocialActionAssisterAid rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf

:socialActionAssistedBySocialActionAssisterAid .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#understandSignLanguageSocialActionAssisterActionOf_UnderstandSignLanguageSocialAction

:understandSignLanguageSocialActionAssisterActionOf_UnderstandSignLanguageSocialAction rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf

:socialActionAssisterActionOfSocialAction .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#understandSignLanguageSocialActionAssisterAidOf_UnderstandSignLanguageSocialAction

:understandSignLanguageSocialActionAssisterAidOf_UnderstandSignLanguageSocialAction rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf

:socialActionAssisterAidOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#urinatingAbilityAssistedByUrinatingAbilityAssister>

:urinatingAbilityAssistedByUrinatingAbilityAssister rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf :bodyAbilityAssistedByBodyAbilityAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#urinatingAbilityAssisterOfUrinatingAbility>

:urinatingAbilityAssisterOfUrinatingAbility rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf :bodyAbilityAssisterOfBodyAbility .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#useCutlerySocialActionAssistedByUseCutlerySocialActionAssister>

:useCutlerySocialActionAssistedByUseCutlerySocialActionAssister rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf

:socialActionAssistedBySocialActionAssister .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#useCutlerySocialActionAssistedByUseCutlerySocialActionAssisterAction :useCutlerySocialActionAssistedByUseCutlerySocialActionAssisterAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssistedBySocialActionAssisterAction .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#useCutlerySocialActionAssistedByUseCutlerySocialActionAssisterAid :useCutlerySocialActionAssistedByUseCutlerySocialActionAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssistedBySocialActionAssisterAid .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#useCutlerySocialActionAssisterActionOfUseCutlerySocialAction :useCutlerySocialActionAssisterActionOfUseCutlerySocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterActionOfSocialAction .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#useCutlerySocialActionAssisterAidOfUseCutlerySocialAction :useCutlerySocialActionAssisterAidOfUseCutlerySocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterAidOfSocialAction .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#useCutlerySocialActionAssisterOfUseCutlerySocialAction :useCutlerySocialActionAssisterOfUseCutlerySocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#useCutleryToFeedSocialActionAssistedByUseCutleryToFeedSocialActionAssister> :useCutleryToFeedSocialActionAssistedByUseCutleryToFeedSocialActionAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssistedBySocialActionAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#useCutleryToFeedSocialActionAssistedByUseCutleryToFeedSocialActionAssisterAction> :useCutleryToFeedSocialActionAssistedByUseCutleryToFeedSocialActionAssisterAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssistedBySocialActionAssisterAction .

http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#useCutleryToFeedSocialActionAssistedByUseCutleryToFeedSocialActionAssisterAid :useCutleryToFeedSocialActionAssistedByUseCutleryToFeedSocialActionAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#useCutleryToFeedSocialActionAssisterActionOfUseCutleryToFeed>
SocialAction
:useCutleryToFeedSocialActionAssisterActionOfUseCutleryToFeedSocialAction rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#useCutleryToFeedSocialActionAssisterAidOfUseCutleryToFeed>
SocialAction
:useCutleryToFeedSocialActionAssisterAidOfUseCutleryToFeedSocialAction rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterAidOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#useCutleryToFeedSocialActionAssisterOfUseCutleryToFeedSocialAction>
Action
:useCutleryToFeedSocialActionAssisterOfUseCutleryToFeedSocialAction rdf:type owl:ObjectProperty
;
rdfs:subPropertyOf :socialActionAssisterOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#useDrinkingUtensilSocialActionAssistedByUseDrinkingUtensil>
SocialActionAssister
:useDrinkingUtensilSocialActionAssistedByUseDrinkingUtensilSocialAction
Assister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#useDrinkingUtensilSocialActionAssistedByUseDrinkingUtensil>
SocialActionAssisterAction
:useDrinkingUtensilSocialActionAssistedByUseDrinkingUtensilSocialAction
AssisterAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#useDrinkingUtensilSocialActionAssistedByUseDrinkingUtensil>
SocialActionAssisterAid
:useDrinkingUtensilSocialActionAssistedByUseDrinkingUtensilSocialAction
AssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#useDrinkingUtensilSocialActionAssisterActionOfUseDrinkingUtensil>
UtensilSocialAction
:useDrinkingUtensilSocialActionAssisterActionOfUseDrinkingUtensilSocial

Action rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#useDrinkingUtensilSocialActionAssisterAidOfUseDrinkingUtensil>
SocialAction
:useDrinkingUtensilSocialActionAssisterAidOfUseDrinkingUtensilSocialAction rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterAidOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#useDrinkingUtensilSocialActionAssisterOfUseDrinkingUtensil>
SocialAction
:useDrinkingUtensilSocialActionAssisterOfUseDrinkingUtensilSocialAction rdf:type owl:ObjectProperty
;
rdfs:subPropertyOf :socialActionAssisterOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#walkingAbilityAssistedByWalkingAbilityAssister>
:walkingAbilityAssistedByWalkingAbilityAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyAbilityAssistedByBodyAbilityAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#walkingAbilityAssisterOfWalkingAbility>
:walkingAbilityAssisterOfWalkingAbility rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :bodyAbilityAssisterOfBodyAbility .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#washSelfSocialActionAssistedByWashSelfSocialActionAssister>
:washSelfSocialActionAssistedByWashSelfSocialActionAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssistedBySocialActionAssister
.

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#washSelfSocialActionAssistedByWashSelfSocialActionAssisterAction>
Action
:washSelfSocialActionAssistedByWashSelfSocialActionAssisterAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#washSelfSocialActionAssistedByWashSelfSocialActionAssisterAid>
:washSelfSocialActionAssistedByWashSelfSocialActionAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#washSelfSocialActionAssisterActionOfWashSelfSocialAction>
:washSelfSocialActionAssisterActionOfWashSelfSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#washSelfSocialActionAssisterAidOfWashSelfSocialAction>
:washSelfSocialActionAssisterAidOfWashSelfSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterAidOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#washSelfSocialActionAssisterOfWashSelfSocialAction>
:washSelfSocialActionAssisterOfWashSelfSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#washerBasicFunctionRoleAssistedByWasherBasicFunctionRoleAssister>
Assister
:washerBasicFunctionRoleAssistedByWasherBasicFunctionRoleAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#washerBasicFunctionRoleAssistedByWasherBasicFunctionRoleAssisterAid>
AssisterAid
:washerBasicFunctionRoleAssistedByWasherBasicFunctionRoleAssisterAid rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#washerBasicFunctionRoleAssistedByWasherBasicFunctionRoleAssisterRole>
AssisterRole
:washerBasicFunctionRoleAssistedByWasherBasicFunctionRoleAssisterRole rdf:type
owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssistedByRoleAssisterRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#washerBasicFunctionRoleAssisterAidOfWasherBasicFunctionRole>
:washerBasicFunctionRoleAssisterAidOfWasherBasicFunctionRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterAidOfRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#washerBasicFunctionRoleAssisterOfWasherBasicFunctionRole>
:washerBasicFunctionRoleAssisterOfWasherBasicFunctionRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterOfRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#washerBasicFunctionRoleAssisterRoleOfWasherBasicFunctionRole>
:washerBasicFunctionRoleAssisterRoleOfWasherBasicFunctionRole rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :roleAssisterRoleOfRole .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#writeAssignmentSocialActionAssistedByWriteAssignmentSocialActionAssister>
:writeAssignmentSocialActionAssistedByWriteAssignmentSocialActionAssister rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#writeAssignmentSocialActionAssistedByWriteAssignmentSocialActionAssisterAction>
:writeAssignmentSocialActionAssistedByWriteAssignmentSocialActionAssisterAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#writeAssignmentSocialActionAssistedByWriteAssignmentSocialActionAssisterAid>
:writeAssignmentSocialActionAssistedByWriteAssignmentSocialActionAssisterAid rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#writeAssignmentSocialActionAssisterActionOfWriteAssignmentSocialAction>
:writeAssignmentSocialActionAssisterActionOfWriteAssignmentSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#writeAssignmentSocialActionAssisterAidOfWriteAssignmentSocialAction>
:writeAssignmentSocialActionAssisterAidOfWriteAssignmentSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterAidOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#writeAssignmentSocialActionAssisterOfWriteAssignmentSocialAction>
:writeAssignmentSocialActionAssisterOfWriteAssignmentSocialAction rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf :socialActionAssisterOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#hearQuestions&AnswersSocialActionAssistedByHearQuestions&AnswersSocialActionAssister>
<<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#hearQuestions&AnswersSocialActionAssistedByHearQuestions&AnswersSocialActionAssister>> rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf :socialActionAssistedBySocialActionAssister .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#hearQuestions&AnswersSocialActionAssistedByHearQuestions&AnswersSocialActionAssisterAction>
<<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#hearQuestions&AnswersSocialActionAssistedByHearQuestions&AnswersSocialActionAssisterAction>> rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf :socialActionAssistedBySocialActionAssisterAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#hearQuestions&AnswersSocialActionAssistedByHearQuestions&AnswersSocialActionAssisterAid>
<<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#hearQuestions&AnswersSocialActionAssistedByHearQuestions&AnswersSocialActionAssisterAid>> rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf :socialActionAssistedBySocialActionAssisterAid .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#hearQuestions&AnswersSocialActionAssisterActionOfHearQuestion&AnswersSocialAction>
<<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#hearQuestions&AnswersSocialActionAssisterActionOfHearQuestion&AnswersSocialAction>> rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf :socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#hearQuestions&AnswersSocialActionAssisterActionOfHearQuestions&AnswersSocialAction>
<<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#hearQuestions&AnswersSocialActionAssisterActionOfHearQuestions&AnswersSocialAction>> rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf :socialActionAssisterActionOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#hearQuestions&AnswersSocialActionAssisterAidOfHearQuestions&AnswersSocialAction>
<<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#hearQuestions&AnswersSocialActionAssisterAidOfHearQuestions&AnswersSocialAction>> rdf:type owl:ObjectProperty ;

rdfs:subPropertyOf :socialActionAssisterAidOfSocialAction .

<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#hearQuestions&AnswersSocialActionAssisterOfHearQuestions&AnswersSocialAction>
<<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#hearQuestions&AnswersSocialActionAssisterOfHearQuestions&AnswersSocialAction>> rdf:type owl:ObjectProperty ;

<<http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#hearQuestions&AnswersSocialActionAssisterOfHearQuestions&AnswersSocialAction>> rdf:type owl:ObjectProperty ;
rdfs:subPropertyOf
:socialActionAssisterOfSocialAction .

Classes
#####

<http://www.OntoCarer.org/Agent.owl#Role>
<<http://www.OntoCarer.org/Agent.owl#Role>> rdf:type owl:Class .

<http://www.OntoCarer.org/Agent.owl#RoleAssister>
<<http://www.OntoCarer.org/Agent.owl#RoleAssister>> rdf:type owl:Class .

<http://www.OntoCarer.org/Agent.owl#RoleAssisterRole>
<<http://www.OntoCarer.org/Agent.owl#RoleAssisterRole>> rdf:type owl:Class .

<http://www.OntoCarer.org/BodyAbilities.owl#BodyAbility>
<<http://www.OntoCarer.org/BodyAbilities.owl#BodyAbility>> rdf:type owl:Class .

<http://www.OntoCarer.org/BodyAbilities.owl#BodyAbilityAssister>
<<http://www.OntoCarer.org/BodyAbilities.owl#BodyAbilityAssister>> rdf:type owl:Class .

<http://www.OntoCarer.org/BodyComponents.owl#BodyComponent>
<<http://www.OntoCarer.org/BodyComponents.owl#BodyComponent>> rdf:type owl:Class .

<http://www.OntoCarer.org/BodyComponents.owl#BodyComponentAssister>
<<http://www.OntoCarer.org/BodyComponents.owl#BodyComponentAssister>> rdf:type owl:Class .

<http://www.OntoCarer.org/SocialAction.owl#SocialAction>
<<http://www.OntoCarer.org/SocialAction.owl#SocialAction>> rdf:type owl:Class .

<http://www.OntoCarer.org/SocialAction.owl#SocialActionAssister>
<<http://www.OntoCarer.org/SocialAction.owl#SocialActionAssister>> rdf:type owl:Class .

<http://www.OntoCarer.org/SocialAction.owl#SocialActionAssisterAction>
<<http://www.OntoCarer.org/SocialAction.owl#SocialActionAssisterAction>> rdf:type owl:Class .

Generated by the OWL API (version 4.5.9.2019-02-01T07:24:44Z)
<https://github.com/owlcs/owlapi>

Appendix E

OntoCarer CollegeModel.rdf

@prefix : <http://www.OntoCarer.org/CollegeModel.rdf#> .
@prefix owl: <http://www.w3.org/2002/07/owl#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix xml: <http://www.w3.org/XML/1998/namespace> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix Agent: <http://www.OntoCarer.org/Agent.owl#> .
@prefix Buildings: <http://www.OntoCarer.org/Buildings.owl#> .
@prefix Organisation: <http://www.OntoCarer.org/Organisation.owl#> .
@prefix SocialAction: <http://www.OntoCarer.org/SocialAction.owl#> .
@prefix BodyAbilities: <http://www.OntoCarer.org/BodyAbilities.owl#> .
@prefix BodyComponents: <http://www.OntoCarer.org/BodyComponents.owl#> .
@prefix OntoCarer-Link-Ontology: <http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#> .
@base <http://www.OntoCarer.org/CollegeModel.rdf> .

```

<http://www.OntoCarer.org/CollegeModel.rdf> rdf:type owl:Ontology ;
      owl:imports <file:/Users/michaelulman/Documents/Ontologies/OntoCarer-
Link-Ontology.owl> ,
<file:/Users/michaelulman/Documents/Ontologies//BodyComponents.owl> ,
      <file:/Users/michaelulman/Documents/Ontologies/Agent.owl> ,
<file:/Users/michaelulman/Documents/Ontologies/SocialAction.owl> ,
<file:/Users/michaelulman/Documents/Ontologies//BodyAbilities.owl> ,
      <file:/Users/michaelulman/Documents/Ontologies//Buildings.owl>
,
<file:/Users/michaelulman/Documents/Ontologies/Organisation.owl> .

#####
# Annotation properties
#####

### http://www.OntoCarer.org/Agent.owl#roleHasSocialActionAssisterAction
Agent:roleHasSocialActionAssisterAction rdf:type owl:AnnotationProperty .

### http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#cleanSelfAfterToiletSocialActionOfCleanSelfAfterToiletSocialActionAssisterAction
OntoCarer-Link-
Ontology:cleanSelfAfterToiletSocialActionOfCleanSelfAfterToiletSocialActionAssisterAction rdf:type
owl:AnnotationProperty .

### http://www.OntoCarer.org/OntoCarer-Link-
Ontology.owl#takeNotesSocialActionAssistedByTakeNotesSocialActionAssisterAction
OntoCarer-Link-Ontology:takeNotesSocialActionAssistedByTakeNotesSocialActionAssisterAction
rdf:type owl:AnnotationProperty .

#####
# Classes
#####

### http://www.OntoCarer.org/Agent.owl#DresserRole
Agent:DresserRole rdf:type owl:Class .

### http://www.OntoCarer.org/Agent.owl#DresserRoleAssisterRole
Agent:DresserRoleAssisterRole rdf:type owl:Class .

### http://www.OntoCarer.org/Agent.owl#DrinkerRole
Agent:DrinkerRole rdf:type owl:Class .

### http://www.OntoCarer.org/Agent.owl#DrinkerRoleAssisterRole
Agent:DrinkerRoleAssisterRole rdf:type owl:Class .

### http://www.OntoCarer.org/Agent.owl#EaterRole

```

Agent:EaterRole rdf:type owl:Class .

http://www.OntoCarer.org/Agent.owl#EaterRoleAssisterRole
Agent:EaterRoleAssisterRole rdf:type owl:Class .

http://www.OntoCarer.org/Agent.owl#SignerRole
Agent:SignerRole rdf:type owl:Class .

http://www.OntoCarer.org/Agent.owl#SignerTranslatorRole
Agent:SignerTranslatorRole rdf:type owl:Class .

http://www.OntoCarer.org/Agent.owl#ToileterRole
Agent:ToileterRole rdf:type owl:Class .

http://www.OntoCarer.org/Agent.owl#ToileterRoleAssisterRole
Agent:ToileterRoleAssisterRole rdf:type owl:Class .

http://www.OntoCarer.org/Agent.owl#WasherRole
Agent:WasherRole rdf:type owl:Class .

http://www.OntoCarer.org/Agent.owl#WasherRoleAssisterRole
Agent:WasherRoleAssisterRole rdf:type owl:Class .

http://www.OntoCarer.org/SocialAction.owl#TakeNotesSocialAction
SocialAction:TakeNotesSocialAction rdf:type owl:Class .

Individuals
#####

http://www.OntoCarer.org/CollegeModel.rdf#agent1
:agent1 rdf:type owl:NamedIndividual ,
 Agent:Person ;
 Agent:agentHasBasicFunctionRole :agent1DresserBasicFunctionRole1 ,
 :agent1DrinkerBasicFunctionRole1 ,
 :agent1EaterBasicFunctionRole1 ,
 :agent1ToileterBasicFunctionRole1 ,
 :agent1WasherBasicFunctionRole1 ;
 Agent:agentHasBodyAbility :agent1LeftEarHearingAbility1 ,
 :agent1RightEarHearingAbility1 ;
 Agent:agentHasBodyComponent :agent1LeftEarComponent1 ,
 :agent1RightEarComponent1 ;
 Agent:agentHasCooperatorRole :agent1SignerCooperatorRole1 ;
 Agent:agentHasLocation :largeLectureTheatre1 ;

Agent:agentHasOrganisationMembership :ontoCarerCollegeOrganisation ;
 Agent:agentHasRole :agent1CafeUserRole1 ,
 :agent1DresserBasicFunctionRole1 ,
 :agent1DrinkerBasicFunctionRole1 ,
 :agent1EaterBasicFunctionRole1 ,
 :agent1InformationSeekerUserRole1 ,
 :agent1LibraryUserRole1 ,
 :agent1SignerCooperatorRole1 ,
 :agent1StudentUserRole1 ,
 :agent1ToileterBasicFunctionRole1 ,
 :agent1WasherBasicFunctionRole1 ;
 Agent:agentHasSocialAction :agent10EaterBasicFunctionRole1FeedSelfSocialAction1 ,
 :agent1CafeUserRole1MakeCafeFoodOrderSocialAction1 ,
 :agent1CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
 :agent1CafeUserRole1SeeCafeFoodMenuSocialAction1 ,
 :agent1DresserBasicFunctionRole1PutClothesOnSocialAction1 ,
 :agent1DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
 :agent1DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
 :agent1EaterBasicFunctionRole1UseCutlerySocialAction1 ,
 :agent1EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
 :agent1InformationSeekerUserRole1AnswerQuestionsSocialAction1 ,
 :agent1InformationSeekerUserRole1AskQuestionsSocialAction1 ,
 :agent1InformationSeekerUserRole1FindAnswersSocialAction1 ,
 :agent1LibraryUserRole1AnswerQuestionsSocialAction1 ,
 :agent1LibraryUserRole1AskQuestionsSocialAction1 ,
 :agent1LibraryUserRole1CheckOutLibraryBookSocialAction1 ,
 :agent1LibraryUserRole1FindLibrarySocialAction1 ,
 :agent1LibraryUserRole1NavigateToLibrarySocialAction1 ,
 :agent1LibraryUserRole1ReturnOfLibraryBookSocialAction1 ,
 :agent1LibraryUserRole1SearchCatalogueSocialAction1 ,
 :agent1SignerCooperatorRole1MakeSignLanguageSocialAction1 ,
 :agent1SignerCooperatorRole1SeeSignLanguageSocialAction1 ,
 :agent1SignerCooperatorRole1UnderstandSignLanguageSocialAction1 ,
 :agent1StudentUserRole1AnswerQuestionsSocialAction1 ,
 :agent1StudentUserRole1AskQuestionsSocialAction1 ,
 :agent1StudentUserRole1DoPracticalTasksSocialAction1 ,
 :agent1StudentUserRole1EnrolOnCourseSocialAction1 ,
 :agent1StudentUserRole1ExitTeachingRoomSocialAction1 ,
 :agent1StudentUserRole1FindTeachingRoomSocialAction1 ,
 :agent1StudentUserRole1HearLectureSocialAction1 ,
 :agent1StudentUserRole1PayCourseFeesSocialAction1 ,
 :agent1StudentUserRole1SeeLectureSocialAction1 ,
 :agent1StudentUserRole1SubmitAssignmentSocialAction1 ,
 :agent1StudentUserRole1TakeNotesFromSpeakerSocialAction1 ,
 :agent1StudentUserRole1TakeNotesFromTextSocialAction1 ,
 :agent1StudentUserRoleWriteAssignmentSocialAction1 ,
 :agent1ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,
 :agent1ToileterBasicFunctionRole1FindToiletSocialAction1 ,
 :agent1ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
 :agent1ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,
 :agent1ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,
 :agent1WasherBasicFunctionRole1DrySelfSocialAction1 ,
 :agent1WasherBasicFunctionRole1WashSelfSocialAction1 ,
 :agent1InformationSeekerUserRole1HearQuestions&AnswersSocialAction1 ;
 Agent:agentHasUserRole :agent1InformationSeekerUserRole1 ,
 :agent1LibraryUserRole1 ,
 :agent1StudentUserRole1 ;
 Agent:agentIsInBuilding :ontoCarerCollegeBuilding ;
 Agent:agentIsInOrganisation :ontoCarerCollegeOrganisation ;
 Agent:agentIsOnFloor :floorF1 .

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent10
:agent10 rdf:type owl:NamedIndividual ,
    Agent:Person ;
    Agent:agentHasBasicFunctionRole :agent10DresserBasicFunctionRole1 ,
        :agent10DrinkerBasicFunctionRole1 ,
        :agent10EaterBasicFunctionRole1 ,
        :agent10ToileterBasicFunctionRole1 ,
        :agent10WasherBasicFunctionRole1 ;
    Agent:agentHasLocation :registry1 ;
    Agent:agentHasOrganisationMembership :ontoCarerCollegeOrganisation ;
    Agent:agentHasProviderRole :agent10BursarProviderRole1 ;
    Agent:agentHasRole :agent10BursarProviderRole1 ,
        :agent10DresserBasicFunctionRole1 ,
        :agent10EaterBasicFunctionRole1 ;
    Agent:agentHasSocialAction :agent10BursarProviderRole1AnswerQuestionsSocialAction1 ,
        :agent10BursarProviderRole1AskQuestionsSocialAction1 ,
        :agent10BursarProviderRole1TakePaymentForCourseFeesSocialAction1 ,
        :agent10DresserBasicFunctionRole1PutClothesOnSocialAction1 ,
        :agent10DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
        :agent10EaterBasicFunctionRole1FeedSelfSocialAction1 ,
        :agent10EaterBasicFunctionRole1UseCutlerySocialAction1 ,
        :agent10EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
        :agent10ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,
        :agent10ToileterBasicFunctionRole1FindToiletSocialAction1 ,
        :agent10ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
        :agent10ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,
        :agent10ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,
        :agent10WasherBasicFunctionRole1DrySelfSocialAction1 ,
        :agent10WasherBasicFunctionRole1WashSelfSocialAction1 ;
    Agent:agentHasSocialActionAssisterAction
:agent10StudentUserRoleAssisterRolePayCourseFeesSocialActionAssisterAction1 ;
    Agent:agentIsInBuilding :ontoCarerCollegeBuilding ;
    Agent:agentIsInOrganisation :ontoCarerCollegeOrganisation ;
    Agent:agentIsOnFloor :floorF1 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent10BursarProviderRole1
:agent10BursarProviderRole1 rdf:type owl:NamedIndividual ,
    Agent:BursarProviderRole ;
    Agent:roleHasAgent :agent10 ;
    Agent:roleHasSocialAction
:agent10BursarProviderRole1AnswerQuestionsSocialAction1 ,
        :agent10BursarProviderRole1AskQuestionsSocialAction1 ,

:agent10BursarProviderRole1TakePaymentForCourseFeesSocialAction1 ;
    Agent:roleHasDesireIntentionalLevel 1 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent10BursarProviderRole1
AnswerQuestionsSocialAction1

```


:agent10BursarProviderRole1AnswerQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:AnswerQuestionsSocialAction ;
SocialAction:socialActionHasAgent :agent10 ;
SocialAction:socialActionInRole :agent10BursarProviderRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

http://www.OntoCarer.org/CollegeModel.rdf#agent10BursarProviderRole1
AskQuestionsSocialAction1
:agent10BursarProviderRole1AskQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:AskQuestionsSocialAction ;
SocialAction:socialActionHasAgent :agent10 ;
SocialAction:socialActionInRole :agent10BursarProviderRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

http://www.OntoCarer.org/CollegeModel.rdf#agent10BursarProviderRole1
TakePaymentForCourseFeesSocialAction1
:agent10BursarProviderRole1TakePaymentForCourseFeesSocialAction1 rdf:type
owl:NamedIndividual ,
SocialAction:TakePaymentForCourseFeesSocialAction
;
SocialAction:socialActionHasAgent :agent10 ;
SocialAction:socialActionInRole
:agent10BursarProviderRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

[http://www.OntoCarer.org/CollegeModel.rdf#agent10DresserBasicFunction
Role1](http://www.OntoCarer.org/CollegeModel.rdf#agent10DresserBasicFunctionRole1)
:agent10DresserBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:DresserRole ;
Agent:roleHasAgent :agent10 ;
Agent:roleHasSocialAction
:agent10DresserBasicFunctionRole1PutClothesOnSocialAction1 ,
:agent10DresserBasicFunctionRole1RemoveClothesSocialAction1 ;
Agent:roleHasDesireIntentionLevel 1 .

http://www.OntoCarer.org/CollegeModel.rdf#agent10DresserBasicFunction
Role1PutClothesOnSocialAction1
:agent10DresserBasicFunctionRole1PutClothesOnSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:PutClothesOnSocialAction ;
OntoCarer-Link-
Ontology:putClothesOnSocialActionAssistedByPutClothesOnSocialActionAssisterAction
:agent14DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialAction
AssisterAction1 ,
:agent6DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialAction
AssisterAction1 ;
SocialAction:socialActionHasAgent :agent10 ;
SocialAction:socialActionInRole :agent10BursarProviderRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 2 .

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent10DresserBasicFunction
Role1RemoveClothesSocialAction1
:agent10DresserBasicFunctionRole1RemoveClothesSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:RemoveClothesSocialAction ;
    OntoCarer-Link-
Ontology:removeClothesSocialActionAssistedByRemoveClothesSocialAction
AssisterAction :agent14DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialAction
AssisterAction1 ,

:agent6DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialAction
AssisterAction1 ;
    SocialAction:socialActionHasAgent :agent10 ;
    SocialAction:socialActionInRole :agent10BursarProviderRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 2 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent10DrinkerBasicFunction
Role1
:agent10DrinkerBasicFunctionRole1 rdf:type owl:NamedIndividual ,
    Agent:DrinkerRole ;
    Agent:roleHasAgent :agent10 ;
    Agent:roleHasSocialAction
:agent10DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ;
    Agent:roleHasDesireIntentionalLevel 1 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent10DrinkerBasicFunction
Role1UseDrinkingUtensilSocialAction1
:agent10DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:UseDrinkingUtensilSocialAction ;

OntoCarer-Link-
Ontology:useDrinkingUtensilSocialActionAssistedByUseDrinkingUtensilSocialActionAssisterAction
:agent14DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1 ,

:agent6DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1 ,

:agent9DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1 ;
    SocialAction:socialActionHasAgent :agent10 ;
    SocialAction:socialActionInRole
:agent10DrinkerBasicFunctionRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent10EaterBasicFunction
Role1
:agent10EaterBasicFunctionRole1 rdf:type owl:NamedIndividual ,
    Agent:EaterRole ;
    Agent:roleHasAgent :agent10 ;
    Agent:roleHasSocialAction
:agent10EaterBasicFunctionRole1FeedSelfSocialAction1 ,
    :agent10EaterBasicFunctionRole1UseCutlerySocialAction1 ,

```

:agent10EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent10EaterBasicFunction>

Role1FeedSelfSocialAction1

:agent10EaterBasicFunctionRole1FeedSelfSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FeedSelfSocialAction ;

OntoCarer-Link-

Ontology:feedSelfSocialActionAssistedByFeedSelfSocialActionAssisterAction

:agent14EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister
Action1 ,

:agent6EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssisterAction1 ,

:agent9EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent10 ;

SocialAction:socialActionInRole :agent10EaterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent10EaterBasicFunction>

Role1UseCutlerySocialAction1

:agent10EaterBasicFunctionRole1UseCutlerySocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:UseCutlerySocialAction ;

OntoCarer-Link-

Ontology:useCutlerySocialActionAssistedByUseCutlerySocialActionAssister

Action :agent14EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ,

:agent6EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ,

:agent9EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent10 ;

SocialAction:socialActionInRole :agent10EaterBasicFunctionRole1

;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent10EaterBasicFunction
Role1UseCutleryToFeedSocialAction1
:agent10EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:UseCutleryToFeedSocialAction ;
    OntoCarer-Link-
Ontology:useCutleryToFeedSocialActionAssistedByUseCutleryToFeedSocialActionAssister
:agent14EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ,

:agent6EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ;
    OntoCarer-Link-
Ontology:useCutleryToFeedSocialActionAssistedByUseCutleryToFeedSocialActionAssisterAction
:agent9EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialActionAssisterAction1 ;
    SocialAction:socialActionHasAgent :agent10 ;
    SocialAction:socialActionInRole

:agent10EaterBasicFunctionRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent10LeftLegComponent1
:agent10LeftLegComponent1 rdf:type owl:NamedIndividual ,
    BodyComponents:LeftLegComponent ;
    BodyComponents:bodyComponentHasPerson :agent10 ;
    BodyComponents:bodyComponentHasQualifier 4 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent10RightLegComponent1
:agent10RightLegComponent1 rdf:type owl:NamedIndividual ,
    BodyComponents:RightLegComponent ;
    BodyComponents:bodyComponentHasPerson :agent10 ;
    BodyComponents:bodyComponentHasQualifier 4 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent10StandingAbility1
:agent10StandingAbility1 rdf:type owl:NamedIndividual ,
    BodyAbilities:StandingAbility ;
    BodyAbilities:bodyAbilityHasPerson :agent10 ;
    BodyAbilities:bodyAbilityHasQualifier 4 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent10StudentUserRoleAssisterRole1

```

:agent10StudentUserRoleAssisterRole1 rdf:type owl:NamedIndividual ,
Agent:StudentUserRoleAssisterRole ;
Agent:roleAssisterRoleHasAgent :agent10 ;
Agent:roleAssisterRoleHasSocialActionAssisterAction
:agent10StudentUserRoleAssisterRolePayCourseFeesSocialActionAssisterAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent10StudentUserRole>

AssisterRolePayCourseFeesSocialActionAssisterAction1

:agent10StudentUserRoleAssisterRolePayCourseFeesSocialActionAssisterAction1 rdf:type
owl:NamedIndividual ,

SocialAction:PayCourseFeesSocialActionAssisterAction ;

OntoCarer-Link-

Ontology:payCourseFeesSocialActionAssisterActionOfPayCourseFeesSocialAction

:agent1StudentUserRole1PayCourseFeesSocialAction1 ,

:agent5StudentUserRole1PayCourseFeesSocialAction1 ,

:agent7StudentUserRole1PayCourseFeesSocialAction1 ;

SocialAction:socialActionAssisterActionHasAgent

:agent10 ;

SocialAction:socialActionAssisterActionInRole

:agent10StudentUserRoleAssisterRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent10ToileterBasic>

FunctionRole1

:agent10ToileterBasicFunctionRole1 rdf:type owl:NamedIndividual ,

Agent:ToileterRole ;

Agent:roleHasAgent :agent10 ;

Agent:roleHasSocialAction

:agent10ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,

:agent10ToileterBasicFunctionRole1FindToiletSocialAction1 ,

:agent10ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,

:agent10ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,

:agent10ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ;

Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent10ToileterBasic>

FunctionRole1CleanSelfAfterToiletSocialAction1

:agent10ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 rdf:type owl:NamedIndividual ,

SocialAction:CleanSelfAfterToiletSocialAction ;

OntoCarer-Link-

Ontology:cleanSelfAfterToiletSocialActionAssistedByCleanSelfAfterToilet

SocialActionAssisterAction

:agent14ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocial

ActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent10 ;
SocialAction:socialActionInRole
:agent10ToileterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 3 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent10ToileterBasic>

FunctionRole1FindToiletSocialAction1

:agent10ToileterBasicFunctionRole1FindToiletSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FindToiletSocialAction ;
OntoCarer-Link-

Ontology:findToiletSocialActionAssistedByFindToiletSocialActionAssister
Action

:agent12ToileterBasicFunctionRoleAssisterRole1FindToiletSocialAction
AssisterAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1FindToiletSocialAction
AssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1FindToiletSocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent10 ;
SocialAction:socialActionInRole

:agent10ToileterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent10ToileterBasicFunction>

Role1NavigateToToiletSocialAction1

:agent10ToileterBasicFunctionRole1NavigateToToiletSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:NavigateToToiletSocialAction ;
OntoCarer-Link-

Ontology:navigateToToiletSocialActionAssistedByNavigateToToiletSocialActionAssisterAction

:agent12ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent10 ;
SocialAction:socialActionInRole

:agent10ToileterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent10ToileterBasicFunction
Role1RemoveRelevantClothesSocialAction1
:agent10ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 rdf:type
owl:NamedIndividual ,
                                SocialAction:RemoveRelevantClothesSocialAction ;
                                OntoCarer-Link-
Ontology:removeRelevantClothesSocialActionAssistedByRemoveRelevantClothes
SocialActionAssisterAction
:agent14ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocial
ActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocial
ActionAssisterAction1 ;
                                SocialAction:socialActionHasAgent :agent10 ;
                                SocialAction:socialActionInRole

:agent10ToileterBasicFunctionRole1 ;
                                SocialAction:socialActionHasDesireIntentionLevel 1 ;
                                SocialAction:socialActionHasQualifier 2 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent10ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1
FunctionRole1RestoreRelevantClothesSocialAction1
:agent10ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 rdf:type
owl:NamedIndividual ,
                                SocialAction:RestoreRelevantClothesSocialAction ;
                                OntoCarer-Link-
Ontology:restoreRelevantClothesSocialActionAssistedByRestoreRelevantClothesSocialActionAssister
Action :agent14ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocial
ActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocial
ActionAssisterAction1 ;
                                SocialAction:socialActionHasAgent :agent10 ;
                                SocialAction:socialActionInRole

:agent10ToileterBasicFunctionRole1 ;
                                SocialAction:socialActionHasDesireIntentionLevel 1 ;
                                SocialAction:socialActionHasQualifier 3 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent10WalkingAbility1
:agent10WalkingAbility1 rdf:type owl:NamedIndividual ,
                                BodyAbilities:WalkingAbility ;
                                BodyAbilities:bodyAbilityHasPerson :agent10 ;
                                BodyAbilities:bodyAbilityHasQualifier 4 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent10WasherBasicFunctionRole1
:agent10WasherBasicFunctionRole1 rdf:type owl:NamedIndividual ,

```

```

Agent:WasherRole ;
Agent:roleHasAgent :agent10 ;
Agent:roleHasSocialAction
:agent10WasherBasicFunctionRole1DrySelfSocialAction1 ,
:agent10WasherBasicFunctionRole1WashSelfSocialAction1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 3 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent10WasherBasicFunctionRole1DrySelfSocialAction1
:agent10WasherBasicFunctionRole1DrySelfSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:DrySelfSocialAction ;
OntoCarer-Link-
Ontology:drySelfSocialActionAssistedByDrySelfSocialActionAssisterAction
:agent14WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssisterAction1 ,

:agent6WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent10 ;
SocialAction:socialActionInRole
:agent10WasherBasicFunctionRole1 ;
SocialAction:socialActionHasQualifier 1 ,
3 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent10WasherBasicFunctionRole1WashSelfSocialAction1
:agent10WasherBasicFunctionRole1WashSelfSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:WashSelfSocialAction ;
OntoCarer-Link-
Ontology:washSelfSocialActionAssistedByWashSelfSocialActionAssisterAction
:agent14WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssisterAction1 ,

:agent6WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent10 ;
SocialAction:socialActionInRole
:agent10WasherBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 3 .

```



```

### http://www.OntoCarer.org/CollegeModel.rdf#agent11
:agent11 rdf:type owl:NamedIndividual ,
    Agent:Person ;
    Agent:agentHasBasicFunctionRole :agent11DresserBasicFunctionRole1 ,
        :agent11DrinkerBasicFunctionRole1 ,
        :agent11EaterBasicFunctionRole1 ,
        :agent11ToileterBasicFunctionRole1 ,
        :agent11WasherBasicFunctionRole1 ;
    Agent:agentHasLocation :registry1 ;
    Agent:agentHasOrganisationMembership :ontoCarerCollegeOrganisation ;
    Agent:agentHasProviderRole :agent11RegistrarProviderRole1 ;
    Agent:agentHasRole :agent11DresserBasicFunctionRole1 ,
        :agent11DrinkerBasicFunctionRole1 ,
        :agent11EaterBasicFunctionRole1 ,
        :agent11RegistrarProviderRole1 ,
        :agent11ToileterBasicFunctionRole1 ,
        :agent11WasherBasicFunctionRole1 ;
    Agent:agentHasSocialAction :agent11DresserBasicFunctionRole1PutClothesOnSocialAction1 ,
        :agent11DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
        :agent11DrinkerRole1UseDrinkingUtensilSocialAction1 ,
        :agent11EaterBasicFunctionRole1FeedSelfSocialAction1 ,
        :agent11EaterBasicFunctionRole1UseCutlerySocialAction1 ,
        :agent11EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
        :agent11RegistrarProviderRole1AnswerQuestionsSocialAction1 ,
        :agent11RegistrarProviderRole1AskQuestionsSocialAction1 ,
        :agent11RegistrarProviderRole1EnrolStudentOnCourseSocialAction1 ,
        :agent11ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,
        :agent11ToileterBasicFunctionRole1FindToiletSocialAction1 ,
        :agent11ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
        :agent11ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,
        :agent11ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,
        :agent11WasherBasicFunctionRole1DrySelfSocialAction1 ,
        :agent11WasherBasicFunctionRole1WashSelfSocialAction1 ;
    Agent:agentIsInBuilding :ontoCarerCollegeBuilding ;
    Agent:agentIsInOrganisation :ontoCarerCollegeOrganisation ;
    Agent:agentIsOnFloor :floorF1 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent11DresserBasicFunctionRole1
:agent11DresserBasicFunctionRole1 rdf:type owl:NamedIndividual ,
    Agent:DresserRole ;
    Agent:roleHasAgent :agent11 ;
    Agent:roleHasSocialAction
:agent11DresserBasicFunctionRole1PutClothesOnSocialAction1 ,
    :agent11WasherBasicFunctionRole1WashSelfSocialAction1 ;
    Agent:roleHasDesireIntentionalLevel 1 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent11DresserBasicFunctionRole1PutClothesOnSocialAction1
:agent11DresserBasicFunctionRole1PutClothesOnSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:PutClothesOnSocialAction ;
    OntoCarer-Link-
Ontology:putClothesOnSocialActionAssistedByPutClothesOnSocialActionAssisterAction
:agent14DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialActionAssisterAction1 ,
:agent6DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialActionAssisterAction1 ;

```

SocialAction:socialActionHasAgent :agent11 ;
SocialAction:socialActionInRole
:agent11DresserBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent11DresserBasicFunctionRole1RemoveClothesSocialAction1>
:agent11DresserBasicFunctionRole1RemoveClothesSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:RemoveClothesSocialAction ;
OntoCarer-Link-
Ontology:removeClothesSocialActionAssistedByRemoveClothesSocialActionAssisterAction
:agent14DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialActionAssisterAction1 ,
:agent6DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent11 ;
SocialAction:socialActionInRole
:agent11DresserBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent11DrinkerBasicFunctionRole1>
:agent11DrinkerBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:DrinkerRole ;
Agent:roleHasAgent :agent11 ;
Agent:roleHasSocialAction
:agent11DrinkerRole1UseDrinkingUtensilSocialAction1 ;
Agent:roleHasDesireIntentionLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent11DrinkerRole1UseDrinkingUtensilSocialAction1>
:agent11DrinkerRole1UseDrinkingUtensilSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:UseDrinkingUtensilSocialAction ;
OntoCarer-Link-
Ontology:useDrinkingUtensilSocialActionAssistedByUseDrinkingUtensilSocialActionAssisterAction
:agent14DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1 ,
:agent6DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1 ,
:agent9DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent11 ;
SocialAction:socialActionInRole :agent11DrinkerBasicFunctionRole1
;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent11EaterBasicFunctionRole1>
:agent11EaterBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:EaterRole ;
Agent:roleHasAgent :agent11 ;
Agent:roleHasSocialAction
:agent11EaterBasicFunctionRole1FeedSelfSocialAction1 ,

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:agent11EaterBasicFunctionRole1UseCutlerySocialAction1 ,

:agent11EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ;
    Agent:roleHasDesireIntentionalLevel 1 .

### http://www.OntoCarer.org/CollegeModel.rdf#agent11EaterBasicFunction
Role1FeedSelfSocialAction1
:agent11EaterBasicFunctionRole1FeedSelfSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:FeedSelfSocialAction ;
    OntoCarer-Link-
Ontology:feedSelfSocialActionAssistedByFeedSelfSocialActionAssisterAction
:agent14EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister
Action1 ,

:agent6EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister
Action1 ,

:agent9EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister
Action1 ;
    SocialAction:socialActionHasAgent :agent11 ;
    SocialAction:socialActionInRole :agent11EaterBasicFunctionRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

### http://www.OntoCarer.org/CollegeModel.rdf#agent11EaterBasicFunction
Role1UseCutlerySocialAction1
:agent11EaterBasicFunctionRole1UseCutlerySocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:UseCutlerySocialAction ;
    OntoCarer-Link-
Ontology:useCutlerySocialActionAssistedByUseCutlerySocialActionAssister
Action :agent14EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ,

:agent6EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ,

:agent9EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ;
    SocialAction:socialActionHasAgent :agent11 ;
    SocialAction:socialActionInRole :agent11EaterBasicFunctionRole1
;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

### http://www.OntoCarer.org/CollegeModel.rdf#agent11EaterBasicFunction
Role1UseCutleryToFeedSocialAction1
:agent11EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:UseCutleryToFeedSocialAction ;
    OntoCarer-Link-
Ontology:useCutleryToFeedSocialActionAssistedByUseCutleryToFeedSocialActionAssisterAction
:agent14EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ,

:agent6EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ,

:agent9EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction

```

AssisterAction1 ;
SocialAction:socialActionHasAgent :agent11 ;
SocialAction:socialActionInRole
:agent11EaterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent11RegistrarProvider>
Role1
:agent11RegistrarProviderRole1 rdf:type owl:NamedIndividual ,
Agent:RegistrarProviderRole ;
Agent:roleHasAgent :agent11 ;
Agent:roleHasSocialAction
:agent11RegistrarProviderRole1AnswerQuestionsSocialAction1 ,
:agent11RegistrarProviderRole1AskQuestionsSocialAction1 ,
:agent11RegistrarProviderRole1EnrolStudentOnCourseSocialAction1 ;
Agent:roleHasDesireIntentionLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent11RegistrarProvider>
Role1AnswerQuestionsSocialAction1
:agent11RegistrarProviderRole1AnswerQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:AnswerQuestionsSocialAction ;
SocialAction:socialActionHasAgent :agent11 ;
SocialAction:socialActionInRole :agent11RegistrarProviderRole1
;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent11RegistrarProvider>
Role1AskQuestionsSocialAction1
:agent11RegistrarProviderRole1AskQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:AskQuestionsSocialAction ;
SocialAction:socialActionHasAgent :agent11 ;
SocialAction:socialActionInRole :agent11RegistrarProviderRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent11RegistrarProvider>
Role1EnrolStudentOnCourseSocialAction1
:agent11RegistrarProviderRole1EnrolStudentOnCourseSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:EnrolStudentOnCourseSocialAction ;
SocialAction:socialActionHasAgent :agent11 ;
SocialAction:socialActionInRole
:agent11RegistrarProviderRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent11StudentUserRoleAssisterRole1>
:agent11StudentUserRoleAssisterRole1 rdf:type owl:NamedIndividual ,
Agent:StudentUserRoleAssisterRole ;

Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent11StudentUserRole>

AssisterRoleEnrolOnCourseSocialActionAssisterAction1

:agent11StudentUserRoleAssisterRoleEnrolOnCourseSocialActionAssisterAction1 rdf:type owl:NamedIndividual ,

SocialAction:EnrolOnCourseSocialActionAssisterAction ;

OntoCarer-Link-

Ontology:enrolStudentOnCourseSocialActionAssisterActionOfEnrolStudentOnCourseSocialAction

:agent11StudentUserRole1EnrolOnCourseSocialAction1 ,

:agent5StudentUserRole1EnrolOnCourseSocialAction1 ,

:agent7StudentUserRole1EnrolOnCourseSocialAction1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent11ToileterBasic>

FunctionRole1

:agent11ToileterBasicFunctionRole1 rdf:type owl:NamedIndividual ,

Agent:ToileterRole ;

Agent:roleHasAgent :agent11 ;

Agent:roleHasSocialAction

:agent11ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,

:agent11ToileterBasicFunctionRole1FindToiletSocialAction1 ,

:agent11ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,

:agent11ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,

:agent11ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ;

Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent11ToileterBasic>

FunctionRole1CleanSelfAfterToiletSocialAction1

:agent11ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 rdf:type owl:NamedIndividual ,

SocialAction:CleanSelfAfterToiletSocialAction ;

OntoCarer-Link-

Ontology:cleanSelfAfterToiletSocialActionAssistedByCleanSelfAfterToilet

SocialActionAssisterAction

:agent14ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocial

ActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocial

ActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent11 ;

SocialAction:socialActionInRole

:agent11ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent11ToileterBasicFunction>

Role1FindToiletSocialAction1

:agent11ToileterBasicFunctionRole1FindToiletSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FindToiletSocialAction ;

OntoCarer-Link-

Ontology:findToiletSocialActionAssistedByFindToiletSocialActionAssister

Action :agent12ToileterBasicFunctionRoleAssisterRole1FindToiletSocialAction
AssisterAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1FindToiletSocialAction
AssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1FindToiletSocialActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent11 ;

SocialAction:socialActionInRole

:agent11ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

###

<http://www.OntoCarer.org/CollegeModel.rdf#agent11ToileterBasicFunctionRole1NavigateToToiletSocialAction1>

:agent11ToileterBasicFunctionRole1NavigateToToiletSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:NavigateToToiletSocialAction ;

OntoCarer-Link-

Ontology:navigateToToiletSocialActionAssistedByNavigateToToiletSocialActionAssisterAction

:agent12ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent11 ;

SocialAction:socialActionInRole

:agent11ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent11ToileterBasicFunction>

Role1RemoveRelevantClothesSocialAction1

:agent11ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 rdf:type
owl:NamedIndividual ,

SocialAction:RemoveRelevantClothesSocialAction ;

OntoCarer-Link-

Ontology:removeRelevantClothesSocialActionAssistedByRemoveRelevantClothesSocialActionAssisterAction

:agent14ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocialActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocialActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent11 ;
SocialAction:socialActionInRole

:agent11ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent11ToileterBasicFunction>

Role1RestoreRelevantClothesSocialAction1

:agent11ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 rdf:type owl:NamedIndividual ,

SocialAction:RestoreRelevantClothesSocialAction ;
Agent:agentHasAssistedRole

:agent11ToileterBasicFunctionRole1 ;

OntoCarer-Link-

Ontology:restoreRelevantClothesSocialActionAssistedByRestoreRelevantClothesSocialActionAssisterAction :agent14ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocialActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocialActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent11 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent11WasherBasicFunction>

Role1

:agent11WasherBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:WasherRole ;

Agent:roleHasAgent :agent11 ;
Agent:roleHasSocialAction

:agent11WasherBasicFunctionRole1DrySelfSocialAction1 ,

:agent11WasherBasicFunctionRole1WashSelfSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent11WasherBasicFunction>

Role1DrySelfSocialAction1

:agent11WasherBasicFunctionRole1DrySelfSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:DrySelfSocialAction ;

OntoCarer-Link-

Ontology:drySelfSocialActionAssistedByDrySelfSocialActionAssisterAction

:agent14WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssisterAction1 ,

:agent6WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent11 ;
SocialAction:socialActionInRole

:agent11WasherBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent11WasherBasicFunction>

Role1WashSelfSocialAction1

:agent11WasherBasicFunctionRole1WashSelfSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:WashSelfSocialAction ;

OntoCarer-Link-

Ontology:washSelfSocialActionAssistedByWashSelfSocialActionAssisterAction

:agent14WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssister
Action1 ,

:agent6WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent11 ;

SocialAction:socialActionInRole

:agent11WasherBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent12>

:agent12 rdf:type owl:NamedIndividual ,

Agent:Person ;

Agent:agentHasBasicFunctionRole :agent12DresserBasicFunctionRole1 ,

:agent12DrinkerBasicFunctionRole1 ,

:agent12EaterBasicFunctionRole1 ,

:agent12ToileterBasicFunctionRole1 ,

:agent12WasherBasicFunctionRole1 ;

Agent:agentHasLocation :reception1 ;

Agent:agentHasOrganisationMembership :ontoCarerCollegeOrganisation ;

Agent:agentHasProviderRole :agent12SecurityGuardProviderRole1 ;

Agent:agentHasRole :agent12DresserBasicFunctionRole1 ,

:agent12DrinkerBasicFunctionRole1 ,

:agent12EaterBasicFunctionRole1 ,

:agent12SecurityGuardProviderRole1 ,

:agent12ToileterBasicFunctionRole1 ,

:agent12WasherBasicFunctionRole1 ;

Agent:agentHasSocialAction :agent12DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

:agent12DresserBasicFunctionRole1RemoveClothesSocialAction1 ,

:agent12DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,

:agent12EaterBasicFunctionRole1FeedSelfSocialAction1 ,

:agent12EaterBasicFunctionRole1UseCutlerySocialAction1 ,

:agent12EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,

:agent12SecurityGuardProviderRole1AnswerQuestionsSocialAction1 ,

:agent12SecurityGuardProviderRole1AskQuestionsSocialAction1 ,

:agent12SecurityGuardProviderRole1TakeSecurityActionSocialAction1 ,

:agent12ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,

:agent12ToileterBasicFunctionRole1FindToiletSocialAction1 ,

:agent12ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,

:agent12ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,

:agent12ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,

:agent12WasherBasicFunctionRole1DrySelfSocialAction1 ,

:agent12WasherBasicFunctionRole1WashSelfSocialAction1 ;

Agent:agentHasSocialActionAssisterAction

:agent12LibraryUserRoleAssisterRole1FindLibrarySocialActionAssisterAction1 ,

:agent12LibraryUserRoleAssisterRole1NavigateToLibrarySocialActionAssister
Action1 ,

:agent12StudentUserRoleAssisterRole1FindTeachingRoomSocialActionAssister
Action1 ,

:agent12StudentUserRoleAssisterRole1NavigateToTeachingRoomSocialAction
AssisterAction1 ,

:agent12ToileterBasicFunctionRoleAssisterRole1FindToiletSocialAction
AssisterAction1 ,

:agent12ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ;
Agent:agentIsInOrganisation :ontoCarerCollegeOrganisation ;
Agent:agentIsOnFloor :floorF0 .

[http://www.OntoCarer.org/CollegeModel.rdf#agent12DresserBasicFunction
Role1](http://www.OntoCarer.org/CollegeModel.rdf#agent12DresserBasicFunctionRole1)

:agent12DresserBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:DresserRole ;
Agent:roleHasAgent :agent12 ;
Agent:roleHasSocialAction
:agent12DresserBasicFunctionRole1PutClothesOnSocialAction1 ,
:agent12DresserBasicFunctionRole1RemoveClothesSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

[http://www.OntoCarer.org/CollegeModel.rdf#agent12DresserBasicFunction
Role1PutClothesOnSocialAction1](http://www.OntoCarer.org/CollegeModel.rdf#agent12DresserBasicFunctionRole1PutClothesOnSocialAction1)

:agent12DresserBasicFunctionRole1PutClothesOnSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:PutClothesOnSocialAction ;
OntoCarer-Link-
Ontology:putClothesOnSocialActionAssistedByPutClothesOnSocialActionAssisterAction
:agent14DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialAction
AssisterAction1 ,
:agent6DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialAction
AssisterAction1 ;
SocialAction:socialActionHasAgent :agent12 ;
SocialAction:socialActionInRole
:agent12DresserBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

[http://www.OntoCarer.org/CollegeModel.rdf#agent12DresserBasicFunction
Role1RemoveClothesSocialAction1](http://www.OntoCarer.org/CollegeModel.rdf#agent12DresserBasicFunctionRole1RemoveClothesSocialAction1)

:agent12DresserBasicFunctionRole1RemoveClothesSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:RemoveClothesSocialAction ;
OntoCarer-Link-
Ontology:removeClothesSocialActionAssistedByRemoveClothesSocialAction
AssisterAction :agent14DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialAction
AssisterAction1 ,
:agent6DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialAction
AssisterAction1 ;
SocialAction:socialActionHasAgent :agent12 ;

SocialAction:socialActionInRole
:agent12DresserBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent12DrinkerBasicFunctionRole1>

:agent12DrinkerBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:DrinkerRole ;
Agent:roleHasAgent :agent12 ;
Agent:roleHasSocialAction
:agent12DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent12DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1>

:agent12DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:UseDrinkingUtensilSocialAction ;
OntoCarer-Link-

Ontology:useDrinkingUtensilSocialActionAssistedByUseDrinkingUtensilSocialActionAssisterAction

:agent14DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1 ,

:agent6DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1 ,

:agent9DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent12 ;
SocialAction:socialActionInRole

:agent12DrinkerBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent12EaterBasicFunctionRole1>

:agent12EaterBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:EaterRole ;
Agent:roleHasAgent :agent12 ;
Agent:roleHasSocialAction
:agent12EaterBasicFunctionRole1FeedSelfSocialAction1 ,
:agent12EaterBasicFunctionRole1UseCutlerySocialAction1 ,

:agent12EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

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### http://www.OntoCarer.org/CollegeModel.rdf#agent12EaterBasicFunction
Role1FeedSelfSocialAction1
:agent12EaterBasicFunctionRole1FeedSelfSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:FeedSelfSocialAction ;
    OntoCarer-Link-
Ontology:feedSelfSocialActionAssistedByFeedSelfSocialActionAssisterAction
:agent14EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister
Action1 ,

:agent6EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister
Action1 ,

:agent9EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister
Action1 ;
    SocialAction:socialActionHasAgent :agent12 ;
    SocialAction:socialActionInRole :agent12EaterBasicFunctionRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

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### http://www.OntoCarer.org/CollegeModel.rdf#agent12EaterBasicFunction
Role1UseCutlerySocialAction1
:agent12EaterBasicFunctionRole1UseCutlerySocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:UseCutlerySocialAction ;
    OntoCarer-Link-
Ontology:useCutlerySocialActionAssistedByUseCutlerySocialActionAssister
Action :agent14EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ,

:agent6EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ,

:agent9EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ;
    SocialAction:socialActionHasAgent :agent12 ;
    SocialAction:socialActionInRole :agent12EaterBasicFunctionRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

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http://www.OntoCarer.org/CollegeModel.rdf#agent12EaterBasicFunctionRole1UseCutleryToFeedSocialAction1
:agent12EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:UseCutleryToFeedSocialAction ;
    OntoCarer-Link-
Ontology:useCutleryToFeedSocialActionAssistedByUseCutleryToFeedSocialActionAssisterAction
:agent14EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ,

:agent6EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ,

:agent9EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ;
    SocialAction:socialActionHasAgent :agent12 ;

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SocialAction:socialActionInRole
:agent12EaterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent12LibraryUserRole>

AssisterRole1
:agent12LibraryUserRoleAssisterRole1 rdf:type owl:NamedIndividual ,
Agent:LibraryUserRoleAssisterRole ;
Agent:roleHasAgent :agent12 ;
Agent:roleHasDesireIntentionLevel 1 ;
Agent:roleHasSocialActionAssisterAction
:agent12LibraryUserRoleAssisterRole1FindLibrarySocialActionAssisterAction1 ,

:agent12LibraryUserRoleAssisterRole1NavigateToLibrarySocialActionAssister
Action1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent12LibraryUserRole>

AssisterRole1FindLibrarySocialActionAssisterAction1
:agent12LibraryUserRoleAssisterRole1FindLibrarySocialActionAssisterAction1 rdf:type
owl:NamedIndividual ,

SocialAction:FindLibrarySocialActionAssisterAction ;
OntoCarer-Link-
Ontology:findLibrarySocialActionAssisterActionOfFindLibrarySocialAction
:agent15LibraryUserRole1FindLibrarySocialAction1 ,

:agent1LibraryUserRole1FindLibrarySocialAction1 ,

:agent4LibraryUserRole1FindLibrarySocialAction1 ,

:agent5LibraryUserRole1FindLibrarySocialAction1 ,

:agent7LibraryUserRole1FindLibrarySocialAction1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent12LibraryUserRole>

AssisterRole1NavigateToLibrarySocialActionAssisterAction1
:agent12LibraryUserRoleAssisterRole1NavigateToLibrarySocialActionAssister
Action1 rdf:type owl:NamedIndividual ,

SocialAction:NavigateToLibrarySocialActionAssisterAction ;
OntoCarer-Link-
Ontology:navigateToLibrarySocialActionAssisterActionOfNavigateToLibrary
SocialAction :agent15LibraryUserRole1NavigateToLibrarySocialAction1 ,

:agent1LibraryUserRole1NavigateToLibrarySocialAction1 ,

:agent4LibraryUserRole1NavigateToLibrarySocialAction1 ,

:agent5LibraryUserRole1NavigateToLibrarySocialAction1 ,

:agent7LibraryUserRole1NavigateToLibrarySocialAction1 ;

1 ;
SocialAction:socialActionHasDesireIntentionLevel
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent12SecurityGuard>

ProviderRole1
:agent12SecurityGuardProviderRole1 rdf:type owl:NamedIndividual ,
Agent:SecurityGuardProviderRole ;
Agent:roleHasAgent :agent12 ;
Agent:roleHasSocialAction
:agent12SecurityGuardProviderRole1AnswerQuestionsSocialAction1 ,
:agent12SecurityGuardProviderRole1AskQuestionsSocialAction1 ,
:agent12SecurityGuardProviderRole1TakeSecurityActionSocialAction1 ;
Agent:roleHasDesireIntentionLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent12SecurityGuardProvider>

Role1AnswerQuestionsSocialAction1
:agent12SecurityGuardProviderRole1AnswerQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:AnswerQuestionsSocialAction ;
SocialAction:socialActionHasAgent :agent12 ;
SocialAction:socialActionInRole
:agent12SecurityGuardProviderRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent12SecurityGuardProvider>

Role1AskQuestionsSocialAction1
:agent12SecurityGuardProviderRole1AskQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:AskQuestionsSocialAction ;
SocialAction:socialActionHasAgent :agent12 ;
SocialAction:socialActionInRole
:agent12SecurityGuardProviderRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent12SecurityGuardProvider>

Role1TakeSecurityActionSocialAction1
:agent12SecurityGuardProviderRole1TakeSecurityActionSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:TakeSecurityActionSocialAction ;
SocialAction:socialActionHasAgent :agent12 ;
SocialAction:socialActionInRole
:agent12SecurityGuardProviderRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent12StudentUserRole>

AssisterRole1
:agent12StudentUserRoleAssisterRole1 rdf:type owl:NamedIndividual ,
Agent:StudentUserRoleAssisterRole ;
Agent:roleAssisterRoleHasAgent :agent12 ;
Agent:roleAssisterRoleHasSocialActionAssisterAction
:agent12StudentUserRoleAssisterRole1FindTeachingRoomSocialActionAssister
Action1 ,

:agent12StudentUserRoleAssisterRole1NavigateToTeachingRoomSocialAction
AssisterAction1 ;

Agent:roleHasDesireIntentionalLevel 1 ;
Agent:roleHasSocialActionAssisterAction

:agent12StudentUserRoleAssisterRole1FindTeachingRoomSocialActionAssister
Action1 ,

:agent12StudentUserRoleAssisterRole1NavigateToTeachingRoomSocialAction
AssisterAction1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent12StudentUserRole>

AssisterRole1FindTeachingRoomSocialActionAssisterAction1

:agent12StudentUserRoleAssisterRole1FindTeachingRoomSocialActionAssister
Action1 rdf:type owl:NamedIndividual ,

SocialAction:FindTeachingRoomSocialActionAssisterAction ;

OntoCarer-Link-

Ontology:findTeachingRoomSocialActionAssisterActionOfFindTeachingRoomSocialAction

:agent1StudentUserRole1FindTeachingRoomSocialAction1 ,

:agent5StudentUserRole1FindTeachingRoomSocialAction1 ,

:agent7StudentUserRole1FindTeachingRoomSocialAction1 ;

SocialAction:socialActionAssisterActionHasAgent

:agent12 ;

SocialAction:socialActionAssisterActionInRole

:agent12StudentUserRoleAssisterRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1

;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent12StudentUserRole>

AssisterRole1NavigateToTeachingRoomSocialActionAssisterAction1

:agent12StudentUserRoleAssisterRole1NavigateToTeachingRoomSocialAction
AssisterAction1 rdf:type owl:NamedIndividual ,

SocialAction:NavigateToTeachingRoomSocialActionAssisterAction ;

OntoCarer-Link-

Ontology:navigateToTeachingRoomSocialActionAssisterActionOfNavigateTo

TeachingRoomSocialAction :agent1StudentUserRole1NavigateToTeachingRoomSocialAction1 ,

:agent5StudentUserRole1NavigateToTeachingRoomSocialAction1 ,

:agent7StudentUserRole1NavigateToTeachingRoomSocialAction1 ;

SocialAction:socialActionAssisterActionHasAgent :agent12 ;

SocialAction:socialActionAssisterActionInRole

:agent12StudentUserRoleAssisterRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent12ToileterBasic>

FunctionRole1

:agent12ToileterBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:ToileterRole ;

Agent:roleHasAgent :agent12 ;
Agent:roleHasSocialAction
:agent12ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,
 :agent12ToileterBasicFunctionRole1FindToiletSocialAction1 ,

:agent12ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,

:agent12ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,

:agent12ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent12ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1>
:agent12ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 rdfs:type owl:NamedIndividual ,
 SocialAction:CleanSelfAfterToiletSocialAction ;
 OntoCarer-Link-
Ontology:cleanSelfAfterToiletSocialActionAssistedByCleanSelfAfterToilet
SocialActionAssisterAction
:agent14ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocial
ActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocial
ActionAssisterAction1 ;
 SocialAction:socialActionHasAgent :agent12 ;
 SocialAction:socialActionInRole

:agent12ToileterBasicFunctionRole1 ;
 SocialAction:socialActionHasDesireIntentionLevel 1 ;
 SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent12ToileterBasicFunctionRole1FindToiletSocialAction1>
:agent12ToileterBasicFunctionRole1FindToiletSocialAction1 rdfs:type owl:NamedIndividual ,
 SocialAction:FindToiletSocialAction ;
 OntoCarer-Link-
Ontology:findToiletSocialActionAssistedByFindToiletSocialActionAssister
Action :agent14ToileterBasicFunctionRoleAssisterRole1FindToiletSocialAction
AssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1FindToiletSocialActionAssisterAction1 ;
 SocialAction:socialActionHasAgent :agent12 ;
 SocialAction:socialActionInRole

:agent12ToileterBasicFunctionRole1 ;
 SocialAction:socialActionHasDesireIntentionLevel 1 ;
 SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent12ToileterBasicFunctionRole1NavigateToToiletSocialAction1>
:agent12ToileterBasicFunctionRole1NavigateToToiletSocialAction1 rdfs:type owl:NamedIndividual ,
 SocialAction:NavigateToToiletSocialAction ;
 OntoCarer-Link-
Ontology:navigateToToiletSocialActionAssistedByNavigateToToiletSocialActionAssisterAction
:agent14ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent12 ;
SocialAction:socialActionInRole
:agent12ToileterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent12ToileterBasic>

FunctionRole1RemoveRelevantClothesSocialAction1

:agent12ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 rdf:type
owl:NamedIndividual ,

SocialAction:RemoveRelevantClothesSocialAction ;

OntoCarer-Link-

Ontology:removeRelevantClothesSocialActionAssistedByRemoveRelevantClothes

SocialActionAssisterAction

:agent14ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocial
ActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocial
ActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent12 ;

SocialAction:socialActionInRole

:agent12ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent12ToileterBasic>

FunctionRole1RestoreRelevantClothesSocialAction1

:agent12ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 rdf:type
owl:NamedIndividual ,

SocialAction:RestoreRelevantClothesSocialAction ;

OntoCarer-Link-

Ontology:restoreRelevantClothesSocialActionAssistedByRestoreRelevantClothesSocialActionAssister

Action :agent14ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocial

ActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocial
ActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent12 ;

SocialAction:socialActionInRole

:agent12ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent12ToileterBasic>

FunctionRoleAssisterRole1

:agent12ToileterBasicFunctionRoleAssisterRole1 rdf:type owl:NamedIndividual ,
Agent:ToileterRoleAssisterRole ;

Agent:roleAssisterRoleHasAgent :agent12 ;

Agent:roleAssisterRoleHasSocialActionAssisterAction

:agent12ToileterBasicFunctionRoleAssisterRole1FindToiletSocialAction
AssisterAction1 ,

:agent12ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ;

Agent:roleHasDesireIntentionLevel 1 ;

Agent:roleHasSocialActionAssisterAction

:agent12StudentUserRoleAssisterRole1FindTeachingRoomSocialActionAssister

Action1 ,

:agent12StudentUserRoleAssisterRole1NavigateToTeachingRoomSocialAction
AssisterAction1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent12ToileterBasicFunctionRoleAssisterRole1FindToiletSocialActionAssisterAction1>
:agent12ToileterBasicFunctionRoleAssisterRole1FindToiletSocialAction
AssisterAction1 rdf:type owl:NamedIndividual ,

SocialAction:FindToiletSocialActionAssisterAction ;

Ontology:findTeachingRoomSocialActionAssisterOfFindTeachingRoomSocialAction
:agent6ToileterBasicFunctionRole1FindToiletSocialAction1 ;

Ontology:findToiletSocialActionAssisterActionOfFindToiletSocialAction
:agent10ToileterBasicFunctionRole1FindToiletSocialAction1 ,

:agent11ToileterBasicFunctionRole1FindToiletSocialAction1 ,

:agent13ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,

:agent14ToileterBasicFunctionRole1FindToiletSocialAction1 ,

:agent15ToileterBasicFunctionRole1FindToiletSocialAction1 ,

:agent1ToileterBasicFunctionRole1FindToiletSocialAction1 ,

:agent2ToileterBasicFunctionRole1FindToiletSocialAction1 ,

:agent3ToileterBasicFunctionRole1FindToiletSocialAction1 ,

:agent4ToileterBasicFunctionRole1FindToiletSocialAction1 ,

:agent5ToileterBasicFunctionRole1FindToiletSocialAction1 ,

:agent6ToileterBasicFunctionRole1FindToiletSocialAction1 ,

:agent7ToileterBasicFunctionRole1FindToiletSocialAction1 ,

:agent8ToileterBasicFunctionRole1FindToiletSocialAction1 ,

:agent9ToileterBasicFunctionRole1FindToiletSocialAction1 ;

SocialAction:socialActionAssisterActionHasAgent :agent12 ;

SocialAction:socialActionAssisterActionInRole
:agent12ToileterBasicFunctionRoleAssisterRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent12ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialActionAssisterAction1>
:agent12ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 rdf:type owl:NamedIndividual ,

SocialAction:NavigateToToiletSocialActionAssisterAction ;

OntoCarer-Link-

Ontology:navigateToToiletSocialActionAssisterActionOfNavigateToToiletSocialAction
:agent10ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
:agent13ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
:agent14ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
:agent15ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
:agent1ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
:agent2ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
:agent3ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
:agent4ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
:agent5ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
:agent6ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
:agent7ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
:agent8ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
:agent9ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ;
SocialAction:socialActionAssisterActionHasAgent :agent12 ;
SocialAction:socialActionAssisterActionInRole :agent12ToileterBasicFunctionRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent12WasherBasicFunctionRole1>

:agent12WasherBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:WasherRole ;
Agent:roleHasAgent :agent12 ;
Agent:roleHasSocialAction
:agent12WasherBasicFunctionRole1DrySelfSocialAction1 ,
:agent12WasherBasicFunctionRole1WashSelfSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent12WasherBasicFunctionRole1DrySelfSocialAction1>

:agent12WasherBasicFunctionRole1DrySelfSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:DrySelfSocialAction ;
OntoCarer-Link-

Ontology:drySelfSocialActionAssistedByDrySelfSocialActionAssister
:agent6WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssister
Action1 ;

OntoCarer-Link-

Ontology:drySelfSocialActionAssistedByDrySelfSocialActionAssisterAction
:agent14WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent12 ;

SocialAction:socialActionInRole
:agent12WasherBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent12WasherBasicFunctionRole1>

WashSelfSocialAction1

:agent12WasherBasicFunctionRole1WashSelfSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:WashSelfSocialAction ;
OntoCarer-Link-

Ontology:washSelfSocialActionAssistedByWashSelfSocialActionAssisterAction
:agent14WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssister
Action1 ,

:agent6WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent12 ;
SocialAction:socialActionInRole
:agent12WasherBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent13>

:agent13 rdf:type owl:NamedIndividual ,
Agent:Person ;

Agent:agentHasBasicFunctionRole :agent13DresserBasicFunctionRole1 ,
:agent13DrinkerBasicFunctionRole1 ,
:agent13EaterBasicFunctionRole1 ,
:agent13ToileterBasicFunctionRole1 ,
:agent13WasherBasicFunctionRole1 ;

Agent:agentHasLocation :techRoom1 ;

Agent:agentHasOrganisationMembership :ontoCarerCollegeOrganisation ;

Agent:agentHasProviderRole :agent13TechnicianProviderRole1 ;

Agent:agentHasRole :agent13DresserBasicFunctionRole1 ,
:agent13DrinkerBasicFunctionRole1 ,
:agent13EaterBasicFunctionRole1 ,
:agent13TechnicianProviderRole1 ,
:agent13ToileterBasicFunctionRole1 ,
:agent13WasherBasicFunctionRole1 ;

Agent:agentHasSocialAction :agent13DresserBasicFunctionRole1PutClothesOnSocialAction1 ,
:agent13DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
:agent13DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent13EaterBasicFunctionRole1FeedSelfSocialAction1 ,
:agent13EaterBasicFunctionRole1UseCutlerySocialAction1 ,
:agent13EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
:agent13TechnicianProviderRole1AnswerQuestionsSocialAction1 ,
:agent13TechnicianProviderRole1AskQuestionsSocialAction1 ,
:agent13TechnicianProviderRole1DeliverAssisterAidSocialAction1 ,
:agent13TechnicianProviderRole1DeliverEquipmentSocialAction1 ,
:agent13TechnicianProviderRole1SetUpAssisterAidSocialAction1 ,
:agent13TechnicianProviderRole1SetUpEquipmentSocialAction1 ,
:agent13ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,
:agent13ToileterBasicFunctionRole1FindToiletSocialAction1 ,
:agent13ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
:agent13ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,
:agent13ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,
:agent13WasherBasicFunctionRole1DrySelfSocialAction1 ,
:agent13WasherBasicFunctionRole1WashSelfSocialAction1 ;

Agent:agentIsInBuilding :ontoCarerCollegeBuilding ;
Agent:agentIsInOrganisation :ontoCarerCollegeOrganisation ;
Agent:agentIsOnFloor :floorF0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent13DresserBasicFunctionRole1>

:agent13DresserBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:DresserRole ;
Agent:roleHasAgent :agent13 ;
Agent:roleHasSocialAction
:agent13DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

:agent13DresserBasicFunctionRole1RemoveClothesSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent13DresserBasicFunctionRole1PutClothesOnSocialAction1>

:agent13DresserBasicFunctionRole1PutClothesOnSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:PutClothesOnSocialAction ;
OntoCarer-Link-
Ontology:putClothesOnSocialActionAssistedByPutClothesOnSocialActionAssisterAction
:agent14DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialAction
AssisterAction1 ,

:agent6DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialAction
AssisterAction1 ;
SocialAction:socialActionHasAgent :agent13 ;
SocialAction:socialActionInRole
:agent13DresserBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent13DresserBasicFunctionRole1RemoveClothesSocialAction1>

:agent13DresserBasicFunctionRole1RemoveClothesSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:RemoveClothesSocialAction ;
OntoCarer-Link-
Ontology:removeClothesSocialActionAssistedByRemoveClothesSocialAction
AssisterAction :agent14DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialAction
AssisterAction1 ,

:agent6DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialAction
AssisterAction1 ;
SocialAction:socialActionHasAgent :agent13 ;
SocialAction:socialActionInRole
:agent13DresserBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent13DrinkerBasicFunctionRole1>

:agent13DrinkerBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:DrinkerRole ;
Agent:roleHasAgent :agent13 ;

Agent:roleHasSocialAction
:agent13DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent13DrinkerBasic>

FunctionRole1UseDrinkingUtensilSocialAction1

:agent13DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:UseDrinkingUtensilSocialAction ;
OntoCarer-Link-

Ontology:useDrinkingUtensilSocialActionAssistedByUseDrinkingUtensilSocial
ActionAssister

:agent14DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1 ;
OntoCarer-Link-

Ontology:useDrinkingUtensilSocialActionAssistedByUseDrinkingUtensilSocial
ActionAssisterAction :agent6DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocial
ActionAssisterAction1 ,

:agent9DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent13 ;
SocialAction:socialActionInRole

:agent13DrinkerBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent13EaterBasic>

FunctionRole1

:agent13EaterBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:EaterRole ;

Agent:roleHasAgent :agent13 ;
Agent:roleHasSocialAction

:agent13EaterBasicFunctionRole1FeedSelfSocialAction1 ,
:agent13EaterBasicFunctionRole1UseCutlerySocialAction1 ,

:agent13EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent13EaterBasicFunction>

Role1FeedSelfSocialAction1

:agent13EaterBasicFunctionRole1FeedSelfSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FeedSelfSocialAction ;

OntoCarer-Link-

Ontology:feedSelfSocialActionAssistedByFeedSelfSocialActionAssisterAction

:agent14EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister
Action1 ,

:agent6EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister
Action1 ,

:agent9EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent13 ;
SocialAction:socialActionInRole :agent13EaterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

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### http://www.OntoCarer.org/CollegeModel.rdf#agent13EaterBasicFunction
Role1UseCutlerySocialAction1
:agent13EaterBasicFunctionRole1UseCutlerySocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:UseCutlerySocialAction ;
    OntoCarer-Link-
Ontology:useCutlerySocialActionAssistedByUseCutlerySocialActionAssister
Action :agent14EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ,

:agent6EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ,

:agent9EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ;

    SocialAction:socialActionHasAgent :agent13 ;
    SocialAction:socialActionInRole :agent13EaterBasicFunctionRole1
;

    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

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### http://www.OntoCarer.org/CollegeModel.rdf#agent13EaterBasicFunction
Role1UseCutleryToFeedSocialAction1
:agent13EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:UseCutleryToFeedSocialAction ;
    OntoCarer-Link-
Ontology:useCutleryToFeedSocialActionAssistedByUseCutleryToFeedSocialActionAssisterAction
:agent14EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ,

:agent6EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ,

:agent9EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ;

    SocialAction:socialActionHasAgent :agent13 ;
    SocialAction:socialActionInRole
:agent13EaterBasicFunctionRole1 ;

    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

```

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### http://www.OntoCarer.org/CollegeModel.rdf#agent13Technician
ProviderRole1
:agent13TechnicianProviderRole1 rdf:type owl:NamedIndividual ,
    Agent:TechnicianProviderRole ;
    Agent:roleHasAgent :agent13 ;
    Agent:roleHasSocialAction
:agent13TechnicianProviderRole1AnswerQuestionsSocialAction1 ,
    :agent13TechnicianProviderRole1AskQuestionsSocialAction1 ,

:agent13TechnicianProviderRole1DeliverAssisterAidSocialAction1 ,

:agent13TechnicianProviderRole1DeliverEquipmentSocialAction1 ,

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:agent13TechnicianProviderRole1SetUpAssisterAidSocialAction1
,
:agent13TechnicianProviderRole1SetUpEquipmentSocialAction1
;
Agent:roleHasDesireIntentionalLevel 1 .

```

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### http://www.OntoCarer.org/CollegeModel.rdf#agent13TechnicianProvider
Role1AnswerQuestionsSocialAction1
:agent13TechnicianProviderRole1AnswerQuestionsSocialAction1 rdf:type owl:NamedIndividual ;
    SocialAction:socialActionHasAgent :agent13 ;
    SocialAction:socialActionInRole
:agent13TechnicianProviderRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent13TechnicianProvider
Role1AskQuestionsSocialAction1
:agent13TechnicianProviderRole1AskQuestionsSocialAction1 rdf:type owl:NamedIndividual ;
    SocialAction:socialActionHasAgent :agent13 ;
    SocialAction:socialActionInRole
:agent13TechnicianProviderRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent13TechnicianProvider
Role1DeliverAssisterAidSocialAction1
:agent13TechnicianProviderRole1DeliverAssisterAidSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:DeliverAssisterAidSocialAction ;
    SocialAction:socialActionHasAgent :agent13 ;
    SocialAction:socialActionInRole
:agent13TechnicianProviderRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent13TechnicianProvider
Role1DeliverEquipmentSocialAction1
:agent13TechnicianProviderRole1DeliverEquipmentSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:DeliverEquipmentSocialAction ;
    SocialAction:socialActionHasAgent :agent13 ;
    SocialAction:socialActionInRole
:agent13TechnicianProviderRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent13TechnicianProvider
Role1SetUpAssisterAidSocialAction1
:agent13TechnicianProviderRole1SetUpAssisterAidSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:SetUpAssisterAidSocialAction ;
    SocialAction:socialActionHasAgent :agent13 ;
    SocialAction:socialActionInRole
:agent13TechnicianProviderRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

```

<http://www.OntoCarer.org/CollegeModel.rdf#agent13TechnicianProvider>
Role1SetupEquipmentSocialAction1
:agent13TechnicianProviderRole1SetupEquipmentSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:SetUpEquipmentSocialAction ;
SocialAction:socialActionHasAgent :agent13 ;
SocialAction:socialActionInRole
:agent13TechnicianProviderRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent13ToileterBasicFunction>
Role1
:agent13ToileterBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:ToileterRole ;
Agent:roleHasAgent :agent13 ;
Agent:roleHasSocialAction
:agent13ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,
:agent13ToileterBasicFunctionRole1FindToiletSocialAction1 ,
:agent13ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
:agent13ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,
:agent13ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent13ToileterBasicFunction>
Role1CleanSelfAfterToiletSocialAction1
:agent13ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:CleanSelfAfterToiletSocialAction ;
OntoCarer-Link-
Ontology:cleanSelfAfterToiletSocialActionAssistedByCleanSelfAfterToilet
SocialActionAssisterAction
:agent14ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocial
ActionAssisterAction1 ,
:agent6ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocial
ActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent13 ;
SocialAction:socialActionInRole
:agent13ToileterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent13ToileterBasicFunction>
Role1FindToiletSocialAction1
:agent13ToileterBasicFunctionRole1FindToiletSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FindToiletSocialAction ;
OntoCarer-Link-
Ontology:findToiletSocialActionAssistedByFindToiletSocialActionAssister
Action :agent12ToileterBasicFunctionRoleAssisterRole1FindToiletSocialAction
AssisterAction1 ,
:agent14ToileterBasicFunctionRoleAssisterRole1FindToiletSocialAction
AssisterAction1 ,
:agent6ToileterBasicFunctionRoleAssisterRole1FindToiletSocialActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent13 ;
SocialAction:socialActionInRole
:agent13ToileterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent13ToileterBasicFunction>

Role1NavigateToToiletSocialAction1
:agent13ToileterBasicFunctionRole1NavigateToToiletSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:NavigateToToiletSocialAction ;

OntoCarer-Link-

Ontology:navigateToToiletSocialActionAssistedByNavigateToToiletSocialActionAssisterAction
:agent12ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent13 ;

SocialAction:socialActionInRole

:agent13ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent13ToileterBasicFunction>

Role1RemoveRelevantClothesSocialAction1
:agent13ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 rdf:type
owl:NamedIndividual ,

SocialAction:RemoveRelevantClothesSocialAction ;

OntoCarer-Link-

Ontology:removeRelevantClothesSocialActionAssistedByRemoveRelevantClothes
SocialActionAssisterAction :

,

:agent6ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocial
ActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent13 ;

SocialAction:socialActionInRole

:agent13ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent13ToileterBasicFunction>

Role1RestoreRelevantClothesSocialAction1
:agent13ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 rdf:type
owl:NamedIndividual ,

SocialAction:RemoveRelevantClothesSocialAction ;

OntoCarer-Link-

Ontology:restoreRelevantClothesSocialActionAssistedByRestoreRelevantClothesSocialActionAssister
Action :agent14ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocial
ActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocial
ActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent13 ;

SocialAction:socialActionInRole
:agent13ToileterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent13WasherBasicFunction>

Role1
:agent13WasherBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:WasherRole ;
Agent:roleHasAgent :agent13 ;
Agent:roleHasSocialAction
:agent13WasherBasicFunctionRole1DrySelfSocialAction1 ,
:agent13WasherBasicFunctionRole1WashSelfSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent13WasherBasicFunction>

Role1DrySelfSocialAction1
:agent13WasherBasicFunctionRole1DrySelfSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:DrySelfSocialAction ;
OntoCarer-Link-
Ontology:drySelfSocialActionAssistedByDrySelfSocialActionAssisterAction
:agent14WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssisterAction1 ,
:agent6WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssister
Action1 ;
SocialAction:socialActionHasAgent :agent13 ;
SocialAction:socialActionInRole
:agent13WasherBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent13WasherBasicFunction>

Role1WashSelfSocialAction1
:agent13WasherBasicFunctionRole1WashSelfSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:WashSelfSocialAction ;
OntoCarer-Link-
Ontology:washSelfSocialActionAssistedByWashSelfSocialActionAssisterAction
:agent14WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssister
Action1 ,
:agent6WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssister
Action1 ;
SocialAction:socialActionHasAgent :agent13 ;
SocialAction:socialActionInRole
:agent13WasherBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14>

:agent14 rdf:type owl:NamedIndividual ,
Agent:Person ;
Agent:agentHasAssisterRole :agent14CareWorkerProviderAssisterRole1 ;
Agent:agentHasBasicFunctionRole :agent14DresserBasicFunctionRole1 ,
:agent14DrinkerBasicFunctionRole1 ,
:agent14EaterBasicFunctionRole1 ,
:agent14ToileterBasicFunctionRole1 ,

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:agent14WasherBasicFunctionRole1 ;
Agent:agentHasLocation :classroom2 ;
Agent:agentHasOrganisationMembership :ontoCarerCollegeOrganisation ;
Agent:agentHasRole :agent14CafeUserRole1 ,
:agent14DresserBasicFunctionRole1 ,
:agent14DrinkerBasicFunctionRole1 ,
:agent14EaterBasicFunctionRole1 ,
:agent14ToileterBasicFunctionRole1 ,
:agent14WasherBasicFunctionRole1 ;
Agent:agentHasRoleAssisterRole :agent14DresserBasicFunctionRoleAssisterRole1 ,
:agent14DrinkerBasicFunctionRoleAssisterRole1 ,
:agent14EaterBasicFunctionRoleAssisterRole1 ,
:agent14LibraryUserRoleAssisterRole1 ,
:agent14StudentUserRoleAssisterRole1 ,
:agent14ToileterBasicFunctionRoleAssisterRole1 ,
:agent14WasherBasicFunctionRoleAssisterRole1 ;
Agent:agentHasSocialAction :agent14CafeUserRole1MakeCafeFoodOrderSocialAction1 ,
:agent14CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
:agent14CafeUserRole1SeeCafeFoodMenuSocialAction1 ,
:agent14DresserBasicFunctionRole1PutClothesOnSocialAction1 ,
:agent14DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
:agent14DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent14EaterBasicFunctionRole1FeedSelfSocialAction1 ,
:agent14EaterBasicFunctionRole1UseCutlerySocialAction1 ,
:agent14EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
:agent14ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,
:agent14ToileterBasicFunctionRole1FindToiletSocialAction1 ,
:agent14ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
:agent14ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,
:agent14ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,
:agent14WasherBasicFunctionRole1DrySelfSocialAction1 ,
:agent14WasherBasicFunctionRole1WashSelfSocialAction1 ;
Agent:agentHasSocialActionAssisterAction
:agent14CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssister
Action1 ,

:agent14CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssister
Action1 ,

:agent14CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1 ,
:agent14DresserBasicFunctionRole1RemoveClothesSocialAction1 ,

:agent14DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialAction
AssisterAction1 ,

:agent14DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialAction
AssisterAction1 ,

:agent14DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1 ,

:agent14EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister
Action1 ,

:agent14EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ,

:agent14EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ,

:agent14LibraryUserRoleAssisterRole1FindBookOnShelvesSocialActionAssister

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Action1 ,

:agent14LibraryUserRoleAssisterRole1FindLibrarySocialActionAssisterAction1 ,

:agent14LibraryUserRoleAssisterRole1NavigateToLibrarySocialActionAssisterAction1 ,

:agent14StudentUserRoleAssisterRole1AnswerQuestionsSocialActionAssisterAction1 ,

:agent14StudentUserRoleAssisterRole1AskQuestionsSocialActionAssisterAction1 ,

:agent14StudentUserRoleAssisterRole1EnrolOnCourseSocialActionAssisterAction1 ,

:agent14StudentUserRoleAssisterRole1ExitTeachingRoomSocialActionAssisterAction1 ,

:agent14StudentUserRoleAssisterRole1FindTeachingRoomSocialActionAssisterAction1 ,

:agent14StudentUserRoleAssisterRole1NavigateToTeachingRoomSocialActionAssisterAction1 ,

:agent14StudentUserRoleAssisterRole1PayCourseFeesSocialActionAssisterAction1 ,

:agent14StudentUserRoleAssisterRole1SubmitAssignmentSocialActionAssisterAction1 ,

:agent14StudentUserRoleAssisterRole1TakeNotesFromSpeakerSocialActionAssisterAction1 ,

:agent14StudentUserRoleAssisterRole1TakeNotesFromTextSocialActionAssisterAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocialActionAssisterAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1FindToiletSocialActionAssisterAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialActionAssisterAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocialActionAssisterAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocialActionAssisterAction1 ,

:agent14WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssisterAction1 ,

:agent14WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssisterAction1 ;

Agent:agentHasUserRole :agent14CafeUserRole1 ;

Agent:agentIsInBuilding :ontoCarerCollegeBuilding ;

Agent:agentIsInOrganisation :ontoCarerCollegeOrganisation ;

Agent:agentIsOnFloor :floorF0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14CafeUserRole1>
:agent14CafeUserRole1 rdf:type owl:NamedIndividual ,
Agent:CafeUserRole ;
Agent:roleHasAgent :agent14 ;
Agent:roleHasSocialAction :agent14CafeUserRole1MakeCafeFoodOrderSocialAction1 ,
:agent14CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
:agent14CafeUserRole1SeeCafeFoodMenuSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14CafeUserRole1MakeCafeFoodOrderSocialAction1>
:agent14CafeUserRole1MakeCafeFoodOrderSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:MakeCafeFoodOrderSocialAction ;
OntoCarer-Link-
Ontology:makeCafeFoodOrderSocialActionAssistedByMakeCafeFoodOrderSocialActionAssisterAction
:agent6CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssisterAction1 ,
:agent9CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent14 ;
SocialAction:socialActionInRole :agent14CafeUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14CafeUserRole1PayForCafeFoodOrderSocialAction1>
:agent14CafeUserRole1PayForCafeFoodOrderSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:PayForCafeFoodOrderSocialAction ;
OntoCarer-Link-
Ontology:payForCafeFoodOrderSocialActionAssistedByPayForCafeFoodOrderSocialActionAssisterAction
:agent6CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssisterAction1 ,
:agent9CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent14 ;
SocialAction:socialActionInRole :agent14CafeUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14CafeUserRole1SeeCafeFoodMenuSocialAction1>
:agent14CafeUserRole1SeeCafeFoodMenuSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:SeeCafeFoodMenuSocialAction ;
OntoCarer-Link-
Ontology:seeCafeFoodMenuSocialActionAssistedBySeeCafeFoodMenuSocialActionAssisterAction
:agent6CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1 ,
:agent9CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent14 ;
SocialAction:socialActionInRole :agent14CafeUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14CafeUserRoleAssister>

Role1

:agent14CafeUserRoleAssisterRole1 rdf:type owl:NamedIndividual ,
Agent:CafeUserRoleAssisterRole ;
Agent:roleAssisterRoleHasAgent :agent14 ;
Agent:roleAssisterRoleHasSocialActionAssisterAction

:agent14CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssister
Action1 ,

:agent14CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssister
Action1 ,

:agent14CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1 ;
Agent:roleHasDesireIntentionalLevel 1 ;
Agent:roleHasSocialActionAssisterAction

:agent14CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssister
Action1 ,

:agent14CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssister
Action1 ,

:agent14CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1 ,
:agent14CareWorkerProviderAssisterRole1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssisterAction1>

:agent14CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssister
Action1 rdf:type owl:NamedIndividual ,

SocialAction:MakeCafeFoodOrderSocialActionAssisterAction ;
OntoCarer-Link-

Ontology:makeCafeFoodOrderSocialActionAssistedActionOfMakeCafeFoodOrder
SocialAction :agent15CafeUserRole1MakeCafeFoodOrderSocialAction1 ,

:agent1CafeUserRole1MakeCafeFoodOrderSocialAction1 ,

:agent2CafeUserRole1MakeCafeFoodOrderSocialAction1 ,

:agent3CafeUserRole1MakeCafeFoodOrderSocialAction1 ,

:agent4CafeUserRole1MakeCafeFoodOrderSocialAction1 ,

:agent5CafeUserRole1MakeCafeFoodOrderSocialAction1 ,

:agent6CafeUserRole1MakeCafeFoodOrderSocialAction1 ,

:agent7CafeUserRole1MakeCafeFoodOrderSocialAction1 ,

:agent9CafeUserRole1MakeCafeFoodOrderSocialAction1 ;
SocialAction:socialActionAssisterActionInRole

:agent14CafeUserRoleAssisterRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssisterAction1>

:agent14CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssister
Action1 rdf:type owl:NamedIndividual ,

SocialAction:PayForCafeFoodOrderSocialActionAssisterAction ;
OntoCarer-Link-
Ontology:payforCafeFoodOrderSocialActionAssisterActionOfPayForCafeFoodOrderSocialAction
:agent15CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
:agent1CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
:agent2CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
:agent3CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
:agent4CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
:agent5CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
:agent6CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
:agent7CafeUserRole1PayForCafeFoodOrderSocialAction1 ;
:agent14 ; SocialAction:socialActionAssisterActionHasAgent
SocialAction:socialActionHasDesireIntentionLevel 1
; SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1>
:agent14CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1 rdf:type
owl:NamedIndividual ,

SocialAction:SeeCafeFoodMenuSocialActionAssisterAction ;
OntoCarer-Link-
Ontology:seeCafeFoodMenuSocialActionAssisterActionOfSeeCafeFoodMenuSocial
Action :agent15CafeUserRole1SeeCafeFoodMenuSocialAction1 ,
:agent1CafeUserRole1SeeCafeFoodMenuSocialAction1 ,
:agent2CafeUserRole1SeeCafeFoodMenuSocialAction1 ,
:agent3CafeUserRole1SeeCafeFoodMenuSocialAction1 ,
:agent4CafeUserRole1SeeCafeFoodMenuSocialAction1 ,
:agent5CafeUserRole1SeeCafeFoodMenuSocialAction1 ,
:agent6CafeUserRole1SeeCafeFoodMenuSocialAction1 ,
:agent7CafeUserRole1SeeCafeFoodMenuSocialAction1 ,
:agent9CafeUserRole1SeeCafeFoodMenuSocialAction1 ;
:agent14 ; SocialAction:socialActionAssisterActionHasAgent
SocialAction:socialActionAssisterActionInRole
:agent14CafeUserRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14CareWorkerProvider>

AssisterRole1

```
:agent14CareWorkerProviderAssisterRole1 rdf:type owl:NamedIndividual ,
      Agent:CareWorkerProviderAssisterRole ;
      Agent:assisterRoleHasAgent :agent14 ;
      Agent:roleHasSubRole :agent14DresserBasicFunctionRoleAssisterRole1 ,
        :agent14DrinkerBasicFunctionRoleAssisterRole1 ,
        :agent14EaterBasicFunctionRoleAssisterRole1 ,
        :agent14ToileterBasicFunctionRoleAssisterRole1 ,
        :agent14WasherBasicFunctionRoleAssisterRole1 .
```

<http://www.OntoCarer.org/CollegeModel.rdf#agent14DresserBasicFunctionRole1>

```
:agent14DresserBasicFunctionRole1 rdf:type owl:NamedIndividual ,
      Agent:DresserRole ;
      Agent:roleHasAgent :agent14 ;
      Agent:roleHasSocialAction
:agent14DresserBasicFunctionRole1PutClothesOnSocialAction1 ,
:agent14DresserBasicFunctionRole1RemoveClothesSocialAction1 ;
      Agent:roleHasDesireIntentionalLevel 1 .
```

<http://www.OntoCarer.org/CollegeModel.rdf#agent14DresserBasicFunctionRole1PutClothesOnSocialAction1>

```
:agent14DresserBasicFunctionRole1PutClothesOnSocialAction1 rdf:type owl:NamedIndividual ,
      SocialAction:PutClothesOnSocialAction ;
      OntoCarer-Link-
Ontology:putClothesOnSocialActionAssistedByPutClothesOnSocialActionAssisterAction
:agent6DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialAction
AssisterAction1 ;
      SocialAction:socialActionHasAgent :agent14 ;
      SocialAction:socialActionInRole
:agent14DresserBasicFunctionRole1 ;
      SocialAction:socialActionHasDesireIntentionLevel 1 ;
      SocialAction:socialActionHasQualifier 0 .
```

<http://www.OntoCarer.org/CollegeModel.rdf#agent14DresserBasicFunctionRole1RemoveClothesSocialAction1>

```
:agent14DresserBasicFunctionRole1RemoveClothesSocialAction1 rdf:type owl:NamedIndividual ,
      SocialAction:RemoveClothesSocialAction ;
      OntoCarer-Link-
Ontology:removeClothesSocialActionAssistedByRemoveClothesSocialAction
AssisterAction :agent6DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialAction
AssisterAction1 ;
      SocialAction:socialActionHasAgent :agent14 ;
      SocialAction:socialActionInRole
:agent14DresserBasicFunctionRole1 ;
      SocialAction:socialActionHasDesireIntentionLevel 1 ;
      SocialAction:socialActionHasQualifier 0 .
```

<http://www.OntoCarer.org/CollegeModel.rdf#agent14DresserBasicFunctionRoleAssisterRole1>

```
:agent14DresserBasicFunctionRoleAssisterRole1 rdf:type owl:NamedIndividual ,
      Agent:DresserRoleAssisterRole ;
      Agent:roleAssisterRoleHasAgent :agent14 ;
      Agent:roleAssisterRoleHasSocialActionAssisterAction
:agent14DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialAction
```


AssisterAction1 ,

:agent14DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialAction
AssisterAction1 ;

Agent:roleHasDesireIntentionalLevel 1 ;

Agent:roleHasSocialActionAssisterAction

:agent14DresserRoleAssisterRole1PutClothesOnSocialActionAssisterAction1 ,

:agent14DresserRoleAssisterRole1RemoveClothesSocialActionAssisterAction1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14DresserBasicFunction>

RoleAssisterRole1PutClothesOnSocialActionAssisterAction1

:agent14DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialActionAssisterAction1 rdfs:type
owl:NamedIndividual ,

SocialAction:PutClothesOnSocialActionAssisterAction ;

OntoCarer-Link-

Ontology:putClothesOnSocialActionAssisterActionOfPutClothesOnSocialAction

:agent10DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

:agent11DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

:agent12DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

:agent1DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

:agent2DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

:agent3DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

:agent4DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

:agent5DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

:agent6DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

:agent7DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

:agent8DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

:agent9DresserBasicFunctionRole1PutClothesOnSocialAction1 ;

SocialAction:socialActionAssisterActionHasAgent :agent14 ;

SocialAction:socialActionAssisterActionInRole

:agent14DresserBasicFunctionRoleAssisterRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14DresserBasicFunction>

RoleAssisterRole1RemoveClothesSocialActionAssisterAction1

:agent14DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialAction
AssisterAction1 rdfs:type owl:NamedIndividual ,

SocialAction:RemoveClothesActionSocialActionAssisterAction ;

OntoCarer-Link-

Ontology:removeClothesActionSocialActionAssisterActionOfRemoveClothesActionSocialAction

:agent10DresserBasicFunctionRole1RemoveClothesSocialAction1 ,

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:agent11DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
:agent12DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
:agent13DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
:agent15DresserRole1RemoveClothesSocialAction1 ,
:agent1DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
:agent2DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
:agent3DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
:agent4DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
:agent5DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
:agent6DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
:agent7DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
:agent8DresserBasicFunctionRole1RemoveClothesSocialAction1 ;
SocialAction:socialActionAssisterActionHasAgent :agent14 ;
SocialAction:socialActionAssisterActionInRole
:agent14DresserBasicFunctionRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent14DrinkerBasicFunction
Role1

```

```

:agent14DrinkerBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:DrinkerRole ;
Agent:roleHasAgent :agent14 ;
Agent:roleHasSocialAction
:agent14DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent14DrinkerBasicFunction
Role1UseDrinkingUtensilSocialAction1

```

```

:agent14DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:UseDrinkingUtensilSocialAction ;
OntoCarer-Link-
Ontology:useDrinkingUtensilSocialActionAssistedByUseDrinkingUtensilSocial
ActionAssisterAction :agent6DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialAction
AssisterAction1 ,
:agent9DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialAction
AssisterAction1 ;
SocialAction:socialActionHasAgent :agent14 ;
SocialAction:socialActionInRole
:agent14DrinkerBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

```

<http://www.OntoCarer.org/CollegeModel.rdf#agent14DrinkerBasicFunctionRoleAssisterRole1>
:agent14DrinkerBasicFunctionRoleAssisterRole1 rdf:type owl:NamedIndividual ,
Agent:DrinkerRoleAssisterRole ;
Agent:roleAssisterRoleHasAgent :agent14 ;
Agent:roleAssisterRoleHasSocialActionAssisterAction
:agent14DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1 ;
Agent:roleHasDesireIntentionalLevel 1 ;
Agent:roleHasSocialActionAssisterAction
:agent14DrinkerRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1>
:agent14DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1
rdf:type owl:NamedIndividual ,

SocialAction:UseDrinkingUtensilSocialActionAssisterAction ;
OntoCarer-Link-
Ontology:useDrinkingUtensilSocialActionAssisterActionOfUseDrinkingUtensil
SocialAction :agent10DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,

:agent11DrinkerRole1UseDrinkingUtensilSocialAction1 ,
:agent12DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent13DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent15DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent1DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent2DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent3DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent4DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent5DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent6DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent7DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent8DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent9DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ;

SocialAction:socialActionAssisterActionHasAgent :agent14 ;

SocialAction:socialActionAssisterActionInRole :agent14DrinkerBasicFunctionRoleAssisterRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14EaterBasicFunctionRole1>
Role1

```

:agent14EaterBasicFunctionRole1 rdf:type owl:NamedIndividual ,
    Agent:EaterRole ;
    Agent:roleHasAgent :agent14 ;
    Agent:roleHasSocialAction
:agent14EaterBasicFunctionRole1FeedSelfSocialAction1 ,

:agent14EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,

:agent14EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ;
    Agent:roleHasDesireIntentionalLevel 1 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent14EaterBasicFunctionRole1FeedSelfSocialAction1

```

```

:agent14EaterBasicFunctionRole1FeedSelfSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:FeedSelfSocialAction ;
    OntoCarer-Link-
Ontology:feedSelfSocialActionAssistedByFeedSelfSocialActionAssisterAction
:agent6EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister
Action1 ,

:agent9EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister
Action1 ;
    SocialAction:socialActionHasAgent :agent14 ;
    SocialAction:socialActionInRole :agent14EaterBasicFunctionRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent14EaterBasicFunctionRole1UseCutlerySocialAction1

```

```

:agent14EaterBasicFunctionRole1UseCutlerySocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:UseCutlerySocialAction ;
    OntoCarer-Link-
Ontology:useCutlerySocialActionAssistedByUseCutlerySocialActionAssister
Action :agent6EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ,

:agent9EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ;
    SocialAction:socialActionHasAgent :agent14 ;
    SocialAction:socialActionInRole :agent14EaterBasicFunctionRole1
;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent14EaterBasicFunctionRole1UseCutleryToFeedSocialAction1

```

```

:agent14EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:UseCutleryToFeedSocialAction ;
    OntoCarer-Link-
Ontology:useCutleryToFeedSocialActionAssistedByUseCutleryToFeedSocialActionAssisterAction
:agent6EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ,

:agent9EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ;
    SocialAction:socialActionHasAgent :agent14 ;

```

SocialAction:socialActionInRole
:agent14EaterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14EaterBasicFunctionRoleAssisterRole1>

:agent14EaterBasicFunctionRoleAssisterRole1 rdf:type owl:NamedIndividual ,
Agent:EaterRoleAssisterRole ;
Agent:roleAssisterRoleHasAgent :agent14 ;
Agent:roleAssisterRoleHasSocialActionAssisterAction
:agent14EaterBasicFunctionRoleAssisterRole1 ;
Agent:roleHasDesireIntentionalLevel 1 ;
Agent:roleHasSocialActionAssisterAction
:agent14EaterRoleAssisterRole1FeedSelfSocialActionAssisterAction1 ,
:agent14EaterRoleAssisterRole1UseCutlerySocialActionAssisterAction1 ,
:agent14EaterRoleAssisterRole1UseCutleryToFeedSocialActionAssisterAction1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssisterAction1>

:agent14EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssisterAction1 rdf:type
owl:NamedIndividual ,
SocialAction:FeedSelfSocialActionAssisterAction ;
OntoCarer-Link-
Ontology:feedSelfSocialActionAssisterActionOffFeedSelfSocialAction
:agent10EaterBasicFunctionRole1FeedSelfSocialAction1 ,
:agent11EaterBasicFunctionRole1FeedSelfSocialAction1 ,
:agent12EaterBasicFunctionRole1FeedSelfSocialAction1 ,
:agent13EaterBasicFunctionRole1FeedSelfSocialAction1 ,
:agent15EaterBasicFunctionRole1FeedSelfSocialAction1 ,
:agent1EaterBasicFunctionRole1FeedSelfSocialAction1 ,
:agent2EaterBasicFunctionRole1FeedSelfSocialAction1 ,
:agent3EaterBasicFunctionRole1FeedSelfSocialAction1 ,
:agent4EaterBasicFunctionRole1FeedSelfSocialAction1 ,
:agent5EaterBasicFunctionRole1FeedSelfSocialAction1 ,
:agent6EaterBasicFunctionRole1FeedSelfSocialAction1 ,
:agent7EaterBasicFunctionRole1FeedSelfSocialAction1 ,
:agent8EaterBasicFunctionRole1FeedSelfSocialAction1 ,
:agent9EaterBasicFunctionRole1FeedSelfSocialAction1 ;
SocialAction:socialActionAssisterActionHasAgent
:agent14 ;

SocialAction:socialActionAssisterActionInRole
:agent14EaterBasicFunctionRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1
;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14EaterBasicFunction>

RoleAssisterRole1UseCutlerySocialActionAssisterAction1
:agent14EaterBasicFunctionRoleAssisterRole1UseCutlerySocialAction
AssisterAction1 rdf:type owl:NamedIndividual ,
SocialAction:UseCutlerySocialActionAssisterAction ;
OntoCarer-Link-
Ontology:useCutlerySocialActionAssisterActionOfUseCutlerySocialAction
:agent10EaterBasicFunctionRole1UseCutlerySocialAction1 ,

:agent11EaterBasicFunctionRole1UseCutlerySocialAction1 ,

:agent12EaterBasicFunctionRole1UseCutlerySocialAction1 ,

:agent13EaterBasicFunctionRole1UseCutlerySocialAction1 ,

:agent15EaterBasicFunctionRole1UseCutlerySocialAction1 ,

:agent1EaterBasicFunctionRole1UseCutlerySocialAction1 ,

:agent2EaterBasicFunctionRole1UseCutlerySocialAction1 ,

:agent3EaterBasicFunctionRole1UseCutlerySocialAction1 ,

:agent4EaterBasicFunctionRole1UseCutlerySocialAction1 ,

:agent5EaterBasicFunctionRole1UseCutlerySocialAction1 ,

:agent6EaterBasicFunctionRole1UseCutlerySocialAction1 ,

:agent7EaterBasicFunctionRole1UseCutlerySocialAction1 ,

:agent8EaterBasicFunctionRole1UseCutlerySocialAction1 ,

:agent9EaterBasicFunctionRole1UseCutlerySocialAction1 ;

SocialAction:socialActionAssisterActionHasAgent
:agent14 ;

SocialAction:socialActionAssisterActionInRole

:agent14EaterBasicFunctionRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel

1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14EaterBasicFunction>

RoleAssisterRole1UseCutleryToFeedSocialActionAssisterAction1
:agent14EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialActionAssisterAction1
rdf:type owl:NamedIndividual ,

SocialAction:UseCutleryToFeedSocialActionAssisterAction ;

OntoCarer-Link-
Ontology:useCutleryToFeedSocialActionAssisterActionOfUseCutleryToFeedSocialAction
:agent10EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,

```

:agent11EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
:agent12EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
:agent13EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
:agent15EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
:agent1EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
:agent2EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
:agent3EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
:agent4EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
:agent5EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
:agent6EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
:agent7EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
:agent8EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
:agent9EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ;

SocialAction:socialActionAssisterActionHasAgent :agent14 ;
                                                SocialAction:socialActionAssisterActionInRole
:agent14EaterBasicFunctionRoleAssisterRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
                                                SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent14LibraryUserRole
AssisterRole1
:agent14LibraryUserRoleAssisterRole1 rdf:type owl:NamedIndividual ,
    Agent:LibraryUserRoleAssisterRole ;
    Agent:roleAssisterRoleHasAgent :agent14 ;
    Agent:roleAssisterRoleHasSocialActionAssisterAction
:agent14LibraryUserRoleAssisterRole1FindBookOnShelvesSocialActionAssister
Action1 ,

:agent14LibraryUserRoleAssisterRole1FindLibrarySocialActionAssisterAction1 ,

:agent14LibraryUserRoleAssisterRole1NavigateToLibrarySocialActionAssister
Action1 ;
    Agent:roleHasDesireIntentionalLevel 1 ;
    Agent:roleHasSocialActionAssisterAction
:agent14LibraryUserRoleAssisterRole1FindBookOnShelvesSocialActionAssister
Action1 ,

:agent14LibraryUserRoleAssisterRole1FindLibrarySocialActionAssisterAction1 ,

:agent14LibraryUserRoleAssisterRole1NavigateToLibrarySocialActionAssister
Action1 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent14LibraryUserRole

```

AssisterRole1FindBookOnShelvesSocialActionAssisterAction1
:agent14LibraryUserRoleAssisterRole1FindBookOnShelvesSocialActionAssister
Action1 rdf:type owl:NamedIndividual ,

SocialAction:FindBookOnShelvesSocialActionAssisterAction ;
OntoCarer-Link-
Ontology:findBookOnShelvesSocialActionAssisterActionOfFindBookOnLibrary
ShelvesSocialAction :agent15LibraryUserRole1FindBookOnShelvesSocialAction1 ,

:agent1LibraryUserRole1FindBookOnShelvesSocialAction1 ,
:agent4LibraryUserRole1FindBookOnShelvesSocialAction1 ,
:agent5LibraryUserRole1FindBookOnShelvesSocialAction1 ,
:agent7LibraryUserRole1FindBookOnShelvesSocialAction1 ;
SocialAction:socialActionAssisterActionHasAgent
:agent14 ;
SocialAction:socialActionAssisterActionInRole
:agent14LibraryUserRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel
1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14LibraryUserRole>
AssisterRole1FindLibrarySocialActionAssisterAction1
:agent14LibraryUserRoleAssisterRole1FindLibrarySocialActionAssisterAction1 rdf:type
owl:NamedIndividual ,

SocialAction:FindLibrarySocialActionAssisterAction ;
OntoCarer-Link-
Ontology:findLibrarySocialActionAssisterActionOfFindLibrarySocialAction
:agent15LibraryUserRole1FindLibrarySocialAction1 ,

:agent4LibraryUserRole1FindLibrarySocialAction1 ,
:agent5LibraryUserRole1FindLibrarySocialAction1 ,
:agent7LibraryUserRole1FindLibrarySocialAction1 ;
OntoCarer-Link-
Ontology:findLibrarySocialActionAssisterAidOfFindLibrarySocialAction
:agent1LibraryUserRole1FindLibrarySocialAction1 ;
SocialAction:socialActionAssisterActionHasAgent
:agent14 ;
SocialAction:socialActionAssisterActionInRole
:agent14LibraryUserRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14LibraryUserRole>
AssisterRole1NavigateToLibrarySocialActionAssisterAction1
:agent14LibraryUserRoleAssisterRole1NavigateToLibrarySocialActionAssister
Action1 rdf:type owl:NamedIndividual ,

SocialAction:NavigateToLibrarySocialActionAssisterAction ;
OntoCarer-Link-
Ontology:navigateToLibrarySocialActionAssisterActionOfNavigateToLibrary
SocialAction :agent15LibraryUserRole1NavigateToLibrarySocialAction1 ,


```

:agent1LibraryUserRole1NavigateToLibrarySocialAction1 ,
:agent4LibraryUserRole1NavigateToLibrarySocialAction1 ,
:agent5LibraryUserRole1NavigateToLibrarySocialAction1 ,
:agent7LibraryUserRole1NavigateToLibrarySocialAction1 ;
                                SocialAction:socialActionAssisterActionHasAgent
:agent14 ;
                                SocialAction:socialActionAssisterActionInRole
:agent14LibraryUserRoleAssisterRole1 ;
                                SocialAction:socialActionHasDesireIntentionLevel
1 ;
                                SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent14StudentUserRoleAssisterRole1

```

```

:agent14StudentUserRoleAssisterRole1 rdf:type owl:NamedIndividual ,
                                Agent:StudentUserRoleAssisterRole ;
                                Agent:roleAssisterRoleHasAgent :agent14 ;
                                Agent:roleAssisterRoleHasSocialActionAssisterAction
:agent14StudentUserRoleAssisterRole1AnswerQuestionsSocialActionAssister
Action1 ,
:agent14StudentUserRoleAssisterRole1AskQuestionsSocialActionAssisterAction1 ,
:agent14StudentUserRoleAssisterRole1EnrolOnCourseSocialActionAssister
Action1 ,
:agent14StudentUserRoleAssisterRole1ExitTeachingRoomSocialActionAssister
Action1 ,
:agent14StudentUserRoleAssisterRole1FindTeachingRoomSocialActionAssisterAction1 ,
:agent14StudentUserRoleAssisterRole1NavigateToTeachingRoomSocialAction
AssisterAction1 ,
:agent14StudentUserRoleAssisterRole1PayCourseFeesSocialActionAssisterAction1 ,
:agent14StudentUserRoleAssisterRole1SubmitAssignmentSocialActionAssister
Action1 ;
                                Agent:roleHasDesireIntentionalLevel 1 ;
                                Agent:roleHasSocialActionAssisterAction
:agent14StudentUserRoleAssisterRoleAnswerQuestionsSocialActionAssister
Action1 ,
:agent14StudentUserRoleAssisterRoleAskQuestionsSocialActionAssisterAction1 ,
:agent14StudentUserRoleAssisterRoleEnrolOnCourseSocialActionAssisterAction1 ,
:agent14StudentUserRoleAssisterRoleExitTeachingRoomSocialActionAssister
Action1 ,
:agent14StudentUserRoleAssisterRoleFindTeachingRoomSocialActionAssister
Action1 ,
:agent14StudentUserRoleAssisterRoleNavigateToTeachingRoomSocialAction
AssisterAction1 ,

```

:agent14StudentUserRoleAssisterRolePayCourseFeesSocialActionAssisterAction1 ,

:agent14StudentUserRoleAssisterRoleSubmitAssignmentSocialActionAssister
Action1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14StudentUserRole>

AssisterRole1AnswerQuestionsSocialActionAssisterAction1

:agent14StudentUserRoleAssisterRole1AnswerQuestionsSocialActionAssister
Action1 rdf:type owl:NamedIndividual ,

SocialAction:AnswerQuestionsSocialActionAssisterAction ;

OntoCarer-Link-

Ontology:answerQuestionsSocialActionAssisterActionOfAnswerQuestionsSocial
Action :agent14StudentUserRole1AnswerQuestionsSocialAction1 ,

:agent5StudentUserRole1AnswerQuestionsSocialAction1 ,

:agent7StudentUserRole1AnswerQuestionsSocialAction1 ;

SocialAction:socialActionAssisterActionHasAgent

:agent14 ;

SocialAction:socialActionAssisterActionInRole

:agent14StudentUserRoleAssisterRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1

;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14StudentUserRole>

AssisterRole1AskQuestionsSocialActionAssisterAction1

:agent14StudentUserRoleAssisterRole1AskQuestionsSocialActionAssisterAction1 rdf:type
owl:NamedIndividual ,

SocialAction:AskQuestionsSocialActionAssisterAction ;

OntoCarer-Link-

Ontology:askQuestionsSocialActionAssisterActionOfAskQuestionsSocialAction
:agent14StudentUserRole1AskQuestionsSocialAction1 ,

:agent5StudentUserRole1AskQuestionsSocialAction1 ,

:agent7StudentUserRole1AskQuestionsSocialAction1 ;

SocialAction:socialActionAssisterActionHasAgent

:agent14 ;

SocialAction:socialActionAssisterActionInRole

:agent14StudentUserRoleAssisterRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14StudentUserRole>

AssisterRole1EnrolOnCourseSocialActionAssisterAction1

:agent14StudentUserRoleAssisterRole1EnrolOnCourseSocialActionAssisterAction1 rdf:type
owl:NamedIndividual ,

SocialAction:EnrolOnCourseSocialActionAssisterAction ;

OntoCarer-Link-

Ontology:enrolStudentOnCourseSocialActionAssisterActionOfEnrolStudentOnCourseSocialAction
:agent14StudentUserRole1EnrolOnCourseSocialAction1 ,

:agent5StudentUserRole1EnrolOnCourseSocialAction1 ,
:agent7StudentUserRole1EnrolOnCourseSocialAction1 ;
SocialAction:socialActionAssisterActionHasAgent
:agent14 ;
SocialAction:socialActionAssisterActionInRole
:agent14StudentUserRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14StudentUserRole>
AssisterRole1ExitTeachingRoomSocialActionAssisterAction1
:agent14StudentUserRoleAssisterRole1ExitTeachingRoomSocialActionAssister
Action1 rdf:type owl:NamedIndividual ,

SocialAction:ExitTeachingRoomSocialActionAssisterAction ;
OntoCarer-Link-
Ontology:exitTeachingRoomSocialActionAssisterActionOfExitTeachingRoomSocialAction
:agent1StudentUserRole1ExitTeachingRoomSocialAction1 ,
:agent5StudentUserRole1ExitTeachingRoomSocialAction1 ,
:agent7StudentUserRole1ExitTeachingRoomSocialAction1 ;
SocialAction:socialActionAssisterActionHasAgent
:agent14 ;
SocialAction:socialActionAssisterActionInRole
:agent14StudentUserRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1
;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14StudentUserRole>
AssisterRole1FindTeachingRoomSocialActionAssisterAction1
:agent14StudentUserRoleAssisterRole1FindTeachingRoomSocialActionAssister
Action1 rdf:type owl:NamedIndividual ,

SocialAction:FindTeachingRoomSocialActionAssisterAction ;
OntoCarer-Link-
Ontology:findTeachingRoomSocialActionAssisterActionOfFindTeachingRoomSocialAction
:agent1StudentUserRole1FindTeachingRoomSocialAction1 ,
:agent5StudentUserRole1FindTeachingRoomSocialAction1 ,
:agent7StudentUserRole1FindTeachingRoomSocialAction1 ;
SocialAction:socialActionAssisterActionHasAgent
:agent14 ;
SocialAction:socialActionAssisterActionInRole
:agent14StudentUserRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1
;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14StudentUserRole>
AssisterRole1NavigateToTeachingRoomSocialActionAssisterAction1
:agent14StudentUserRoleAssisterRole1NavigateToTeachingRoomSocialAction
AssisterAction1 rdf:type owl:NamedIndividual ,

SocialAction:NavigateToTeachingRoomSocialActionAssisterAction ;
 OntoCarer-Link-
 Ontology:navigateToTeachingRoomSocialActionAssisterActionOfNavigateTo
 TeachingRoomSocialAction :agent1StudentUserRole1NavigateToTeachingRoomSocialAction1 ,
 :agent5StudentUserRole1NavigateToTeachingRoomSocialAction1 ,
 :agent7StudentUserRole1NavigateToTeachingRoomSocialAction1 ;
 SocialAction:socialActionAssisterActionHasAgent :agent14 ;
 SocialAction:socialActionAssisterActionInRole
 :agent14StudentUserRoleAssisterRole1 ;
 SocialAction:socialActionHasDesireIntentionLevel 1 ;
 SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14StudentUserRole>
 AssisterRole1PayCourseFeesSocialActionAssisterAction1
 :agent14StudentUserRoleAssisterRole1PayCourseFeesSocialActionAssisterAction1 rdf:type
 owl:NamedIndividual ,

SocialAction:PayCourseFeesSocialActionAssisterAction ;
 OntoCarer-Link-
 Ontology:payCourseFeesSocialActionAssisterActionOfPayCourseFeesSocialAction
 :agent1StudentUserRole1PayCourseFeesSocialAction1 ,
 :agent5StudentUserRole1PayCourseFeesSocialAction1 ,
 :agent7StudentUserRole1PayCourseFeesSocialAction1 ;
 SocialAction:socialActionAssisterActionHasAgent
 :agent14 ;
 SocialAction:socialActionAssisterActionInRole
 :agent14StudentUserRoleAssisterRole1 ;
 SocialAction:socialActionHasDesireIntentionLevel 1 ;
 SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14StudentUserRole>
 AssisterRole1SubmitAssignmentSocialActionAssisterAction1
 :agent14StudentUserRoleAssisterRole1SubmitAssignmentSocialActionAssister
 Action1 rdf:type owl:NamedIndividual ,

SocialAction:SubmitAssignmentSocialActionAssisterAction ;
 OntoCarer-Link-
 Ontology:submitAssignmentSocialActionAssisterActionOfSubmitAssignmentSocialAction
 :agent1StudentUserRole1SubmitAssignmentSocialAction1 ,
 :agent5StudentUserRole1SubmitAssignmentSocialAction1 ,
 :agent7StudentUserRole1SubmitAssignmentSocialAction1 ;
 SocialAction:socialActionAssisterActionHasAgent
 :agent14 ;
 SocialAction:socialActionAssisterActionInRole
 :agent14StudentUserRoleAssisterRole1 ;
 SocialAction:socialActionHasDesireIntentionLevel 1
 ;
 SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14StudentUserRole>
AssisterRole1TakeNotesFromSpeakerSocialActionAssisterAction1
:agent14StudentUserRoleAssisterRole1TakeNotesFromSpeakerSocialAction
AssisterAction1 rdf:type owl:NamedIndividual ,

SocialAction:TakeNotesFromSpeakerSocialActionAssisterAction ;
OntoCarer-Link-
Ontology:takeNotesFromSpeakerSocialActionAssisterActionOfTakeNotesFromSpeakerSocialAction
:agent14StudentUserRole1TakeNotesFromSpeakerSocialAction1 ,
:agent5StudentUserRole1TakeNotesFromSpeakerSocialAction1 ,
:agent7StudentUserRole1TakeNotesFromSpeakerSocialAction1 ;
SocialAction:socialActionAssisterActionHasAgent :agent14 ;
SocialAction:socialActionAssisterActionInRole
:agent14StudentUserRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14StudentUserRole>
AssisterRole1TakeNotesFromTextSocialActionAssisterAction1
:agent14StudentUserRoleAssisterRole1TakeNotesFromTextSocialActionAssister
Action1 rdf:type owl:NamedIndividual ,

SocialAction:TakeNotesFromTextSocialActionAssisterAction ;
OntoCarer-Link-
Ontology:takeNotesFromTextSocialActionAssisterActionOfTakeNotesFromText
SocialAction :agent14StudentUserRole1TakeNotesFromTextSocialAction1 ,
:agent5StudentUserRole1TakeNotesFromTextSocialAction1 ;
SocialAction:socialActionAssisterActionHasAgent
:agent14 ;
SocialAction:socialActionAssisterActionInRole
:agent14StudentUserRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel
1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14ToileterBasicFunction>
Role1

:agent14ToileterBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:ToileterRole ;
Agent:roleHasAgent :agent14 ;
Agent:roleHasSocialAction
:agent14ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,
:agent14ToileterBasicFunctionRole1FindToiletSocialAction1 ,
:agent14ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
:agent14ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,
:agent14ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent14ToileterBasicFunction
Role1CleanSelfAfterToiletSocialAction1
:agent14ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:CleanSelfAfterToiletSocialAction ;
    OntoCarer-Link-
Ontology:cleanSelfAfterToiletSocialActionAssistedByCleanSelfAfterToilet
SocialActionAssisterAction :agent6ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocial
ActionAssisterAction1 ;
    SocialAction:socialActionHasAgent :agent14 ;
    SocialAction:socialActionInRole

:agent14ToileterBasicFunctionRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

```

```

###
http://www.OntoCarer.org/CollegeModel.rdf#agent14ToileterBasicFunctionRole1FindToiletSocialAction1
:agent14ToileterBasicFunctionRole1FindToiletSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:FindToiletSocialAction ;
    OntoCarer-Link-
Ontology:findToiletSocialActionAssistedByFindToiletSocialActionAssister
Action :agent12ToileterBasicFunctionRoleAssisterRole1FindToiletSocialAction
AssisterAction1 ,
:agent6ToileterBasicFunctionRoleAssisterRole1FindToiletSocialActionAssisterAction1 ;
    SocialAction:socialActionHasAgent :agent14 ;
    SocialAction:socialActionInRole
:agent14ToileterBasicFunctionRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent14ToileterBasicFunction
Role1NavigateToToiletSocialAction1
:agent14ToileterBasicFunctionRole1NavigateToToiletSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:NavigateToToiletSocialAction ;
    OntoCarer-Link-
Ontology:navigateToToiletSocialActionAssistedByNavigateToToiletSocialActionAssisterAction
:agent12ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ,
:agent6ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ;
    SocialAction:socialActionHasAgent :agent14 ;
    SocialAction:socialActionInRole
:agent14ToileterBasicFunctionRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent14ToileterBasicFunction
Role1RemoveRelevantClothesSocialAction1
:agent14ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 rdf:type
owl:NamedIndividual ,
    SocialAction:RemoveRelevantClothesSocialAction ;

```

OntoCarer-Link-

Ontology:removeRelevantClothesSocialActionAssistedByRemoveRelevantClothes
 SocialActionAssisterAction
 :agent6ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocial
 ActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent14 ;
 SocialAction:socialActionInRole

:agent14ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
 SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14ToileterBasicFunction>
 Role1RestoreRelevantClothesSocialAction1
 :agent14ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 rdf:type
 owl:NamedIndividual ,

SocialAction:RestoreRelevantClothesSocialAction ;
 OntoCarer-Link-

Ontology:restoreRelevantClothesSocialActionAssistedByRestoreRelevantClothesSocialActionAssister
 Action :agent14ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocial
 ActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent14 ;
 SocialAction:socialActionInRole

:agent14ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
 SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14ToileterBasicFunction>
 RoleAssisterRole1
 :agent14ToileterBasicFunctionRoleAssisterRole1 rdf:type owl:NamedIndividual ,
 Agent:ToileterRoleAssisterRole ;
 Agent:roleAssisterRoleHasSocialActionAssisterAction

:agent14ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocial
 ActionAssisterAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1FindToiletSocialAction
 AssisterAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
 AssisterAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocial
 ActionAssisterAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocial
 ActionAssisterAction1 ;

Agent:roleHasAgent :agent14 ;
 Agent:roleHasDesireIntentionLevel 1 ;
 Agent:roleHasSocialActionAssisterAction

:agent14ToileterRoleAssisterRole1CleanSelfAfterToiletSocialActionAssister
 Action1 ,

:agent14ToileterRoleAssisterRole1FindToiletSocialActionAssisterAction1 ,

:agent14ToileterRoleAssisterRole1NavigateToToiletSocialActionAssisterAction1 ,

:agent14ToileterRoleAssisterRole1RemoveRelevantClothesSocialActionAssister
 Action1 ,

:agent14ToileterRoleAssisterRole1RestoreRelevantClothesSocialActionAssisterAction1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14ToileterBasicFunction>

RoleAssisterRole1CleanSelfAfterToiletSocialActionAssisterAction1

:agent14ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocial
ActionAssisterAction1 rdf:type owl:NamedIndividual ,

SocialAction:CleanSelfAfterToiletSocialActionAssisterAction ;

OntoCarer-Link-

Ontology:cleanSelfAfterToiletSocialActionAssisterActionOfCleanSelfAfter

ToiletSocialAction :agent10ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,

:agent11ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,

:agent12ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,

:agent13ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,

:agent15ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,

:agent1ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,

:agent2ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,

:agent3ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,

:agent4ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,

:agent5ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,

:agent6ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,

:agent7ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,

:agent8ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,

:agent9ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ;

SocialAction:socialActionAssisterActionHasAgent :agent14 ;

SocialAction:socialActionAssisterActionInRole :agent14ToileterBasicFunctionRoleAssisterRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14ToileterBasicFunction>

RoleAssisterRole1FindToiletSocialActionAssisterAction1

:agent14ToileterBasicFunctionRoleAssisterRole1FindToiletSocialAction
AssisterAction1 rdf:type owl:NamedIndividual ,

SocialAction:FindToiletSocialActionAssisterAction ;

OntoCarer-Link-

Ontology:findTeachingRoomSocialActionAssisterActionOfFindTeachingRoomSocialAction

:agent1ToileterBasicFunctionRole1FindToiletSocialAction1 ;

OntoCarer-Link-

Ontology:findToiletSocialActionAssisterActionOfFindToiletSocialAction

:agent10ToileterBasicFunctionRole1FindToiletSocialAction1 ,

:agent11ToileterBasicFunctionRole1FindToiletSocialAction1 ,
 :agent12ToileterBasicFunctionRole1FindToiletSocialAction1 ,
 :agent13ToileterBasicFunctionRole1FindToiletSocialAction1 ,
 :agent15ToileterBasicFunctionRole1FindToiletSocialAction1 ,
 :agent2ToileterBasicFunctionRole1FindToiletSocialAction1 ,
 :agent3ToileterBasicFunctionRole1FindToiletSocialAction1 ,
 :agent4ToileterBasicFunctionRole1FindToiletSocialAction1 ,
 :agent5ToileterBasicFunctionRole1FindToiletSocialAction1 ,
 :agent6ToileterBasicFunctionRole1FindToiletSocialAction1 ,
 :agent7ToileterBasicFunctionRole1FindToiletSocialAction1 ,
 :agent8ToileterBasicFunctionRole1FindToiletSocialAction1 ,
 :agent9ToileterBasicFunctionRole1FindToiletSocialAction1 ;
 SocialAction:socialActionAssisterActionHasAgent :agent14 ;
 SocialAction:socialActionAssisterActionInRole
 :agent14ToileterBasicFunctionRoleAssisterRole1 ;
 SocialAction:socialActionHasDesireIntentionLevel 1 ;
 SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14ToileterBasicFunction>

RoleAssisterRole1NavigateToToiletSocialActionAssisterAction1
 :agent14ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
 AssisterAction1 rdf:type owl:NamedIndividual ,
 SocialAction:NavigateToToiletSocialActionAssisterAction ;
 OntoCarer-Link-
 Ontology:navigateToToiletSocialActionAssisterActionOfNavigateToToiletSocialAction
 :agent10ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
 :agent11ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
 :agent12ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
 :agent13ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
 :agent15ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
 :agent1ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
 :agent2ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
 :agent3ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
 :agent4ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
 :agent5ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ,

:agent7ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,

:agent8ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,

:agent9ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ;

SocialAction:socialActionAssisterActionHasAgent :agent14 ;

SocialAction:socialActionAssisterActionInRole :agent14ToileterBasicFunctionRoleAssisterRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14ToileterBasicFunction>

RoleAssisterRole1RemoveRelevantClothesSocialActionAssisterAction1
:agent14ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocial
ActionAssisterAction1 rdf:type owl:NamedIndividual ,

SocialAction:RemoveRelevantClothesSocialActionAssisterAction ;

OntoCarer-Link-

Ontology:removeRelevantClothesSocialActionAssistedByRemoveRelevantClothes
SocialActionAssister :agent2ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ;

OntoCarer-Link-

Ontology:removeRelevantClothesSocialActionAssisterActionOfRemoveRelevant
ClothesSocialAction :agent10ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,

:agent12ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,

:agent13ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,

:agent15ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,

:agent1ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,

:agent3ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,

:agent4ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,

:agent5ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,

:agent6ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,

:agent7ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,

:agent8ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,

:agent9ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ;

OntoCarer-Link-

Ontology:removeRelevantClothesSocialActionAssisterAidOfRemoveRelevant
ClothesSocialAction :agent11ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ;

SocialAction:socialActionAssisterActionHasAgent :agent14 ;

SocialAction:socialActionAssisterActionInRole :agent14ToileterBasicFunctionRoleAssisterRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14ToileterBasicFunction>

RoleAssisterRole1RestoreRelevantClothesSocialActionAssisterAction1
:agent14ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocial
ActionAssisterAction1 rdf:type owl:NamedIndividual ,

SocialAction:RestoreRelevantClothesSocialActionAssisterAction ;

OntoCarer-Link-

Ontology:restoreRelevantClothesSocialActionAssisterActionOfRestoreRelevant
ClothesSocialAction :agent11ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,

:agent12ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,

:agent13ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,

:agent15ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,

:agent1ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,

:agent2ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,

:agent3ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,

:agent4ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,

:agent5ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,

:agent6ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,

:agent7ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,

:agent8ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,

:agent9ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ;

OntoCarer-Link-

Ontology:restoreRelevantClothesSocialActionAssisterOfRestoreRelevantClothesSocialAction

:agent10ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ;

SocialAction:socialActionAssisterActionHasAgent :agent14 ;

SocialAction:socialActionAssisterActionInRole :agent14ToileterBasicFunctionRoleAssisterRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14WasherBasicFunction>

Role1

:agent14WasherBasicFunctionRole1 rdf:type owl:NamedIndividual ,

Agent:WasherRole ;

Agent:roleHasAgent :agent14 ;

Agent:roleHasSocialAction

:agent14WasherBasicFunctionRole1DrySelfSocialAction1 ,

:agent14WasherBasicFunctionRole1WashSelfSocialAction1 ;

Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14WasherBasicFunctionRole1DrySelfSocialAction1>
:agent14WasherBasicFunctionRole1DrySelfSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:DrySelfSocialAction ;
OntoCarer-Link-
Ontology:drySelfSocialActionAssistedByDrySelfSocialActionAssisterAction
:agent6WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssister
Action1 ;
SocialAction:socialActionHasAgent :agent14 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14WasherBasicFunctionRole1WashSelfSocialAction1>
:agent14WasherBasicFunctionRole1WashSelfSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:WashSelfSocialAction ;
OntoCarer-Link-
Ontology:washSelfSocialActionAssistedByWashSelfSocialActionAssisterAction
:agent6WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssister
Action1 ;
SocialAction:socialActionHasAgent :agent14 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14WasherBasicFunctionRoleAssisterRole1>
:agent14WasherBasicFunctionRoleAssisterRole1 rdf:type owl:NamedIndividual ,
Agent:WasherRoleAssisterRole ;
Agent:roleAssisterRoleHasAgent :agent14 ;
Agent:roleAssisterRoleHasSocialActionAssisterAction
:agent14WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssister
Action1 ,
:agent14WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssister
Action1 ;
Agent:roleHasDesireIntentionLevel 1 ;
Agent:roleHasSocialActionAssisterAction
:agent14WasherRoleAssisterRole1DrySelfSocialActionAssisterAction1 ,
:agent14WasherRoleAssisterRole1WashSelfSocialActionAssisterAction1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent14WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssisterAction1>
:agent14WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssister
Action1 rdf:type owl:NamedIndividual ,
SocialAction:DrySelfSocialActionAssisterAction ;
OntoCarer-Link-
Ontology:drySelfSocialActionAssisterActionOfDrySelfSocialAction
:agent10WasherBasicFunctionRole1DrySelfSocialAction1 ,
:agent11WasherBasicFunctionRole1DrySelfSocialAction1 ,
:agent13WasherBasicFunctionRole1DrySelfSocialAction1 ,
:agent15WasherBasicFunctionRole1DrySelfSocialAction1 ,

```

:agent1WasherBasicFunctionRole1DrySelfSocialAction1 ,
:agent2WasherBasicFunctionRole1DrySelfSocialAction1 ,
:agent3WasherBasicFunctionRole1DrySelfSocialAction1 ,
:agent4WasherBasicFunctionRole1DrySelfSocialAction1 ,
:agent5WasherBasicFunctionRole1DrySelfSocialAction1 ,
:agent6WasherBasicFunctionRole1DrySelfSocialAction1 ,
:agent7WasherBasicFunctionRole1DrySelfSocialAction1 ,
:agent8WasherBasicFunctionRole1DrySelfSocialAction1 ,
:agent9WasherBasicFunctionRole1DrySelfSocialAction1 ;
                                SocialAction:socialActionAssisterActionHasAgent
:agent14 ;
                                SocialAction:socialActionAssisterActionInRole
:agent14WasherBasicFunctionRoleAssisterRole1 ;
                                SocialAction:socialActionHasDesireIntentionLevel 1
;
                                SocialAction:socialActionHasQualifier 0 .

```

<http://www.OntoCarer.org/CollegeModel.rdf#agent14WasherBasicFunction>

```

RoleAssisterRole1WashSelfSocialActionAssisterAction1
:agent14WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssister
Action1 rdf:type owl:NamedIndividual ,

```

```

SocialAction:WashSelfSocialActionAssisterAction ;
                                OntoCarer-Link-
Ontology:washSelfSocialActionAssisterActionOfWashSelfSocialAction

```

```

:agent10WasherBasicFunctionRole1WashSelfSocialAction1 ,
:agent11WasherBasicFunctionRole1WashSelfSocialAction1 ,
:agent12WasherBasicFunctionRole1WashSelfSocialAction1 ,
:agent15WasherBasicFunctionRole1WashSelfSocialAction1 ,
:agent1WasherBasicFunctionRole1WashSelfSocialAction1 ,
:agent2WasherBasicFunctionRole1WashSelfSocialAction1 ,
:agent3WasherBasicFunctionRole1WashSelfSocialAction1 ,
:agent4WasherBasicFunctionRole1WashSelfSocialAction1 ,
:agent5WasherBasicFunctionRole1WashSelfSocialAction1 ,
:agent6WasherBasicFunctionRole1WashSelfSocialAction1 ,
:agent7WasherBasicFunctionRole1WashSelfSocialAction1 ,
:agent8WasherBasicFunctionRole1WashSelfSocialAction1 ,
:agent9WasherBasicFunctionRole1WashSelfSocialAction1 ;

```

```

SocialAction:socialActionAssisterActionHasAgent
:agent14 ;
SocialAction:socialActionAssisterActionInRole
:agent14WasherBasicFunctionRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1
;
SocialAction:socialActionHasQualifier 0 .

```

http://www.OntoCarer.org/CollegeModel.rdf#agent15

```

:agent15 rdf:type owl:NamedIndividual ,
  Agent:Person ;
Agent:agentHasBasicFunctionRole :agent15DresserBasicFunctionRole1 ,
  :agent15DrinkerBasicFunctionRole1 ,
  :agent15EaterBasicFunctionRole1 ,
  :agent15ToileterBasicFunctionRole1 ,
  :agent15WasherBasicFunctionRole1 ;
Agent:agentHasLocation :classroom1 ;
Agent:agentHasOrganisationMembership :ontoCarerCollegeOrganisation ;
Agent:agentHasProviderRole :agent15LecturerProviderRole1 ;
Agent:agentHasRole :agent15CafeUserRole1 ,
  :agent15DresserBasicFunctionRole1 ,
  :agent15DrinkerBasicFunctionRole1 ,
  :agent15EaterBasicFunctionRole1 ,
  :agent15InformationSeekerUserRole1 ,
  :agent15LecturerProviderRole1 ,
  :agent15LibraryUserRole1 ,
  :agent15ToileterBasicFunctionRole1 ,
  :agent15WasherBasicFunctionRole1 ;
Agent:agentHasSocialAction :agent15CafeUserRole1MakeCafeFoodOrderSocialAction1 ,
  :agent15CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
  :agent15CafeUserRole1SeeCafeFoodMenuSocialAction1 ,
  :agent15DresserBasicFunctionRole1PutClothesOnSocialAction1 ,
  :agent15DresserRole1RemoveClothesSocialAction1 ,
  :agent15DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
  :agent15EaterBasicFunctionRole1FeedSelfSocialAction1 ,
  :agent15EaterBasicFunctionRole1UseCutlerySocialAction1 ,
  :agent15EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
  :agent15InformationSeekerUserRole1AnswerQuestionsSocialAction1 ,
  :agent15InformationSeekerUserRole1AskQuestionsSocialAction1 ,
  :agent15InformationSeekerUserRole1FindAnswersSocialAction1 ,
  :agent15LecturerProviderRole1AnswerQuestionsSocialAction1 ,
  :agent15LecturerProviderRole1AskQuestionsSocialAction1 ,
  :agent15LecturerProviderRole1ShowLectureSlidesSocialAction1 ,
  :agent15LecturerProviderRole1SpeakLectureSocialAction1 ,
  :agent15LibraryUserRole1AnswerQuestionsSocialAction1 ,
  :agent15LibraryUserRole1AskQuestionsSocialAction1 ,
  :agent15LibraryUserRole1CheckOutLibraryBookSocialAction1 ,
  :agent15LibraryUserRole1FindBookOnShelvesSocialAction1 ,
  :agent15LibraryUserRole1FindLibrarySocialAction1 ,
  :agent15LibraryUserRole1NavigateToLibrarySocialAction1 ,
  :agent15LibraryUserRole1ReturnOfLibraryBookSocialAction1 ,
  :agent15LibraryUserRole1SearchCatalogueSocialAction1 ,
  :agent15ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,
  :agent15ToileterBasicFunctionRole1FindToiletSocialAction1 ,
  :agent15ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
  :agent15ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,
  :agent15ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,
  :agent15WasherBasicFunctionRole1DrySelfSocialAction1 ,
  :agent15WasherBasicFunctionRole1WashSelfSocialAction1 ,

```

```

:agent15InformationSeekerUserRole1HearQuestions&AnswersSocialAction1 ;
Agent:agentHasSocialActionAssisterAction
:agent15StudentUserRoleAssisterRoleSubmitAssignmentSocialActionAssister
Action1 ;
Agent:agentHasUserRole :agent15CafeUserRole1 ,
:agent15InformationSeekerUserRole1 ,
:agent15LibraryUserRole1 ;
Agent:agentIsInBuilding :ontoCarerCollegeBuilding ;
Agent:agentIsInOrganisation :ontoCarerCollegeOrganisation ;
Agent:agentIsOnFloor :floorF0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent15CafeUserRole1
:agent15CafeUserRole1 rdf:type owl:NamedIndividual ,
Agent:CafeUserRole ;
Agent:roleHasAgent :agent15 ;
Agent:roleHasSocialAction :agent15CafeUserRole1MakeCafeFoodOrderSocialAction1 ,
:agent15CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
:agent15CafeUserRole1SeeCafeFoodMenuSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent15CafeUserRole1MakeCafeFoodOrderSocialAction1
:agent15CafeUserRole1MakeCafeFoodOrderSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:MakeCafeFoodOrderSocialAction ;
OntoCarer-Link-
Ontology:makeCafeFoodOrderSocialActionAssistedByMakeCafeFoodOrderSocial
ActionAssisterAction :agent14CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssister
Action1 ,

```

```

:agent6CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssister
Action1 ,

```

```

:agent9CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent15 ;
SocialAction:socialActionInRole :agent15CafeUserRole1 ;
SocialAction:socialActionHasDesireIntentionalLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent15CafeUserRole1PayForCafeFoodOrderSocialAction1
:agent15CafeUserRole1PayForCafeFoodOrderSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:PayForCafeFoodOrderSocialAction ;
OntoCarer-Link-
Ontology:payForCafeFoodOrderSocialActionAssistedByPayForCafeFoodOrderSocialActionAssisterA
ction :agent14CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssister
Action1 ,

```

```

:agent6CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssister
Action1 ,

```

```

:agent9CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssister
Action1 ;
SocialAction:socialActionHasAgent :agent15 ;
SocialAction:socialActionInRole :agent15CafeUserRole1 ;
SocialAction:socialActionHasDesireIntentionalLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

```

<http://www.OntoCarer.org/CollegeModel.rdf#agent15CafeUserRole1SeeCafeFoodMenuSocialAction1>
:agent15CafeUserRole1SeeCafeFoodMenuSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:SeeCafeFoodMenuSocialAction ;
OntoCarer-Link-
Ontology:seeCafeFoodMenuSocialActionAssistedBySeeCafeFoodMenuSocialActionAssisterAction :agent14CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1 ,
:agent6CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1 ,
:agent9CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent15 ;
SocialAction:socialActionInRole :agent15CafeUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent15DresserBasicFunctionRole1>
:agent15DresserBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:DresserRole ;
Agent:roleHasAgent :agent15 ;
Agent:roleHasSocialAction
:agent15DresserBasicFunctionRole1PutClothesOnSocialAction1 ,
:agent15DresserRole1RemoveClothesSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent15DresserBasicFunctionRole1PutClothesOnSocialAction1>
:agent15DresserBasicFunctionRole1PutClothesOnSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:PutClothesOnSocialAction ;
OntoCarer-Link-
Ontology:putClothesOnSocialActionAssistedByPutClothesOnSocialActionAssisterAction :agent14DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialActionAssisterAction1 ,
:agent6DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent15 ;
SocialAction:socialActionInRole
:agent15DresserBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent15DresserRole1RemoveClothesSocialAction1>
:agent15DresserRole1RemoveClothesSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:RemoveClothesSocialAction ;
OntoCarer-Link-
Ontology:removeClothesSocialActionAssistedByRemoveClothesSocialActionAssisterAction :agent14DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialActionAssisterAction1 ,
:agent6DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent15 ;
SocialAction:socialActionInRole :agent15DresserBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent15DrinkerBasicFunctionRole1>

:agent15DrinkerBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:DrinkerRole ;
Agent:roleHasAgent :agent15 ;
Agent:roleHasSocialAction
:agent15DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent15DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1>

:agent15DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:UseDrinkingUtensilSocialAction ;
OntoCarer-Link-

Ontology:useDrinkingUtensilSocialActionAssistedByUseDrinkingUtensilSocialActionAssisterAction

:agent14DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1 ,

:agent6DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1 ,

:agent9DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent15 ;
SocialAction:socialActionInRole

:agent15DrinkerBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionalLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent15EaterBasicFunctionRole1>

:agent15EaterBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:EaterRole ;
Agent:roleHasAgent :agent15 ;
Agent:roleHasSocialAction

:agent15EaterBasicFunctionRole1FeedSelfSocialAction1 ,
:agent15EaterBasicFunctionRole1UseCutlerySocialAction1 ,

:agent15EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent15EaterBasicFunctionRole1FeedSelfSocialAction1>

:agent15EaterBasicFunctionRole1FeedSelfSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FeedSelfSocialAction ;
OntoCarer-Link-

Ontology:feedSelfSocialActionAssistedByFeedSelfSocialActionAssisterAction
:agent14EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssisterAction1 ,

:agent6EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssisterAction1 ,

:agent9EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister

Action1 ;
SocialAction:socialActionHasAgent :agent15 ;
SocialAction:socialActionInRole :agent15EaterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent15EaterBasicFunctionRole1UseCutlerySocialAction1>
:agent15EaterBasicFunctionRole1UseCutlerySocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:UseCutlerySocialAction ;
OntoCarer-Link-

Ontology:useCutlerySocialActionAssistedByUseCutlerySocialActionAssister
Action :agent14EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ,

:agent6EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ,

:agent9EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent15 ;
SocialAction:socialActionInRole :agent15EaterBasicFunctionRole1

;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent15EaterBasicFunctionRole1UseCutleryToFeedSocialAction1>
:agent15EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:UseCutleryToFeedSocialAction ;
OntoCarer-Link-

Ontology:useCutlerySocialActionAssistedByUseCutlerySocialActionAssister
Action :agent14EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ;

OntoCarer-Link-

Ontology:useCutleryToFeedSocialActionAssistedByUseCutleryToFeedSocialActionAssister
:agent9EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ;

OntoCarer-Link-

Ontology:useCutleryToFeedSocialActionAssistedByUseCutleryToFeedSocialActionAssisterAction
:agent6EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent15 ;
SocialAction:socialActionInRole

:agent15EaterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent15InformationSeekerUserRole1>
Role1

:agent15InformationSeekerUserRole1 rdf:type owl:NamedIndividual ,
Agent:InformationSeekerUserRole ;

Agent:roleHasAgent :agent15 ;
Agent:roleHasSocialAction

:agent5InformationSeekerUserRole1AnswerQuestionsSocialAction1 ;
Agent:roleHasDesireIntentionLevel 1 .

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent15InformationSeekerUser
Role1AnswerQuestionsSocialAction1
:agent15InformationSeekerUserRole1AnswerQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:AnswerQuestionsSocialAction ;
    SocialAction:socialActionHasAgent :agent15 ;
    SocialAction:socialActionInRole
:agent15InformationSeekerUserRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent15InformationSeekerUser
Role1AskQuestionsSocialAction1
:agent15InformationSeekerUserRole1AskQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:AskQuestionsSocialAction ;
    SocialAction:socialActionInRole
:agent15InformationSeekerUserRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent15InformationSeekerUser
Role1FindAnswersSocialAction1
:agent15InformationSeekerUserRole1FindAnswersSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:FindAnswersSocialAction ;
    OntoCarer-Link-
Ontology:findAnswersSocialActionAssistedByFindAnswersSocialActionAssisterAction
:agent2InformationSeekerUserRoleAssisterRole1FindAnswersSocialAction
AssisterAction1 ,

:agent3InformationSeekerUserRoleAssisterRole1FindAnswersSocialAction
AssisterAction1 ;
    SocialAction:socialActionInRole
:agent15InformationSeekerUserRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent15LecturerProviderRole1
:agent15LecturerProviderRole1 rdf:type owl:NamedIndividual ,
    Agent:LecturerProviderRole ;
    Agent:roleHasAgent :agent15 ;
    Agent:roleHasSocialAction
:agent15LecturerProviderRole1AnswerQuestionsSocialAction1 ,
    :agent15LecturerProviderRole1AskQuestionsSocialAction1 ,
    :agent15LecturerProviderRole1ShowLectureSlidesSocialAction1 ,
    :agent15LecturerProviderRole1SpeakLectureSocialAction1 ;
    Agent:roleHasDesireIntentionLevel 1 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent15LecturerProviderRole1
AnswerQuestionsSocialAction1
:agent15LecturerProviderRole1AnswerQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:AnswerQuestionsSocialAction ;
    SocialAction:socialActionHasAgent :agent15 ;
    SocialAction:socialActionInRole :agent15LecturerProviderRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

```

<http://www.OntoCarer.org/CollegeModel.rdf#agent15LecturerProviderRole1>
AskQuestionsSocialAction1
:agent15LecturerProviderRole1AskQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:AskQuestionsSocialAction ;
SocialAction:socialActionHasAgent :agent15 ;
SocialAction:socialActionInRole :agent15LecturerProviderRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent15LecturerProviderRole1ShowLectureSlidesSocialAction1>
Role1ShowLectureSlidesSocialAction1
:agent15LecturerProviderRole1ShowLectureSlidesSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:ShowLectureSlidesSocialAction ;
SocialAction:socialActionHasAgent :agent15 ;
SocialAction:socialActionInRole :agent15LecturerProviderRole1 ;
;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent15LecturerProviderRole1SpeakLectureSocialAction1>
Role1SpeakLectureSocialAction1
:agent15LecturerProviderRole1SpeakLectureSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:SpeakLectureSocialAction ;
SocialAction:socialActionHasAgent :agent15 ;
SocialAction:socialActionInRole :agent15LecturerProviderRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent15LibraryUserRole1>
:agent15LibraryUserRole1 rdf:type owl:NamedIndividual ,
Agent:LibraryUserRole ;
Agent:roleHasAgent :agent15 ;
Agent:roleHasSocialAction :agent15LibraryUserRole1AnswerQuestionsSocialAction1
,
:agent15LibraryUserRole1AskQuestionsSocialAction1 ,
:agent15LibraryUserRole1CheckOutLibraryBookSocialAction1 ,
:agent15LibraryUserRole1FindBookOnShelvesSocialAction1 ,
:agent15LibraryUserRole1FindLibrarySocialAction1 ,
:agent15LibraryUserRole1NavigateToLibrarySocialAction1 ,
:agent15LibraryUserRole1ReturnOfLibraryBookSocialAction1 ,
:agent15LibraryUserRole1SearchCatalogueSocialAction1 ;
Agent:roleHasDesireIntentionLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent15LibraryUserRole1AnswerQuestionsSocialAction1>
AnswerQuestionsSocialAction1
:agent15LibraryUserRole1AnswerQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:AnswerQuestionsSocialAction ;
SocialAction:socialActionHasAgent :agent15 ;
SocialAction:socialActionInRole :agent15LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent15LibraryUserRole1AskQuestionsSocialAction1>
QuestionsSocialAction1

:agent15LibraryUserRole1AskQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:AskQuestionsSocialAction ;
SocialAction:socialActionHasAgent :agent15 ;
SocialAction:socialActionInRole :agent15LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent15LibraryUserRole1>

CheckOutLibraryBookSocialAction1

:agent15LibraryUserRole1CheckOutLibraryBookSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:CheckOutLibraryBookSocialAction ;
OntoCarer-Link-

Ontology:checkOutLibraryBookSocialActionAssistedByCheckOutLibraryBookSocial

ActionAssisterAction :agent8LibraryUserRoleAssisterRole1CheckOutLibraryBookSocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent15 ;
SocialAction:socialActionInRole :agent15LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent15LibraryUserRole1Find>

BookOnShelvesSocialAction1

:agent15LibraryUserRole1FindBookOnShelvesSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FindBookOnShelvesSocialAction ;
OntoCarer-Link-

Ontology:findBookOnShelvesSocialActionAssistedByFindBookOnShelvesSocial

ActionAssisterAction :agent14LibraryUserRoleAssisterRole1FindBookOnShelvesSocialActionAssister
Action1 ,

:agent6LibraryUserRoleAssisterRole1FindBookOnShelvesSocialActionAssister
Action1 ,

:agent8LibraryUserRoleAssisterRole1FindBookOnShelvesSocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent15 ;
SocialAction:socialActionInRole :agent15LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent15LibraryUserRole1Find>

LibrarySocialAction1

:agent15LibraryUserRole1FindLibrarySocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FindLibrarySocialAction ;
OntoCarer-Link-

Ontology:findLibrarySocialActionAssistedByFindLibrarySocialActionAssister

Action :agent12LibraryUserRoleAssisterRole1FindLibrarySocialActionAssisterAction1 ,

:agent14LibraryUserRoleAssisterRole1FindLibrarySocialActionAssisterAction1 ,

:agent6LibraryUserRoleAssisterRole1FindLibrarySocialActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent15 ;
SocialAction:socialActionInRole :agent15LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent15LibraryUserRole1>

NavigateToLibrarySocialAction1
:agent15LibraryUserRole1NavigateToLibrarySocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:NavigateToLibrarySocialAction ;
OntoCarer-Link-
Ontology:navigateToLibrarySocialActionAssistedByNavigateToLibrarySocial
ActionAssisterAction :agent12LibraryUserRoleAssisterRole1NavigateToLibrarySocialActionAssister
Action1 ,
:agent14LibraryUserRoleAssisterRole1NavigateToLibrarySocialActionAssister
Action1 ,
:agent6LibraryUserRoleAssisterRole1NavigateToLibrarySocialActionAssister
Action1 ;
SocialAction:socialActionHasAgent :agent15 ;
SocialAction:socialActionInRole :agent15LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent15LibraryUserRole1ReturnOfLibraryBookSocialAction1>
:agent15LibraryUserRole1ReturnOfLibraryBookSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:ReturnOfLibraryBookSocialAction ;
OntoCarer-Link-
Ontology:returnOfLibraryBookSocialActionAssistedByReturnOfLibraryBookSocialActionAssisterAction
:agent8LibraryUserRoleAssisterRole1ReturnOfLibraryBookSocialActionAssister
Action1 ;
SocialAction:socialActionHasAgent :agent15 ;
SocialAction:socialActionInRole :agent15LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent15LibraryUserRole1SearchCatalogueSocialAction1>
:agent15LibraryUserRole1SearchCatalogueSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:SearchCatalogueForItemSocialAction ;
OntoCarer-Link-
Ontology:searchCatalogueForItemSocialActionAssistedBySearchCatalogueForItemSocialActionAssister
Action :agent8LibraryUserRoleAssisterRole1SearchCatalogueSocialActionAssister
Action1 ;
SocialAction:socialActionHasAgent :agent15 ;
SocialAction:socialActionInRole :agent15LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent15StudentUserRoleAssisterRole1>
:agent15StudentUserRoleAssisterRole1 rdf:type owl:NamedIndividual ,
Agent:StudentUserRoleAssisterRole ;
Agent:roleAssisterRoleHasAgent :agent15 ;
Agent:roleAssisterRoleHasSocialActionAssisterAction
:agent15StudentUserRoleAssisterRole1DoPracticalTasksSocialActionAssister
Action1 ,
:agent15StudentUserRoleAssisterRoleSubmitAssignmentSocialActionAssisterAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent15StudentUserRole
AssisterRole1DoPracticalTasksSocialActionAssisterAction1
:agent15StudentUserRoleAssisterRole1DoPracticalTasksSocialActionAssister
Action1 rdf:type owl:NamedIndividual ,

SocialAction:DoPracticalTasksSocialActionAssisterAction ;
                                OntoCarer-Link-
Ontology:doPracticalTasksSocialActionAssisterActionOfDoPracticalTasksSocialAction
:agent15StudentUserRole1DoPracticalTasksSocialAction1 ,

:agent5StudentUserRole1DoPracticalTasksSocialAction1 ,

:agent7StudentUserRole1DoPracticalTasksSocialAction1 ;
                                SocialAction:socialActionAssisterActionHasAgent
:agent15 ;
                                SocialAction:socialActionAssisterActionInRole
:agent15StudentUserRoleAssisterRole1 ;
                                SocialAction:socialActionHasDesireIntentionLevel 1
;
                                SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent15StudentUserRole
AssisterRoleSubmitAssignmentSocialActionAssisterAction1
:agent15StudentUserRoleAssisterRoleSubmitAssignmentSocialActionAssister
Action1 rdf:type owl:NamedIndividual ,

SocialAction:SubmitAssignmentSocialActionAssisterAction ;
                                OntoCarer-Link-
Ontology:submitAssignmentSocialActionAssisterActionOfSubmitAssignmentSocialAction
:agent15StudentUserRole1SubmitAssignmentSocialAction1 ,

:agent5StudentUserRole1SubmitAssignmentSocialAction1 ,

:agent7StudentUserRole1SubmitAssignmentSocialAction1 ;
                                SocialAction:socialActionAssisterActionHasAgent
:agent15 ;
                                SocialAction:socialActionAssisterActionInRole
:agent15StudentUserRoleAssisterRole1 ;
                                SocialAction:socialActionHasDesireIntentionLevel 1
;
                                SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent15ToileterBasicFunction
Role1
:agent15ToileterBasicFunctionRole1 rdf:type owl:NamedIndividual ,
                                Agent:ToileterRole ;
                                Agent:roleHasAgent :agent15 ;
                                Agent:roleHasSocialAction
:agent15ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,
                                :agent15ToileterBasicFunctionRole1FindToiletSocialAction1 ,

:agent15ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,

:agent15ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,

:agent15ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ;

```


Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent15ToileterBasicFunction>

Role1CleanSelfAfterToiletSocialAction1

:agent15ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:CleanSelfAfterToiletSocialAction ;
OntoCarer-Link-

Ontology:cleanSelfAfterToiletSocialActionAssistedByCleanSelfAfterToilet
SocialActionAssisterAction

:agent14ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocial

ActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocial
ActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent15 ;
SocialAction:socialActionInRole

:agent15ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent15ToileterBasicFunction>

Role1FindToiletSocialAction1

:agent15ToileterBasicFunctionRole1FindToiletSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FindToiletSocialAction ;
OntoCarer-Link-

Ontology:findToiletSocialActionAssistedByFindToiletSocialActionAssister
Action :agent12ToileterBasicFunctionRoleAssisterRole1FindToiletSocialAction
AssisterAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1FindToiletSocialAction
AssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1FindToiletSocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent15 ;
SocialAction:socialActionInRole

:agent15ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent15ToileterBasicFunction>

Role1NavigateToToiletSocialAction1

:agent15ToileterBasicFunctionRole1NavigateToToiletSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:NavigateToToiletSocialAction ;
OntoCarer-Link-

Ontology:navigateToToiletSocialActionAssistedByNavigateToToiletSocialActionAssisterAction
:agent12ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent15 ;
SocialAction:socialActionInRole

:agent15ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

###

<http://www.OntoCarer.org/CollegeModel.rdf#agent15ToileterBasicFunction>

Role1RemoveRelevantClothesSocialAction1

:agent15ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 rdf:type

owl:NamedIndividual ,

SocialAction:RemoveRelevantClothesSocialAction ;

OntoCarer-Link-

Ontology:removeRelevantClothesSocialActionAssistedByRemoveRelevantClothes

SocialActionAssisterAction

:agent14ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocial

ActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocial

ActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent15 ;

SocialAction:socialActionInRole

:agent15ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent15ToileterBasicFunction>

Role1RestoreRelevantClothesSocialAction1

:agent15ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 rdf:type

owl:NamedIndividual ,

SocialAction:RestoreRelevantClothesSocialAction ;

OntoCarer-Link-

Ontology:restoreRelevantClothesSocialActionAssistedByRestoreRelevantClothesSocialActionAssister

Action :agent14ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocial

ActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocial

ActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent15 ;

SocialAction:socialActionInRole

:agent15ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent15WasherBasicFunction>

Role1

:agent15WasherBasicFunctionRole1 rdf:type owl:NamedIndividual ,

Agent:WasherRole ;

Agent:roleHasAgent :agent15 ;

Agent:roleHasSocialAction

:agent15WasherBasicFunctionRole1DrySelfSocialAction1 ,

:agent15WasherBasicFunctionRole1WashSelfSocialAction1 ;

Agent:roleHasDesireIntentionLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent15WasherBasicFunction>

Role1DrySelfSocialAction1

:agent15WasherBasicFunctionRole1DrySelfSocialAction1 rdf:type owl:NamedIndividual ,

SocialAction:DrySelfSocialAction ;

OntoCarer-Link-

Ontology:drySelfSocialActionAssistedByDrySelfSocialActionAssisterAction
:agent14WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssister
Action1 ,

:agent6WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent15 ;
SocialAction:socialActionInRole

:agent15WasherBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

[http://www.OntoCarer.org/CollegeModel.rdf#agent15WasherBasicFunction
Role1WashSelfSocialAction1](http://www.OntoCarer.org/CollegeModel.rdf#agent15WasherBasicFunctionRole1WashSelfSocialAction1)

:agent15WasherBasicFunctionRole1WashSelfSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:WashSelfSocialAction ;

OntoCarer-Link-

Ontology:washSelfSocialActionAssistedByWashSelfSocialActionAssisterAction
:agent14WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssister
Action1 ,

:agent6WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent15 ;
SocialAction:socialActionInRole

:agent15WasherBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1CafeUserRole1>

:agent1CafeUserRole1 rdf:type owl:NamedIndividual ,
Agent:CafeUserRole ;

Agent:roleHasAgent :agent1 ;

Agent:roleHasSocialAction :agent1CafeUserRole1MakeCafeFoodOrderSocialAction1 ,

:agent1CafeUserRole1PayForCafeFoodOrderSocialAction1 ,

:agent1CafeUserRole1SeeCafeFoodMenuSocialAction1 ;

Agent:roleHasDesireIntentionalLevel 1 .

[http://www.OntoCarer.org/CollegeModel.rdf#agent1CafeUserRole1MakeCafe
FoodOrderSocialAction1](http://www.OntoCarer.org/CollegeModel.rdf#agent1CafeUserRole1MakeCafeFoodOrderSocialAction1)

:agent1CafeUserRole1MakeCafeFoodOrderSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:MakeCafeFoodOrderSocialAction ;

OntoCarer-Link-

Ontology:makeCafeFoodOrderSocialActionAssistedByMakeCafeFoodOrderSocial
ActionAssisterAction :agent14CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssister
Action1 ,

:agent6CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssister
Action1 ,

:agent9CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole :agent1CafeUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 2 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1CafeUserRole1PayForCafeFoodOrderSocialAction1>

CafeFoodOrderSocialAction1

:agent1CafeUserRole1PayForCafeFoodOrderSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:PayForCafeFoodOrderSocialAction ;
OntoCarer-Link-

Ontology:payForCafeFoodOrderSocialActionAssistedByPayForCafeFoodOrderSocialActionAssisterAction :agent14CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssisterAction1 ,

:agent6CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssisterAction1 ,

:agent9CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole :agent1CafeUserRole1 ;
SocialAction:socialActionHasQualifier 0 ,
1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1CafeUserRole1SeeCafeFoodMenuSocialAction1>

FoodMenuSocialAction1

:agent1CafeUserRole1SeeCafeFoodMenuSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:SeeCafeFoodMenuSocialAction ;
OntoCarer-Link-

Ontology:seeCafeFoodMenuSocialActionAssistedBySeeCafeFoodMenuSocialActionAssisterAction :agent6CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1 ,

:agent9CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole :agent1CafeUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1DresserBasicFunctionRole1>

Role1

:agent1DresserBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:DresserRole ;
Agent:roleHasAgent :agent1 ;
Agent:roleHasSocialAction

:agent1DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

:agent1DresserBasicFunctionRole1RemoveClothesSocialAction1 ;
Agent:roleHasDesireIntentionLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1DresserBasicFunctionRole1PutClothesOnSocialAction1>

Role1PutClothesOnSocialAction1

:agent1DresserBasicFunctionRole1PutClothesOnSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:PutClothesOnSocialAction ;
OntoCarer-Link-

Ontology:putClothesOnSocialActionAssistedByPutClothesOnSocialActionAssisterAction :agent14DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialAction

AssisterAction1 ,

:agent6DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole

:agent1DresserBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1DresserBasicFunction>

Role1RemoveClothesSocialAction1

:agent1DresserBasicFunctionRole1RemoveClothesSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:RemoveClothesSocialAction ;

OntoCarer-Link-

Ontology:removeClothesSocialActionAssistedByRemoveClothesSocialAction

AssisterAction :agent14DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialAction
AssisterAction1 ,

:agent6DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole

:agent1DresserBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1DrinkerBasicFunction>

Role1

:agent1DrinkerBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:DrinkerRole ;

Agent:roleHasAgent :agent1 ;
Agent:roleHasSocialAction

:agent1DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1DrinkerBasicFunction>

Role1UseDrinkingUtensilSocialAction1

:agent1DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:UseDrinkingUtensilSocialAction ;

OntoCarer-Link-

Ontology:useDrinkingUtensilSocialActionAssistedByUseDrinkingUtensilSocial
ActionAssisterAction

:agent14DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1 ,

:agent6DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocial
ActionAssisterAction1 ,

:agent9DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocial
ActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole

:agent1DresserBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent1EaterBasicFunctionRole1
:agent1EaterBasicFunctionRole1 rdf:type owl:NamedIndividual ,
    Agent:EaterRole ;
    Agent:roleHasAgent :agent1 ;
    Agent:roleHasSocialAction
:agent1EaterBasicFunctionRole1FeedSelfSocialAction1 ,
    :agent1EaterBasicFunctionRole1UseCutlerySocialAction1 ,
    :agent1EaterBasicFunctionRole1UseCutleryToFeedSocialAction1
;
    Agent:roleHasDesireIntentionalLevel 1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent1EaterBasicFunctionRole1FeedSelfSocialAction1
:agent1EaterBasicFunctionRole1FeedSelfSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:FeedSelfSocialAction ;
    OntoCarer-Link-
Ontology:feedSelfSocialActionAssistedByFeedSelfSocialActionAssisterAction
:agent14EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssisterAction1 ,

:agent6EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssisterAction1 ,

:agent9EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssisterAction1 ;
    SocialAction:socialActionHasAgent :agent1 ;
    SocialAction:socialActionInRole :agent1EaterBasicFunctionRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent1EaterBasicFunctionRole1UseCutlerySocialAction1
:agent1EaterBasicFunctionRole1UseCutlerySocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:UseCutlerySocialAction ;
    OntoCarer-Link-
Ontology:useCutlerySocialActionAssistedByUseCutlerySocialActionAssisterAction
:agent14EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssisterAction1 ,

:agent6EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssisterAction1 ,

:agent9EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssisterAction1 ;
    SocialAction:socialActionHasAgent :agent1 ;
    SocialAction:socialActionInRole :agent1EaterBasicFunctionRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent1EaterBasicFunctionRole1UseCutleryToFeedSocialAction1
:agent1EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:UseCutleryToFeedSocialAction ;

```

OntoCarer-Link-

Ontology:useCutleryToFeedSocialActionAssistedByUseCutleryToFeedSocialActionAssister
:agent14EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ;

OntoCarer-Link-

Ontology:useCutleryToFeedSocialActionAssistedByUseCutleryToFeedSocialActionAssisterAction
:agent6EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ,

:agent9EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole

:agent1EaterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1HearingAbility1>

:agent1HearingAbility1 rdf:type owl:NamedIndividual ,
BodyAbilities:HearingAbility ;
BodyAbilities:bodyAbilityHasPerson :agent1 ;
BodyAbilities:bodyAbilityHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1InformationSeekerUserRole1>

Role1
:agent1InformationSeekerUserRole1 rdf:type owl:NamedIndividual ,
Agent:InformationSeekerUserRole ;
Agent:roleHasAgent :agent1 ;
Agent:roleHasSocialAction
:agent1InformationSeekerUserRole1AnswerQuestionsSocialAction1 ,

:agent1InformationSeekerUserRole1AskQuestionsSocialAction1 ,
:agent1InformationSeekerUserRole1FindAnswersSocialAction1

,

:agent1InformationSeekerUserRole1HearQuestions&AnswersSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1InformationSeekerUserRole1AnswerQuestionsSocialAction1>

Role1AnswerQuestionsSocialAction1
:agent1InformationSeekerUserRole1AnswerQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:AnswerQuestionsSocialAction ;
SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole

:agent1InformationSeekerUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1InformationSeekerUserRole1AskQuestionsSocialAction1>

Role1AskQuestionsSocialAction1
:agent1InformationSeekerUserRole1AskQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:AskQuestionsSocialAction ;
SocialAction:socialActionHasAgent :agent1 ;

SocialAction:socialActionInRole
:agent1InformationSeekerUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1InformationSeekerUserRole1FindAnswersSocialAction1>

:agent1InformationSeekerUserRole1FindAnswersSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FindAnswersSocialAction ;
OntoCarer-Link-

Ontology:findAnswersSocialActionAssistedByFindAnswersSocialActionAssister
Action :agent2InformationSeekerUserRoleAssisterRole1FindAnswersSocialAction
AssisterAction1 ,

:agent3InformationSeekerUserRoleAssisterRole1FindAnswersSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole
:agent1InformationSeekerUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1LeftEarComponent1>

:agent1LeftEarComponent1 rdf:type owl:NamedIndividual ,
BodyComponents:LeftEarComponent ;
BodyComponents:bodyComponentHasPerson :agent1 ;
BodyComponents:bodyComponentHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1LeftEarHearingAbility1>

:agent1LeftEarHearingAbility1 rdf:type owl:NamedIndividual ,
BodyAbilities:HearingAbility ;
BodyAbilities:bodyAbilityHasPerson :agent1 ;
BodyAbilities:bodyAbilityHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1LibraryUserRole1>

:agent1LibraryUserRole1 rdf:type owl:NamedIndividual ,
Agent:LibraryUserRole ;
Agent:roleHasAgent :agent1 ;
Agent:roleHasSocialAction :agent1LibraryUserRole1AnswerQuestionsSocialAction1 ,
:agent1LibraryUserRole1AskQuestionsSocialAction1 ,
:agent1LibraryUserRole1CheckOutLibraryBookSocialAction1 ,
:agent1LibraryUserRole1FindBookOnShelvesSocialAction1 ,
:agent1LibraryUserRole1FindLibrarySocialAction1 ,
:agent1LibraryUserRole1NavigateToLibrarySocialAction1 ,
:agent1LibraryUserRole1ReturnOfLibraryBookSocialAction1 ,
:agent1LibraryUserRole1SearchCatalogueSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1LibraryUserRole1AnswerQuestionsSocialAction1>

:agent1LibraryUserRole1AnswerQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:AnswerQuestionsSocialAction ;
SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole :agent1LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1LibraryUserRole1Ask>

QuestionsSocialAction1

:agent1LibraryUserRole1AskQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:AskQuestionsSocialAction ;
SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole :agent1LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1LibraryUserRole1Check>

OutLibraryBookSocialAction1

:agent1LibraryUserRole1CheckOutLibraryBookSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:CheckOutLibraryBookSocialAction ;
OntoCarer-Link-
Ontology:checkOutLibraryBookSocialActionAssistedByCheckOutLibraryBookSocial
ActionAssisterAction :agent8LibraryUserRoleAssisterRole1CheckOutLibraryBookSocialActionAssister
Action1 ;
SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole :agent1LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1LibraryUserRole1Find>

BookOnShelvesSocialAction1

:agent1LibraryUserRole1FindBookOnShelvesSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FindBookOnShelvesSocialAction ;
OntoCarer-Link-
Ontology:findBookOnShelvesSocialActionAssistedByFindBookOnShelvesSocial
ActionAssisterAction :agent14LibraryUserRoleAssisterRole1FindBookOnShelvesSocialActionAssister
Action1 ,
:agent6LibraryUserRoleAssisterRole1FindBookOnShelvesSocialActionAssister
Action1 ,
:agent8LibraryUserRoleAssisterRole1FindBookOnShelvesSocialActionAssister
Action1 ;
SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole :agent1LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 0 ,
1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1LibraryUserRole1Find>

LibrarySocialAction1

:agent1LibraryUserRole1FindLibrarySocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FindLibrarySocialAction ;
OntoCarer-Link-
Ontology:findLibrarySocialActionAssistedByFindLibrarySocialActionAssister
Action :agent12LibraryUserRoleAssisterRole1FindLibrarySocialActionAssisterAction1 ,
:agent14LibraryUserRoleAssisterRole1FindLibrarySocialActionAssisterAction1 ,
:agent6LibraryUserRoleAssisterRole1FindLibrarySocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole :agent1LibraryUserRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 0 ,
1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1LibraryUserRole1>

NavigateToLibrarySocialAction1

:agent1LibraryUserRole1NavigateToLibrarySocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:NavigateToLibrarySocialAction ;
OntoCarer-Link-

Ontology:navigateToLibrarySocialActionAssistedByNavigateToLibrarySocial
ActionAssisterAction :agent12LibraryUserRoleAssisterRole1NavigateToLibrarySocialActionAssister
Action1 ,

:agent6LibraryUserRoleAssisterRole1NavigateToLibrarySocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole :agent1LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 0 ,
1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1LibraryUserRole1Return>

OfLibraryBookSocialAction1

:agent1LibraryUserRole1ReturnOfLibraryBookSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:ReturnOfLibraryBookSocialAction ;
OntoCarer-Link-

Ontology:returnOfLibraryBookSocialActionAssistedByReturnOfLibraryBookSocialActionAssisterAction
:agent8LibraryUserRoleAssisterRole1ReturnOfLibraryBookSocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole :agent1LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 0 ,
1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1LibraryUserRole1Search>

CatalogueSocialAction1

:agent1LibraryUserRole1SearchCatalogueSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:SearchCatalogueForItemSocialAction ;
OntoCarer-Link-

Ontology:searchCatalogueForItemSocialActionAssistedBySearchCatalogueForItemSocialActionAssister
Action :agent8LibraryUserRoleAssisterRole1SearchCatalogueSocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole :agent1LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 0 ,
1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1RightEarComponent1>

:agent1RightEarComponent1 rdf:type owl:NamedIndividual ,

BodyComponents:RightEarComponent ;
BodyComponents:bodyComponentHasPerson :agent1 ;
BodyComponents:bodyComponentHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1RightEarHearingAbility1>

:agent1RightEarHearingAbility1 rdf:type owl:NamedIndividual ,
BodyAbilities:HearingAbility ;
BodyAbilities:bodyAbilityHasPerson :agent1 ;
BodyAbilities:bodyAbilityHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1SignerCooperatorRole1>
:agent1SignerCooperatorRole1 rdf:type owl:NamedIndividual ,
Agent:SignerRole ;
Agent:roleHasAgent :agent1 ;
Agent:roleHasSocialAction
:agent1SignerCooperatorRole1MakeSignLanguageSocialAction1 ,
:agent1SignerCooperatorRole1SeeSignLanguageSocialAction1 ,
:agent1SignerCooperatorRole1UnderstandSignLanguageSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1SignerCooperatorRole1>
MakeSignLanguageSocialAction1
:agent1SignerCooperatorRole1MakeSignLanguageSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:MakeSignLanguageSocialAction ;
SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole :agent1SignerCooperatorRole1 ;
SocialAction:socialActionHasDesireIntentionalLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1SignerCooperatorRole1>
SeeSignLanguageSocialAction1
:agent1SignerCooperatorRole1SeeSignLanguageSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:SeeSignLanguageActionSocialAction ;
SocialAction:socialActionHasAgent
:agent1SignerCooperatorRole1 ;
SocialAction:socialActionInRole :agent1SignerCooperatorRole1 ;
SocialAction:socialActionHasDesireIntentionalLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1SignerCooperatorRole1>
UnderstandSignLanguageSocialAction1
:agent1SignerCooperatorRole1UnderstandSignLanguageSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:UnderstandSignLanguageSocialAction ;
SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole
:agent1SignerCooperatorRole1 ;
SocialAction:socialActionHasDesireIntentionalLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1StudentUserRole1>
:agent1StudentUserRole1 rdf:type owl:NamedIndividual ,
Agent:StudentUserRole ;
Agent:agentHasSocialAction
:agent1StudentUserRole1ExitTeachingRoomSocialAction1 ,
:agent1StudentUserRole1TakeNotesFromTextSocialAction1 ;
Agent:roleHasAgent :agent1 ;
Agent:roleHasSocialAction :agent1StudentUserRole1AnswerQuestionsSocialAction1 ,
:agent1StudentUserRole1AskQuestionsSocialAction1 ,

```

:agent1StudentUserRole1DoPracticalTasksSocialAction1 ,
:agent1StudentUserRole1EnrolOnCourseSocialAction1 ,
:agent1StudentUserRole1ExitTeachingRoomSocialAction1 ,
:agent1StudentUserRole1FindTeachingRoomSocialAction1 ,
:agent1StudentUserRole1HearLectureSocialAction1 ,
:agent1StudentUserRole1NavigateToTeachingRoomSocialAction1 ,
:agent1StudentUserRole1PayCourseFeesSocialAction1 ,
:agent1StudentUserRole1SeeLectureSocialAction1 ,
:agent1StudentUserRole1SubmitAssignmentSocialAction1 ,
:agent1StudentUserRole1TakeNotesFromSpeakerSocialAction1 ,
:agent1StudentUserRoleWriteAssignmentSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent1StudentUserRole1Answer
QuestionsSocialAction1
:agent1StudentUserRole1AnswerQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
              SocialAction:AnswerQuestionsSocialAction ;
                OntoCarer-Link-
Ontology:answerQuestionsSocialActionAssistedByAnswerQuestionsSocialAction
AssisterAction :agent14StudentUserRoleAssisterRole1AnswerQuestionsSocialActionAssister
Action1 ,

:agent6StudentUserRoleAssisterRole1AnswerQuestionsSocialActionAssister
Action1 ;
                SocialAction:socialActionHasAgent :agent1 ;
                SocialAction:socialActionInRole :agent1StudentUserRole1 ;
                SocialAction:socialActionHasDesireIntentionLevel 1 ;
                SocialAction:socialActionHasQualifier 4 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent1StudentUserRole1Ask
QuestionsSocialAction1
:agent1StudentUserRole1AskQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
              SocialAction:AskQuestionsSocialAction ;
                OntoCarer-Link-
Ontology:askQuestionsSocialActionAssistedByAskQuestionsSocialActionAssisterAction
:agent14StudentUserRoleAssisterRole1AskQuestionsSocialActionAssisterAction1 ,

:agent6StudentUserRoleAssisterRole1AskQuestionsSocialActionAssisterAction1 ;
                SocialAction:socialActionHasAgent :agent1 ;
                SocialAction:socialActionInRole :agent1StudentUserRole1 ;
                SocialAction:socialActionHasDesireIntentionLevel 1 ;
                SocialAction:socialActionHasQualifier 4 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent1StudentUserRole1Do
PracticalTasksSocialAction1
:agent1StudentUserRole1DoPracticalTasksSocialAction1 rdf:type owl:NamedIndividual ,
              SocialAction:DoPracticalTasksSocialAction ;
                OntoCarer-Link-
Ontology:doPracticalTasksSocialActionAssistedByDoPracticalTasksSocialActionAssisterAction
:agent15StudentUserRoleAssisterRole1DoPracticalTasksSocialActionAssister
Action1 ,

:agent5StudentUserRoleAssisterRole1DoPracticalTasksSocialActionAssister
Action1 ;
                SocialAction:socialActionHasAgent :agent1 ;
                SocialAction:socialActionInRole :agent1StudentUserRole1 ;
                SocialAction:socialActionHasDesireIntentionLevel 1 ;

```

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1StudentUserRole1Enrol>

OnCourseSocialAction1

:agent1StudentUserRole1EnrolOnCourseSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:EnrolOnCourseSocialAction ;
OntoCarer-Link-

Ontology:enrolStudentOnCourseSocialActionAssistedByEnrolStudentOnCourse
SocialActionAssisterAction

:agent11StudentUserRoleAssisterRoleEnrolOnCourseSocialActionAssisterAction1 ,

:agent14StudentUserRoleAssisterRole1EnrolOnCourseSocialActionAssister
Action1 ,

:agent6StudentUserRoleAssisterRole1EnrolOnCourseSocialActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent1 ;

SocialAction:socialActionInRole :agent1StudentUserRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 3 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1StudentUserRole1Exit>

TeachingRoomSocialAction1

:agent1StudentUserRole1ExitTeachingRoomSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:ExitTeachingRoomSocialAction ;
OntoCarer-Link-

Ontology:exitTeachingRoomSocialActionAssistedByExitTeachingRoomSocialActionAssisterAction

:agent14StudentUserRoleAssisterRole1ExitTeachingRoomSocialActionAssister
Action1 ,

:agent6StudentUserRoleAssisterRole1ExitTeachingRoomSocialActionAssister
Action1 ;

SocialAction:socialActionInRole :agent1 ,

:agent1StudentUserRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1StudentUserRole1Find>

TeachingRoomSocialAction1

:agent1StudentUserRole1FindTeachingRoomSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FindTeachingRoomSocialAction ;
OntoCarer-Link-

Ontology:findTeachingRoomSocialActionAssistedByFindTeachingRoomSocialActionAssisterAction

:agent12StudentUserRoleAssisterRole1FindTeachingRoomSocialActionAssister
Action1 ,

:agent14StudentUserRoleAssisterRole1FindTeachingRoomSocialActionAssister
Action1 ,

:agent6StudentUserRoleAssisterRole1FindTeachingRoomSocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent1 ;

SocialAction:socialActionInRole :agent1StudentUserRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1StudentUserRole1Hear>

LectureSocialAction1

:agent1StudentUserRole1HearLectureSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:HearLectureSocialAction ;
SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole :agent1StudentUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1StudentUserRole1>

NavigateToTeachingRoomSocialAction1

:agent1StudentUserRole1NavigateToTeachingRoomSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:NavigateToTeachingRoomSocialAction ;
OntoCarer-Link-

Ontology:navigateToTeachingRoomSocialActionAssisterActionOfNavigateTo
TeachingRoomSocialAction

:agent12StudentUserRoleAssisterRole1NavigateToTeachingRoomSocialAction
AssisterAction1 ;

OntoCarer-Link-

Ontology:navigateToTeachingRoomSocialActionAssisterAidOfNavigateToTeaching
RoomSocialAction :agent14StudentUserRoleAssisterRole1NavigateToTeachingRoomSocialAction
AssisterAction1 ,

:agent6StudentUserRoleAssisterRole1NavigateToTeachingRoomSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole :agent1StudentUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1StudentUserRole1Pay>

CourseFeesSocialAction1

:agent1StudentUserRole1PayCourseFeesSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:PayCourseFeesSocialAction ;
OntoCarer-Link-

Ontology:payCourseFeesSocialActionAssistedByPayCourseFeesSocialAction

AssisterAction :agent10StudentUserRoleAssisterRole1PayCourseFeesSocialActionAssisterAction1 ,

:agent14StudentUserRoleAssisterRole1PayCourseFeesSocialActionAssister
Action1 ,

:agent6StudentUserRoleAssisterRole1PayCourseFeesSocialActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole :agent1StudentUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1StudentUserRole1See>

LectureSocialAction1

:agent1StudentUserRole1SeeLectureSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:SeeLectureSocialAction ;
SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole :agent1StudentUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1StudentUserRole1>

SubmitAssignmentSocialAction1
:agent1StudentUserRole1SubmitAssignmentSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:SubmitAssignmentSocialAction ;
OntoCarer-Link-
Ontology:submitAssignmentSocialActionAssistedBySubmitAssignmentSocialActionAssisterAction
:agent14StudentUserRoleAssisterRole1SubmitAssignmentSocialActionAssister
Action1 ,

:agent15StudentUserRoleAssisterRoleSubmitAssignmentSocialActionAssister
Action1 ,

:agent5StudentUserRoleAssisterRole1SubmitAssignmentSocialActionAssister
Action1 ,

:agent6StudentUserRoleAssisterRole1SubmitAssignmentSocialActionAssister
Action1 ;
SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole :agent1StudentUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1StudentUserRole1TakeNotesFromSpeakerSocialAction1>
NotesFromSpeakerSocialAction1
:agent1StudentUserRole1TakeNotesFromSpeakerSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:TakeNotesFromSpeakerSocialAction ;
OntoCarer-Link-
Ontology:takeNotesFromSpeakerSocialActionAssistedByTakeNotesFromSpeaker
SocialActionAssisterAction
:agent14StudentUserRoleAssisterRole1TakeNotesFromSpeakerSocialAction
AssisterAction1 ,

:agent5StudentUserRoleAssisterRole1TakeNotesFromSpeakerSocialActionAssisterAction1 ,

:agent6StudentUserRoleAssisterRole1TakeNotesFromSpeakerSocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole :agent1StudentUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1StudentUserRole1TakeNotesFromTextSocialAction1>
NotesFromTextSocialAction1
:agent1StudentUserRole1TakeNotesFromTextSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:TakeNotesFromTextSocialAction ;
OntoCarer-Link-
Ontology:takeNotesFromTextSocialActionAssistedByTakeNotesFromTextSocial
ActionAssisterAction
:agent14StudentUserRoleAssisterRole1TakeNotesFromTextSocialActionAssister
Action1 ,

:agent6StudentUserRoleAssisterRole1TakeNotesFromTextSocialActionAssister
Action1 ;
SocialAction:socialActionInRole :agent1StudentUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1StudentUserRoleWriteAssignmentSocialAction1>

:agent1StudentUserRoleWriteAssignmentSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:WriteAssignmentSocialAction ;
SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole :agent1StudentUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1ToileterBasicFunction>

Role1

:agent1ToileterBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:ToileterRole ;
Agent:roleHasAgent :agent1 ;
Agent:roleHasSocialAction
:agent1ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,
:agent1ToileterBasicFunctionRole1FindToiletSocialAction1 ,

:agent1ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,

:agent1ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,

:agent1ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1ToileterBasicFunction>

Role1CleanSelfAfterToiletSocialAction1

:agent1ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:CleanSelfAfterToiletSocialAction ;
OntoCarer-Link-

Ontology:cleanSelfAfterToiletSocialActionAssistedByCleanSelfAfterToilet
SocialActionAssisterAction

:agent14ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocial
ActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocial
ActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole

:agent1ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1ToileterBasicFunction>

Role1FindToiletSocialAction1

:agent1ToileterBasicFunctionRole1FindToiletSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FindToiletSocialAction ;
OntoCarer-Link-

Ontology:findToiletSocialActionAssisterActionOffFindToiletSocialAction

:agent12ToileterBasicFunctionRoleAssisterRole1FindToiletSocialAction
AssisterAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1FindToiletSocialAction
AssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1FindToiletSocialActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole

:agent1ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1ToileterBasicFunction>

Role1NavigateToToiletSocialAction1
:agent1ToileterBasicFunctionRole1NavigateToToiletSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:NavigateToToiletSocialAction ;
OntoCarer-Link-

Ontology:navigateToToiletSocialActionAssistedByNavigateToToiletSocialActionAssisterAction
:agent14ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ;

OntoCarer-Link-

Ontology:navigateToToiletSocialActionAssisterActionOfNavigateToToiletSocialAction
:agent12ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole

:agent1ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1ToileterBasicFunction>

Role1RemoveRelevantClothesSocialAction1
:agent1ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 rdf:type
owl:NamedIndividual ,

SocialAction:RemoveRelevantClothesSocialAction ;
OntoCarer-Link-

Ontology:removeRelevantClothesSocialActionAssistedByRemoveRelevantClothes
SocialActionAssisterAction
:agent14ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocial
ActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocial
ActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole

:agent1ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1ToileterBasicFunction>

Role1RestoreRelevantClothesSocialAction1
:agent1ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 rdf:type
owl:NamedIndividual ,

SocialAction:RestoreRelevantClothesSocialAction ;
OntoCarer-Link-

Ontology:restoreRelevantClothesSocialActionAssistedByRestoreRelevantClothesSocialActionAssister
Action :agent14ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocial
ActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole

:agent1ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1WasherBasicFunction>

Role1

:agent1WasherBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:WasherRole ;
Agent:roleHasAgent :agent1 ;
Agent:roleHasSocialAction
:agent1WasherBasicFunctionRole1DrySelfSocialAction1 ,
:agent1WasherBasicFunctionRole1WashSelfSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1WasherBasicFunction>

Role1DrySelfSocialAction1

:agent1WasherBasicFunctionRole1DrySelfSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:DrySelfSocialAction ;
OntoCarer-Link-
Ontology:drySelfSocialActionAssistedByDrySelfSocialActionAssister
:agent14WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssister
Action1 ,
:agent6WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssister
Action1 ;
SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole :agent1WasherBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1WasherBasicFunction>

Role1WashSelfSocialAction1

:agent1WasherBasicFunctionRole1WashSelfSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:WashSelfSocialAction ;
OntoCarer-Link-
Ontology:washSelfSocialActionAssistedByWashSelfSocialActionAssisterAction
:agent14WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssister
Action1 ,
:agent6WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssister
Action1 ;
SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole :agent1WasherBasicFunctionRole1
;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2>

:agent2 rdf:type owl:NamedIndividual ,

Agent:Person ;
Agent:agentHasBasicFunctionRole :agent2DresserBasicFunctionRole1 ,
:agent2DrinkerBasicFunctionRole1 ,
:agent2EaterBasicFunctionRole1 ,
:agent2ToileterBasicFunctionRole1 ,
:agent2WasherBasicFunctionRole1 ;
Agent:agentHasCooperatorRole :agent2SignerCooperatorRole1 ,
:agent2SignerTranslatorCooperatorRole1 ;
Agent:agentHasLocation :studentServices1 ;
Agent:agentHasOrganisationMembership :ontoCarerCollegeOrganisation ;

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Agent:agentHasProviderRole :agent2InformationAssistantProviderRole1 ;
Agent:agentHasRole :agent2CafeUserRole1 ,
    :agent2CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
    :agent2CafeUserRole1SeeCafeFoodMenuSocialAction1 ,
    :agent2DresserBasicFunctionRole1 ,
    :agent2DrinkerBasicFunctionRole1 ,
    :agent2EaterBasicFunctionRole1 ,
    :agent2InformationAssistantProviderRole1 ,
    :agent2SignerCooperatorRole1 ,
    :agent2ToileterBasicFunctionRole1 ,
    :agent2WasherBasicFunctionRole1 ;
Agent:agentHasRoleAssisterRole :agent2InformationSeekerUserRoleAssisterRole1 ;
Agent:agentHasSocialAction :agent2CafeUserRole1MakeCafeFoodOrderSocialAction1 ,
    :agent2CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
    :agent2CafeUserRole1SeeCafeFoodMenuSocialAction1 ,
    :agent2DresserBasicFunctionRole1PutClothesOnSocialAction1 ,
    :agent2DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
    :agent2DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
    :agent2EaterBasicFunctionRole1FeedSelfSocialAction1 ,
    :agent2EaterBasicFunctionRole1UseCutlerySocialAction1 ,
    :agent2EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
    :agent2InformationAssistantProviderRole1AnswerQuestionsSocialAction1 ,
    :agent2InformationAssistantProviderRole1AskQuestionsSocialAction1 ,

:agent2InformationAssistantProviderRole1FindInformationToAnswerQuestionsSocialAction1 ,
    :agent2SignerCooperatorRole1MakeSignLanguageSocialAction1 ,
    :agent2SignerCooperatorRole1SeeSignLanguageSocialAction1 ,
    :agent2SignerCooperatorRole1UnderstandSignLanguageSocialAction1 ,

:agent2SignerTranslatorCooperatorRole1TranslateSignLanguageToSpokenLanguageSocialAction1 ,

:agent2SignerTranslatorCooperatorRole1TranslateSpokenLanguageToSignLanguageSocialAction1 ,
    :agent2ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,
    :agent2ToileterBasicFunctionRole1FindToiletSocialAction1 ,
    :agent2ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
    :agent2ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,
    :agent2ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,
    :agent2WasherBasicFunctionRole1DrySelfSocialAction1 ,
    :agent2WasherBasicFunctionRole1WashSelfSocialAction1 ;
Agent:agentHasSocialActionAssisterAction
:agent2InformationSeekerUserRoleAssisterRole1FindAnswersSocialAction
AssisterAction1 ;
Agent:agentHasUserRole :agent2CafeUserRole1 ;
Agent:agentIsInBuilding :ontoCarerCollegeBuilding ;
Agent:agentIsInOrganisation :ontoCarerCollegeOrganisation ;
Agent:agentIsOnFloor :floorF0 .

### http://www.OntoCarer.org/CollegeModel.rdf#agent2CafeUserRole1
:agent2CafeUserRole1 rdf:type owl:NamedIndividual ,
    Agent:CafeUserRole ;
Agent:roleHasAgent :agent2 ;
Agent:roleHasSocialAction :agent2CafeUserRole1MakeCafeFoodOrderSocialAction1 ,
    :agent2CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
    :agent2CafeUserRole1SeeCafeFoodMenuSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

### http://www.OntoCarer.org/CollegeModel.rdf#agent2CafeUserRole1MakeCafeFoodOrderSocialAction1

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:agent2CafeUserRole1MakeCafeFoodOrderSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:MakeCafeFoodOrderSocialAction ;
OntoCarer-Link-
Ontology:makeCafeFoodOrderSocialActionAssistedByMakeCafeFoodOrderSocial
ActionAssister :agent14CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssister
Action1 ,

:agent6CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssisterAction1 ,

:agent9CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent2 ;
SocialAction:socialActionInRole :agent2CafeUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2CafeUserRole1PayForCafeFoodOrderSocialAction1>

:agent2CafeUserRole1PayForCafeFoodOrderSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:PayForCafeFoodOrderSocialAction ;
OntoCarer-Link-

Ontology:payForCafeFoodOrderSocialActionAssistedByPayForCafeFoodOrderSocialActionAssister
:agent6CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssister
Action1 ;

OntoCarer-Link-

Ontology:payForCafeFoodOrderSocialActionAssistedByPayForCafeFoodOrderSocialActionAssisterA
ction :agent14CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssister
Action1 ,

:agent9CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent2 ;
SocialAction:socialActionInRole :agent2CafeUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2CafeUserRole1SeeCafeFoodMenuSocialAction1>

:agent2CafeUserRole1SeeCafeFoodMenuSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:SeeCafeFoodMenuSocialAction ;
SocialAction:socialActionHasAgent :agent2 ;
SocialAction:socialActionInRole :agent2CafeUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2DresserBasicFunctionRole1>

:agent2DresserBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:DresserRole ;
Agent:roleHasAgent :agent2 ;
Agent:roleHasSocialAction

:agent2DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

:agent2DresserBasicFunctionRole1RemoveClothesSocialAction1 ;
Agent:roleHasDesireIntentionLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2DresserBasicFunctionRole1>

Role1PutClothesOnSocialAction1
:agent2DresserBasicFunctionRole1PutClothesOnSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:PutClothesOnSocialAction ;
OntoCarer-Link-

Ontology:putClothesOnSocialActionAssistedByPutClothesOnSocialActionAssisterAction
:agent14DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialAction
AssisterAction1 ,

:agent6DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent2 ;
SocialAction:socialActionInRole

:agent2DresserBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2DresserBasicFunction>

Role1RemoveClothesSocialAction1

:agent2DresserBasicFunctionRole1RemoveClothesSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:RemoveClothesSocialAction ;
OntoCarer-Link-

Ontology:removeClothesSocialActionAssistedByRemoveClothesSocialAction
AssisterAction :agent14DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialAction
AssisterAction1 ,

:agent6DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent2 ;
SocialAction:socialActionInRole

:agent2DresserBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2DrinkerBasicFunction>

Role1

:agent2DrinkerBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:DrinkerRole ;

Agent:roleHasAgent :agent2 ;
Agent:roleHasSocialAction

:agent2DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ;
Agent:roleHasDesireIntentionLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2DrinkerBasicFunction>

Role1UseDrinkingUtensilSocialAction1

:agent2DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:UseDrinkingUtensilSocialAction ;
OntoCarer-Link-

Ontology:useDrinkingUtensilSocialActionAssistedByUseDrinkingUtensilSocial
ActionAssisterAction

:agent14DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1 ,

:agent6DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialAction
AssisterAction1 ,

:agent9DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent2 ;

:agent2DrinkerBasicFunctionRole1 ;
SocialAction:socialActionInRole
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2EaterBasicFunction>

Role1

:agent2EaterBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:EaterRole ;
Agent:roleHasAgent :agent2 ;
Agent:roleHasSocialAction
:agent2EaterBasicFunctionRole1FeedSelfSocialAction1 ,
:agent2EaterBasicFunctionRole1UseCutlerySocialAction1 ,
:agent2EaterBasicFunctionRole1UseCutleryToFeedSocialAction1
;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2EaterBasicFunction>
Role1FeedSelfSocialAction1

:agent2EaterBasicFunctionRole1FeedSelfSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FeedSelfSocialAction ;
OntoCarer-Link-

Ontology:feedSelfSocialActionAssistedByFeedSelfSocialActionAssisterAction

:agent14EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister
Action1 ,

:agent6EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister
Action1 ,

:agent9EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent2 ;
SocialAction:socialActionInRole :agent2EaterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2EaterBasicFunction>
Role1UseCutlerySocialAction1

:agent2EaterBasicFunctionRole1UseCutlerySocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:UseCutlerySocialAction ;
OntoCarer-Link-

Ontology:useCutlerySocialActionAssistedByUseCutlerySocialActionAssister

Action :agent14EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ,

:agent6EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ,

:agent9EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent2 ;
SocialAction:socialActionInRole :agent2EaterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2EaterBasicFunction>

Role1UseCutleryToFeedSocialAction1
:agent2EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:UseCutleryToFeedSocialAction ;
OntoCarer-Link-
Ontology:useCutlerySocialActionAssisterOfUseCutlerySocialAction
:agent9EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ;
OntoCarer-Link-
Ontology:useCutleryToFeedSocialActionAssistedByUseCutleryToFeedSocialActionAssisterAction
:agent14EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ,
:agent6EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ;
SocialAction:socialActionHasAgent :agent2 ;
SocialAction:socialActionInRole
:agent2EaterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2InformationAssistant>
ProviderRole1

:agent2InformationAssistantProviderRole1 rdf:type owl:NamedIndividual ,
Agent:InformationAssistantProviderRole ;
Agent:roleHasAgent :agent2 ;
Agent:roleHasSocialAction
:agent2InformationAssistantProviderRole1AnswerQuestionsSocialAction1 ,
:agent2InformationAssistantProviderRole1AskQuestionsSocialAction1 ,
:agent2InformationAssistantProviderRole1FindInformationToAnswerQuestions
SocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2InformationAssistant>
ProviderRole1AnswerQuestionsSocialAction1

:agent2InformationAssistantProviderRole1AnswerQuestionsSocialAction1 rdf:type
owl:NamedIndividual ,
SocialAction:AnswerQuestionsSocialAction ;
SocialAction:socialActionHasAgent :agent2 ;
SocialAction:socialActionInRole
:agent2InformationAssistantProviderRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2InformationAssistant>
ProviderRole1AskQuestionsSocialAction1

:agent2InformationAssistantProviderRole1AskQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:AskQuestionsSocialAction ;
SocialAction:socialActionHasAgent :agent2 ;
SocialAction:socialActionInRole
:agent2InformationAssistantProviderRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2InformationAssistant>
 ProviderRole1FindInformationToAnswerQuestionsSocialAction1
 :agent2InformationAssistantProviderRole1FindInformationToAnswerQuestions
 SocialAction1 rdf:type owl:NamedIndividual ,
 SocialAction:FindInformationToAnswerQuestionsSocialAction ;
 SocialAction:socialActionHasAgent :agent2 ;
 SocialAction:socialActionInRole
 :agent2InformationAssistantProviderRole1 ;
 SocialAction:socialActionHasDesireIntentionLevel 1 ;
 SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2InformationSeekerUser>
 RoleAssisterRole1
 :agent2InformationSeekerUserRoleAssisterRole1 rdf:type owl:NamedIndividual ,
 Agent:InformationSeekerUserRoleAssisterRole ;
 Agent:roleAssisterRoleHasAgent :agent2 ;
 Agent:roleAssisterRoleHasSocialActionAssisterAction
 :agent2InformationSeekerUserRoleAssisterRole1FindAnswersSocialAction
 AssisterAction1 ;
 SocialAction:socialActionHasDesireIntentionLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2InformationSeekerUser>
 RoleAssisterRole1FindAnswersSocialActionAssisterAction1
 :agent2InformationSeekerUserRoleAssisterRole1FindAnswersSocialAction
 AssisterAction1 rdf:type owl:NamedIndividual ,
 SocialAction:FindAnswersSocialActionAssisterAction ;
 OntoCarer-Link-
 Ontology:findAnswersSocialActionAssisterActionOffFindAnswersSocialAction
 :agent15InformationSeekerUserRole1FindAnswersSocialAction1 ,
 :agent1InformationSeekerUserRole1FindAnswersSocialAction1 ,
 :agent5InformationSeekerUserRole1FindAnswersSocialAction1 ,
 :agent7InformationSeekerUserRole1FindAnswersSocialAction1 ;
 SocialAction:socialActionAssisterActionHasAgent :agent2 ;
 SocialAction:socialActionAssisterActionInRole
 :agent2InformationSeekerUserRoleAssisterRole1 ;
 SocialAction:socialActionHasDesireIntentionLevel 1 ;
 SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2SignerCooperatorRole1>
 :agent2SignerCooperatorRole1 rdf:type owl:NamedIndividual ,
 Agent:SignerRole ;
 Agent:roleHasAgent :agent2 ;
 Agent:roleHasSocialAction
 :agent2SignerCooperatorRole1MakeSignLanguageSocialAction1 ,
 :agent2SignerCooperatorRole1SeeSignLanguageSocialAction1 ,
 :agent2SignerCooperatorRole1UnderstandSignLanguageSocialAction1 ;
 Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2SignerCooperatorRole1>
 MakeSignLanguageSocialAction1
 :agent2SignerCooperatorRole1MakeSignLanguageSocialAction1 rdf:type owl:NamedIndividual ,
 SocialAction:MakeSignLanguageSocialAction ;
 SocialAction:socialActionHasAgent :agent2 ;
 SocialAction:socialActionInRole :agent2SignerCooperatorRole1 ;
 SocialAction:socialActionHasDesireIntentionLevel 1 ;
 SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2SignerCooperatorRole1>
 SeeSignLanguageSocialAction1
 :agent2SignerCooperatorRole1SeeSignLanguageSocialAction1 rdf:type owl:NamedIndividual ,
 SocialAction:SeeSignLanguageActionSocialAction ;
 SocialAction:socialActionHasAgent :agent2 ;
 SocialAction:socialActionInRole :agent2SignerCooperatorRole1 ;
 SocialAction:socialActionHasDesireIntentionLevel 1 ;
 SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2SignerCooperatorRole1>
 UnderstandSignLanguageSocialAction1
 :agent2SignerCooperatorRole1UnderstandSignLanguageSocialAction1 rdf:type owl:NamedIndividual
 ,
 SocialAction:UnderstandSignLanguageSocialAction ;
 SocialAction:socialActionHasAgent :agent2 ;
 SocialAction:socialActionInRole
 :agent2SignerCooperatorRole1 ;
 SocialAction:socialActionHasDesireIntentionLevel 1 ;
 SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2SignerTranslatorCooperatorRole1>
 CooperatorRole1
 :agent2SignerTranslatorCooperatorRole1 rdf:type owl:NamedIndividual ,
 Agent:SignerTranslatorRole ;
 Agent:roleHasAgent :agent2 ;
 Agent:roleHasSocialAction
 :agent2SignerTranslatorCooperatorRole1TranslateSignLanguageToSpokenLanguageSocialAction1 ,
 :agent2SignerTranslatorCooperatorRole1TranslateSpokenLanguageToSignLanguageSocialAction1 ;
 Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2SignerTranslatorCooperatorRole1>
 CooperatorRole1TranslateSignLanguageToSpokenLanguageSocialAction1
 :agent2SignerTranslatorCooperatorRole1TranslateSignLanguageToSpokenLanguageSocialAction1
 rdf:type owl:NamedIndividual ,
 SocialAction:TranslateSignLanguageToSpokenLanguageSocialAction ;
 SocialAction:socialActionHasAgent :agent2 ;
 SocialAction:socialActionInRole
 :agent2SignerTranslatorCooperatorRole1 ;
 SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2SignerTranslator>

CooperatorRole1TranslateSpokenLanguageToSignLanguageSocialAction1
:agent2SignerTranslatorCooperatorRole1TranslateSpokenLanguageToSignLanguageSocialAction1
rdf:type owl:NamedIndividual ,

SocialAction:TranslateSpokenLanguageToSignLanguageSocialAction ;
SocialAction:socialActionHasAgent :agent2 ;
SocialAction:socialActionInRole

:agent2SignerTranslatorCooperatorRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2ToileterBasicFunction>

Role1
:agent2ToileterBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:ToileterRole ;
Agent:roleHasAgent :agent2 ;
Agent:roleHasSocialAction
:agent2ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,
:agent2ToileterBasicFunctionRole1FindToiletSocialAction1 ,

:agent2ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,

:agent2ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,

:agent2ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2ToileterBasicFunction>

Role1CleanSelfAfterToiletSocialAction1
:agent2ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:CleanSelfAfterToiletSocialAction ;
OntoCarer-Link-

Ontology:cleanSelfAfterToiletSocialActionAssistedByCleanSelfAfterToilet
SocialActionAssisterAction

:agent14ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocial
ActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocial
ActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent2 ;
SocialAction:socialActionInRole

:agent2ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2ToileterBasicFunction>

Role1FindToiletSocialAction1
:agent2ToileterBasicFunctionRole1FindToiletSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FindToiletSocialAction ;
OntoCarer-Link-

Ontology:findToiletSocialActionAssistedByFindToiletSocialActionAssister
Action :agent12ToileterBasicFunctionRoleAssisterRole1FindToiletSocialAction

AssisterAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1FindToiletSocialAction
AssisterAction1 ;

OntoCarer-Link-

Ontology:findToiletSocialActionAssisterActionOffFindToiletSocialAction

:agent6ToileterBasicFunctionRoleAssisterRole1FindToiletSocialActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent2 ;

SocialAction:socialActionInRole

:agent2ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2ToileterBasicFunction>

Role1NavigateToToiletSocialAction1

:agent2ToileterBasicFunctionRole1NavigateToToiletSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:NavigateToToiletSocialAction ;

OntoCarer-Link-

Ontology:navigateToToiletSocialActionAssistedByNavigateToToiletSocialActionAssisterAction

:agent12ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction

AssisterAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent2 ;

SocialAction:socialActionInRole

:agent2ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2ToileterBasicFunction>

Role1RemoveRelevantClothesSocialAction1

:agent2ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 rdf:type
owl:NamedIndividual ,

SocialAction:RemoveRelevantClothesSocialAction ;

OntoCarer-Link-

Ontology:removeRelevantClothesSocialActionAssistedByRemoveRelevantClothes

SocialActionAssisterAction

:agent14ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocial

ActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocial
ActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent2 ;

SocialAction:socialActionInRole

:agent2ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2ToileterBasicFunction>

Role1RestoreRelevantClothesSocialAction1

:agent2ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 rdf:type
owl:NamedIndividual ,

SocialAction:RestoreRelevantClothesSocialAction ;

OntoCarer-Link-

Ontology:restoreRelevantClothesSocialActionAssistedByRestoreRelevantClothesSocialActionAssisterAction :agent14ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocialActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocialActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent2 ;
SocialAction:socialActionInRole

:agent2ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2WasherBasicFunctionRole1>

:agent2WasherBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:WasherRole ;

Agent:roleHasAgent :agent2 ;
Agent:roleHasSocialAction

:agent2WasherBasicFunctionRole1DrySelfSocialAction1 ,

:agent2WasherBasicFunctionRole1WashSelfSocialAction1 ;
Agent:roleHasDesireIntentionLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2WasherBasicFunctionRole1DrySelfSocialAction1>

:agent2WasherBasicFunctionRole1DrySelfSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:DrySelfSocialAction ;

OntoCarer-Link-

Ontology:drySelfSocialActionAssistedByDrySelfSocialActionAssisterAction

:agent14WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssisterAction1 ,

:agent6WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent2 ;
SocialAction:socialActionInRole :agent2WasherBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent2WasherBasicFunctionRole1WashSelfSocialAction1>

:agent2WasherBasicFunctionRole1WashSelfSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:WashSelfSocialAction ;

OntoCarer-Link-

Ontology:washSelfSocialActionAssistedByWashSelfSocialActionAssisterAction

:agent14WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssisterAction1 ,

:agent6WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent2 ;
SocialAction:socialActionInRole :agent2WasherBasicFunctionRole1

;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent3
:agent3 rdf:type owl:NamedIndividual ,
    Agent:Person ;
    Agent:agentHasBasicFunctionRole :agent2DresserBasicFunctionRole1 ,
        :agent2DrinkerBasicFunctionRole1 ,
        :agent3EaterBasicFunctionRole1 ,
        :agent3ToileterBasicFunctionRole1 ,
        :agent3WasherBasicFunctionRole1 ;
    Agent:agentHasLocation :studentServices1 ;
    Agent:agentHasOrganisationMembership :ontoCarerCollegeOrganisation ;
    Agent:agentHasProviderRole :agent3InformationAssistantProviderRole1 ;
    Agent:agentHasRole :agent3CafeUserRole1 ,
        :agent3DresserBasicFunctionRole1 ,
        :agent3EaterBasicFunctionRole1 ,
        :agent3InformationAssistantProviderRole1 ,
        :agent3ToileterBasicFunctionRole1 ,
        :agent3WasherBasicFunctionRole1 ;
    Agent:agentHasSocialAction :agent3CafeUserRole1MakeCafeFoodOrderSocialAction1 ,
        :agent3CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
        :agent3CafeUserRole1SeeCafeFoodMenuSocialAction1 ,
        :agent3DresserBasicFunctionRole1PutClothesOnSocialAction1 ,
        :agent3DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
        :agent3DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
        :agent3EaterBasicFunctionRole1FeedSelfSocialAction1 ,
        :agent3EaterBasicFunctionRole1UseCutlerySocialAction1 ,
        :agent3EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
        :agent3InformationAssistantProviderRole1AnswerQuestionsSocialAction1 ,
        :agent3InformationAssistantProviderRole1AskQuestionsSocialAction1 ,
        :agent3InformationAssistantProviderRole1FindInformationToAnswerQuestions
SocialAction1 ,
        :agent3ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,
        :agent3ToileterBasicFunctionRole1FindToiletSocialAction1 ,
        :agent3ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
        :agent3ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,
        :agent3ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,
        :agent3WasherBasicFunctionRole1DrySelfSocialAction1 ,
        :agent3WasherBasicFunctionRole1WashSelfSocialAction1 ;
    Agent:agentHasUserRole :agent3CafeUserRole1 ;
    Agent:agentIsInBuilding :ontoCarerCollegeBuilding ;
    Agent:agentIsInOrganisation :ontoCarerCollegeOrganisation ;
    Agent:agentIsOnFloor :floorF0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent3CafeUserRole1
:agent3CafeUserRole1 rdf:type owl:NamedIndividual ,
    Agent:CafeUserRole ;
    Agent:roleHasAgent :agent3 ;
    Agent:roleHasSocialAction :agent3CafeUserRole1MakeCafeFoodOrderSocialAction1 ,
        :agent3CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
        :agent3CafeUserRole1SeeCafeFoodMenuSocialAction1 ;
    Agent:roleHasDesireIntentionalLevel 1 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent3CafeUserRole1MakeCafeFoodOrderSocialAction1
:agent3CafeUserRole1MakeCafeFoodOrderSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:MakeCafeFoodOrderSocialAction ;
    OntoCarer-Link-
Ontology:makeCafeFoodOrderSocialActionAssistedByMakeCafeFoodOrderSocial
ActionAssisterAction :agent14CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssister

```

Action1 ,

:agent6CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssisterAction1 ,

:agent9CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent3 ;
SocialAction:socialActionInRole :agent3CafeUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent3CafeUserRole1PayForCafeFoodOrderSocialAction1>

:agent3CafeUserRole1PayForCafeFoodOrderSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:PayForCafeFoodOrderSocialAction ;
OntoCarer-Link-

Ontology:payForCafeFoodOrderSocialActionAssistedByPayForCafeFoodOrderSocialActionAssisterAction :agent14CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssisterAction1 ,

:agent6CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssisterAction1 ,

:agent9CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent3 ;
SocialAction:socialActionInRole :agent3CafeUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent3CafeUserRole1SeeCafeFoodMenuSocialAction1>

:agent3CafeUserRole1SeeCafeFoodMenuSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:SeeCafeFoodMenuSocialAction ;
OntoCarer-Link-

Ontology:seeCafeFoodMenuSocialActionAssistedBySeeCafeFoodMenuSocialActionAssisterAction :agent14CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1 ,

:agent6CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1 ,

:agent9CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent3 ;
SocialAction:socialActionInRole :agent3CafeUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent3DresserBasicFunctionRole1>

:agent3DresserBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:DresserRole ;
Agent:roleHasAgent :agent3 ;
Agent:roleHasSocialAction

:agent3DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

:agent3DresserBasicFunctionRole1RemoveClothesSocialAction1 ;
Agent:roleHasDesireIntentionLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent3DresserBasicFunction>

Role1PutClothesOnSocialAction1
:agent3DresserBasicFunctionRole1PutClothesOnSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:PutClothesOnSocialAction ;
OntoCarer-Link-

Ontology:putClothesOnSocialActionAssistedByPutClothesOnSocialActionAssisterAction
:agent14DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialAction
AssisterAction1 ,

:agent6DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent3 ;
SocialAction:socialActionInRole

:agent3DresserBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent3DresserBasicFunction>

Role1RemoveClothesSocialAction1
:agent3DresserBasicFunctionRole1RemoveClothesSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:RemoveClothesSocialAction ;
OntoCarer-Link-

Ontology:removeClothesActionSocialActionAssistedByRemoveClothesActionSocialActionAssisterAction
:agent6DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialAction
AssisterAction1 ;

OntoCarer-Link-

Ontology:removeClothesActionSocialActionAssistedByRemoveClothesActionSocialActionAssisterAction
:agent14DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent3 ;
SocialAction:socialActionInRole

:agent3DresserBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent3DrinkerBasicFunction>

Role1
:agent3DrinkerBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:DrinkerRole ;

Agent:roleHasAgent :agent3 ;
Agent:roleHasSocialAction

:agent3DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ;
Agent:roleHasDesireIntentionLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent3DrinkerBasicFunction>

Role1UseDrinkingUtensilSocialAction1
:agent3DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:UseDrinkingUtensilSocialAction ;
OntoCarer-Link-

Ontology:useDrinkingUtensilSocialActionAssistedByUseDrinkingUtensilSocialAction
AssisterAction

:agent14DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1 ,

:agent6DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialAction
AssisterAction1 ,

:agent9DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialAction

```

AssisterAction1 ;
                                SocialAction:socialActionHasAgent :agent3 ;
                                SocialAction:socialActionInRole
:agent3DrinkerBasicFunctionRole1 ;
                                SocialAction:socialActionHasDesireIntentionLevel 1 ;
                                SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent3EaterBasicFunctionRole1
Role1
:agent3EaterBasicFunctionRole1 rdf:type owl:NamedIndividual ,
                                Agent:EaterRole ;
                                Agent:roleHasAgent :agent3 ;
                                Agent:roleHasSocialAction
:agent3EaterBasicFunctionRole1FeedSelfSocialAction1 ,
                                :agent3EaterBasicFunctionRole1UseCutlerySocialAction1 ,
                                :agent3EaterBasicFunctionRole1UseCutleryToFeedSocialAction1
;
                                Agent:roleHasDesireIntentionalLevel 1 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent3EaterBasicFunctionRole1FeedSelfSocialAction1
:agent3EaterBasicFunctionRole1FeedSelfSocialAction1 rdf:type owl:NamedIndividual ,
                                SocialAction:FeedSelfSocialAction ;
                                OntoCarer-Link-
Ontology:feedSelfSocialActionAssistedByFeedSelfSocialActionAssisterAction
:agent14EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister
Action1 ,
:agent6EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister
Action1 ,
:agent9EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister
Action1 ;
                                SocialAction:socialActionHasAgent :agent3 ;
                                SocialAction:socialActionInRole :agent3EaterBasicFunctionRole1 ;
                                SocialAction:socialActionHasDesireIntentionLevel 1 ;
                                SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent3EaterBasicFunctionRole1UseCutlerySocialAction1
:agent3EaterBasicFunctionRole1UseCutlerySocialAction1 rdf:type owl:NamedIndividual ,
                                SocialAction:UseCutlerySocialAction ;
                                OntoCarer-Link-
Ontology:useCutlerySocialActionAssistedByUseCutlerySocialActionAssister
Action :agent14EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ,
:agent6EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ,
:agent9EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ;
                                SocialAction:socialActionHasAgent :agent3 ;
                                SocialAction:socialActionInRole :agent3EaterBasicFunctionRole1 ;
                                SocialAction:socialActionHasDesireIntentionLevel 1 ;
                                SocialAction:socialActionHasQualifier 0 .

```



```

### http://www.OntoCarer.org/CollegeModel.rdf#agent3EaterBasicFunction
Role1UseCutleryToFeedSocialAction1
:agent3EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:UseCutleryToFeedSocialAction ;
    OntoCarer-Link-
Ontology:useCutleryToFeedSocialActionAssistedByUseCutleryToFeedSocialActionAssisterAction
:agent14EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ,

:agent6EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ,

:agent9EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ;

    SocialAction:socialActionHasAgent :agent3 ;
    SocialAction:socialActionInRole

:agent3EaterBasicFunctionRole1 ;

    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent3InformationAssistant
ProviderRole1
:agent3InformationAssistantProviderRole1 rdf:type owl:NamedIndividual ,
    Agent:InformationAssistantProviderRole ;
    Agent:roleHasSocialAction
:agent3InformationAssistantProviderRole1AnswerQuestionsSocialAction1 ,

:agent3InformationAssistantProviderRole1AskQuestionsSocialAction1 ,

:agent3InformationAssistantProviderRole1FindInformationToAnswerQuestions
SocialAction1 ;

    Agent:roleHasDesireIntentionLevel 1 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent3InformationAssistant
ProviderRole1AnswerQuestionsSocialAction1
:agent3InformationAssistantProviderRole1AnswerQuestionsSocialAction1 rdf:type
owl:NamedIndividual ,

    SocialAction:AnswerQuestionsSocialAction ;
    SocialAction:socialActionHasAgent :agent3 ;
    SocialAction:socialActionInRole

:agent3InformationAssistantProviderRole1 ;

    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent3InformationAssistant
ProviderRole1AskQuestionsSocialAction1
:agent3InformationAssistantProviderRole1AskQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:AskQuestionsSocialAction ;
    SocialAction:socialActionHasAgent :agent3 ;
    SocialAction:socialActionInRole

:agent3InformationAssistantProviderRole1 ;

    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

```


<http://www.OntoCarer.org/CollegeModel.rdf#agent3InformationAssistant>
ProviderRole1FindInformationToAnswerQuestionsSocialAction1
:agent3InformationAssistantProviderRole1FindInformationToAnswerQuestions
SocialAction1 rdf:type owl:NamedIndividual ,

SocialAction:FindInformationToAnswerQuestionsSocialAction ;
SocialAction:socialActionHasAgent :agent3 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent3InformationSeekerUser>
RoleAssisterRole1
:agent3InformationSeekerUserRoleAssisterRole1 rdf:type owl:NamedIndividual ,
Agent:InformationAssistantProviderRoleAssisterRole ;
Agent:roleAssisterRoleHasAgent :agent3 ;
Agent:roleAssisterRoleHasSocialActionAssisterAction
:agent3InformationSeekerUserRoleAssisterRole1FindAnswersSocialAction
AssisterAction1 ;
Agent:roleHasDesireIntentionalLevel 1 ;
Agent:roleHasSocialActionAssisterAction
:agent3InformationSeekerUserRoleAssisterRole1FindAnswersSocialAction
AssisterAction1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent3InformationSeekerUser>
RoleAssisterRole1FindAnswersSocialActionAssisterAction1
:agent3InformationSeekerUserRoleAssisterRole1FindAnswersSocialAction
AssisterAction1 rdf:type owl:NamedIndividual ,

SocialAction:FindAnswersSocialActionAssisterAction ;
OntoCarer-Link-
Ontology:findAnswersSocialActionAssisterActionOfFindAnswersSocialAction
:agent15InformationSeekerUserRole1FindAnswersSocialAction1 ,
:agent1InformationSeekerUserRole1FindAnswersSocialAction1 ,
:agent5InformationSeekerUserRole1FindAnswersSocialAction1 ,
:agent7InformationSeekerUserRole1FindAnswersSocialAction1 ;
SocialAction:socialActionAssisterActionHasAgent :agent3 ;
SocialAction:socialActionAssisterActionInRole
:agent3InformationSeekerUserRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent3ToileterBasicFunction>
Role1
:agent3ToileterBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:ToileterRole ;
Agent:roleHasAgent :agent3 ;
Agent:roleHasSocialAction
:agent3ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,
:agent3ToileterBasicFunctionRole1FindToiletSocialAction1 ,
:agent3ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,

:agent3ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,
:agent3ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent3ToileterBasicFunction>

Role1CleanSelfAfterToiletSocialAction1

:agent3ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:CleanSelfAfterToiletSocialAction ;
OntoCarer-Link-

Ontology:cleanSelfAfterToiletSocialActionAssistedByCleanSelfAfterToilet
SocialActionAssisterAction

:agent14ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocial
ActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocial
ActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent3 ;
SocialAction:socialActionInRole

:agent3ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent3ToileterBasicFunction>

Role1FindToiletSocialAction1

:agent3ToileterBasicFunctionRole1FindToiletSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FindToiletSocialAction ;
OntoCarer-Link-

Ontology:findToiletSocialActionAssisterActionOffFindToiletSocialAction

:agent12ToileterBasicFunctionRoleAssisterRole1FindToiletSocialAction
AssisterAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1FindToiletSocialAction
AssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1FindToiletSocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent3 ;
SocialAction:socialActionInRole

:agent3ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent3ToileterBasicFunction>

Role1NavigateToToiletSocialAction1

:agent3ToileterBasicFunctionRole1NavigateToToiletSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:NavigateToToiletSocialAction ;
OntoCarer-Link-

Ontology:navigateToToiletSocialActionAssistedByNavigateToToiletSocialActionAssisterAction

:agent12ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent3 ;
SocialAction:socialActionInRole
:agent3ToileterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent3ToileterBasicFunction>

Role1RemoveRelevantClothesSocialAction1

:agent3ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 rdf:type
owl:NamedIndividual ,

SocialAction:RemoveRelevantClothesSocialAction ;
OntoCarer-Link-

Ontology:removeRelevantClothesSocialActionAssistedByRemoveRelevantClothes
SocialActionAssisterAction

:agent14ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocial
ActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocial
ActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent3 ;
SocialAction:socialActionInRole

:agent3ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent3ToileterBasicFunction>

Role1RestoreRelevantClothesSocialAction1

:agent3ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 rdf:type
owl:NamedIndividual ,

SocialAction:RestoreRelevantClothesSocialAction ;
OntoCarer-Link-

Ontology:restoreRelevantClothesSocialActionAssistedByRestoreRelevantClothesSocialActionAssister
Action :agent14ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocial
ActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocial
ActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent3 ;
SocialAction:socialActionInRole

:agent3ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent3WasherBasicFunction>

Role1

:agent3WasherBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:WasherRole ;

Agent:roleHasAgent :agent3 ;
Agent:roleHasSocialAction

:agent3WasherBasicFunctionRole1DrySelfSocialAction1 ,

:agent3WasherBasicFunctionRole1WashSelfSocialAction1 ;
Agent:roleHasDesireIntentionLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent3WasherBasicFunction>

Role1DrySelfSocialAction1

:agent3WasherBasicFunctionRole1DrySelfSocialAction1 rdf:type owl:NamedIndividual ,

SocialAction:DrySelfSocialAction ;
 OntoCarer-Link-
 Ontology:drySelfSocialActionAssistedByDrySelfSocialActionAssisterAction
 :agent14WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssister
 Action1 ,

 :agent6WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssister
 Action1 ;

 SocialAction:socialActionHasAgent :agent3 ;
 SocialAction:socialActionInRole :agent4WasherBasicFunctionRole1 ;
 SocialAction:socialActionHasDesireIntentionLevel 1 ;
 SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent3WasherBasicFunctionRole1WashSelfSocialAction1>

:agent3WasherBasicFunctionRole1WashSelfSocialAction1 rdf:type owl:NamedIndividual ,
 SocialAction:WashSelfSocialAction ;
 OntoCarer-Link-

Ontology:washSelfSocialActionAssistedByWashSelfSocialActionAssisterAction
 :agent14WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssister
 Action1 ,

:agent6WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssister
 Action1 ;

SocialAction:socialActionHasAgent :agent3 ;
 SocialAction:socialActionInRole :agent3WasherBasicFunctionRole1

;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
 SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4>

:agent4 rdf:type owl:NamedIndividual ,
 Agent:Person ;

Agent:agentHasBasicFunctionRole :agent4DresserBasicFunctionRole1 ,
 :agent4DrinkerBasicFunctionRole1 ,
 :agent4EaterBasicFunctionRole1 ,
 :agent4ToileterBasicFunctionRole1 ,
 :agent4WasherBasicFunctionRole1 ;

Agent:agentHasLocation :largeLectureTheatre1 ;

Agent:agentHasOrganisationMembership :ontoCarerCollegeOrganisation ;

Agent:agentHasProviderRole :agent4LecturerProviderRole1 ;

Agent:agentHasRole :agent4CafeUserRole1 ,
 :agent4DresserBasicFunctionRole1 ,
 :agent4DrinkerBasicFunctionRole1 ,
 :agent4EaterBasicFunctionRole1 ,
 :agent4LecturerProviderRole1 ,
 :agent4LibraryUserRole1 ,
 :agent4ToileterBasicFunctionRole1 ,
 :agent4WasherBasicFunctionRole1 ;

Agent:agentHasSocialAction :agent4CafeUserRole1MakeCafeFoodOrderSocialAction1 ,
 :agent4CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
 :agent4CafeUserRole1SeeCafeFoodMenuSocialAction1 ,
 :agent4DresserBasicFunctionRole1PutClothesOnSocialAction1 ,
 :agent4DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
 :agent4DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
 :agent4EaterBasicFunctionRole1FeedSelfSocialAction1 ,
 :agent4EaterBasicFunctionRole1UseCutlerySocialAction1 ,
 :agent4EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,

:agent4LecturerProviderRole1AnswerQuestionsSocialAction1 ,
 :agent4LecturerProviderRole1AskQuestionsSocialAction1 ,
 :agent4LecturerProviderRole1ShowLectureSlidesSocialAction1 ,
 :agent4LecturerProviderRole1SpeakLectureSocialAction1 ,
 :agent4LibraryUserRole1AnswerQuestionsSocialAction1 ,
 :agent4LibraryUserRole1AskQuestionsSocialAction1 ,
 :agent4LibraryUserRole1CheckOutLibraryBookSocialAction1 ,
 :agent4LibraryUserRole1FindBookOnShelvesSocialAction1 ,
 :agent4LibraryUserRole1FindLibrarySocialAction1 ,
 :agent4LibraryUserRole1NavigateToLibrarySocialAction1 ,
 :agent4LibraryUserRole1ReturnOfLibraryBookSocialAction1 ,
 :agent4LibraryUserRole1SearchCatalogueSocialAction1 ,
 :agent4ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,
 :agent4ToileterBasicFunctionRole1FindToiletSocialAction1 ,
 :agent4ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
 :agent4ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,
 :agent4ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,
 :agent4WasherBasicFunctionRole1DrySelfSocialAction1 ,
 :agent4WasherBasicFunctionRole1WashSelfSocialAction1 ;
 Agent:agentHasUserRole :agent4CafeUserRole1 ,
 :agent4LibraryUserRole1 ;
 Agent:agentIsInBuilding :ontoCarerCollegeBuilding ;
 Agent:agentIsInOrganisation :ontoCarerCollegeOrganisation ;
 Agent:agentIsOnFloor :floorF1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4CafeUserRole1>
 :agent4CafeUserRole1 rdf:type owl:NamedIndividual ,
 Agent:CafeUserRole ;
 Agent:roleHasAgent :agent4 ;
 Agent:roleHasSocialAction :agent4CafeUserRole1MakeCafeFoodOrderSocialAction1 ,
 :agent4CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
 :agent4CafeUserRole1SeeCafeFoodMenuSocialAction1 ;
 Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4CafeUserRole1MakeCafeFoodOrderSocialAction1>
 :agent4CafeUserRole1MakeCafeFoodOrderSocialAction1 rdf:type owl:NamedIndividual ,
 SocialAction:MakeCafeFoodOrderSocialAction ;
 OntoCarer-Link-
 Ontology:makeCafeFoodOrderSocialActionAssistedByMakeCafeFoodOrderSocial
 ActionAssisterAction :agent14CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssister
 Action1 ,

 :agent6CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssisterAction1 ,

 :agent9CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssisterAction1 ;
 SocialAction:socialActionHasAgent :agent4 ;
 SocialAction:socialActionInRole :agent4CafeUserRole1 ;
 SocialAction:socialActionHasDesireIntentionLevel 1 ;
 SocialAction:socialActionHasQualifier 2 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4CafeUserRole1PayForCafeFoodOrderSocialAction1>
 :agent4CafeUserRole1PayForCafeFoodOrderSocialAction1 rdf:type owl:NamedIndividual ,
 SocialAction:PayForCafeFoodOrderSocialAction ;

OntoCarer-Link-

Ontology:payForCafeFoodOrderSocialActionAssistedByPayForCafeFoodOrderSocialActionAssisterAction :agent14CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssisterAction1 ,

:agent6CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssisterAction1 ,

:agent9CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent4 ;
SocialAction:socialActionInRole :agent4CafeUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 2 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4CafeUserRole1SeeCafeFoodMenuSocialAction1>

:agent4CafeUserRole1SeeCafeFoodMenuSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:SeeCafeFoodMenuSocialAction ;

OntoCarer-Link-

Ontology:seeCafeFoodMenuSocialActionAssistedBySeeCafeFoodMenuSocialActionAssisterAction :agent14CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1 ,

:agent6CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1 ,

:agent9CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent4 ;
SocialAction:socialActionInRole :agent4CafeUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4DresserBasicFunctionRole1>

:agent4DresserBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:DresserRole ;

Agent:roleHasAgent :agent4 ;
Agent:roleHasSocialAction

:agent4DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

:agent4DresserBasicFunctionRole1RemoveClothesSocialAction1 ;
Agent:roleHasDesireIntentionLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4DresserBasicFunctionRole1PutClothesOnSocialAction1>

:agent4DresserBasicFunctionRole1PutClothesOnSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:PutClothesOnSocialAction ;

OntoCarer-Link-

Ontology:putClothesOnSocialActionAssistedByPutClothesOnSocialActionAssisterAction :agent14DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

:agent6DresserBasicFunctionRole1PutClothesOnSocialAction1 ;

SocialAction:socialActionHasAgent :agent4 ;
SocialAction:socialActionInRole

:agent4DresserBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent4DresserBasicFunction
Role1RemoveClothesSocialAction1
:agent4DresserBasicFunctionRole1RemoveClothesSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:RemoveClothesSocialAction ;
    OntoCarer-Link-
Ontology:removeClothesSocialActionAssistedByRemoveClothesSocialAction
AssisterAction :agent14DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialAction
AssisterAction1 ,

:agent6DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialAction
AssisterAction1 ;
    SocialAction:socialActionHasAgent :agent4 ;
    SocialAction:socialActionInRole

:agent4DresserBasicFunctionRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent4DrinkerBasicFunction
Role1
:agent4DrinkerBasicFunctionRole1 rdf:type owl:NamedIndividual ,
    Agent:DrinkerRole ;
    Agent:roleHasAgent :agent4 ;
    Agent:roleHasSocialAction
:agent4DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ;
    Agent:roleHasDesireIntentionalLevel 1 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent4DrinkerBasicFunction
Role1UseDrinkingUtensilSocialAction1
:agent4DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:UseDrinkingUtensilSocialAction ;
    OntoCarer-Link-
Ontology:useDrinkingUtensilSocialActionAssistedByUseDrinkingUtensilSocial
ActionAssisterAction
:agent14DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1 ,

:agent6DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialAction
AssisterAction1 ,

:agent9DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialAction
AssisterAction1 ;
    SocialAction:socialActionHasAgent :agent4 ;
    SocialAction:socialActionInRole

:agent4DrinkerBasicFunctionRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent4EaterBasicFunction
Role1
:agent4EaterBasicFunctionRole1 rdf:type owl:NamedIndividual ,
    Agent:EaterRole ;
    Agent:roleHasAgent :agent4 ;
    Agent:roleHasSocialAction
:agent4EaterBasicFunctionRole1FeedSelfSocialAction1 ,
    :agent4EaterBasicFunctionRole1UseCutlerySocialAction1 ,
    :agent4EaterBasicFunctionRole1UseCutleryToFeedSocialAction1
;
    Agent:roleHasDesireIntentionalLevel 1 .

```


<http://www.OntoCarer.org/CollegeModel.rdf#agent4EaterBasicFunction>
Role1FeedSelfSocialAction1
:agent4EaterBasicFunctionRole1FeedSelfSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FeedSelfSocialAction ;
OntoCarer-Link-
Ontology:feedSelfSocialActionAssistedByFeedSelfSocialActionAssisterAction
:agent14EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister
Action1 ,

:agent6EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister
Action1 ,

:agent9EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent4 ;
SocialAction:socialActionInRole :agent4EaterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4EaterBasicFunction>
Role1UseCutlerySocialAction1
:agent4EaterBasicFunctionRole1UseCutlerySocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:UseCutlerySocialAction ;
OntoCarer-Link-
Ontology:useCutlerySocialActionAssistedByUseCutlerySocialActionAssister
Action :agent14EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ,

:agent6EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ,

:agent9EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent4 ;
SocialAction:socialActionInRole :agent4EaterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4EaterBasicFunction>
Role1UseCutleryToFeedSocialAction1
:agent4EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:UseCutleryToFeedSocialAction ;
OntoCarer-Link-
Ontology:useCutleryToFeedSocialActionAssistedByUseCutleryToFeedSocialActionAssisterAction
:agent14EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ,

:agent6EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ,

:agent9EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent4 ;
SocialAction:socialActionInRole
:agent4EaterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4LecturerProviderRole1>
:agent4LecturerProviderRole1 rdf:type owl:NamedIndividual ,
Agent:LecturerProviderRole ;
Agent:roleHasAgent :agent4 ;
Agent:roleHasSocialAction
:agent4LecturerProviderRole1AnswerQuestionsSocialAction1 ,
:agent4LecturerProviderRole1AskQuestionsSocialAction1 ,
:agent4LecturerProviderRole1ShowLectureSlidesSocialAction1 ,
:agent4LecturerProviderRole1SpeakLectureSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4LecturerProviderRole1>
AnswerQuestionsSocialAction1
:agent4LecturerProviderRole1AnswerQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:AnswerQuestionsSocialAction ;
SocialAction:socialActionHasAgent :agent4 ;
SocialAction:socialActionInRole :agent4LecturerProviderRole1 ;
SocialAction:socialActionHasDesireIntentionalLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4LecturerProviderRole1>
AskQuestionsSocialAction1
:agent4LecturerProviderRole1AskQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:AskQuestionsSocialAction ;
SocialAction:socialActionHasAgent :agent4 ;
SocialAction:socialActionInRole :agent4LecturerProviderRole1 ;
SocialAction:socialActionHasDesireIntentionalLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4LecturerProviderRole1>
ShowLectureSlidesSocialAction1
:agent4LecturerProviderRole1ShowLectureSlidesSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:ShowLectureSlidesSocialAction ;
SocialAction:socialActionHasAgent :agent4 ;
SocialAction:socialActionInRole :agent4LecturerProviderRole1 ;
SocialAction:socialActionHasDesireIntentionalLevel 1 ;
SocialAction:socialActionHasQualifier 3 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4LecturerProviderRole1>
SpeakLectureSocialAction1
:agent4LecturerProviderRole1SpeakLectureSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:SpeakLectureSocialAction ;
SocialAction:socialActionHasAgent :agent4 ;
SocialAction:socialActionInRole :agent4LecturerProviderRole1 ;
SocialAction:socialActionHasDesireIntentionalLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4LeftEyeComponent1>
:agent4LeftEyeComponent1 rdf:type owl:NamedIndividual ,
BodyComponents:LeftEyeComponent ;
BodyComponents:bodyComponentHasPerson :agent4 ;
BodyComponents:bodyComponentHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4LeftEyeSeeingAbility1>
:agent4LeftEyeSeeingAbility1 rdf:type owl:NamedIndividual ,
BodyAbilities:SeeingAbility ;
BodyAbilities:bodyAbilityHasPerson :agent4 ;
BodyAbilities:bodyAbilityHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4LibraryUserRole1>
:agent4LibraryUserRole1 rdf:type owl:NamedIndividual ,
Agent:LibraryUserRole ;
Agent:roleHasAgent :agent4 ;
Agent:roleHasSocialAction :agent4LibraryUserRole1AnswerQuestionsSocialAction1 ,
:agent4LibraryUserRole1AskQuestionsSocialAction1 ,
:agent4LibraryUserRole1CheckOutLibraryBookSocialAction1 ,
:agent4LibraryUserRole1FindBookOnShelvesSocialAction1 ,
:agent4LibraryUserRole1FindLibrarySocialAction1 ,
:agent4LibraryUserRole1NavigateToLibrarySocialAction1 ,
:agent4LibraryUserRole1ReturnOfLibraryBookSocialAction1 ,
:agent4LibraryUserRole1SearchCatalogueSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4LibraryUserRole1AnswerQuestionsSocialAction1>
:agent4LibraryUserRole1AnswerQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:AnswerQuestionsSocialAction ;
SocialAction:socialActionHasAgent :agent4 ;
SocialAction:socialActionInRole :agent4LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4LibraryUserRole1AskQuestionsSocialAction1>
:agent4LibraryUserRole1AskQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:AskQuestionsSocialAction ;
SocialAction:socialActionHasAgent :agent4 ;
SocialAction:socialActionInRole :agent4LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4LibraryUserRole1CheckOutLibraryBookSocialAction1>
:agent4LibraryUserRole1CheckOutLibraryBookSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:CheckOutLibraryBookSocialAction ;
OntoCarer-Link-
Ontology:checkOutLibraryBookSocialActionAssistedByCheckOutLibraryBookSocial
ActionAssisterAction :agent8LibraryUserRoleAssisterRole1CheckOutLibraryBookSocialActionAssister
Action1 ;
SocialAction:socialActionHasAgent :agent4 ;
SocialAction:socialActionInRole :agent4LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4LibraryUserRole1FindBookOnShelvesSocialAction1>
:agent4LibraryUserRole1FindBookOnShelvesSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FindBookOnShelvesSocialAction ;
OntoCarer-Link-
Ontology:findBookOnShelvesSocialActionAssistedByFindBookOnShelvesSocialActionAssisterAction :agent14LibraryUserRoleAssisterRole1FindBookOnShelvesSocialActionAssisterAction1 ,
:agent6LibraryUserRoleAssisterRole1FindBookOnShelvesSocialActionAssisterAction1 ,
:agent8LibraryUserRoleAssisterRole1FindBookOnShelvesSocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent4 ;
SocialAction:socialActionInRole :agent4LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4LibraryUserRole1FindLibrarySocialAction1>
LibrarySocialAction1
:agent4LibraryUserRole1FindLibrarySocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FindLibrarySocialAction ;
OntoCarer-Link-
Ontology:findLibrarySocialActionAssistedByFindLibrarySocialActionAssisterAction :agent12LibraryUserRoleAssisterRole1FindLibrarySocialActionAssisterAction1 ,
:agent14LibraryUserRoleAssisterRole1FindLibrarySocialActionAssisterAction1 ,
:agent6LibraryUserRoleAssisterRole1FindLibrarySocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent4 ;
SocialAction:socialActionInRole :agent4LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 3 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4LibraryUserRole1NavigateToLibrarySocialAction1>
NavigateToLibrarySocialAction1
:agent4LibraryUserRole1NavigateToLibrarySocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:NavigateToLibrarySocialAction ;
OntoCarer-Link-
Ontology:navigateToLibrarySocialActionAssistedByNavigateToLibrarySocialActionAssisterAction :agent12LibraryUserRoleAssisterRole1NavigateToLibrarySocialActionAssisterAction1 ,
:agent14LibraryUserRoleAssisterRole1NavigateToLibrarySocialActionAssisterAction1 ,
:agent6LibraryUserRoleAssisterRole1NavigateToLibrarySocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent4 ;
SocialAction:socialActionInRole :agent4LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 3 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4LibraryUserRole1ReturnOfLibraryBookSocialAction1>

:agent4LibraryUserRole1ReturnOfLibraryBookSocialAction1 rdf:type owl:NamedIndividual ,
 SocialAction:ReturnOfLibraryBookSocialAction ;
 OntoCarer-Link-
 Ontology:returnOfLibraryBookSocialActionAssistedByReturnOfLibraryBookSocialActionAssisterAction
 :agent8LibraryUserRoleAssisterRole1ReturnOfLibraryBookSocialActionAssister
 Action1 ;
 SocialAction:socialActionHasAgent :agent4 ;
 SocialAction:socialActionInRole :agent4LibraryUserRole1 ;
 SocialAction:socialActionHasDesireIntentionLevel 1 ;
 SocialAction:socialActionHasQualifier 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4LibraryUserRole1Search>

CatalogueSocialAction1
 :agent4LibraryUserRole1SearchCatalogueSocialAction1 rdf:type owl:NamedIndividual ,
 SocialAction:SearchCatalogueForItemSocialAction ;
 OntoCarer-Link-
 Ontology:searchCatalogueForItemSocialActionAssistedBySearchCatalogueForItemSocialActionAssisterAction :agent8LibraryUserRoleAssisterRole1SearchCatalogueSocialActionAssister
 Action1 ;
 SocialAction:socialActionHasAgent :agent4 ;
 SocialAction:socialActionInRole :agent4LibraryUserRole1 ;
 SocialAction:socialActionHasDesireIntentionLevel 1 ;
 SocialAction:socialActionHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4RightEyeComponent1>
 :agent4RightEyeComponent1 rdf:type owl:NamedIndividual ,
 BodyComponents:RightEyeComponent ;
 BodyComponents:bodyComponentHasPerson :agent4 ;
 BodyComponents:bodyComponentHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4RightEyeSeeingAbility1>
 :agent4RightEyeSeeingAbility1 rdf:type owl:NamedIndividual ,
 BodyAbilities:SeeingAbility ;
 BodyComponents:bodyComponentHasPerson :agent4 ;
 BodyAbilities:bodyAbilityHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4SeeingAbility1>
 :agent4SeeingAbility1 rdf:type owl:NamedIndividual ,
 BodyAbilities:SeeingAbility ;
 BodyAbilities:bodyAbilityHasPerson :agent4 ;
 BodyAbilities:bodyAbilityHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4ToileterBasicFunction>

Role1
 :agent4ToileterBasicFunctionRole1 rdf:type owl:NamedIndividual ,
 Agent:ToileterRole ;
 Agent:roleHasAgent :agent4 ;
 Agent:roleHasSocialAction
 :agent4ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,
 :agent4ToileterBasicFunctionRole1FindToiletSocialAction1 ,

:agent4ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
:agent4ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,
:agent4ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4ToileterBasicFunction>

Role1CleanSelfAfterToiletSocialAction1

:agent4ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:CleanSelfAfterToiletSocialAction ;
OntoCarer-Link-

Ontology:cleanSelfAfterToiletSocialActionAssistedByCleanSelfAfterToilet
SocialActionAssisterAction

:agent14ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocial
ActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocial
ActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent4 ;
SocialAction:socialActionInRole

:agent4ToileterBasicFunctionRole1 ;

BodyComponents:bodyComponentHasQualifier 0 ;
SocialAction:socialActionHasDesireIntentionLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4ToileterBasicFunction>

Role1FindToiletSocialAction1

:agent4ToileterBasicFunctionRole1FindToiletSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FindToiletSocialAction ;
OntoCarer-Link-

Ontology:findToiletSocialActionAssistedByFindToiletSocialActionAssister
Action :agent12ToileterBasicFunctionRoleAssisterRole1FindToiletSocialAction
AssisterAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1FindToiletSocialAction
AssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1FindToiletSocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent4 ;
SocialAction:socialActionInRole

:agent4ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 3 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4ToileterBasicFunction>

Role1NavigateToToiletSocialAction1

:agent4ToileterBasicFunctionRole1NavigateToToiletSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:NavigateToToiletSocialAction ;
OntoCarer-Link-

Ontology:navigateToToiletSocialActionAssistedByNavigateToToiletSocialActionAssisterAction

:agent12ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ;
SocialAction:socialActionHasAgent :agent4 ;
SocialAction:socialActionInRole
:agent4ToileterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 3 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4ToileterBasicFunction>
Role1RemoveRelevantClothesSocialAction1
:agent4ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 rdf:type
owl:NamedIndividual ,
SocialAction:RemoveRelevantClothesSocialAction ;
OntoCarer-Link-
Ontology:removeRelevantClothesSocialActionAssistedByRemoveRelevantClothes
SocialActionAssisterAction
:agent14ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocial
ActionAssisterAction1 ,
:agent6ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocial
ActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent4 ;
SocialAction:socialActionInRole
:agent4ToileterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4ToileterBasicFunction>
Role1RestoreRelevantClothesSocialAction1
:agent4ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 rdf:type
owl:NamedIndividual ,
SocialAction:RestoreRelevantClothesSocialAction ;
OntoCarer-Link-
Ontology:restoreRelevantClothesSocialActionAssistedByRestoreRelevantClothesSocialActionAssister
Action :agent14ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocial
ActionAssisterAction1 ,
:agent6ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocial
ActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent4 ;
SocialAction:socialActionInRole
:agent4ToileterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4WasherBasicFunction>
Role1
:agent4WasherBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:WasherRole ;
Agent:roleHasAgent :agent4 ;
Agent:roleHasSocialAction
:agent4WasherBasicFunctionRole1DrySelfSocialAction1 ,
:agent4WasherBasicFunctionRole1WashSelfSocialAction1 ;
Agent:roleHasDesireIntentionLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4WasherBasicFunction>

Role1DrySelfSocialAction1

:agent4WasherBasicFunctionRole1DrySelfSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:DrySelfSocialAction ;

OntoCarer-Link-

Ontology:drySelfSocialActionAssistedByDrySelfSocialActionAssisterAction

:agent14WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssister
Action1 ,

:agent6WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent4 ;

SocialAction:socialActionInRole :agent4WasherBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent4WasherBasicFunction>

Role1WashSelfSocialAction1

:agent4WasherBasicFunctionRole1WashSelfSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:WashSelfSocialAction ;

OntoCarer-Link-

Ontology:washSelfSocialActionAssistedByWashSelfSocialActionAssisterAction

:agent14WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssister
Action1 ,

:agent6WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent4 ;

SocialAction:socialActionInRole :agent4WasherBasicFunctionRole1

;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5>

:agent5 rdf:type owl:NamedIndividual ,

Agent:Person ;

Agent:agentHasBasicFunctionRole :agent5DresserBasicFunctionRole1 ,
:agent5DrinkerBasicFunctionRole1 ,
:agent5EaterBasicFunctionRole1 ,
:agent5ToileterBasicFunctionRole1 ,
:agent5WasherBasicFunctionRole1 ;

Agent:agentHasLocation :largeLectureTheatre1 ;

Agent:agentHasOrganisationMembership :ontoCarerCollegeOrganisation ;

Agent:agentHasRole :agent5CafeUserRole1 ,
:agent5DresserBasicFunctionRole1 ,
:agent5DrinkerBasicFunctionRole1 ,
:agent5EaterBasicFunctionRole1 ,
:agent5InformationSeekerUserRole1 ,
:agent5LibraryUserRole1 ,
:agent5StudentUserRole1 ,
:agent5ToileterBasicFunctionRole1 ,
:agent5WasherBasicFunctionRole1 ;

Agent:agentHasRoleAssisterRole :agent5StudentUserRoleAssisterRole1 ;

Agent:agentHasSocialAction :agent5CafeUserRole1MakeCafeFoodOrderSocialAction1 ,
:agent5CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
:agent5CafeUserRole1SeeCafeFoodMenuSocialAction1 ,
:agent5DresserBasicFunctionRole1PutClothesOnSocialAction1 ,
:agent5DresserBasicFunctionRole1RemoveClothesSocialAction1 ,

:agent5DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
 :agent5EaterBasicFunctionRole1FeedSelfSocialAction1 ,
 :agent5EaterBasicFunctionRole1UseCutlerySocialAction1 ,
 :agent5EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
 :agent5InformationSeekerUserRole1AnswerQuestionsSocialAction1 ,
 :agent5InformationSeekerUserRole1AskQuestionsSocialAction1 ,
 :agent5InformationSeekerUserRole1FindAnswersSocialAction1 ,
 :agent5LibraryUserRole1AnswerQuestionsSocialAction1 ,
 :agent5LibraryUserRole1AskQuestionsSocialAction1 ,
 :agent5LibraryUserRole1CheckOutLibraryBookSocialAction1 ,
 :agent5LibraryUserRole1FindLibrarySocialAction1 ,
 :agent5LibraryUserRole1NavigateToLibrarySocialAction1 ,
 :agent5LibraryUserRole1ReturnOfLibraryBookSocialAction1 ,
 :agent5LibraryUserRole1SearchCatalogueSocialAction1 ,
 :agent5StudentUserRole1AnswerQuestionsSocialAction1 ,
 :agent5StudentUserRole1AskQuestionsSocialAction1 ,
 :agent5StudentUserRole1DoPracticalTasksSocialAction1 ,
 :agent5StudentUserRole1EnrolOnCourseSocialAction1 ,
 :agent5StudentUserRole1ExitTeachingRoomSocialAction1 ,
 :agent5StudentUserRole1FindTeachingRoomSocialAction1 ,
 :agent5StudentUserRole1HearLectureSocialAction1 ,
 :agent5StudentUserRole1NavigateToTeachingRoomSocialAction1 ,
 :agent5StudentUserRole1PayCourseFeesSocialAction1 ,
 :agent5StudentUserRole1SeeLectureSocialAction1 ,
 :agent5StudentUserRole1SubmitAssignmentSocialAction1 ,
 :agent5StudentUserRole1TakeNotesFromSpeakerSocialAction1 ,
 :agent5StudentUserRole1TakeNotesFromTextSocialAction1 ,
 :agent5ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,
 :agent5ToileterBasicFunctionRole1FindToiletSocialAction1 ,
 :agent5ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
 :agent5ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,
 :agent5ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,
 :agent5WasherBasicFunctionRole1DrySelfSocialAction1 ,
 :agent5WasherBasicFunctionRole1WashSelfSocialAction1 ,
 :agent5InformationSeekerUserRole1HearQuestions&AnswersSocialAction1 ;

Agent:agentHasSocialActionAssisterAction

:agent5StudentUserRoleAssisterRole1DoPracticalTasksSocialActionAssister
Action1 ,

:agent5StudentUserRoleAssisterRole1SubmitAssignmentSocialActionAssister
Action1 ,

:agent5StudentUserRoleAssisterRole1TakeNotesFromSpeakerSocialActionAssisterAction1 ;

Agent:agentHasUserRole :agent5CafeUserRole1 ,
 :agent5InformationSeekerUserRole1 ,
 :agent5LibraryUserRole1 ,
 :agent5StudentUserRole1 ;

Agent:agentIsInBuilding :ontoCarerCollegeBuilding ;
 Agent:agentIsInOrganisation :ontoCarerCollegeOrganisation ;
 Agent:agentIsOnFloor :floorF1 .

http://www.OntoCarer.org/CollegeModel.rdf#agent5CafeUserRole1

:agent5CafeUserRole1 rdf:type owl:NamedIndividual ,

Agent:CafeUserRole ;

Agent:roleHasAgent :agent5 ;

Agent:roleHasSocialAction :agent5CafeUserRole1MakeCafeFoodOrderSocialAction1 ,

 :agent5CafeUserRole1PayForCafeFoodOrderSocialAction1 ;

Agent:roleHasDesireIntentionalLevel 1 .

Agent:roleHasAgent :agent5 ;
Agent:roleHasSocialAction
:agent5DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

:agent5DresserBasicFunctionRole1RemoveClothesSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5DresserBasicFunction>
Role1PutClothesOnSocialAction1
:agent5DresserBasicFunctionRole1PutClothesOnSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:PutClothesOnSocialAction ;
OntoCarer-Link-
Ontology:putClothesOnSocialActionAssistedByPutClothesOnSocialActionAssisterAction
:agent14DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialAction
AssisterAction1 ,

:agent6DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent5 ;
SocialAction:socialActionInRole
:agent5DresserBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5DresserBasicFunction>
Role1RemoveClothesSocialAction1
:agent5DresserBasicFunctionRole1RemoveClothesSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:RemoveClothesSocialAction ;
OntoCarer-Link-
Ontology:removeClothesSocialActionAssistedByRemoveClothesSocialAction
AssisterAction :agent14DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialAction
AssisterAction1 ,

:agent6DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent5 ;
SocialAction:socialActionInRole
:agent5DresserBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5DrinkerBasicFunction>
Role1
:agent5DrinkerBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:DrinkerRole ;
Agent:roleHasAgent :agent5 ;
Agent:roleHasSocialAction
:agent5DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5DrinkerBasicFunction>
Role1UseDrinkingUtensilSocialAction1
:agent5DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:UseDrinkingUtensilSocialAction ;
OntoCarer-Link-
Ontology:useDrinkingUtensilSocialActionAssistedByUseDrinkingUtensil

SocialActionAssisterAction
:agent14DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1 ,

:agent6DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialAction
AssisterAction1 ,

:agent9DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent5 ;
SocialAction:socialActionInRole

:agent5DresserBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5EaterBasicFunction>
Role1

:agent5EaterBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:EaterRole ;

Agent:roleHasAgent :agent5 ;
Agent:roleHasSocialAction

:agent5EaterBasicFunctionRole1FeedSelfSocialAction1 ,

:agent5EaterBasicFunctionRole1UseCutlerySocialAction1 ,
:agent5EaterBasicFunctionRole1UseCutleryToFeedSocialAction1

;

Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5EaterBasicFunction>

Role1FeedSelfSocialAction1

:agent5EaterBasicFunctionRole1FeedSelfSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FeedSelfSocialAction ;

OntoCarer-Link-

Ontology:feedSelfSocialActionAssistedByFeedSelfSocialActionAssisterAction

:agent14EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister
Action1 ,

:agent6EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister
Action1 ,

:agent9EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent5 ;
SocialAction:socialActionInRole :agent5EaterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5EaterBasicFunction>

Role1UseCutlerySocialAction1

:agent5EaterBasicFunctionRole1UseCutlerySocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:UseCutlerySocialAction ;

OntoCarer-Link-

Ontology:useCutlerySocialActionAssistedByUseCutlerySocialActionAssister

Action :agent14EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ,

:agent6EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ,

:agent9EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ;
SocialAction:socialActionHasAgent :agent5 ;
SocialAction:socialActionInRole :agent5EaterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5EaterBasicFunction>
Role1UseCutleryToFeedSocialAction1
:agent5EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:UseCutleryToFeedSocialAction ;
OntoCarer-Link-
Ontology:useCutleryToFeedSocialActionAssistedByUseCutleryToFeedSocialActionAssisterAction
:agent14EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ,

:agent6EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ,

:agent9EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ;
SocialAction:socialActionHasAgent :agent5 ;
SocialAction:socialActionInRole
:agent5EaterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5InformationSeekerUser>
Role1
:agent5InformationSeekerUserRole1 rdf:type owl:NamedIndividual ,
Agent:InformationSeekerUserRole ;
Agent:roleHasAgent :agent5 ;
Agent:roleHasSocialAction
:agent5InformationSeekerUserRole1AnswerQuestionsSocialAction1 ,
:agent5InformationSeekerUserRole1AskQuestionsSocialAction1 ,
:agent5InformationSeekerUserRole1FindAnswersSocialAction1
,
:agent5InformationSeekerUserRole1HearQuestions&AnswersSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5InformationSeekerUser>
Role1AnswerQuestionsSocialAction1
:agent5InformationSeekerUserRole1AnswerQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:AnswerQuestionsSocialAction ;
SocialAction:socialActionHasAgent :agent5 ;
SocialAction:socialActionInRole
:agent5InformationSeekerUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5InformationSeekerUser>
Role1AskQuestionsSocialAction1
:agent5InformationSeekerUserRole1AskQuestionsSocialAction1 rdf:type owl:NamedIndividual ,

SocialAction:AskQuestionsSocialAction ;
SocialAction:socialActionHasAgent :agent5 ;
SocialAction:socialActionInRole
:agent5InformationSeekerUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5InformationSeekerUserRole1FindAnswersSocialAction1>

Role1FindAnswersSocialAction1
:agent5InformationSeekerUserRole1FindAnswersSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FindAnswersSocialAction ;
OntoCarer-Link-

Ontology:findAnswersSocialActionAssistedByFindAnswersSocialActionAssisterAction
:agent2InformationAssistantProviderRole1FindInformationToAnswerQuestions
SocialAction1 ,

:agent3InformationAssistantProviderRole1FindInformationToAnswerQuestions
SocialAction1 ;

SocialAction:socialActionHasAgent :agent5 ;
SocialAction:socialActionInRole
:agent5InformationSeekerUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5LibraryUserRole1>

:agent5LibraryUserRole1 rdf:type owl:NamedIndividual ,
Agent:LibraryUserRole ;
Agent:roleHasAgent :agent5 ;
Agent:roleHasSocialAction :agent5LibraryUserRole1AnswerQuestionsSocialAction1 ,
:agent5LibraryUserRole1AskQuestionsSocialAction1 ,
:agent5LibraryUserRole1CheckOutLibraryBookSocialAction1 ,
:agent5LibraryUserRole1FindBookOnShelvesSocialAction1 ,
:agent5LibraryUserRole1FindLibrarySocialAction1 ,
:agent5LibraryUserRole1NavigateToLibrarySocialAction1 ,
:agent5LibraryUserRole1ReturnOfLibraryBookSocialAction1 ,
:agent5LibraryUserRole1SearchCatalogueSocialAction1 ;
Agent:roleHasDesireIntentionLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5LibraryUserRole1AnswerQuestionsSocialAction1>

:agent5LibraryUserRole1AnswerQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:AnswerQuestionsSocialAction ;
SocialAction:socialActionHasAgent :agent5 ;
SocialAction:socialActionInRole :agent5LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5LibraryUserRole1AskQuestionsSocialAction1>

:agent5LibraryUserRole1AskQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:AskQuestionsSocialAction ;
SocialAction:socialActionHasAgent :agent5 ;
SocialAction:socialActionInRole :agent5LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5LibraryUserRole1CheckOutLibraryBookSocialAction1>
:agent5LibraryUserRole1CheckOutLibraryBookSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:CheckOutLibraryBookSocialAction ;
OntoCarer-Link-
Ontology:checkOutLibraryBookSocialActionAssistedByCheckOutLibraryBookSocial
ActionAssisterAction :agent8LibraryUserRoleAssisterRole1CheckOutLibraryBookSocialActionAssister
Action1 ;
SocialAction:socialActionHasAgent :agent5 ;
SocialAction:socialActionInRole :agent5LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5LibraryUserRole1FindBookOnShelvesSocialAction1>
:agent5LibraryUserRole1FindBookOnShelvesSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FindBookOnShelvesSocialAction ;
OntoCarer-Link-
Ontology:findBookOnShelvesSocialActionAssistedByFindBookOnShelvesSocial
ActionAssisterAction :agent14LibraryUserRoleAssisterRole1FindBookOnShelvesSocialActionAssister
Action1 ,
:agent6LibraryUserRoleAssisterRole1FindBookOnShelvesSocialActionAssister
Action1 ,
:agent8LibraryUserRoleAssisterRole1FindBookOnShelvesSocialActionAssister
Action1 ;
SocialAction:socialActionHasAgent :agent5 ;
SocialAction:socialActionInRole :agent5LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5LibraryUserRole1FindLibrarySocialAction1>
:agent5LibraryUserRole1FindLibrarySocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FindLibrarySocialAction ;
OntoCarer-Link-
Ontology:findLibrarySocialActionAssistedByFindLibrarySocialActionAssisterAction
:agent12LibraryUserRoleAssisterRole1FindLibrarySocialActionAssisterAction1 ,
:agent14LibraryUserRoleAssisterRole1FindLibrarySocialActionAssisterAction1 ,
:agent6LibraryUserRoleAssisterRole1FindLibrarySocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent5 ;
SocialAction:socialActionInRole :agent5LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5LibraryUserRole1NavigateToLibrarySocialAction1>
:agent5LibraryUserRole1NavigateToLibrarySocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:NavigateToLibrarySocialAction ;
OntoCarer-Link-
Ontology:navigateToLibrarySocialActionAssistedByNavigateToLibrarySocial
ActionAssisterAction :agent12LibraryUserRoleAssisterRole1NavigateToLibrarySocialActionAssister
Action1 ,

:agent14LibraryUserRoleAssisterRole1NavigateToLibrarySocialActionAssister
Action1 ,

:agent6LibraryUserRoleAssisterRole1NavigateToLibrarySocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent5 ;
SocialAction:socialActionInRole :agent5LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5LibraryUserRole1Return>

OfLibraryBookSocialAction1

:agent5LibraryUserRole1ReturnOfLibraryBookSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:ReturnOfLibraryBookSocialAction ;
OntoCarer-Link-

Ontology:returnOfLibraryBookSocialActionAssistedByReturnOfLibraryBookSocialActionAssisterAction

:agent8LibraryUserRoleAssisterRole1ReturnOfLibraryBookSocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent5 ;
SocialAction:socialActionInRole :agent5LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5LibraryUserRole1Search>

CatalogueSocialAction1

:agent5LibraryUserRole1SearchCatalogueSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:SearchCatalogueForItemSocialAction ;
OntoCarer-Link-

Ontology:searchCatalogueForItemSocialActionAssistedBySearchCatalogueForItemSocialActionAssisterAction :agent8LibraryUserRoleAssisterRole1SearchCatalogueSocialActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent5 ;
SocialAction:socialActionInRole :agent5LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5StudentUserRole1>

Role1

:agent5StudentUserRole1 rdf:type owl:NamedIndividual ,
Agent:StudentUserRole ;

Agent:roleHasAgent :agent5 ;

Agent:roleHasSocialAction :agent5StudentUserRole1AnswerQuestionsSocialAction1 ,
:agent5StudentUserRole1AskQuestionsSocialAction1 ,
:agent5StudentUserRole1DoPracticalTasksSocialAction1 ,
:agent5StudentUserRole1EnrolOnCourseSocialAction1 ,
:agent5StudentUserRole1ExitTeachingRoomSocialAction1 ,
:agent5StudentUserRole1FindTeachingRoomSocialAction1 ,
:agent5StudentUserRole1HearLectureSocialAction1 ,
:agent5StudentUserRole1NavigateToTeachingRoomSocialAction1 ,
:agent5StudentUserRole1PayCourseFeesSocialAction1 ,
:agent5StudentUserRole1SeeLectureSocialAction1 ,
:agent5StudentUserRole1SubmitAssignmentSocialAction1 ,
:agent5StudentUserRole1TakeNotesFromSpeakerSocialAction1 ,
:agent5StudentUserRole1TakeNotesFromTextSocialAction1 ;

Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5StudentUserRole1Answer>
QuestionsSocialAction1
:agent5StudentUserRole1AnswerQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:AnswerQuestionsSocialAction ;
OntoCarer-Link-
Ontology:answerQuestionsSocialActionAssistedByAnswerQuestionsSocialAction
AssisterAction :agent14StudentUserRoleAssisterRole1AnswerQuestionsSocialActionAssister
Action1 ,

:agent6StudentUserRoleAssisterRole1AnswerQuestionsSocialActionAssister
Action1 ;
SocialAction:socialActionHasAgent :agent5 ;
SocialAction:socialActionInRole :agent5StudentUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5StudentUserRole1Ask>
QuestionsSocialAction1
:agent5StudentUserRole1AskQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:AskQuestionsSocialAction ;
OntoCarer-Link-
Ontology:askQuestionsSocialActionAssistedByAskQuestionsSocialActionAssisterAction
:agent14StudentUserRoleAssisterRole1AskQuestionsSocialActionAssisterAction1 ,

:agent6StudentUserRoleAssisterRole1AskQuestionsSocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent5 ;
SocialAction:socialActionInRole :agent5StudentUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5StudentUserRole1Do>
PracticalTasksSocialAction1
:agent5StudentUserRole1DoPracticalTasksSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:DoPracticalTasksSocialAction ;
OntoCarer-Link-
Ontology:doPracticalTasksSocialActionAssistedByDoPracticalTasksSocialActionAssisterAction
:agent15StudentUserRoleAssisterRole1DoPracticalTasksSocialActionAssister
Action1 ,

:agent5StudentUserRoleAssisterRole1DoPracticalTasksSocialActionAssister
Action1 ;
SocialAction:socialActionHasAgent :agent5 ;
SocialAction:socialActionInRole :agent5StudentUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5StudentUserRole1Enrol>
OnCourseSocialAction1
:agent5StudentUserRole1EnrolOnCourseSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:EnrolOnCourseSocialAction ;
OntoCarer-Link-
Ontology:enrolStudentOnCourseSocialActionAssistedByEnrolStudentOnCourse
SocialActionAssisterAction
:agent11StudentUserRoleAssisterRole1EnrolOnCourseSocialActionAssisterAction1 ,

:agent14StudentUserRoleAssisterRole1EnrolOnCourseSocialActionAssister
Action1 ,


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:agent6StudentUserRoleAssisterRole1EnrolOnCourseSocialActionAssisterAction1 ;
    SocialAction:socialActionHasAgent :agent5 ;
    SocialAction:socialActionInRole :agent5StudentUserRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

### http://www.OntoCarer.org/CollegeModel.rdf#agent5StudentUserRole1Exit
TeachingRoomSocialAction1
:agent5StudentUserRole1ExitTeachingRoomSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:ExitTeachingRoomSocialAction ;
    OntoCarer-Link-
Ontology:exitTeachingRoomSocialActionAssistedByExitTeachingRoomSocialActionAssisterAction
:agent14StudentUserRoleAssisterRole1ExitTeachingRoomSocialActionAssister
Action1 ,

:agent6StudentUserRoleAssisterRole1ExitTeachingRoomSocialActionAssister
Action1 ;
    SocialAction:socialActionHasAgent :agent5 ;
    SocialAction:socialActionInRole :agent5StudentUserRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

### http://www.OntoCarer.org/CollegeModel.rdf#agent5StudentUserRole1Find
TeachingRoomSocialAction1
:agent5StudentUserRole1FindTeachingRoomSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:FindTeachingRoomSocialAction ;
    OntoCarer-Link-
Ontology:findTeachingRoomSocialActionAssistedByFindTeachingRoomSocialActionAssisterAction
:agent12StudentUserRoleAssisterRole1FindTeachingRoomSocialActionAssister
Action1 ,

:agent14StudentUserRoleAssisterRole1FindTeachingRoomSocialActionAssister
Action1 ,

:agent6StudentUserRoleAssisterRole1FindTeachingRoomSocialActionAssister
Action1 ;
    SocialAction:socialActionHasAgent :agent5 ;
    SocialAction:socialActionInRole :agent5StudentUserRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

### http://www.OntoCarer.org/CollegeModel.rdf#agent5StudentUserRole1Hear
LectureSocialAction1
:agent5StudentUserRole1HearLectureSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:HearLectureSocialAction ;
    SocialAction:socialActionHasAgent :agent5 ;
    SocialAction:socialActionInRole :agent5StudentUserRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

### http://www.OntoCarer.org/CollegeModel.rdf#agent5StudentUserRole1
NavigateToTeachingRoomSocialAction1
:agent5StudentUserRole1NavigateToTeachingRoomSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:NavigateToTeachingRoomSocialAction ;

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OntoCarer-Link-

Ontology:navigateToTeachingRoomSocialActionAssisterActionOfNavigateTo
TeachingRoomSocialAction
:agent12StudentUserRoleAssisterRole1NavigateToTeachingRoomSocialAction
AssisterAction1 ,

:agent14StudentUserRoleAssisterRole1NavigateToTeachingRoomSocialAction
AssisterAction1 ,

:agent6StudentUserRoleAssisterRole1NavigateToTeachingRoomSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent5 ;
SocialAction:socialActionInRole :agent5StudentUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

[http://www.OntoCarer.org/CollegeModel.rdf#agent5StudentUserRole1Pay
CourseFeesSocialAction1](http://www.OntoCarer.org/CollegeModel.rdf#agent5StudentUserRole1PayCourseFeesSocialAction1)

:agent5StudentUserRole1PayCourseFeesSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:PayCourseFeesSocialAction ;
OntoCarer-Link-

Ontology:payCourseFeesSocialActionAssistedByPayCourseFeesSocialAction
AssisterAction :agent10StudentUserRoleAssisterRolePayCourseFeesSocialActionAssisterAction1 ,

:agent14StudentUserRoleAssisterRole1PayCourseFeesSocialActionAssister
Action1 ,

:agent6StudentUserRoleAssisterRole1PayCourseFeesSocialActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent5 ;
SocialAction:socialActionInRole :agent5StudentUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

[http://www.OntoCarer.org/CollegeModel.rdf#agent5StudentUserRole1See
LectureSocialAction1](http://www.OntoCarer.org/CollegeModel.rdf#agent5StudentUserRole1SeeLectureSocialAction1)

:agent5StudentUserRole1SeeLectureSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:SeeLectureSocialAction ;
SocialAction:socialActionHasAgent :agent5 ;
SocialAction:socialActionInRole :agent5StudentUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

[http://www.OntoCarer.org/CollegeModel.rdf#agent5StudentUserRole1Submit
AssignmentSocialAction1](http://www.OntoCarer.org/CollegeModel.rdf#agent5StudentUserRole1SubmitAssignmentSocialAction1)

:agent5StudentUserRole1SubmitAssignmentSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:SubmitAssignmentSocialAction ;
OntoCarer-Link-

Ontology:submitAssignmentSocialActionAssistedBySubmitAssignmentSocialActionAssisterAction
:agent14StudentUserRoleAssisterRole1SubmitAssignmentSocialActionAssister
Action1 ,

:agent15StudentUserRoleAssisterRoleSubmitAssignmentSocialActionAssister
Action1 ,

:agent5StudentUserRoleAssisterRole1SubmitAssignmentSocialActionAssister
Action1 ,

:agent6StudentUserRoleAssisterRole1SubmitAssignmentSocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent5 ;
SocialAction:socialActionInRole :agent5StudentUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5StudentUserRole1Take>

NotesFromSpeakerSocialAction1

:agent5StudentUserRole1TakeNotesFromSpeakerSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:TakeNotesFromSpeakerSocialAction ;
OntoCarer-Link-

Ontology:takeNotesFromSpeakerSocialActionAssistedByTakeNotesFromSpeaker
SocialActionAssisterAction

:agent14StudentUserRoleAssisterRole1TakeNotesFromSpeakerSocialAction
AssisterAction1 ,

:agent6StudentUserRoleAssisterRole1TakeNotesFromSpeakerSocialActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent5 ;
SocialAction:socialActionInRole :agent5StudentUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5StudentUserRole1Take>

NotesFromTextSocialAction1

:agent5StudentUserRole1TakeNotesFromTextSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:TakeNotesFromTextSocialAction ;
OntoCarer-Link-

Ontology:takeNotesFromTextSocialActionAssistedByTakeNotesFromTextSocial
ActionAssisterAction

:agent14StudentUserRoleAssisterRole1TakeNotesFromTextSocialActionAssister
Action1 ,

:agent6StudentUserRoleAssisterRole1TakeNotesFromTextSocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent5 ;
SocialAction:socialActionInRole :agent5StudentUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5StudentUserRole1Write>

AssignmentSocialAction1

:agent5StudentUserRole1WriteAssignmentSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:WriteAssignmentSocialAction ;
SocialAction:socialActionAssisterActionInRole

:agent5StudentUserRole1 ;

SocialAction:socialActionHasAgent :agent5 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent5StudentUserRole
AssisterRole1
:agent5StudentUserRoleAssisterRole1 rdf:type owl:NamedIndividual ,
    Agent:StudentUserRoleAssisterRole ;
    Agent:roleAssisterRoleHasAgent :agent5 ;
    Agent:roleAssisterRoleHasSocialActionAssisterAction
:agent5StudentUserRoleAssisterRole1DoPracticalTasksSocialActionAssister
Action1 ,

:agent5StudentUserRoleAssisterRole1SubmitAssignmentSocialActionAssister
Action1 ;
    Agent:roleHasDesireIntentionalLevel 1 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent5StudentUserRole
AssisterRole1DoPracticalTasksSocialActionAssisterAction1
:agent5StudentUserRoleAssisterRole1DoPracticalTasksSocialActionAssister
Action1 rdf:type owl:NamedIndividual ,

SocialAction:DoPracticalTasksSocialActionAssisterAction ;
    OntoCarer-Link-
Ontology:doPracticalTasksSocialActionAssisterActionOfDoPracticalTasksSocialAction
:agent1StudentUserRole1DoPracticalTasksSocialAction1 ,

:agent7StudentUserRole1DoPracticalTasksSocialAction1 ;
    SocialAction:socialActionAssisterActionHasAgent
:agent5 ;
    SocialAction:socialActionAssisterActionInRole
:agent5StudentUserRoleAssisterRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1
;
    SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent5StudentUserRole
AssisterRole1SubmitAssignmentSocialActionAssisterAction1
:agent5StudentUserRoleAssisterRole1SubmitAssignmentSocialActionAssister
Action1 rdf:type owl:NamedIndividual ,

SocialAction:SubmitAssignmentSocialActionAssisterAction ;
    OntoCarer-Link-
Ontology:submitAssignmentSocialActionAssisterActionOfSubmitAssignmentSocialAction
:agent1StudentUserRole1SubmitAssignmentSocialAction1 ,

:agent7StudentUserRole1SubmitAssignmentSocialAction1 ;
    SocialAction:socialActionAssisterActionHasAgent
:agent5 ;
    SocialAction:socialActionAssisterActionInRole
:agent5StudentUserRoleAssisterRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1
;
    SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent5StudentUserRole
AssisterRole1TakeNotesFromSpeakerSocialActionAssisterAction1
:agent5StudentUserRoleAssisterRole1TakeNotesFromSpeakerSocialActionAssisterAction1 rdf:type
owl:NamedIndividual ,

SocialAction:TakeNotesFromSpeakerSocialActionAssisterAction ;

```

OntoCarer-Link-

Ontology:takeNotesFromSpeakerSocialActionAssisterActionOfTakeNotesFromSpeakerSocialAction
:agent1StudentUserRole1TakeNotesFromSpeakerSocialAction1 ,
:agent7StudentUserRole1TakeNotesFromSpeakerSocialAction1 ;
SocialAction:socialActionAssisterActionHasAgent
:agent5 ;
SocialAction:socialActionAssisterActionInRole
:agent5StudentUserRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel
1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5ToileterBasicFunction>

Role1
:agent5ToileterBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:ToileterRole ;
Agent:roleHasAgent :agent5 ;
Agent:roleHasSocialAction
:agent5ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,
:agent5ToileterBasicFunctionRole1FindToiletSocialAction1 ,
:agent5ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
:agent5ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,
:agent5ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5ToileterBasicFunction>

Role1CleanSelfAfterToiletSocialAction1
:agent5ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:CleanSelfAfterToiletSocialAction ;
OntoCarer-Link-
Ontology:cleanSelfAfterToiletSocialActionAssistedByCleanSelfAfterToilet
SocialActionAssisterAction
:agent14ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocial
ActionAssisterAction1 ,
:agent6ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocial
ActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent5 ;
SocialAction:socialActionInRole
:agent5ToileterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5ToileterBasicFunction>

Role1FindToiletSocialAction1
:agent5ToileterBasicFunctionRole1FindToiletSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FindToiletSocialAction ;
OntoCarer-Link-
Ontology:findToiletSocialActionAssistedByFindToiletSocialActionAssister
Action :agent12ToileterBasicFunctionRoleAssisterRole1FindToiletSocialAction
AssisterAction1 ,
:agent14ToileterBasicFunctionRoleAssisterRole1FindToiletSocialAction

AssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1FindToiletSocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent5 ;
SocialAction:socialActionInRole

:agent5ToileterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5ToileterBasicFunction>

Role1NavigateToToiletSocialAction1

:agent5ToileterBasicFunctionRole1NavigateToToiletSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:NavigateToToiletSocialAction ;
OntoCarer-Link-

Ontology:navigateToToiletSocialActionAssistedByNavigateToToiletSocialActionAssisterAction

:agent12ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent5 ;
SocialAction:socialActionInRole

:agent5ToileterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5ToileterBasicFunction>

Role1RemoveRelevantClothesSocialAction1

:agent5ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 rdf:type
owl:NamedIndividual ,

SocialAction:RemoveRelevantClothesSocialAction ;
OntoCarer-Link-

Ontology:removeRelevantClothesSocialActionAssistedByRemoveRelevantClothes
SocialActionAssisterAction

:agent14ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocial
ActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocial
ActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent5 ;
SocialAction:socialActionInRole

:agent5ToileterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5ToileterBasicFunction>

Role1RestoreRelevantClothesSocialAction1

:agent5ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 rdf:type
owl:NamedIndividual ,

SocialAction:RestoreRelevantClothesSocialAction ;
OntoCarer-Link-

Ontology:restoreRelevantClothesSocialActionAssistedByRestoreRelevantClothesSocialActionAssister
Action :agent14ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocial

ActionAssisterAction1 ,

```

:agent6ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocial
ActionAssisterAction1 ;
                                SocialAction:socialActionHasAgent :agent5 ;
                                SocialAction:socialActionInRole
:agent5ToileterBasicFunctionRole1 ;
                                SocialAction:socialActionHasDesireIntentionLevel 1 ;
                                SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent5WasherBasicFunction
Role1
:agent5WasherBasicFunctionRole1 rdf:type owl:NamedIndividual ,
                                Agent:WasherRole ;
                                Agent:roleHasAgent :agent5 ;
                                Agent:roleHasSocialAction
:agent5WasherBasicFunctionRole1DrySelfSocialAction1 ,
                                :agent5WasherBasicFunctionRole1WashSelfSocialAction1 ;
                                Agent:roleHasDesireIntentionalLevel 1 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent5WasherBasicFunction
Role1DrySelfSocialAction1
:agent5WasherBasicFunctionRole1DrySelfSocialAction1 rdf:type owl:NamedIndividual ,
                                SocialAction:DrySelfSocialAction ;
                                OntoCarer-Link-
Ontology:drySelfSocialActionAssistedByDrySelfSocialActionAssisterAction
:agent14WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssister
Action1 ,
:agent6WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssister
Action1 ;
                                SocialAction:socialActionHasAgent :agent5 ;
                                SocialAction:socialActionInRole :agent5WasherBasicFunctionRole1 ;
                                SocialAction:socialActionHasDesireIntentionLevel 1 ;
                                SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent5WasherBasicFunction
Role1WashSelfSocialAction1
:agent5WasherBasicFunctionRole1WashSelfSocialAction1 rdf:type owl:NamedIndividual ,
                                SocialAction:WashSelfSocialAction ;
                                OntoCarer-Link-
Ontology:washSelfSocialActionAssistedByWashSelfSocialActionAssisterAction
:agent14WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssister
Action1 ,
:agent6WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssister
Action1 ;
                                SocialAction:socialActionHasAgent :agent5 ;
                                SocialAction:socialActionInRole :agent5WasherBasicFunctionRole1
;
                                SocialAction:socialActionHasDesireIntentionLevel 1 ;
                                SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent6
:agent6 rdf:type owl:NamedIndividual ,
                                Agent:Person ;
                                Agent:agentHasAssisterRole :agent6CareWorkerProviderAssisterRole1 ;

```

Agent:agentHasBasicFunctionRole :agent6DresserBasicFunctionRole1 ,
:agent6DrinkerBasicFunctionRole1 ,
:agent6EaterBasicFunctionRole1 ,
:agent6ToileterBasicFunctionRole1 ,
:agent6WasherBasicFunctionRole1 ;

Agent:agentHasLocation :largeLectureTheatre1 ;

Agent:agentHasOrganisationMembership :ontoCarerCollegeOrganisation ;

Agent:agentHasRole :agent6CafeUserRole1 ,
:agent6CareWorkerProviderAssisterRole1 ,
:agent6DresserBasicFunctionRole1 ,
:agent6DrinkerBasicFunctionRole1 ,
:agent6DrinkerBasicFunctionRoleAssisterRole1 ,
:agent6EaterBasicFunctionRole1 ,
:agent6EaterBasicFunctionRoleAssisterRole1 ,
:agent6ToileterBasicFunctionRole1 ,
:agent6ToileterBasicFunctionRoleAssisterRole1 ,
:agent6WasherBasicFunctionRole1 ,
:agent6WasherBasicFunctionRoleAssisterRole1 ;

Agent:agentHasRoleAssisterRole :agent6CafeUserRoleAssisterRole1 ,
:agent6DresserBasicFunctionRoleAssisterRole1 ,
:agent6DrinkerBasicFunctionRoleAssisterRole1 ,
:agent6EaterBasicFunctionRoleAssisterRole1 ,
:agent6LibraryUserRoleAssisterRole1 ,
:agent6ToileterBasicFunctionRoleAssisterRole1 ,
:agent6WasherBasicFunctionRoleAssisterRole1 ;

Agent:agentHasSocialAction :agent6CafeUserRole1MakeCafeFoodOrderSocialAction1 ,
:agent6CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
:agent6CafeUserRole1SeeCafeFoodMenuSocialAction1 ,
:agent6DresserBasicFunctionRole1PutClothesOnSocialAction1 ,
:agent6DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
:agent6DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent6EaterBasicFunctionRole1FeedSelfSocialAction1 ,
:agent6EaterBasicFunctionRole1UseCutlerySocialAction1 ,
:agent6EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
:agent6ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,
:agent6ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
:agent6ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,
:agent6ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,
:agent6WasherBasicFunctionRole1DrySelfSocialAction1 ,
:agent6WasherBasicFunctionRole1WashSelfSocialAction1 ;

Agent:agentHasSocialActionAssisterAction
:agent6CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssister
Action1 ,

:agent6CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssister
Action1 ,

:agent6CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1 ,

:agent6DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialAction
AssisterAction1 ,

:agent6DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialAction
AssisterAction1 ,

:agent6DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialAction
AssisterAction1 ,

:agent6EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister
Action1 ,

:agent6EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssisterAction1 ,

:agent6EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialActionAssisterAction1 ,

:agent6LibraryUserRoleAssisterRole1FindBookOnShelvesSocialActionAssisterAction1 ,

:agent6LibraryUserRoleAssisterRole1FindLibrarySocialActionAssisterAction1 ,

:agent6LibraryUserRoleAssisterRole1NavigateToLibrarySocialActionAssisterAction1 ,

:agent6StudentUserRoleAssisterRole1AnswerQuestionsSocialActionAssisterAction1 ,

:agent6StudentUserRoleAssisterRole1AskQuestionsSocialActionAssisterAction1 ,

:agent6StudentUserRoleAssisterRole1EnrolOnCourseSocialActionAssisterAction1 ,

:agent6StudentUserRoleAssisterRole1ExitTeachingRoomSocialActionAssisterAction1 ,

:agent6StudentUserRoleAssisterRole1FindTeachingRoomSocialActionAssisterAction1 ,

:agent6StudentUserRoleAssisterRole1NavigateToTeachingRoomSocialActionAssisterAction1 ,

:agent6StudentUserRoleAssisterRole1PayCourseFeesSocialActionAssisterAction1 ,

:agent6StudentUserRoleAssisterRole1SubmitAssignmentSocialActionAssisterAction1 ,

:agent6StudentUserRoleAssisterRole1TakeNotesFromSpeakerSocialActionAssisterAction1 ,

:agent6StudentUserRoleAssisterRole1TakeNotesFromTextSocialActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocialActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1FindToiletSocialActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocialActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocialActionAssisterAction1 ,

:agent6WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssisterAction1 ,

:agent6WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssisterAction1 ;

Agent:agentHasUserRole :agent6CafeUserRole1 ;
Agent:agentIsInBuilding :ontoCarerCollegeBuilding ;
Agent:agentIsInOrganisation :ontoCarerCollegeOrganisation ;
Agent:agentIsOnFloor :floorF1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6CafeUserRole1>
:agent6CafeUserRole1 rdf:type owl:NamedIndividual ,
Agent:CafeUserRole ;
Agent:roleHasAgent :agent6 ;
Agent:roleHasSocialAction :agent6CafeUserRole1MakeCafeFoodOrderSocialAction1 ,
:agent6CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
:agent6CafeUserRole1SeeCafeFoodMenuSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6CafeUserRole1MakeCafeFoodOrderSocialAction1>
:agent6CafeUserRole1MakeCafeFoodOrderSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:MakeCafeFoodOrderSocialAction ;
OntoCarer-Link-
Ontology:makeCafeFoodOrderSocialActionAssistedActionOfMakeCafeFoodOrder
SocialAction :agent9CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssister
Action1 ;
OntoCarer-Link-
Ontology:makeCafeFoodOrderSocialActionAssistedByMakeCafeFoodOrderSocial
ActionAssisterAction :agent14CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssister
Action1 ;
SocialAction:socialActionHasAgent :agent6 ;
SocialAction:socialActionInRole :agent6CafeUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6CafeUserRole1PayForCafeFoodOrderSocialAction1>
:agent6CafeUserRole1PayForCafeFoodOrderSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:PayForCafeFoodOrderSocialAction ;
OntoCarer-Link-
Ontology:payForCafeFoodOrderSocialActionAssistedByPayForCafeFoodOrderSocialActionAssisterA
ction :agent14CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssister
Action1 ,
:agent9CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssister
Action1 ;
SocialAction:socialActionHasAgent :agent6 ;
SocialAction:socialActionInRole :agent6 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6CafeUserRole1SeeCafeFoodMenuSocialAction1>
:agent6CafeUserRole1SeeCafeFoodMenuSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:SeeCafeFoodMenuSocialAction ;
OntoCarer-Link-
Ontology:seeCafeFoodMenuSocialActionAssistedBySeeCafeFoodMenuSocialAction
AssisterAction :agent14CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1 ,
:agent9CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent6 ;
SocialAction:socialActionInRole :agent6 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6CafeUserRoleAssisterRole1>

:agent6CafeUserRoleAssisterRole1 rdf:type owl:NamedIndividual ,
Agent:CafeUserRoleAssisterRole ;
Agent:roleAssisterRoleHasAgent :agent6 ;
Agent:roleAssisterRoleHasSocialActionAssisterAction
:agent6CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssister
Action1 ,

:agent6CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssister
Action1 ,

:agent6CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1 ;
Agent:roleHasDesireIntentionLevel 1 ;
Agent:roleHasSocialActionAssisterAction
:agent6CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssister
Action1 ,

:agent6CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssister
Action1 ,

:agent6CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssisterAction1>
:agent6CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssisterAction1 rdf:type
owl:NamedIndividual ,

SocialAction:MakeCafeFoodOrderSocialActionAssisterAction ;
OntoCarer-Link-
Ontology:makeCafeFoodOrderSocialActionAssisterOfMakeCafeFoodOrderSocial
Action :agent14CafeUserRole1MakeCafeFoodOrderSocialAction1 ,

:agent15CafeUserRole1MakeCafeFoodOrderSocialAction1 ,

:agent1CafeUserRole1MakeCafeFoodOrderSocialAction1 ,

:agent2CafeUserRole1MakeCafeFoodOrderSocialAction1 ,

:agent3CafeUserRole1MakeCafeFoodOrderSocialAction1 ,

:agent4CafeUserRole1MakeCafeFoodOrderSocialAction1 ,

:agent5CafeUserRole1MakeCafeFoodOrderSocialAction1 ,

:agent7CafeUserRole1MakeCafeFoodOrderSocialAction1 ,

:agent9CafeUserRole1MakeCafeFoodOrderSocialAction1 ;
SocialAction:socialActionAssisterActionHasAgent
:agent6 ;
SocialAction:socialActionAssisterActionInRole
:agent6CafeUserRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssisterAction1>
:agent6CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssisterAction1 rdf:type owl:NamedIndividual ,

SocialAction:PayForCafeFoodOrderSocialActionAssisterAction ;
OntoCarer-Link-
Ontology:payForCafeFoodOrderSocialActionAssisterOfPayForCafeFoodOrderSocialAction
:agent14CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
:agent15CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
:agent1CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
:agent2CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
:agent3CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
:agent4CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
:agent5CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
:agent7CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
:agent9CafeUserRole1PayForCafeFoodOrderSocialAction1 ;
SocialAction:socialActionAssisterActionHasAgent
:agent6 ;
SocialAction:socialActionAssisterActionInRole
:agent6CafeUserRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1
;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1>
:agent6CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1 rdf:type
owl:NamedIndividual ,

SocialAction:SeeCafeFoodMenuSocialActionAssisterAction ;
OntoCarer-Link-
Ontology:seeCafeFoodOrderMenuSocialActionAssisterOfSeeCafeFoodOrderMenu
SocialAction :agent14CafeUserRole1SeeCafeFoodMenuSocialAction1 ,
:agent15CafeUserRole1SeeCafeFoodMenuSocialAction1 ,
:agent1CafeUserRole1SeeCafeFoodMenuSocialAction1 ,
:agent2CafeUserRole1SeeCafeFoodMenuSocialAction1 ,
:agent3CafeUserRole1SeeCafeFoodMenuSocialAction1 ,
:agent4CafeUserRole1SeeCafeFoodMenuSocialAction1 ,
:agent5CafeUserRole1SeeCafeFoodMenuSocialAction1 ,
:agent7CafeUserRole1SeeCafeFoodMenuSocialAction1 ,

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:agent9CafeUserRole1SeeCafeFoodMenuSocialAction1 ;
                                SocialAction:socialActionAssisterActionHasAgent
:agent6 ;
                                SocialAction:socialActionAssisterActionInRole
:agent6CafeUserRoleAssisterRole1 ;
                                SocialAction:socialActionHasDesireIntentionLevel 1 ;
                                SocialAction:socialActionHasQualifier 0 .

```

<http://www.OntoCarer.org/CollegeModel.rdf#agent6CareWorkerProvider>

```

AssisterRole1
:agent6CareWorkerProviderAssisterRole1 rdf:type owl:NamedIndividual ,
                                Agent:CareWorkerProviderAssisterRole ;
                                Agent:roleHasAgent :agent6 ;
                                Agent:roleHasSubRole :agent6DresserBasicFunctionRoleAssisterRole1 ,
                                :agent6DrinkerBasicFunctionRoleAssisterRole1 ,
                                :agent6EaterBasicFunctionRoleAssisterRole1 ,
                                :agent6ToileterBasicFunctionRoleAssisterRole1 ,
                                :agent6WasherBasicFunctionRoleAssisterRole1 ;
                                SocialAction:socialActionHasDesireIntentionLevel 1 .

```

<http://www.OntoCarer.org/CollegeModel.rdf#agent6DresserBasicFunction>

```

Role1
:agent6DresserBasicFunctionRole1 rdf:type owl:NamedIndividual ,
                                Agent:DresserRole ;
                                Agent:roleHasAgent :agent6 ;
                                Agent:roleHasSocialAction
:agent6DresserBasicFunctionRole1PutClothesOnSocialAction1 ,
:agent6DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
:agent6DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ;
                                Agent:roleHasDesireIntentionLevel 1 .

```

<http://www.OntoCarer.org/CollegeModel.rdf#agent6DresserBasicFunction>

```

Role1PutClothesOnSocialAction1
:agent6DresserBasicFunctionRole1PutClothesOnSocialAction1 rdf:type owl:NamedIndividual ,
                                SocialAction:PutClothesOnSocialAction ;
                                OntoCarer-Link-
Ontology:putClothesOnSocialActionAssistedByPutClothesOnSocialActionAssisterAction
:agent14DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialAction
AssisterAction1 ;
                                SocialAction:socialActionHasAgent :agent6 ;
                                SocialAction:socialActionInRole :agent6 ;
                                SocialAction:socialActionHasDesireIntentionLevel 1 ;
                                SocialAction:socialActionHasQualifier 0 .

```

<http://www.OntoCarer.org/CollegeModel.rdf#agent6DresserBasicFunction>

```

Role1RemoveClothesSocialAction1
:agent6DresserBasicFunctionRole1RemoveClothesSocialAction1 rdf:type owl:NamedIndividual ,
                                SocialAction:RemoveClothesSocialAction ;
                                OntoCarer-Link-
Ontology:removeClothesSocialActionAssistedByRemoveClothesSocialAction
AssisterAction :agent14DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialAction
AssisterAction1 ;
                                SocialAction:socialActionHasAgent :agent6 ;

```

SocialAction:socialActionInRole :agent6 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6DresserBasicFunction>

RoleAssisterRole1

:agent6DresserBasicFunctionRoleAssisterRole1 rdf:type owl:NamedIndividual ,
Agent:DresserRoleAssisterRole ;
Agent:roleAssisterRoleHasAgent :agent6 ;
Agent:roleAssisterRoleHasSocialActionAssisterAction
:agent6DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialAction
AssisterAction1 ,

:agent6DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialAction
AssisterAction1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
Agent:roleHasSocialActionAssisterAction
:agent6DresserRoleAssisterRole1PutClothesOnSocialActionAssisterAction1 ,
:agent6DresserRoleAssisterRole1RemoveClothesSocialActionAssisterAction1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6DresserBasicFunction>

RoleAssisterRole1PutClothesOnSocialActionAssisterAction1

:agent6DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialAction
AssisterAction1 rdf:type owl:NamedIndividual ,

SocialAction:PutClothesOnSocialActionAssisterAction ;

OntoCarer-Link-
Ontology:putClothesOnSocialActionAssisterOfPutClothesOnSocialAction
:agent10DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

:agent11DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

:agent12DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

:agent13DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

:agent14DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

:agent15DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

:agent1DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

:agent2DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

:agent3DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

:agent4DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

:agent5DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

:agent7DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

:agent8DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

:agent9DresserBasicFunctionRole1PutClothesOnSocialAction1 ;

SocialAction:socialActionAssisterActionHasAgent :agent6 ;

SocialAction:socialActionAssisterActionInRole
:agent6DresserBasicFunctionRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6DresserBasicFunction>

RoleAssisterRole1RemoveClothesSocialActionAssisterAction1
:agent6DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialAction
AssisterAction1 rdf:type owl:NamedIndividual ,
SocialAction:RemoveClothesActionSocialActionAssisterAction ;
OntoCarer-Link-
Ontology:removeClothesActionSocialActionAssisterActionOfRemoveClothesActionSocialAction
:agent10DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
:agent11DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
:agent12DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
:agent13DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
:agent14DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
:agent15DresserRole1RemoveClothesSocialAction1 ,
:agent1DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
:agent2DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
:agent3DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
:agent4DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
:agent5DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
:agent7DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
:agent8DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
:agent9DresserBasicFunctionRole1RemoveClothesSocialAction1 ;
SocialAction:socialActionAssisterActionHasAgent :agent6 ;
SocialAction:socialActionAssisterActionInRole
:agent6DresserBasicFunctionRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6DrinkerBasicFunction>

Role1
:agent6DrinkerBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:DrinkerRole ;
Agent:roleHasAgent :agent6 ;
Agent:roleHasSocialAction
:agent6DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent6DrinkerBasicFunction
Role1UseDrinkingUtensilSocialAction1
:agent6DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:UseDrinkingUtensilSocialAction ;
    OntoCarer-Link-
Ontology:useDrinkingUtensilSocialActionAssistedByUseDrinkingUtensil
SocialActionAssisterAction
:agent14DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1 ;
    SocialAction:socialActionHasAgent :agent6 ;
    SocialAction:socialActionInRole
:agent6DrinkerBasicFunctionRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent6DrinkerBasicFunction
RoleAssisterRole1
:agent6DrinkerBasicFunctionRoleAssisterRole1 rdf:type owl:NamedIndividual ,
    Agent:DrinkerRoleAssisterRole ;
    Agent:roleAssisterRoleHasAgent :agent6 ;
    Agent:roleAssisterRoleHasSocialActionAssisterAction
:agent6DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    Agent:roleHasSocialActionAssisterAction
:agent6DrinkerRole1UseDrinkingUtensilSocialAction1 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent6DrinkerBasicFunction
RoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1
:agent6DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1
rdf:type owl:NamedIndividual ,
    SocialAction:UseDrinkingUtensilSocialActionAssisterAction ;
    OntoCarer-Link-
Ontology:useDrinkingUtensilSocialActionAssisterOfUseDrinkingUtensil
SocialAction :agent10DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent11DrinkerRole1UseDrinkingUtensilSocialAction1 ,
:agent12DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent13DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent14DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent15DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent1DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent2DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent3DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent4DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent5DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent7DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,

```


:agent8DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent9DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ;
SocialAction:socialActionAssisterActionHasAgent :agent6 ;
SocialAction:socialActionAssisterActionInRole :agent6DrinkerBasicFunctionRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6EaterBasicFunctionRole1>
:agent6EaterBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:EaterRole ;
Agent:roleHasAgent :agent6 ;
Agent:roleHasSocialAction
:agent6EaterBasicFunctionRole1FeedSelfSocialAction1 ,
:agent6EaterBasicFunctionRole1UseCutlerySocialAction1 ,
:agent6EaterBasicFunctionRole1UseCutleryToFeedSocialAction1
;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6EaterBasicFunctionRole1FeedSelfSocialAction1>
:agent6EaterBasicFunctionRole1FeedSelfSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FeedSelfSocialAction ;
SocialAction:socialActionHasAgent :agent6 ;
SocialAction:socialActionInRole :agent6EaterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6EaterBasicFunctionRole1UseCutlerySocialAction1>
:agent6EaterBasicFunctionRole1UseCutlerySocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:UseCutlerySocialAction ;
OntoCarer-Link-
Ontology:useCutlerySocialActionAssistedByUseCutlerySocialActionAssister
Action :agent14EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ,
:agent9EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ;
SocialAction:socialActionHasAgent :agent6 ;
SocialAction:socialActionInRole :agent6EaterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6EaterBasicFunctionRole1UseCutleryToFeedSocialAction1>
:agent6EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:UseCutleryToFeedSocialAction ;
OntoCarer-Link-
Ontology:useCutleryToFeedSocialActionAssistedByUseCutleryToFeedSocialActionAssister
:agent9EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction

AssisterAction1 ;
 OntoCarer-Link-
 Ontology:useCutleryToFeedSocialActionAssistedByUseCutleryToFeedSocialActionAssisterAction
 :agent14EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
 AssisterAction1 ;
 SocialAction:socialActionHasAgent :agent6 ;
 SocialAction:socialActionInRole
 :agent6EaterBasicFunctionRole1 ;
 SocialAction:socialActionHasDesireIntentionLevel 1 ;
 SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6EaterBasicFunctionRole>

AssisterRole1
 :agent6EaterBasicFunctionRoleAssisterRole1 rdf:type owl:NamedIndividual ,
 Agent:EaterRoleAssisterRole ;
 Agent:roleHasAgent :agent6 ;
 Agent:roleHasDesireIntentionalLevel 1 ;
 Agent:roleHasSocialActionAssisterAction
 :agent6EaterRoleAssisterRole1FeedSelfSocialActionAssisterAction1 ,
 :agent6EaterRoleAssisterRole1UseCutlerySocialActionAssisterAction1 ,
 :agent6EaterRoleAssisterRole1UseCutleryToFeedSocialActionAssisterAction1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssisterAction1>

:agent6EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssisterAction1
 Action1 rdf:type owl:NamedIndividual ,

SocialAction:FeedSelfSocialActionAssisterAction ;
 OntoCarer-Link-
 Ontology:feedSelfSocialActionAssisterActionOfFeedSelfSocialAction
 :agent10EaterBasicFunctionRole1FeedSelfSocialAction1 ,

:agent11EaterBasicFunctionRole1FeedSelfSocialAction1 ,
 :agent12EaterBasicFunctionRole1FeedSelfSocialAction1 ,
 :agent13EaterBasicFunctionRole1FeedSelfSocialAction1 ,
 :agent14EaterBasicFunctionRole1FeedSelfSocialAction1 ,
 :agent15EaterBasicFunctionRole1FeedSelfSocialAction1 ,
 :agent1EaterBasicFunctionRole1FeedSelfSocialAction1 ,
 :agent2EaterBasicFunctionRole1FeedSelfSocialAction1 ,
 :agent3EaterBasicFunctionRole1FeedSelfSocialAction1 ,
 :agent4EaterBasicFunctionRole1FeedSelfSocialAction1 ,
 :agent5EaterBasicFunctionRole1FeedSelfSocialAction1 ,
 :agent7EaterBasicFunctionRole1FeedSelfSocialAction1 ,
 :agent8EaterBasicFunctionRole1FeedSelfSocialAction1 ,

:agent9EaterBasicFunctionRole1FeedSelfSocialAction1 ;
SocialAction:socialActionAssisterActionHasAgent
:agent6 ;
SocialAction:socialActionAssisterActionInRole
:agent6EaterBasicFunctionRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6EaterBasicFunction>

RoleAssisterRole1UseCutlerySocialActionAssisterAction1
:agent6EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssisterAction1 rdf:type
owl:NamedIndividual ,

SocialAction:UseCutlerySocialActionAssisterAction ;
OntoCarer-Link-
Ontology:useCutlerySocialActionAssisterActionOfUseCutlerySocialAction
:agent10EaterBasicFunctionRole1UseCutlerySocialAction1 ,

:agent11EaterBasicFunctionRole1UseCutlerySocialAction1 ,

:agent12EaterBasicFunctionRole1UseCutlerySocialAction1 ,

:agent13EaterBasicFunctionRole1UseCutlerySocialAction1 ,

:agent14EaterBasicFunctionRole1UseCutlerySocialAction1 ,

:agent15EaterBasicFunctionRole1UseCutlerySocialAction1 ,

:agent1EaterBasicFunctionRole1UseCutlerySocialAction1 ,

:agent2EaterBasicFunctionRole1UseCutlerySocialAction1 ,

:agent3EaterBasicFunctionRole1UseCutlerySocialAction1 ,

:agent4EaterBasicFunctionRole1UseCutlerySocialAction1 ,

:agent5EaterBasicFunctionRole1UseCutlerySocialAction1 ,

:agent7EaterBasicFunctionRole1UseCutlerySocialAction1 ,

:agent8EaterBasicFunctionRole1UseCutlerySocialAction1 ,

:agent9EaterBasicFunctionRole1UseCutlerySocialAction1 ;
SocialAction:socialActionAssisterActionHasAgent

:agent6 ;
SocialAction:socialActionAssisterActionInRole

:agent6EaterBasicFunctionRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1

;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6EaterBasicFunction>

RoleAssisterRole1UseCutleryToFeedSocialActionAssisterAction1
:agent6EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialActionAssisterAction1 rdf:type
owl:NamedIndividual ,

SocialAction:UseCutleryToFeedSocialActionAssisterAction ;

OntoCarer-Link-

Ontology:useCutleryToFeedSocialActionAssisterActionOfUseCutleryToFeedSocialAction
:agent10EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
:agent11EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
:agent12EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
:agent13EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
:agent14EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialActionAssisterAction1 ,
:agent15EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
:agent1EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
:agent2EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
:agent3EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
:agent4EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
:agent5EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
:agent7EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
:agent9EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialActionAssisterAction1 ;
SocialAction:socialActionAssisterActionInRole
:agent6EaterBasicFunctionRoleAssisterRole1 ;
SocialAction:socialActionAssisterHasAgent
:agent6 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6LibraryUserRole>

AssisterRole1
:agent6LibraryUserRoleAssisterRole1 rdf:type owl:NamedIndividual ,
Agent:LibraryUserRoleAssisterRole ;
Agent:roleAssisterRoleHasAgent :agent6 ;
Agent:roleAssisterRoleHasSocialActionAssisterAction
:agent6LibraryUserRoleAssisterRole1FindBookOnShelvesSocialActionAssisterAction1 ,
:agent6LibraryUserRoleAssisterRole1FindLibrarySocialActionAssisterAction1 ,
:agent6LibraryUserRoleAssisterRole1NavigateToLibrarySocialActionAssisterAction1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
Agent:roleHasSocialActionAssisterAction
:agent6LibraryUserRoleAssisterRole1FindBookOnShelvesSocialActionAssisterAction1 ,
:agent6LibraryUserRoleAssisterRole1FindLibrarySocialActionAssisterAction1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6LibraryUserRole>

AssisterRole1FindBookOnShelvesSocialActionAssisterAction1
:agent6LibraryUserRoleAssisterRole1FindBookOnShelvesSocialActionAssister
Action1 rdf:type owl:NamedIndividual ,
SocialAction:FindBookOnShelvesSocialActionAssisterAction ;

OntoCarer-Link-

Ontology:findBookOnShelvesSocialActionAssisterActionOfFindBookOnLibrary
ShelvesSocialAction :agent15LibraryUserRole1FindBookOnShelvesSocialAction1 ,

:agent1LibraryUserRole1FindBookOnShelvesSocialAction1 ,

:agent4LibraryUserRole1FindBookOnShelvesSocialAction1 ,

:agent5LibraryUserRole1FindBookOnShelvesSocialAction1 ,

:agent7LibraryUserRole1FindBookOnShelvesSocialAction1 ;

SocialAction:socialActionAssisterActionHasAgent

:agent6 ;

SocialAction:socialActionAssisterActionInRole

:agent6LibraryUserRoleAssisterRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1

;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6LibraryUserRole>
AssisterRole1FindLibrarySocialActionAssisterAction1
:agent6LibraryUserRoleAssisterRole1FindLibrarySocialActionAssisterAction1 rdf:type
owl:NamedIndividual ,

SocialAction:FindLibrarySocialActionAssisterAction ;

OntoCarer-Link-

Ontology:findLibrarySocialActionAssisterActionOfFindLibrarySocialAction
:agent15LibraryUserRole1FindLibrarySocialAction1 ,

:agent1LibraryUserRole1FindBookOnShelvesSocialAction1 ,

:agent4LibraryUserRole1FindLibrarySocialAction1 ,

:agent5LibraryUserRole1FindLibrarySocialAction1 ,

:agent7LibraryUserRole1FindLibrarySocialAction1 ;

SocialAction:socialActionAssisterActionHasAgent

:agent6 ;

SocialAction:socialActionAssisterActionInRole

:agent6LibraryUserRoleAssisterRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6LibraryUserRole>
AssisterRole1NavigateToLibrarySocialActionAssisterAction1
:agent6LibraryUserRoleAssisterRole1NavigateToLibrarySocialActionAssister
Action1 rdf:type owl:NamedIndividual ,

SocialAction:NavigateToLibrarySocialActionAssisterAction ;

OntoCarer-Link-

Ontology:navigateToLibrarySocialActionAssisterActionOfNavigateToLibrary
SocialAction :agent15LibraryUserRole1NavigateToLibrarySocialAction1 ,

:agent1LibraryUserRole1NavigateToLibrarySocialAction1 ,

:agent4LibraryUserRole1NavigateToLibrarySocialAction1 ,

:agent5LibraryUserRole1NavigateToLibrarySocialAction1 ,

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:agent7LibraryUserRole1NavigateToLibrarySocialAction1 ;
                                                    SocialAction:socialActionAssisterActionHasAgent
:agent6 ;
                                                    SocialAction:socialActionAssisterActionInRole
:agent6LibraryUserRoleAssisterRole1 ;
                                                    SocialAction:socialActionHasDesireIntentionLevel 1
;
                                                    SocialAction:socialActionHasQualifier 0 .

```

<http://www.OntoCarer.org/CollegeModel.rdf#agent6StudentUserRole>

```

AssisterRole1
:agent6StudentUserRoleAssisterRole1 rdf:type owl:NamedIndividual ,
    Agent:StudentUserRoleAssisterRole ;
    Agent:roleAssisterRoleHasAgent :agent6 ;
    Agent:roleAssisterRoleHasSocialActionAssisterAction
:agent6StudentUserRoleAssisterRole1AnswerQuestionsSocialActionAssister
Action1 ,
:agent6StudentUserRoleAssisterRole1AskQuestionsSocialActionAssisterAction1 ,
:agent6StudentUserRoleAssisterRole1EnrolOnCourseSocialActionAssisterAction1 ,
:agent6StudentUserRoleAssisterRole1ExitTeachingRoomSocialActionAssister
Action1 ,
:agent6StudentUserRoleAssisterRole1FindTeachingRoomSocialActionAssister
Action1 ,
:agent6StudentUserRoleAssisterRole1NavigateToTeachingRoomSocialAction
AssisterAction1 ,
:agent6StudentUserRoleAssisterRole1PayCourseFeesSocialActionAssisterAction1 ,
:agent6StudentUserRoleAssisterRole1SubmitAssignmentSocialActionAssister
Action1 ;
    Agent:roleHasDesireIntentionalLevel 1 ;
    Agent:roleHasSocialActionAssisterAction
:agent6StudentUserRoleAssisterRoleAnswerQuestionsSocialActionAssisterAction1 ,
:agent6StudentUserRoleAssisterRoleAskQuestionsSocialActionAssisterAction1 ,
:agent6StudentUserRoleAssisterRoleEnrolOnCourseSocialActionAssisterAction1 ,
:agent6StudentUserRoleAssisterRoleExitTeachingRoomSocialActionAssister
Action1 ,
:agent6StudentUserRoleAssisterRoleFindTeachingRoomSocialActionAssister
Action1 ,
:agent6StudentUserRoleAssisterRoleNavigateToTeachingRoomSocialAction
AssisterAction1 ,
:agent6StudentUserRoleAssisterRolePayCourseFeesSocialActionAssisterAction1 ,
:agent6StudentUserRoleAssisterRoleSubmitAssignmentSocialActionAssister
Action1 .

```

###

<http://www.OntoCarer.org/CollegeModel.rdf#agent6StudentUserRoleAssisterRole1AnswerQuestionsSocialActionAssisterAction1>
:agent6StudentUserRoleAssisterRole1AnswerQuestionsSocialActionAssisterAction1 rdf:type owl:NamedIndividual ,

SocialAction:AnswerQuestionsSocialActionAssisterAction ;
OntoCarer-Link-
Ontology:answerQuestionsSocialActionAssisterActionOfAnswerQuestionsSocialAction :agent1StudentUserRole1AnswerQuestionsSocialAction1 ,
:agent5StudentUserRole1AnswerQuestionsSocialAction1 ,
:agent7StudentUserRole1AnswerQuestionsSocialAction1 ;
SocialAction:socialActionAssisterActionHasAgent
:agent6 ;
SocialAction:socialActionAssisterActionInRole
:agent6StudentUserRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6StudentUserRoleAssisterRole1AskQuestionsSocialActionAssisterAction1>

:agent6StudentUserRoleAssisterRole1AskQuestionsSocialActionAssisterAction1 rdf:type owl:NamedIndividual ,

SocialAction:AskQuestionsSocialActionAssisterAction ;
OntoCarer-Link-
Ontology:askQuestionsSocialActionAssisterActionOfAskQuestionsSocialAction :agent1StudentUserRole1AskQuestionsSocialAction1 ,
:agent5StudentUserRole1AskQuestionsSocialAction1 ,
:agent7StudentUserRole1AskQuestionsSocialAction1 ;
SocialAction:socialActionAssisterActionHasAgent
:agent6 ;
SocialAction:socialActionAssisterActionInRole
:agent6StudentUserRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6StudentUserRoleAssisterRole1EnrolOnCourseSocialActionAssisterAction1>

:agent6StudentUserRoleAssisterRole1EnrolOnCourseSocialActionAssisterAction1 rdf:type owl:NamedIndividual ,

SocialAction:EnrolOnCourseSocialActionAssisterAction ;
OntoCarer-Link-
Ontology:enrolStudentOnCourseSocialActionAssisterActionOfEnrolStudentOnCourseSocialAction :agent1StudentUserRole1EnrolOnCourseSocialAction1 ,
:agent5StudentUserRole1EnrolOnCourseSocialAction1 ,
:agent7StudentUserRole1EnrolOnCourseSocialAction1 ;
SocialAction:socialActionAssisterActionHasAgent
:agent6 ;
SocialAction:socialActionAssisterActionInRole
:agent6StudentUserRoleAssisterRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6StudentUserRole>

AssisterRole1ExitTeachingRoomSocialActionAssisterAction1
:agent6StudentUserRoleAssisterRole1ExitTeachingRoomSocialActionAssister
Action1 rdf:type owl:NamedIndividual ,

SocialAction:ExitTeachingRoomSocialActionAssisterAction ;

OntoCarer-Link-

Ontology:exitTeachingRoomSocialActionAssisterActionOfExitTeachingRoomSocialAction
:agent1StudentUserRole1ExitTeachingRoomSocialAction1 ,

:agent5StudentUserRole1ExitTeachingRoomSocialAction1 ,

:agent7StudentUserRole1ExitTeachingRoomSocialAction1 ;

SocialAction:socialActionAssisterActionHasAgent

:agent6 ;

SocialAction:socialActionAssisterActionInRole

:agent6StudentUserRoleAssisterRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1

;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6StudentUserRole>

AssisterRole1FindTeachingRoomSocialActionAssisterAction1
:agent6StudentUserRoleAssisterRole1FindTeachingRoomSocialActionAssister
Action1 rdf:type owl:NamedIndividual ,

SocialAction:FindTeachingRoomSocialActionAssisterAction ;

OntoCarer-Link-

Ontology:findTeachingRoomSocialActionAssisterActionOfFindTeachingRoomSocialAction
:agent1StudentUserRole1FindTeachingRoomSocialAction1 ,

:agent5StudentUserRole1FindTeachingRoomSocialAction1 ,

:agent7StudentUserRole1FindTeachingRoomSocialAction1 ;

SocialAction:socialActionAssisterActionHasAgent

:agent6 ;

SocialAction:socialActionAssisterActionInRole

:agent6StudentUserRoleAssisterRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1

;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6StudentUserRole>

AssisterRole1NavigateToTeachingRoomSocialActionAssisterAction1
:agent6StudentUserRoleAssisterRole1NavigateToTeachingRoomSocialAction
AssisterAction1 rdf:type owl:NamedIndividual ,

SocialAction:NavigateToTeachingRoomSocialActionAssisterAction ;

OntoCarer-Link-

Ontology:navigateToTeachingRoomSocialActionAssisterActionOfNavigate
ToTeachingRoomSocialAction :agent1StudentUserRole1NavigateToTeachingRoomSocialAction1 ,

:agent5StudentUserRole1NavigateToTeachingRoomSocialAction1 ,


```

:agent7StudentUserRole1NavigateToTeachingRoomSocialAction1 ;
SocialAction:socialActionAssisterActionHasAgent :agent6 ;
                                                    SocialAction:socialActionAssisterActionInRole
:agent6StudentUserRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
                                                    SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent6StudentUserRole
AssisterRole1PayCourseFeesSocialActionAssisterAction1
:agent6StudentUserRoleAssisterRole1PayCourseFeesSocialActionAssisterAction1 rdf:type
owl:NamedIndividual ,

```

```

SocialAction:PayCourseFeesSocialActionAssisterAction ;
                                                    OntoCarer-Link-
Ontology:payCourseFeesSocialActionAssisterActionOfPayCourseFeesSocialAction
:agent1StudentUserRole1PayCourseFeesSocialAction1 ,
:agent5StudentUserRole1PayCourseFeesSocialAction1 ,
:agent7StudentUserRole1PayCourseFeesSocialAction1 ;
                                                    SocialAction:socialActionAssisterActionHasAgent
:agent6 ;
                                                    SocialAction:socialActionAssisterActionInRole
:agent6StudentUserRoleAssisterRole1 ;
                                                    SocialAction:socialActionHasDesireIntentionLevel 1 ;
                                                    SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent6StudentUserRole
AssisterRole1SubmitAssignmentSocialActionAssisterAction1
:agent6StudentUserRoleAssisterRole1SubmitAssignmentSocialActionAssister
Action1 rdf:type owl:NamedIndividual ,

```

```

SocialAction:SubmitAssignmentSocialActionAssisterAction ;
                                                    OntoCarer-Link-
Ontology:submitAssignmentSocialActionAssisterActionOfSubmitAssignmentSocialAction
:agent1StudentUserRole1SubmitAssignmentSocialAction1 ,
:agent5StudentUserRole1SubmitAssignmentSocialAction1 ,
:agent7StudentUserRole1SubmitAssignmentSocialAction1 ;
                                                    SocialAction:socialActionAssisterActionHasAgent
:agent6 ;
                                                    SocialAction:socialActionAssisterActionInRole
:agent6 ;
                                                    SocialAction:socialActionHasDesireIntentionLevel 1
;
                                                    SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent6StudentUserRole
AssisterRole1TakeNotesFromSpeakerSocialActionAssisterAction1
:agent6StudentUserRoleAssisterRole1TakeNotesFromSpeakerSocialActionAssisterAction1 rdf:type
owl:NamedIndividual ,

```

```

SocialAction:TakeNotesFromSpeakerSocialActionAssisterAction ;

```

OntoCarer-Link-

Ontology:takeNotesFromSpeakerSocialActionAssisterActionOfTakeNotesFromSpeakerSocialAction
:agent1StudentUserRole1TakeNotesFromSpeakerSocialAction1 ,
:agent5StudentUserRole1TakeNotesFromSpeakerSocialAction1 ,
:agent7StudentUserRole1TakeNotesFromSpeakerSocialAction1 ;
SocialAction:socialActionAssisterActionHasAgent
:agent6 ;
SocialAction:socialActionAssisterActionInRole
:agent6StudentUserRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel
1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6StudentUserRoleAssisterRole1TakeNotesFromTextSocialActionAssisterAction1>
:agent6StudentUserRoleAssisterRole1TakeNotesFromTextSocialActionAssisterAction1 rdf:type owl:NamedIndividual ,

SocialAction:TakeNotesFromTextSocialActionAssisterAction ;
OntoCarer-Link-
Ontology:takeNotesFromTextSocialActionAssisterActionOfTakeNotesFromText
SocialAction :agent1StudentUserRole1TakeNotesFromTextSocialAction1 ,
:agent5StudentUserRole1TakeNotesFromTextSocialAction1 ,
:agent7StudentUserRole1TakeNotesFromTextSocialAction1 ;
SocialAction:socialActionAssisterActionHasAgent
:agent6 ;
SocialAction:socialActionAssisterActionInRole
:agent6StudentUserRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1
;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6ToileterBasicFunctionRole1>

Role1
:agent6ToileterBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:ToileterRole ;
Agent:roleHasAgent :agent6 ;
Agent:roleHasSocialAction
:agent6ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,
:agent6ToileterBasicFunctionRole1FindToiletSocialAction1 ,
:agent6ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
:agent6ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,
:agent6ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1>

CleanSelfAfterToiletSocialAction1
:agent6ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:CleanSelfAfterToiletSocialAction ;

OntoCarer-Link-

Ontology:cleanSelfAfterToiletSocialActionAssistedByCleanSelfAfterToilet
SocialActionAssisterAction
:agent14ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocial
ActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent6 ;
SocialAction:socialActionInRole

:agent6ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6ToileterBasicFunction>

Role1FindToiletSocialAction1

:agent6ToileterBasicFunctionRole1FindToiletSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FindToiletSocialAction ;

OntoCarer-Link-

Ontology:findToiletSocialActionAssistedByFindToiletSocialActionAssister
Action :agent12StudentUserRoleAssisterRole1FindTeachingRoomSocialActionAssister
Action1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1FindToiletSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent6 ;
SocialAction:socialActionInRole

:agent6ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6ToileterBasicFunction>

Role1NavigateToToiletSocialAction1

:agent6ToileterBasicFunctionRole1NavigateToToiletSocialAction1 rdf:type owl:NamedIndividual ,

SocialAction:NavigateToToiletSocialActionAssisterAction ;

OntoCarer-Link-

Ontology:navigateToToiletSocialActionAssistedByNavigateToToiletSocialActionAssisterAction
:agent12ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent6 ;
SocialAction:socialActionInRole

:agent6ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6ToileterBasicFunction>

Role1RemoveRelevantClothesSocialAction1

:agent6ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 rdf:type
owl:NamedIndividual ,

SocialAction:RemoveRelevantClothesSocialAction ;

OntoCarer-Link-

Ontology:removeRelevantClothesSocialActionAssistedByRemoveRelevantClothes
SocialActionAssisterAction

:agent14ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocial
ActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent6 ;

SocialAction:socialActionInRole
:agent6ToileterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6ToileterBasicFunction>

Role1RestoreRelevantClothesSocialAction1

:agent6ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 rdf:type
owl:NamedIndividual ,

SocialAction:RestoreRelevantClothesSocialAction ;
OntoCarer-Link-

Ontology:restoreRelevantClothesSocialActionAssistedByRestoreRelevantClothesSocialActionAssister
Action :agent14ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocial
ActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent6 ;
SocialAction:socialActionInRole

:agent6ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6ToileterBasicFunction>

RoleAssisterRole1

:agent6ToileterBasicFunctionRoleAssisterRole1 rdf:type owl:NamedIndividual ,
Agent:ToileterRoleAssisterRole ;

Agent:roleAssisterRoleHasAgent :agent6 ;

Agent:roleAssisterRoleHasSocialActionAssisterAction

:agent6ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocial
ActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1FindToiletSocialActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocial
ActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocial
ActionAssisterAction1 ;

Agent:roleHasDesireIntentionLevel 1 ;

Agent:roleHasSocialActionAssisterAction

:agent6ToileterRoleAssisterRole1CleanSelfAfterToiletSocialActionAssisterAction1 ,

:agent6ToileterRoleAssisterRole1FindToiletSocialActionAssisterAction1 ,

:agent6ToileterRoleAssisterRole1NavigateToToiletSocialActionAssisterAction1 ,

:agent6ToileterRoleAssisterRole1RemoveRelevantClothesSocialActionAssister
Action1 ,

:agent6ToileterRoleAssisterRole1RestoreRelevantClothesSocialActionAssister
Action1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6ToileterBasicFunction>

RoleAssisterRole1CleanSelfAfterToiletSocialActionAssisterAction1

:agent6ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocial
ActionAssisterAction1 rdf:type owl:NamedIndividual ,

SocialAction:CleanSelfAfterToiletSocialActionAssisterAction ;

SocialAction:socialActionAssisterActionHasAgent :agent6 ;

SocialAction:socialActionAssisterActionInRole :agent6ToileterBasicFunctionRoleAssisterRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 ;
OntoCarer-Link-

Ontology:cleanSelfAfterToiletSocialActionOfCleanSelfAfterToiletSocialActionAssisterAction
:agent10ToileterRole1CleanSelfAfterToiletSocialAction1 ,

:agent11ToileterRole1RestoreRelevantClothesSocialAction1 ,

:agent12ToileterRole1CleanSelfAfterToiletSocialAction1 ,

:agent13ToileterRole1CleanSelfAfterToiletSocialAction1 ,

:agent14ToileterRole1CleanSelfAfterToiletSocialAction1 ,

:agent15ToileterRole1RestoreRelevantClothesSocialAction1 ,

:agent1ToileterRole1CleanSelfAfterToiletSocialAction1 ,

:agent2ToileterRole1CleanSelfAfterToiletSocialAction1 ,

:agent3ToileterRole1CleanSelfAfterToiletSocialAction1 ,

:agent4ToileterRole1CleanSelfAfterToiletSocialAction1 ,

:agent5ToileterRole1CleanSelfAfterToiletSocialAction1 ,

:agent7ToileterRole1CleanSelfAfterToiletSocialAction1 ,

:agent8ToileterRole1CleanSelfAfterToiletSocialAction1 ,

:agent9ToileterRole1CleanSelfAfterToiletSocialAction1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6ToileterBasicFunction>
RoleAssisterRole1FindToiletSocialActionAssisterAction1
:agent6ToileterBasicFunctionRoleAssisterRole1FindToiletSocialActionAssisterAction1 rdf:type
owl:NamedIndividual ,

SocialAction:FindToiletSocialActionAssisterAction ;

OntoCarer-Link-

Ontology:findToiletSocialActionAssisterActionOfFindToiletSocialAction
:agent10ToileterBasicFunctionRole1FindToiletSocialAction1 ,

:agent11ToileterBasicFunctionRole1FindToiletSocialAction1 ,

:agent12ToileterBasicFunctionRole1FindToiletSocialAction1 ,

:agent13ToileterBasicFunctionRole1FindToiletSocialAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1FindToiletSocialAction
AssisterAction1 ,

:agent15ToileterBasicFunctionRole1FindToiletSocialAction1 ,

:agent1ToileterBasicFunctionRole1FindToiletSocialAction1 ,
 :agent2ToileterBasicFunctionRole1FindToiletSocialAction1 ,
 :agent3ToileterBasicFunctionRole1FindToiletSocialAction1 ,
 :agent4ToileterBasicFunctionRole1FindToiletSocialAction1 ,
 :agent5ToileterBasicFunctionRole1FindToiletSocialAction1 ,
 :agent7ToileterBasicFunctionRole1FindToiletSocialAction1 ,
 :agent8ToileterBasicFunctionRole1FindToiletSocialAction1 ,
 :agent9ToileterBasicFunctionRole1FindToiletSocialAction1 ;
 SocialAction:socialActionAssisterActionHasAgent
 :agent6 ;
 SocialAction:socialActionAssisterActionInRole
 :agent6ToileterBasicFunctionRoleAssisterRole1 ;
 SocialAction:socialActionHasDesireIntentionLevel
 1 ;
 SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6ToileterBasicFunction>

RoleAssisterRole1NavigateToToiletSocialActionAssisterAction1
 :agent6ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialActionAssisterAction1 rdf:type
 owl:NamedIndividual ,

SocialAction:NavigateToToiletSocialAction ;

OntoCarer-Link-

Ontology:navigateToToiletSocialActionAssisterActionOfNavigateToToiletSocialAction

:agent11ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,

:agent12ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,

:agent13ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
 AssisterAction1 ,

:agent15ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,

:agent1ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,

:agent2ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,

:agent3ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,

:agent4ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,

:agent5ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,

:agent7ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,

:agent8ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,

:agent9ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ;

SocialAction:socialActionAssisterActionHasAgent :agent6 ;
SocialAction:socialActionAssisterActionInRole
:agent6ToileterBasicFunctionRoleAssisterRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocialActionAssisterAction1> rdf:type owl:NamedIndividual ,

SocialAction:RemoveRelevantClothesSocialActionAssisterAction ;
OntoCarer-Link-
Ontology:removeRelevantClothesSocialActionAssisterOfRemoveRelevantClothes
SocialAction :agent10ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,

:agent11ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,

:agent12ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,

:agent13ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocialActionAssisterAction1 ,

:agent15ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,

:agent1ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,

:agent2ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,

:agent3ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,

:agent4ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,

:agent5ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,

:agent7ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,

:agent8ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,

:agent9ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ;

SocialAction:socialActionAssisterActionHasAgent :agent6 ;

SocialAction:socialActionAssisterActionInRole :agent6ToileterBasicFunctionRoleAssisterRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocialActionAssisterAction1> rdf:type owl:NamedIndividual ,

SocialAction:RestoreRelevantClothesSocialActionAssisterAction ;

OntoCarer-Link-

Ontology:restoreRelevantClothesSocialActionAssisterOfRestoreRelevantClothesSocialAction
:agent10ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,
:agent11ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,
:agent12ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,
:agent13ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,
:agent14ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,
:agent15ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,
:agent1ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,
:agent2ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,
:agent3ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,
:agent4ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,
:agent5ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,
:agent7ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,
:agent8ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,
:agent9ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ;
SocialAction:socialActionAssisterActionHasAgent :agent6 ;
SocialAction:socialActionAssisterActionInRole :agent6ToileterBasicFunctionRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6WasherBasicFunction>
Role1
:agent6WasherBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:WasherRole ;
Agent:roleHasAgent :agent6 ;
Agent:roleHasSocialAction
:agent6WasherBasicFunctionRole1DrySelfSocialAction1 ,
:agent6WasherBasicFunctionRole1WashSelfSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6WasherBasicFunction>
Role1DrySelfSocialAction1
:agent6WasherBasicFunctionRole1DrySelfSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:DrySelfSocialAction ;
OntoCarer-Link-
Ontology:drySelfSocialActionAssistedByDrySelfSocialActionAssisterAction
:agent14WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssister
Action1 ;
SocialAction:socialActionHasAgent :agent6 ;
SocialAction:socialActionInRole :agent6WasherBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6WasherBasicFunction>

Role1WashSelfSocialAction1

:agent6WasherBasicFunctionRole1WashSelfSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:WashSelfSocialAction ;

OntoCarer-Link-

Ontology:washSelfSocialActionAssistedByWashSelfSocialActionAssisterAction

:agent14WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent6 ;

SocialAction:socialActionInRole :agent6WasherBasicFunctionRole1

;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6WasherBasicFunction>

RoleAssisterRole1

:agent6WasherBasicFunctionRoleAssisterRole1 rdf:type owl:NamedIndividual ,
Agent:WasherRoleAssisterRole ;

Agent:roleAssisterRoleHasAgent :agent6 ;

Agent:roleAssisterRoleHasSocialActionAssisterAction

:agent6WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssister
Action1 ,

:agent6WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssister
Action1 ;

Agent:roleHasDesireIntentionalLevel 1 ;

Agent:roleHasSocialActionAssisterAction

:agent6WasherRoleAssisterRole1DrySelfSocialActionAssisterAction1 ,

:agent6WasherRoleAssisterRole1WashSelfSocialActionAssisterAction1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6WasherBasicFunction>

RoleAssisterRole1DrySelfSocialActionAssisterAction1

:agent6WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssister
Action1 rdf:type owl:NamedIndividual ,

SocialAction:DrySelfSocialActionAssisterAction

;

OntoCarer-Link-

Ontology:drySelfSocialActionAssisterActionOfDrySelfSocialAction

:agent10WasherBasicFunctionRole1DrySelfSocialAction1 ,

:agent11WasherBasicFunctionRole1DrySelfSocialAction1 ,

:agent12WasherBasicFunctionRole1DrySelfSocialAction1 ,

:agent13WasherBasicFunctionRole1DrySelfSocialAction1 ,

:agent14WasherBasicFunctionRole1DrySelfSocialAction1 ,

:agent15WasherBasicFunctionRole1DrySelfSocialAction1 ,

:agent1WasherBasicFunctionRole1DrySelfSocialAction1 ,

:agent2WasherBasicFunctionRole1DrySelfSocialAction1 ,

:agent3WasherBasicFunctionRole1DrySelfSocialAction1 ,
 :agent4WasherBasicFunctionRole1DrySelfSocialAction1 ,
 :agent5WasherBasicFunctionRole1DrySelfSocialAction1 ,
 :agent7WasherBasicFunctionRole1DrySelfSocialAction1 ,
 :agent8WasherBasicFunctionRole1DrySelfSocialAction1 ,
 :agent9WasherBasicFunctionRole1DrySelfSocialAction1 ;
 SocialAction:socialActionAssisterActionHasAgent
 :agent6 ;
 SocialAction:socialActionAssisterActionInRole
 :agent6WasherBasicFunctionRoleAssisterRole1 ;
 SocialAction:socialActionHasDesireIntentionLevel 1 ;
 SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent6WasherBasicFunction>

RoleAssisterRole1WashSelfSocialActionAssisterAction1
 :agent6WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssister
 Action1 rdf:type owl:NamedIndividual ,

SocialAction:WashSelfSocialActionAssisterAction ;
 OntoCarer-Link-
 Ontology:washSelfSocialActionAssisterActionOfWashSelfSocialAction
 :agent10WasherBasicFunctionRole1WashSelfSocialAction1 ,

:agent11WasherBasicFunctionRole1WashSelfSocialAction1 ,

:agent12WasherBasicFunctionRole1WashSelfSocialAction1 ,

:agent13WasherBasicFunctionRole1WashSelfSocialAction1 ,

:agent14WasherBasicFunctionRole1WashSelfSocialAction1 ,

:agent15WasherBasicFunctionRole1WashSelfSocialAction1 ,

:agent1WasherBasicFunctionRole1WashSelfSocialAction1 ,

:agent2WasherBasicFunctionRole1WashSelfSocialAction1 ,

:agent3WasherBasicFunctionRole1WashSelfSocialAction1 ,

:agent4WasherBasicFunctionRole1WashSelfSocialAction1 ,

:agent5WasherBasicFunctionRole1WashSelfSocialAction1 ,

:agent7WasherBasicFunctionRole1WashSelfSocialAction1 ,

:agent8WasherBasicFunctionRole1WashSelfSocialAction1 ,

:agent9WasherBasicFunctionRole1WashSelfSocialAction1 ;
 SocialAction:socialActionAssisterActionHasAgent

:agent6 ;

SocialAction:socialActionAssisterActionInRole

:agent6WasherBasicFunctionRoleAssisterRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1

;

SocialAction:socialActionHasQualifier 0 .

http://www.OntoCarer.org/CollegeModel.rdf#agent7

:agent7 rdf:type owl:NamedIndividual ,

Agent:Person ;

Agent:agentHasBasicFunctionRole :agent7DresserBasicFunctionRole1 ,
:agent7DrinkerBasicFunctionRole1 ,
:agent7EaterBasicFunctionRole1 ,
:agent7ToileterBasicFunctionRole1 ,
:agent7WasherBasicFunctionRole1 ;

Agent:agentHasLocation :corridorF0C3 ;

Agent:agentHasOrganisationMembership :ontoCarerCollegeOrganisation ;

Agent:agentHasRole :agent7CafeUserRole1 ,
:agent7DresserBasicFunctionRole1 ,
:agent7DrinkerBasicFunctionRole1 ,
:agent7EaterBasicFunctionRole1 ,
:agent7InformationSeekerUserRole1 ,
:agent7LibraryUserRole1 ,
:agent7StudentUserRole1 ,
:agent7ToileterBasicFunctionRole1 ,
:agent7WasherBasicFunctionRole1 ;

Agent:agentHasSocialAction :agent7CafeUserRole1MakeCafeFoodOrderSocialAction1 ,
:agent7CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
:agent7CafeUserRole1SeeCafeFoodMenuSocialAction1 ,
:agent7DresserBasicFunctionRole1PutClothesOnSocialAction1 ,
:agent7DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
:agent7DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent7EaterBasicFunctionRole1FeedSelfSocialAction1 ,
:agent7EaterBasicFunctionRole1UseCutlerySocialAction1 ,
:agent7EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
:agent7InformationSeekerUserRole1AnswerQuestionsSocialAction1 ,
:agent7InformationSeekerUserRole1AskQuestionsSocialAction1 ,
:agent7InformationSeekerUserRole1FindAnswersSocialAction1 ,
:agent7LibraryUserRole1AnswerQuestionsSocialAction1 ,
:agent7LibraryUserRole1AskQuestionsSocialAction1 ,
:agent7LibraryUserRole1CheckOutLibraryBookSocialAction1 ,
:agent7LibraryUserRole1FindBookOnShelvesSocialAction1 ,
:agent7LibraryUserRole1FindLibrarySocialAction1 ,
:agent7LibraryUserRole1NavigateToLibrarySocialAction1 ,
:agent7LibraryUserRole1ReturnOfLibraryBookSocialAction1 ,
:agent7LibraryUserRole1SearchCatalogueSocialAction1 ,
:agent7StudentUserRole1AnswerQuestionsSocialAction1 ,
:agent7StudentUserRole1AskQuestionsSocialAction1 ,
:agent7StudentUserRole1DoPracticalTasksSocialAction1 ,
:agent7StudentUserRole1EnrolOnCourseSocialAction1 ,
:agent7StudentUserRole1ExitTeachingRoomSocialAction1 ,
:agent7StudentUserRole1FindTeachingRoomSocialAction1 ,
:agent7StudentUserRole1HearLectureSocialAction1 ,
:agent7StudentUserRole1NavigateToTeachingRoomSocialAction1 ,
:agent7StudentUserRole1PayCourseFeesSocialAction1 ,
:agent7StudentUserRole1SeeLectureSocialAction1 ,
:agent7StudentUserRole1SubmitAssignmentSocialAction1 ,
:agent7StudentUserRole1WriteAssignmentSocialAction1 ,
:agent7ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,
:agent7ToileterBasicFunctionRole1FindToiletSocialAction1 ,
:agent7ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
:agent7ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,

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:agent7ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,
:agent7WasherBasicFunctionRole1DrySelfSocialAction1 ,
:agent7WasherBasicFunctionRole1WashSelfSocialAction1 ,
:agent7InformationSeekerUserRole1HearQuestions&AnswersSocialAction1 ;
Agent:agentHasUserRole :agent7CafeUserRole1 ,
:agent7InformationSeekerUserRole1 ,
:agent7LibraryUserRole1 ,
:agent7StudentUserRole1 ;
Agent:agentIsInBuilding :ontoCarerCollegeBuilding ;
Agent:agentIsInOrganisation :ontoCarerCollegeOrganisation ;
Agent:agentIsOnFloor :floorF0 .

```

<http://www.OntoCarer.org/CollegeModel.rdf#agent7CafeUserRole1>

```

:agent7CafeUserRole1 rdf:type owl:NamedIndividual ,
Agent:CafeUserRole ;
Agent:roleHasAgent :agent7 ;
Agent:roleHasSocialAction :agent7CafeUserRole1MakeCafeFoodOrderSocialAction1 ,
:agent7CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
:agent7CafeUserRole1SeeCafeFoodMenuSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

```

<http://www.OntoCarer.org/CollegeModel.rdf#agent7CafeUserRole1MakeCafeFoodOrderSocialAction1>

```

:agent7CafeUserRole1MakeCafeFoodOrderSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:MakeCafeFoodOrderSocialAction ;
OntoCarer-Link-
Ontology:makeCafeFoodOrderSocialActionAssistedByMakeCafeFoodOrderSocial
ActionAssister :agent9CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssisterAction1 ;
OntoCarer-Link-
Ontology:makeCafeFoodOrderSocialActionAssistedByMakeCafeFoodOrderSocial
ActionAssisterAction :agent14CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssister
Action1 ,
:agent6CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent7 ;
SocialAction:socialActionInRole :agent7CafeUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

```

<http://www.OntoCarer.org/CollegeModel.rdf#agent7CafeUserRole1PayForCafeFoodOrderSocialAction1>

```

:agent7CafeUserRole1PayForCafeFoodOrderSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:PayForCafeFoodOrderSocialAction ;
OntoCarer-Link-
Ontology:payForCafeFoodOrderSocialActionAssistedByPayForCafeFoodOrderSocialActionAssisterA
ction :agent14CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssister
Action1 ,
:agent6CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssister
Action1 ,
:agent9CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssister
Action1 ;
SocialAction:socialActionHasAgent :agent7 ;
SocialAction:socialActionInRole :agent7CafeUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

```

<http://www.OntoCarer.org/CollegeModel.rdf#agent7CafeUserRole1SeeCafeFoodMenuSocialAction1>
:agent7CafeUserRole1SeeCafeFoodMenuSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:SeeCafeFoodMenuSocialAction ;
OntoCarer-Link-
Ontology:seeCafeFoodMenuSocialActionAssistedBySeeCafeFoodMenuSocialActionAssisterAction
:agent14CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1 ,
:agent6CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1 ,
:agent9CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent7 ;
SocialAction:socialActionInRole :agent7CafeUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7DresserBasicFunctionRole1>
:agent7DresserBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:DresserRole ;
Agent:roleHasAgent :agent7 ;
Agent:roleHasSocialAction
:agent7DresserBasicFunctionRole1PutClothesOnSocialAction1 ,
:agent7DresserBasicFunctionRole1RemoveClothesSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7DresserBasicFunctionRole1PutClothesOnSocialAction1>
:agent7DresserBasicFunctionRole1PutClothesOnSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:PutClothesOnSocialAction ;
OntoCarer-Link-
Ontology:putClothesOnSocialActionAssistedByPutClothesOnSocialActionAssisterAction
:agent14DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialActionAssisterAction1 ,
:agent6DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent7 ;
SocialAction:socialActionInRole
:agent7DresserBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7DresserBasicFunctionRole1RemoveClothesSocialAction1>
:agent7DresserBasicFunctionRole1RemoveClothesSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:RemoveClothesSocialAction ;
OntoCarer-Link-
Ontology:removeClothesSocialActionAssistedByRemoveClothesSocialActionAssisterAction :agent14DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialActionAssisterAction1 ,
:agent6DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialAction

```

AssisterAction1 ;
                                SocialAction:socialActionHasAgent :agent7 ;
                                SocialAction:socialActionInRole
:agent7DresserBasicFunctionRole1 ;
                                SocialAction:socialActionHasDesireIntentionLevel 1 ;
                                SocialAction:socialActionHasQualifier 4 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent7DrinkerBasicFunctionRole1

```

```

:agent7DrinkerBasicFunctionRole1 rdf:type owl:NamedIndividual ,
                                Agent:DrinkerRole ;
                                Agent:roleHasAgent :agent7 ;
                                Agent:roleHasSocialAction
:agent7DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ;
                                Agent:roleHasDesireIntentionalLevel 1 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent7DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1

```

```

:agent7DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 rdf:type owl:NamedIndividual ,
                                SocialAction:UseDrinkingUtensilSocialAction ;
                                OntoCarer-Link-

```

```

Ontology:useDrinkingUtensilSocialActionAssistedByUseDrinkingUtensilSocialActionAssisterAction

```

```

:agent14DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1 ,

```

```

:agent6DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1 ,

```

```

:agent9DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1 ;

```

```

                                SocialAction:socialActionHasAgent :agent7 ;
                                SocialAction:socialActionInRole

```

```

:agent7DrinkerBasicFunctionRole1 ;

```

```

                                SocialAction:socialActionHasDesireIntentionLevel 1 ;
                                SocialAction:socialActionHasQualifier 4 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent7EaterBasicFunctionRole1

```

```

:agent7EaterBasicFunctionRole1 rdf:type owl:NamedIndividual ,
                                Agent:EaterRole ;
                                Agent:roleHasAgent :agent7 ;
                                Agent:roleHasSocialAction
:agent7EaterBasicFunctionRole1FeedSelfSocialAction1 ,
                                :agent7EaterBasicFunctionRole1UseCutlerySocialAction1 ,
                                :agent7EaterBasicFunctionRole1UseCutleryToFeedSocialAction1
;
                                Agent:roleHasDesireIntentionalLevel 1 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent7EaterBasicFunctionRole1FeedSelfSocialAction1

```

```

:agent7EaterBasicFunctionRole1FeedSelfSocialAction1 rdf:type owl:NamedIndividual ,
                                SocialAction:FeedSelfSocialAction ;
                                OntoCarer-Link-

```

```

Ontology:feedSelfSocialActionAssistedByFeedSelfSocialActionAssisterAction

```

```

:agent14EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssisterAction1 ,

```

:agent9EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister
Action1 ;

OntoCarer-Link-

Ontology:feedSelfSocialActionAssisterActionOffFeedSelfSocialAction
:agent6EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent7 ;
SocialAction:socialActionInRole :agent7EaterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7EaterBasicFunction>
Role1UseCutlerySocialAction1

:agent7EaterBasicFunctionRole1UseCutlerySocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:UseCutlerySocialAction ;

OntoCarer-Link-

Ontology:useCutlerySocialActionAssistedByUseCutlerySocialActionAssister
Action :agent14EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ,

:agent6EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ,

:agent9EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent7 ;
SocialAction:socialActionInRole :agent7EaterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7EaterBasicFunction>
Role1UseCutleryToFeedSocialAction1

:agent7EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:UseCutleryToFeedSocialAction ;

OntoCarer-Link-

Ontology:useCutleryToFeedSocialActionAssistedByUseCutleryToFeedSocialActionAssisterAction
:agent14EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ,

:agent6EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ,

:agent9EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent7 ;
SocialAction:socialActionInRole

:agent7EaterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7InformationSeekerUser>
Role1

:agent7InformationSeekerUserRole1 rdf:type owl:NamedIndividual ,

Agent:InformationSeekerUserRole ;
Agent:roleHasAgent :agent7 ;
Agent:roleHasSocialAction
:agent7InformationSeekerUserRole1AnswerQuestionsSocialAction1 ,

:agent7InformationSeekerUserRole1AskQuestionsSocialAction1 ,
:agent7InformationSeekerUserRole1FindAnswersSocialAction1
,

:agent7InformationSeekerUserRole1HearQuestions&AnswersSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7InformationSeekerUserRole1AnswerQuestionsSocialAction1>
Role1AnswerQuestionsSocialAction1
:agent7InformationSeekerUserRole1AnswerQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:AnswerQuestionsSocialAction ;
SocialAction:socialActionHasAgent :agent7 ;
SocialAction:socialActionInRole
:agent7InformationSeekerUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7InformationSeekerUserRole1AskQuestionsSocialAction1>
Role1AskQuestionsSocialAction1
:agent7InformationSeekerUserRole1AskQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:AskQuestionsSocialAction ;
SocialAction:socialActionHasAgent :agent7 ;
SocialAction:socialActionInRole
:agent7InformationSeekerUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7InformationSeekerUserRole1FindAnswersSocialAction1>
Role1FindAnswersSocialAction1
:agent7InformationSeekerUserRole1FindAnswersSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FindAnswersSocialAction ;
OntoCarer-Link-
Ontology:findAnswersSocialActionAssistedByFindAnswersSocialActionAssister
Action :agent2InformationAssistantProviderRole1FindInformationToAnswerQuestions
SocialAction1 ,

:agent3InformationAssistantProviderRole1FindInformationToAnswerQuestions
SocialAction1 ;
SocialAction:socialActionHasAgent :agent7 ;
SocialAction:socialActionInRole
:agent7InformationSeekerUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7LeftHandComponent1>
:agent7LeftHandComponent1 rdf:type owl:NamedIndividual ,
BodyComponents:LeftHandComponent ;
BodyComponents:bodyComponentHasPerson :agent7 ;
BodyComponents:bodyComponentHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7LeftHandDexterityAbility1>

:agent7LeftHandDexterityAbility1 rdf:type owl:NamedIndividual ,
BodyAbilities:HandDexterityAbility ;
BodyComponents:bodyComponentHasPerson :agent7 ;
BodyAbilities:bodyAbilityHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7LeftHandMovementAbility1>

:agent7LeftHandMovementAbility1 rdf:type owl:NamedIndividual ,
BodyAbilities:HandMovementAbility ;
BodyComponents:bodyComponentHasPerson :agent7 ;
BodyAbilities:bodyAbilityHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7LibraryUserRole1>

:agent7LibraryUserRole1 rdf:type owl:NamedIndividual ,
Agent:LibraryUserRole ;
Agent:roleHasAgent :agent7 ;
Agent:roleHasSocialAction :agent7LibraryUserRole1AnswerQuestionsSocialAction1 ,
:agent7LibraryUserRole1AskQuestionsSocialAction1 ,
:agent7LibraryUserRole1CheckOutLibraryBookSocialAction1 ,
:agent7LibraryUserRole1FindBookOnShelvesSocialAction1 ,
:agent7LibraryUserRole1FindLibrarySocialAction1 ,
:agent7LibraryUserRole1NavigateToLibrarySocialAction1 ,
:agent7LibraryUserRole1ReturnOfLibraryBookSocialAction1 ,
:agent7LibraryUserRole1SearchCatalogueSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7LibraryUserRole1AnswerQuestionsSocialAction1>

:agent7LibraryUserRole1AnswerQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:AnswerQuestionsSocialAction ;
SocialAction:socialActionHasAgent :agent7 ;
SocialAction:socialActionInRole :agent7LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7LibraryUserRole1AskQuestionsSocialAction1>

:agent7LibraryUserRole1AskQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:AskQuestionsSocialAction ;
SocialAction:socialActionHasAgent :agent7 ;
SocialAction:socialActionInRole :agent7LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7LibraryUserRole1CheckOutLibraryBookSocialAction1>

:agent7LibraryUserRole1CheckOutLibraryBookSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:CheckOutLibraryBookSocialAction ;
OntoCarer-Link-
Ontology:checkOutLibraryBookSocialActionAssistedByCheckOutLibraryBookSocial

ActionAssisterAction :agent8LibraryUserRoleAssisterRole1CheckOutLibraryBookSocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent7 ;
SocialAction:socialActionInRole :agent7LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7LibraryUserRole1Find>

BookOnShelvesSocialAction1

:agent7LibraryUserRole1FindBookOnShelvesSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FindBookOnShelvesSocialAction ;
OntoCarer-Link-

Ontology:findBookOnShelvesSocialActionAssistedByFindBookOnShelvesSocial
ActionAssisterAction :agent14LibraryUserRoleAssisterRole1FindBookOnShelvesSocialActionAssister
Action1 ,

:agent6LibraryUserRoleAssisterRole1FindBookOnShelvesSocialActionAssister
Action1 ,

:agent8LibraryUserRoleAssisterRole1FindBookOnShelvesSocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent7 ;
SocialAction:socialActionInRole :agent7LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7LibraryUserRole1Find>

LibrarySocialAction1

:agent7LibraryUserRole1FindLibrarySocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FindLibrarySocialAction ;
OntoCarer-Link-

Ontology:findLibrarySocialActionAssistedByFindLibrarySocialActionAssister
Action :agent12LibraryUserRoleAssisterRole1FindLibrarySocialActionAssisterAction1 ,

:agent14LibraryUserRoleAssisterRole1FindLibrarySocialActionAssisterAction1 ,

:agent6LibraryUserRoleAssisterRole1FindLibrarySocialActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent7 ;
SocialAction:socialActionInRole :agent7LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7LibraryUserRole1>

NavigateToLibrarySocialAction1

:agent7LibraryUserRole1NavigateToLibrarySocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:NavigateToLibrarySocialAction ;
OntoCarer-Link-

Ontology:navigateToLibrarySocialActionAssistedByNavigateToLibrarySocial
ActionAssisterAction :agent12LibraryUserRoleAssisterRole1NavigateToLibrarySocialActionAssister
Action1 ,

:agent14LibraryUserRoleAssisterRole1NavigateToLibrarySocialActionAssister
Action1 ,

:agent6LibraryUserRoleAssisterRole1NavigateToLibrarySocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent7 ;

SocialAction:socialActionInRole :agent7LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7LibraryUserRole1>

ReturnOfLibraryBookSocialAction1

:agent7LibraryUserRole1ReturnOfLibraryBookSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:ReturnOfLibraryBookSocialAction ;
OntoCarer-Link-

Ontology:returnOfLibraryBookSocialActionAssistedByReturnOfLibraryBookSocialActionAssisterAction
:agent8LibraryUserRoleAssisterRole1ReturnOfLibraryBookSocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent7 ;
SocialAction:socialActionInRole :agent7LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7LibraryUserRole1>

SearchCatalogueSocialAction1

:agent7LibraryUserRole1SearchCatalogueSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:SearchCatalogueForItemSocialAction ;
OntoCarer-Link-

Ontology:searchCatalogueForItemSocialActionAssistedBySearchCatalogueForItemSocialActionAssisterAction
:agent8LibraryUserRoleAssisterRole1SearchCatalogueSocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent7 ;
SocialAction:socialActionInRole :agent7LibraryUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7RightHandComponent1>

:agent7RightHandComponent1 rdf:type owl:NamedIndividual ,
BodyComponents:RightHandComponent ;

BodyComponents:bodyComponentHasPerson :agent7 ;
BodyComponents:bodyComponentHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7RightHandDexterity>

Ability1

:agent7RightHandDexterityAbility1 rdf:type owl:NamedIndividual ,
BodyAbilities:HandDexterityAbility ;
BodyAbilities:bodyAbilityHasPerson :agent7 ;
BodyAbilities:bodyAbilityHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7RightHandMovement>

Ability1

:agent7RightHandMovementAbility1 rdf:type owl:NamedIndividual ,
BodyAbilities:HandMovementAbility ;
BodyAbilities:bodyAbilityHasPerson :agent7 ;
BodyAbilities:bodyAbilityHasQualifier 4 .

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent7StudentUserRole1
:agent7StudentUserRole1 rdf:type owl:NamedIndividual ,
    Agent:StudentUserRole ;
    Agent:roleHasAgent :agent7 ;
    Agent:roleHasSocialAction :agent7StudentUserRole1AnswerQuestionsSocialAction1 ,
        :agent7StudentUserRole1AskQuestionsSocialAction1 ,
        :agent7StudentUserRole1DoPracticalTasksSocialAction1 ,
        :agent7StudentUserRole1EnrolOnCourseSocialAction1 ,
        :agent7StudentUserRole1ExitTeachingRoomSocialAction1 ,
        :agent7StudentUserRole1FindTeachingRoomSocialAction1 ,
        :agent7StudentUserRole1HearLectureSocialAction1 ,
        :agent7StudentUserRole1NavigateToTeachingRoomSocialAction1 ,
        :agent7StudentUserRole1PayCourseFeesSocialAction1 ,
        :agent7StudentUserRole1SeeLectureSocialAction1 ,
        :agent7StudentUserRole1SubmitAssignmentSocialAction1 ,
        :agent7StudentUserRole1WriteAssignmentSocialAction1 ;
    Agent:roleHasDesireIntentionalLevel 1 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent7StudentUserRole1AnswerQuestionsSocialAction1
:agent7StudentUserRole1AnswerQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:AnswerQuestionsSocialAction ;
    SocialAction:socialActionHasAgent :agent7 ;
    SocialAction:socialActionInRole :agent7StudentUserRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent7StudentUserRole1AskQuestionsSocialAction1
:agent7StudentUserRole1AskQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:AskQuestionsSocialAction ;
    SocialAction:socialActionHasAgent :agent7 ;
    SocialAction:socialActionInRole :agent7StudentUserRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent7StudentUserRole1DoPracticalTasksSocialAction1
:agent7StudentUserRole1DoPracticalTasksSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:DoPracticalTasksSocialAction ;
    OntoCarer-Link-
    Ontology:doPracticalTasksSocialActionAssistedByDoPracticalTasksSocialActionAssisterAction
:agent15StudentUserRoleAssisterRole1DoPracticalTasksSocialActionAssister
Action1 ,

:agent5StudentUserRoleAssisterRole1DoPracticalTasksSocialActionAssister
Action1 ;

    SocialAction:socialActionHasAgent :agent7 ;
    SocialAction:socialActionInRole :agent7StudentUserRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 4 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent7StudentUserRole1EnrolOnCourseSocialAction1

```

```

:agent7StudentUserRole1EnrolOnCourseSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:EnrolOnCourseSocialAction ;
    OntoCarer-Link-
Ontology:enrolStudentOnCourseSocialActionAssistedByEnrolStudentOnCourse
SocialActionAssisterAction
:agent11StudentUserRoleAssisterRoleEnrolOnCourseSocialActionAssisterAction1 ,

:agent14StudentUserRoleAssisterRole1EnrolOnCourseSocialActionAssisterAction1 ,

:agent6StudentUserRoleAssisterRole1EnrolOnCourseSocialActionAssisterAction1 ;
    SocialAction:socialActionHasAgent :agent7 ;
    SocialAction:socialActionInRole :agent7StudentUserRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 3 .

### http://www.OntoCarer.org/CollegeModel.rdf#agent7StudentUserRole1Exit
TeachingRoomSocialAction1
:agent7StudentUserRole1ExitTeachingRoomSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:ExitTeachingRoomSocialAction ;
    OntoCarer-Link-
Ontology:exitTeachingRoomSocialActionAssistedByExitTeachingRoomSocialActionAssisterAction
:agent14StudentUserRoleAssisterRole1ExitTeachingRoomSocialActionAssister
Action1 ,

:agent6StudentUserRoleAssisterRole1ExitTeachingRoomSocialActionAssister
Action1 ;
    SocialAction:socialActionHasAgent :agent7 ;
    SocialAction:socialActionInRole :agent7StudentUserRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

### http://www.OntoCarer.org/CollegeModel.rdf#agent7StudentUserRole1Find
TeachingRoomSocialAction1
:agent7StudentUserRole1FindTeachingRoomSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:FindTeachingRoomSocialAction ;
    OntoCarer-Link-
Ontology:findTeachingRoomSocialActionAssistedByFindTeachingRoomSocialActionAssisterAction
:agent12StudentUserRoleAssisterRole1FindTeachingRoomSocialActionAssister
Action1 ,

:agent14StudentUserRoleAssisterRole1FindTeachingRoomSocialActionAssister
Action1 ,

:agent6StudentUserRoleAssisterRole1FindTeachingRoomSocialActionAssister
Action1 ;
    SocialAction:socialActionHasAgent :agent7 ;
    SocialAction:socialActionInRole :agent7StudentUserRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

### http://www.OntoCarer.org/CollegeModel.rdf#agent7StudentUserRole1Hear
LectureSocialAction1
:agent7StudentUserRole1HearLectureSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:HearLectureSocialAction ;
    SocialAction:socialActionHasAgent :agent7 ;
    SocialAction:socialActionInRole :agent7StudentUserRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;

```

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7StudentUserRole1>

NavigateToTeachingRoomSocialAction1

:agent7StudentUserRole1NavigateToTeachingRoomSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:NavigateToTeachingRoomSocialAction ;
OntoCarer-Link-

Ontology:navigateToTeachingRoomSocialActionAssisterActionOfNavigateTo
TeachingRoomSocialAction

:agent12StudentUserRoleAssisterRole1NavigateToTeachingRoomSocialAction
AssisterAction1 ,

:agent14StudentUserRoleAssisterRole1NavigateToTeachingRoomSocialAction
AssisterAction1 ,

:agent6StudentUserRoleAssisterRole1NavigateToTeachingRoomSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent7 ;
SocialAction:socialActionInRole :agent7StudentUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7StudentUserRole1Pay>

CourseFeesSocialAction1

:agent7StudentUserRole1PayCourseFeesSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:PayCourseFeesSocialAction ;
OntoCarer-Link-

Ontology:payCourseFeesSocialActionAssistedByPayCourseFeesSocialAction
AssisterAction :agent10StudentUserRoleAssisterRolePayCourseFeesSocialActionAssisterAction1 ,

:agent14StudentUserRoleAssisterRole1PayCourseFeesSocialActionAssister
Action1 ,

:agent6StudentUserRoleAssisterRole1PayCourseFeesSocialActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent7 ;
SocialAction:socialActionInRole :agent7StudentUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 3 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7StudentUserRole1See>

LectureSocialAction1

:agent7StudentUserRole1SeeLectureSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:SeeLectureSocialAction ;

SocialAction:socialActionHasAgent :agent7 ;
SocialAction:socialActionInRole :agent7StudentUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7StudentUserRole1Submit>

AssignmentSocialAction1

:agent7StudentUserRole1SubmitAssignmentSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:SubmitAssignmentSocialAction ;
OntoCarer-Link-

Ontology:submitAssignmentSocialActionAssistedBySubmitAssignmentSocialActionAssisterAction
:agent14StudentUserRoleAssisterRole1SubmitAssignmentSocialActionAssister

Action1 ,

:agent15StudentUserRoleAssisterRoleSubmitAssignmentSocialActionAssister
Action1 ,

:agent5StudentUserRoleAssisterRole1SubmitAssignmentSocialActionAssister
Action1 ,

:agent6StudentUserRoleAssisterRole1SubmitAssignmentSocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent7 ;
SocialAction:socialActionInRole :agent7StudentUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7StudentUserRole1Take>

NotesFromSpeakerSocialAction1

:agent7StudentUserRole1TakeNotesFromSpeakerSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:TakeNotesFromSpeakerSocialAction ;

OntoCarer-Link-

Ontology:takeNotesFromSpeakerSocialActionAssistedByTakeNotesFromSpeaker
SocialActionAssisterAction

:agent14StudentUserRoleAssisterRole1TakeNotesFromSpeakerSocialAction
AssisterAction1 ,

:agent5StudentUserRole1TakeNotesFromSpeakerSocialAction1 ,

:agent6StudentUserRoleAssisterRole1TakeNotesFromSpeakerSocialActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent7 ;
SocialAction:socialActionInRole :agent7StudentUserRole1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7StudentUserRole1Take>

NotesFromTextSocialAction1

:agent7StudentUserRole1TakeNotesFromTextSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:TakeNotesFromTextSocialAction ;

OntoCarer-Link-

Ontology:takeNotesFromTextSocialActionAssistedByTakeNotesFromTextSocial
ActionAssisterAction

:agent14StudentUserRoleAssisterRole1TakeNotesFromTextSocialActionAssister
Action1 ,

:agent6StudentUserRoleAssisterRole1TakeNotesFromTextSocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent7 ;
SocialAction:socialActionInRole :agent7StudentUserRole1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7StudentUserRole1Write>

AssignmentSocialAction1

:agent7StudentUserRole1WriteAssignmentSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:WriteAssignmentSocialAction ;

SocialAction:socialActionHasAgent :agent7 ;
SocialAction:socialActionInRole :agent7StudentUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7ToileterBasicFunction>

Role1

:agent7ToileterBasicFunctionRole1 rdf:type owl:NamedIndividual ,
 Agent:ToileterRole ;
 Agent:roleHasAgent :agent7 ;
 Agent:roleHasSocialAction
 :agent7ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,
 :agent7ToileterBasicFunctionRole1FindToiletSocialAction1 ,
 :agent7ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
 :agent7ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,
 :agent7ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ;
 Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7ToileterBasicFunction>

Role1CleanSelfAfterToiletSocialAction1

:agent7ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 rdf:type owl:NamedIndividual ,
 SocialAction:CleanSelfAfterToiletSocialAction ;
 OntoCarer-Link-

Ontology:cleanSelfAfterToiletSocialActionAssistedByCleanSelfAfterToilet
 SocialActionAssisterAction

:agent14ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocial
 ActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocial
 ActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent7 ;
 SocialAction:socialActionInRole

:agent7ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
 SocialAction:socialActionHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7ToileterBasicFunction>

Role1FindToiletSocialAction1

:agent7ToileterBasicFunctionRole1FindToiletSocialAction1 rdf:type owl:NamedIndividual ,
 SocialAction:FindToiletSocialAction ;
 OntoCarer-Link-

Ontology:findToiletSocialActionAssistedByFindToiletSocialActionAssister

Action :agent12ToileterBasicFunctionRoleAssisterRole1FindToiletSocialAction
 AssisterAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1FindToiletSocialAction
 AssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1FindToiletSocialActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent7 ;
 SocialAction:socialActionInRole

:agent7ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
 SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7ToileterBasicFunction>

Role1NavigateToToiletSocialAction1

:agent7ToileterBasicFunctionRole1NavigateToToiletSocialAction1 rdf:type owl:NamedIndividual ,
 SocialAction:NavigateToToiletSocialAction ;

OntoCarer-Link-

Ontology:navigateToToiletSocialActionAssistedByNavigateToToiletSocialActionAssisterAction
:agent12ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocial
ActionAssisterAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent7 ;
SocialAction:socialActionInRole

:agent7ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7ToileterBasicFunction>
Role1RemoveRelevantClothesSocialAction1

:agent7ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 rdf:type
owl:NamedIndividual ,

SocialAction:RemoveRelevantClothesSocialAction ;

OntoCarer-Link-

Ontology:removeRelevantClothesSocialActionAssistedByRemoveRelevant
ClothesSocialActionAssisterAction

:agent14ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocial
ActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocial
ActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent7 ;
SocialAction:socialActionInRole

:agent7ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7ToileterBasicFunction>
Role1RestoreRelevantClothesSocialAction1

:agent7ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 rdf:type
owl:NamedIndividual ,

SocialAction:RestoreRelevantClothesSocialAction ;

OntoCarer-Link-

Ontology:restoreRelevantClothesSocialActionAssistedByRestoreRelevantClothesSocialActionAssister
Action :agent14ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocial
ActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocial
ActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent7 ;
SocialAction:socialActionInRole

:agent7ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7WasherBasicFunction>
Role1

:agent7WasherBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:WasherRole ;

```

Agent:roleHasAgent :agent7 ;
Agent:roleHasSocialAction
:agent7WasherBasicFunctionRole1DrySelfSocialAction1 ,
        :agent7WasherBasicFunctionRole1WashSelfSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent7WasherBasicFunctionRole1DrySelfSocialAction1

```

```

Role1DrySelfSocialAction1
:agent7WasherBasicFunctionRole1DrySelfSocialAction1 rdf:type owl:NamedIndividual ,
        SocialAction:DrySelfSocialAction ;

```

```

OntoCarer-Link-

```

```

Ontology:drySelfSocialActionAssistedByDrySelfSocialActionAssisterAction
:agent14WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssisterAction1 ,

```

```

:agent6WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssisterAction1 ;

```

```

SocialAction:socialActionHasAgent :agent7 ;
SocialAction:socialActionInRole :agent7WasherBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 4 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent7WasherBasicFunctionRole1WashSelfSocialAction1

```

```

:agent7WasherBasicFunctionRole1WashSelfSocialAction1 rdf:type owl:NamedIndividual ,
        SocialAction:WashSelfSocialAction ;

```

```

OntoCarer-Link-

```

```

Ontology:washSelfSocialActionAssistedByWashSelfSocialActionAssisterAction
:agent14WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssisterAction1 ,

```

```

:agent6WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssisterAction1 ;

```

```

SocialAction:socialActionHasAgent :agent7 ;
SocialAction:socialActionInRole :agent7WasherBasicFunctionRole1
;

```

```

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 4 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent8

```

```

:agent8 rdf:type owl:NamedIndividual ,
        Agent:Person ;

```

```

Agent:agentHasBasicFunctionRole :agent8DresserBasicFunctionRole1 ,
        :agent8DrinkerBasicFunctionRole1 ,
        :agent8EaterBasicFunctionRole1 ,
        :agent8ToileterBasicFunctionRole1 ,
        :agent8WasherBasicFunctionRole1 ;

```

```

Agent:agentHasLocation :library1 ;
Agent:agentHasOrganisationMembership :ontoCarerCollegeOrganisation ;
Agent:agentHasProviderRole :agent8LibraryAssistantProviderRole1 ;
Agent:agentHasRole :agent8DresserBasicFunctionRole1 ,

```

```

        :agent8DrinkerBasicFunctionRole1 ,
        :agent8EaterBasicFunctionRole1 ,
        :agent8LibraryAssistantProviderRole1 ,
        :agent8ToileterBasicFunctionRole1 ,
        :agent8WasherBasicFunctionRole1 ;

```

Agent:agentHasRoleAssisterRole :agent8LibraryUserRoleAssisterRole1 ;
 Agent:agentHasSocialAction :agent8DresserBasicFunctionRole1PutClothesOnSocialAction1 ,
 :agent8DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
 :agent8DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
 :agent8EaterBasicFunctionRole1FeedSelfSocialAction1 ,
 :agent8EaterBasicFunctionRole1UseCutlerySocialAction1 ,
 :agent8EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
 :agent8LibraryAssistantProviderRole1AnswerQuestionsSocialAction1 ,
 :agent8LibraryAssistantProviderRole1AskQuestionsSocialAction1 ,
 :agent8LibraryAssistantProviderRole1FindAnswersSocialAction1 ,

 :agent8LibraryAssistantProviderRole1ProcessCheckOutLibraryBookSocialAction1 ,

 :agent8LibraryAssistantProviderRole1ProcessReturnOfLibraryBookSocialAction1 ,
 :agent8ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,
 :agent8ToileterBasicFunctionRole1FindToiletSocialAction1 ,
 :agent8ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
 :agent8ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,
 :agent8ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,
 :agent8WasherBasicFunctionRole1DrySelfSocialAction1 ,
 :agent8WasherBasicFunctionRole1WashSelfSocialAction1 ,
 :agent8LibraryAssistantProviderRole1HearQuestions&AnswersSocialAction1 ;
 Agent:agentHasSocialActionAssisterAction
 :agent8LibraryUserRoleAssisterRole1CheckOutLibraryBookSocialActionAssister
 Action1 ,

 :agent8LibraryUserRoleAssisterRole1FindBookOnShelvesSocialActionAssister
 Action1 ,

 :agent8LibraryUserRoleAssisterRole1ReturnOfLibraryBookSocialActionAssister
 Action1 ,

 :agent8LibraryUserRoleAssisterRole1SearchCatalogueSocialActionAssister
 Action1 ;
 Agent:agentIsInBuilding :ontoCarerCollegeBuilding ;
 Agent:agentIsInOrganisation :ontoCarerCollegeOrganisation ;
 Agent:agentIsOnFloor :floorF1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent8DresserBasicFunction>
 Role1

:agent8DresserBasicFunctionRole1 rdf:type owl:NamedIndividual ,
 Agent:DresserRole ;
 Agent:roleHasAgent :agent8 ;
 Agent:roleHasSocialAction
 :agent8DresserBasicFunctionRole1PutClothesOnSocialAction1 ,

 :agent8DresserBasicFunctionRole1RemoveClothesSocialAction1 ;
 Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent8DresserBasicFunction>
 Role1PutClothesOnSocialAction1

:agent8DresserBasicFunctionRole1PutClothesOnSocialAction1 rdf:type owl:NamedIndividual ,
 SocialAction:PutClothesOnSocialAction ;
 OntoCarer-Link-
 Ontology:putClothesOnSocialActionAssistedByPutClothesOnSocialActionAssisterAction
 :agent14DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialAction
 AssisterAction1 ,

:agent6DresserBasicFunctionRole1PutClothesOnSocialAction1 ;
SocialAction:socialActionHasAgent :agent8 ;
SocialAction:socialActionInRole
:agent7DresserBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent8DresserBasicFunction>

Role1RemoveClothesSocialAction1
:agent8DresserBasicFunctionRole1RemoveClothesSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:RemoveClothesSocialAction ;
OntoCarer-Link-
Ontology:removeClothesSocialActionAssistedByRemoveClothesSocialAction
AssisterAction :agent14DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialAction
AssisterAction1 ,

:agent6DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialAction
AssisterAction1 ;
SocialAction:socialActionHasAgent :agent8 ;
SocialAction:socialActionInRole
:agent7DresserBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent8DrinkerBasicFunction>

Role1
:agent8DrinkerBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:DrinkerRole ;
Agent:roleHasAgent :agent8 ;
Agent:roleHasSocialAction
:agent8DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent8DrinkerBasicFunction>

Role1UseDrinkingUtensilSocialAction1
:agent8DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:UseDrinkingUtensilSocialAction ;
OntoCarer-Link-
Ontology:useDrinkingUtensilSocialActionAssistedByUseDrinkingUtensilSocial
ActionAssisterAction
:agent14DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1 ,

:agent6DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialAction
AssisterAction1 ,
:agent9DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialAction
AssisterAction1 ;
SocialAction:socialActionHasAgent :agent8 ;
SocialAction:socialActionInRole
:agent7DresserBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent8EaterBasicFunction>

Role1

```

:agent8EaterBasicFunctionRole1 rdf:type owl:NamedIndividual ,
    Agent:EaterRole ;
    Agent:roleHasAgent :agent8 ;
    Agent:roleHasSocialAction
:agent8EaterBasicFunctionRole1FeedSelfSocialAction1 ,
    :agent8EaterBasicFunctionRole1UseCutlerySocialAction1 ,
    :agent8EaterBasicFunctionRole1UseCutleryToFeedSocialAction1
;
    Agent:roleHasDesireIntentionalLevel 1 .

```

<http://www.OntoCarer.org/CollegeModel.rdf#agent8EaterBasicFunction>

Role1FeedSelfSocialAction1

```

:agent8EaterBasicFunctionRole1FeedSelfSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:FeedSelfSocialAction ;
    OntoCarer-Link-

```

Ontology:feedSelfSocialActionAssistedByFeedSelfSocialActionAssisterAction

```

:agent14EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister
Action1 ,

```

```

:agent6EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister
Action1 ,

```

```

:agent9EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister
Action1 ;

```

```

    SocialAction:socialActionHasAgent :agent8 ;
    SocialAction:socialActionInRole :agent7EaterBasicFunctionRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

```

<http://www.OntoCarer.org/CollegeModel.rdf#agent8EaterBasicFunction>

Role1UseCutlerySocialAction1

```

:agent8EaterBasicFunctionRole1UseCutlerySocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:UseCutlerySocialAction ;
    OntoCarer-Link-

```

Ontology:useCutlerySocialActionAssistedByUseCutlerySocialActionAssister

```

Action :agent14EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ,

```

```

:agent6EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ,

```

```

:agent9EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ;

```

```

    SocialAction:socialActionHasAgent :agent8 ;
    SocialAction:socialActionInRole :agent7EaterBasicFunctionRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 .

```

<http://www.OntoCarer.org/CollegeModel.rdf#agent8EaterBasicFunction>

Role1UseCutleryToFeedSocialAction1

```

:agent8EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:UseCutleryToFeedSocialAction ;
    OntoCarer-Link-

```

Ontology:useCutleryToFeedSocialActionAssistedByUseCutleryToFeedSocialActionAssisterAction

```

:agent14EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ,

```

:agent6EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ,

:agent9EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent8 ;
SocialAction:socialActionInRole

:agent8EaterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent8LibraryAssistant>
ProviderRole1

:agent8LibraryAssistantProviderRole1 rdf:type owl:NamedIndividual ,
Agent:LibraryAssistantProviderRole ;
Agent:roleHasAgent :agent8 ;
Agent:roleHasSocialAction

:agent8LibraryAssistantProviderRole1AnswerQuestionsSocialAction1 ,

:agent8LibraryAssistantProviderRole1AskQuestionsSocialAction1 ,

:agent8LibraryAssistantProviderRole1FindAnswersSocialAction1 ,

:agent8LibraryAssistantProviderRole1ProcessCheckOutLibraryBookSocialAction1 ,

:agent8LibraryAssistantProviderRole1ProcessReturnOfLibraryBookSocialAction1 ,

:agent8LibraryAssistantProviderRole1HearQuestions&AnswersSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent8LibraryAssistantProvider>
Role1AnswerQuestionsSocialAction1

:agent8LibraryAssistantProviderRole1AnswerQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:AnswerQuestionsSocialAction ;
SocialAction:socialActionHasAgent :agent8 ;
SocialAction:socialActionInRole

:agent8LibraryAssistantProviderRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent8LibraryAssistant>
ProviderRole1AskQuestionsSocialAction1

:agent8LibraryAssistantProviderRole1AskQuestionsSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:AskQuestionsSocialAction ;
SocialAction:socialActionHasAgent :agent8 ;
SocialAction:socialActionInRole

:agent8LibraryAssistantProviderRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent8LibraryAssistant>
ProviderRole1FindAnswersSocialAction1

:agent8LibraryAssistantProviderRole1FindAnswersSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FindAnswersSocialAction ;
SocialAction:socialActionHasAgent :agent8 ;

SocialAction:socialActionInRole
:agent8LibraryAssistantProviderRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent8LibraryAssistant>

ProviderRole1ProcessCheckOutLibraryBookSocialAction1
:agent8LibraryAssistantProviderRole1ProcessCheckOutLibraryBookSocialAction1 rdf:type
owl:NamedIndividual ,

SocialAction:ProcessCheckoutLibraryBookSocialAction ;
SocialAction:socialActionHasAgent :agent8 ;
SocialAction:socialActionInRole
:agent8LibraryAssistantProviderRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent8LibraryAssistant>

ProviderRole1ProcessReturnOfLibraryBookSocialAction1
:agent8LibraryAssistantProviderRole1ProcessReturnOfLibraryBookSocialAction1 rdf:type
owl:NamedIndividual ,

SocialAction:ProcessReturnOfLibraryBookSocialAction ;
SocialAction:socialActionHasAgent :agent8 ;
SocialAction:socialActionInRole
:agent8LibraryAssistantProviderRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent8LibraryUserRole>

AssisterRole1
:agent8LibraryUserRoleAssisterRole1 rdf:type owl:NamedIndividual ,
Agent:LibraryUserRoleAssisterRole ;
Agent:roleAssisterRoleHasSocialActionAssisterAction
:agent8LibraryUserRoleAssisterRole1CheckOutLibraryBookSocialAction
AssisterAction1 ,

:agent8LibraryUserRoleAssisterRole1FindBookOnShelvesSocialActionAssister
Action1 ,

:agent8LibraryUserRoleAssisterRole1ReturnOfLibraryBookSocialActionAssister
Action1 ;

Agent:roleHasAgent :agent8 ;
Agent:roleHasDesireIntentionLevel 1 ;
Agent:roleHasSocialActionAssisterAction
:agent8LibraryUserRoleAssisterRole1CheckOutLibraryBookSocialActionAssister
Action1 ,

:agent8LibraryUserRoleAssisterRole1FindBookOnShelvesSocialActionAssister
Action1 ,

:agent8LibraryUserRoleAssisterRole1ReturnOfLibraryBookSocialActionAssister

Action1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent8LibraryUserRole>

AssisterRole1CheckOutLibraryBookSocialActionAssisterAction1
:agent8LibraryUserRoleAssisterRole1CheckOutLibraryBookSocialActionAssister
Action1 rdf:type owl:NamedIndividual ,

SocialAction:CheckOutLibraryBookSocialActionAssisterAction ;
OntoCarer-Link-
Ontology:checkOutLibraryBookSocialActionAssisterActionOfCheckOutLibraryBookSocialAction
:agent15LibraryUserRole1CheckOutLibraryBookSocialAction1 ,
:agent1LibraryUserRole1CheckOutLibraryBookSocialAction1 ,
:agent4LibraryUserRole1CheckOutLibraryBookSocialAction1 ,
:agent5LibraryUserRole1CheckOutLibraryBookSocialAction1 ,
:agent7LibraryUserRole1CheckOutLibraryBookSocialAction1 ;
SocialAction:socialActionAssisterActionHasAgent
:agent8 ;
SocialAction:socialActionAssisterActionInRole
:agent8LibraryUserRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel
1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent8LibraryUserRole>

AssisterRole1FindBookOnShelvesSocialActionAssisterAction1
:agent8LibraryUserRoleAssisterRole1FindBookOnShelvesSocialActionAssisterAction1 rdf:type
owl:NamedIndividual ,

SocialAction:FindBookOnShelvesSocialActionAssisterAction ;
OntoCarer-Link-
Ontology:findBookOnShelvesSocialActionAssisterActionOfFindBookOnLibraryShelvesSocialAction
:agent15LibraryUserRole1FindBookOnShelvesSocialAction1 ,
:agent1LibraryUserRole1FindBookOnShelvesSocialAction1 ,
:agent4LibraryUserRole1FindBookOnShelvesSocialAction1 ,
:agent5LibraryUserRole1FindBookOnShelvesSocialAction1 ,
:agent7LibraryUserRole1FindBookOnShelvesSocialAction1 ;
SocialAction:socialActionAssisterActionHasAgent
:agent8 ;
SocialAction:socialActionAssisterActionInRole
:agent8LibraryUserRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1
;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent8LibraryUserRole>

AssisterRole1ReturnOfLibraryBookSocialActionAssisterAction1
:agent8LibraryUserRoleAssisterRole1ReturnOfLibraryBookSocialActionAssisterAction1 rdf:type
owl:NamedIndividual ,

SocialAction:ReturnOfLibraryBookSocialActionAssisterAction ;
OntoCarer-Link-
Ontology:returnOfLibraryBookSocialActionAssisterActionOfReturnOfLibraryBookSocialAction
:agent15LibraryUserRole1ReturnOfLibraryBookSocialAction1 ,
:agent1LibraryUserRole1ReturnOfLibraryBookSocialAction1 ,
:agent4LibraryUserRole1ReturnOfLibraryBookSocialAction1 ,
:agent5LibraryUserRole1ReturnOfLibraryBookSocialAction1 ,
:agent7LibraryUserRole1ReturnOfLibraryBookSocialAction1 ;
SocialAction:socialActionAssisterActionHasAgent
:agent8 ;
SocialAction:socialActionAssisterActionInRole
:agent8LibraryUserRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel
1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent8LibraryUserRole>
AssisterRole1SearchCatalogueSocialActionAssisterAction1
:agent8LibraryUserRoleAssisterRole1SearchCatalogueSocialActionAssister
Action1 rdf:type owl:NamedIndividual ,

SocialAction:SearchCatalogueForItemSocialActionAssisterAction ;
OntoCarer-Link-
Ontology:searchCatalogueForItemSocialActionAssisterActionOfSearch
CatalogueForItemSocialAction :agent15LibraryUserRole1SearchCatalogueSocialAction1 ,
:agent1LibraryUserRole1SearchCatalogueSocialAction1 ,
:agent4LibraryUserRole1SearchCatalogueSocialAction1 ,
:agent7LibraryUserRole1SearchCatalogueSocialAction1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent8ToileterBasicFunction>
Role1

:agent8ToileterBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:ToileterRole ;
Agent:roleHasAgent :agent8 ;
Agent:roleHasSocialAction
:agent8ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,
:agent8ToileterBasicFunctionRole1FindToiletSocialAction1 ,
:agent8ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,
:agent8ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,
:agent9ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent8ToileterBasicFunction>
Role1CleanSelfAfterToiletSocialAction1

:agent8ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 rdf:type owl:NamedIndividual ,
 SocialAction:CleanSelfAfterToiletSocialAction ;
 OntoCarer-Link-
 Ontology:cleanSelfAfterToiletSocialActionAssistedByCleanSelfAfterToilet
 SocialActionAssisterAction
 :agent14ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocialActionAssisterAction1 ,
 :agent6ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocial
 ActionAssisterAction1 ;
 SocialAction:socialActionHasAgent :agent8 ;
 SocialAction:socialActionInRole
 :agent8ToileterBasicFunctionRole1 ;
 SocialAction:socialActionHasDesireIntentionLevel 1 ;
 SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent8ToileterBasicFunction>

Role1FindToiletSocialAction1

:agent8ToileterBasicFunctionRole1FindToiletSocialAction1 rdf:type owl:NamedIndividual ,
 SocialAction:FindToiletSocialAction ;
 OntoCarer-Link-
 Ontology:findToiletSocialActionAssistedByFindToiletSocialActionAssister
 Action :agent12ToileterBasicFunctionRoleAssisterRole1FindToiletSocialAction
 AssisterAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1FindToiletSocialAction
 AssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1FindToiletSocialActionAssisterAction1 ;
 SocialAction:socialActionHasAgent :agent8 ;
 SocialAction:socialActionInRole
 :agent8ToileterBasicFunctionRole1 ;
 SocialAction:socialActionHasDesireIntentionLevel 1 ;
 SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent8ToileterBasicFunction>

Role1NavigateToToiletSocialAction1

:agent8ToileterBasicFunctionRole1NavigateToToiletSocialAction1 rdf:type owl:NamedIndividual ,
 SocialAction:NavigateToToiletSocialAction ;
 OntoCarer-Link-
 Ontology:navigateToToiletSocialActionAssistedByNavigateToToiletSocialActionAssisterAction
 :agent12ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
 AssisterAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
 AssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialAction
 AssisterAction1 ;
 SocialAction:socialActionHasAgent :agent8 ;
 SocialAction:socialActionInRole
 :agent8ToileterBasicFunctionRole1 ;
 SocialAction:socialActionHasDesireIntentionLevel 1 ;
 SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent8ToileterBasicFunction>

Role1RemoveRelevantClothesSocialAction1

:agent8ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 rdf:type owl:NamedIndividual ,
 SocialAction:RemoveRelevantClothesSocialAction ;
 OntoCarer-Link-
 Ontology:removeRelevantClothesSocialActionAssistedByRemoveRelevantClothesSocialActionAssisterAction
 :agent14ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocialActionAssisterAction1 ,
 :agent6ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocialActionAssisterAction1 ;
 SocialAction:socialActionHasAgent :agent8 ;
 SocialAction:socialActionInRole
 :agent8ToileterBasicFunctionRole1 ;
 SocialAction:socialActionHasDesireIntentionLevel 1 ;
 SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent8ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1>

:agent8ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 rdf:type owl:NamedIndividual ,
 SocialAction:RestoreRelevantClothesSocialAction ;
 OntoCarer-Link-
 Ontology:restoreRelevantClothesSocialActionAssistedByRestoreRelevantClothesSocialActionAssisterAction :agent14ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocialActionAssisterAction1 ,
 :agent6ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocialActionAssisterAction1 ;
 SocialAction:socialActionHasAgent :agent8 ;
 SocialAction:socialActionInRole
 :agent8ToileterBasicFunctionRole1 ;
 SocialAction:socialActionHasDesireIntentionLevel 1 ;
 SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent8WasherBasicFunctionRole1>

:agent8WasherBasicFunctionRole1 rdf:type owl:NamedIndividual ,
 Agent:WasherRole ;
 Agent:roleHasAgent :agent8 ;
 Agent:roleHasSocialAction
 :agent8WasherBasicFunctionRole1DrySelfSocialAction1 ,
 :agent8WasherBasicFunctionRole1WashSelfSocialAction1 ;
 Agent:roleHasDesireIntentionLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent8WasherBasicFunctionRole1DrySelfSocialAction1>

:agent8WasherBasicFunctionRole1DrySelfSocialAction1 rdf:type owl:NamedIndividual ,
 SocialAction:DrySelfSocialAction ;
 OntoCarer-Link-
 Ontology:drySelfSocialActionAssistedByDrySelfSocialActionAssisterAction :agent14WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssisterAction1 ,
 :agent6WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssisterAction1 ;
 SocialAction:socialActionHasAgent :agent8 ;

SocialAction:socialActionInRole :agent8WasherBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent8WasherBasicFunction>

Role1WashSelfSocialAction1

:agent8WasherBasicFunctionRole1WashSelfSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:WashSelfSocialAction ;
OntoCarer-Link-

Ontology:washSelfSocialActionAssistedByWashSelfSocialActionAssisterAction
:agent14WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssister
Action1 ,

:agent6WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent8 ;
SocialAction:socialActionInRole :agent8WasherBasicFunctionRole1

;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent9>

:agent9 rdf:type owl:NamedIndividual ,
Agent:Person ;

Agent:agentHasBasicFunctionRole :agent8EaterBasicFunctionRole1 ,
:agent9DresserBasicFunctionRole1 ,
:agent9DrinkerBasicFunctionRole1 ,
:agent9EaterBasicFunctionRole1 ,
:agent9ToileterBasicFunctionRole1 ,
:agent9WasherBasicFunctionRole1 ;

Agent:agentHasLocation :cafe1 ;

Agent:agentHasOrganisationMembership :ontoCarerCollegeOrganisation ;

Agent:agentHasProviderRole :agent9CafeAssistantProviderRole1 ;

Agent:agentHasRole :agent9CafeAssistantProviderRole1 ,
:agent9CafeUserRole1 ,
:agent9DresserBasicFunctionRole1 ,
:agent9DrinkerBasicFunctionRole1 ,
:agent9ToileterBasicFunctionRole1 ,
:agent9WasherBasicFunctionRole1 ;

Agent:agentHasRoleAssisterRole :agent9CafeUserRoleAssisterRole1 ,
:agent9DrinkerBasicFunctionRoleAssisterRole1 ,
:agent9EaterBasicFunctionRoleAssisterRole1 ;

Agent:agentHasSocialAction

:agent9CafeAssistantProviderRole1DeliverCafeFoodOrderSocialAction1 ,
:agent9CafeAssistantProviderRole1TakeCafeFoodOrderSocialAction1 ,

:agent9CafeAssistantProviderRole1TakePaymentForCafeFoodOrderSocialAction1 ,
:agent9CafeUserRole1MakeCafeFoodOrderSocialAction1 ,
:agent9CafeUserRole1PayForCafeFoodOrderSocialAction1 ,
:agent9CafeUserRole1SeeCafeFoodMenuSocialAction1 ,
:agent9DresserBasicFunctionRole1PutClothesOnSocialAction1 ,
:agent9DresserBasicFunctionRole1RemoveClothesSocialAction1 ,
:agent9DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent9EaterBasicFunctionRole1FeedSelfSocialAction1 ,
:agent9EaterBasicFunctionRole1UseCutlerySocialAction1 ,
:agent9EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,
:agent9EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssister
Action1 ,

```

AssisterAction1 ,
    :agent9EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialAction
    :agent9ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,
    :agent9ToileterBasicFunctionRole1FindToiletSocialAction1 ,
    :agent9ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
    :agent9ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,
    :agent9ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ,
    :agent9WasherBasicFunctionRole1DrySelfSocialAction1 ,
    :agent9WasherBasicFunctionRole1WashSelfSocialAction1 ;
    Agent:agentHasSocialActionAssisterAction
:agent9CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssister
Action1 ,

:agent9CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssister
Action1 ,

:agent9CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1 ,

:agent9DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialAction
AssisterAction1 ,

:agent9EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssister
Action1 ;
    Agent:agentHasUserRole :agent9CafeUserRole1 ;
    Agent:agentIsInBuilding :ontoCarerCollegeBuilding ;
    Agent:agentIsInOrganisation :ontoCarerCollegeOrganisation ;
    Agent:agentIsOnFloor :floorF0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent9CafeAssistantProvider
Role1

```

```

:agent9CafeAssistantProviderRole1 rdf:type owl:NamedIndividual ,
    Agent:CafeAssistantProviderRole ;
    Agent:roleHasAgent :agent9 ;
    Agent:roleHasSocialAction
:agent9CafeAssistantProviderRole1DeliverCafeFoodOrderSocialAction1 ,

:agent9CafeAssistantProviderRole1TakeCafeFoodOrderSocialAction1 ,

:agent9CafeAssistantProviderRole1TakePaymentForCafeFoodOrderSocialAction1 ;
    Agent:roleHasDesireIntentionalLevel 1 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent9CafeAssistantProvider

```

```

Role1DeliverCafeFoodOrderSocialAction1
:agent9CafeAssistantProviderRole1DeliverCafeFoodOrderSocialAction1 rdf:type owl:NamedIndividual
,
    SocialAction:DeliverCafeFoodOrderSocialAction ;
    SocialAction:socialActionHasAgent :agent9 ;
    SocialAction:socialActionInRole
:agent9CafeAssistantProviderRole1 ;
    SocialAction:socialActionHasDesireIntentionLevel 1 ;
    SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent9CafeAssistantProvider

```

```

Role1TakeCafeFoodOrderSocialAction1
:agent9CafeAssistantProviderRole1TakeCafeFoodOrderSocialAction1 rdf:type owl:NamedIndividual ,
    SocialAction:TakeCafeFoodOrderSocialAction ;
    SocialAction:socialActionHasAgent :agent9 ;

```

SocialAction:socialActionInRole
:agent9CafeAssistantProviderRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent9CafeAssistantProvider>

Role1TakePaymentForCafeFoodOrderSocialAction1

:agent9CafeAssistantProviderRole1TakePaymentForCafeFoodOrderSocialAction1 rdf:type
owl:NamedIndividual ,

SocialAction:TakePaymentForCafeFoodOrderSocialAction ;

SocialAction:socialActionHasAgent :agent9 ;

SocialAction:socialActionInRole

:agent9CafeAssistantProviderRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent9CafeUserRole1>

:agent9CafeUserRole1 rdf:type owl:NamedIndividual ,

Agent:CafeUserRole ;

Agent:roleHasAgent :agent9 ;

Agent:roleHasSocialAction :agent9CafeUserRole1MakeCafeFoodOrderSocialAction1 ,

:agent9CafeUserRole1PayForCafeFoodOrderSocialAction1 ,

:agent9CafeUserRole1SeeCafeFoodMenuSocialAction1 ;

Agent:roleHasDesireIntentionLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent9CafeUserRole1MakeCafe>

FoodOrderSocialAction1

:agent9CafeUserRole1MakeCafeFoodOrderSocialAction1 rdf:type owl:NamedIndividual ,

SocialAction:MakeCafeFoodOrderSocialAction ;

OntoCarer-Link-

Ontology:makeCafeFoodOrderSocialActionAssistedByMakeCafeFoodOrderSocial

ActionAssisterAction :agent14CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssister
Action1 ,

:agent6CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent9 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent9CafeUserRole1PayFor>

CafeFoodOrderSocialAction1

:agent9CafeUserRole1PayForCafeFoodOrderSocialAction1 rdf:type owl:NamedIndividual ,

SocialAction:PayForCafeFoodOrderSocialAction ;

OntoCarer-Link-

Ontology:payForCafeFoodOrderSocialActionAssistedByPayForCafeFoodOrderSocialActionAssisterA

ction :agent14CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssister

Action1 ,

:agent6CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssister
Action1 ;

SocialAction:socialActionHasAgent :agent9 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent9CafeUserRole1SeeCafeFoodMenuSocialAction1>
:agent9CafeUserRole1SeeCafeFoodMenuSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:SeeCafeFoodMenuSocialAction ;
OntoCarer-Link-
Ontology:seeCafeFoodMenuSocialActionAssistedBySeeCafeFoodMenuSocialAction
AssisterAction :agent14CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1 ,
:agent6CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent9 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent9CafeUserRoleAssisterRole1>
:agent9CafeUserRoleAssisterRole1 rdf:type owl:NamedIndividual ,
Agent:CafeUserRoleAssisterRole ;
Agent:roleHasAgent :agent9 ;
Agent:roleHasDesireIntentionLevel 1 ;
Agent:roleHasSocialActionAssisterAction
:agent9CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssister
Action1 ,
:agent9CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssister
Action1 ,
:agent9CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent9CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssisterAction1>
:agent9CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssister
Action1 rdf:type owl:NamedIndividual ,
SocialAction:MakeCafeFoodOrderSocialActionAssisterAction ;
OntoCarer-Link-
Ontology:makeCafeFoodOrderSocialActionAssisterOfMakeCafeFoodOrderSocialAction
:agent14CafeUserRole1MakeCafeFoodOrderSocialAction1 ,
:agent15CafeUserRole1MakeCafeFoodOrderSocialAction1 ,
:agent1CafeUserRole1MakeCafeFoodOrderSocialAction1 ,
:agent2CafeUserRole1MakeCafeFoodOrderSocialAction1 ,
:agent3CafeUserRole1MakeCafeFoodOrderSocialAction1 ,
:agent4CafeUserRole1MakeCafeFoodOrderSocialAction1 ,
:agent5CafeUserRole1MakeCafeFoodOrderSocialAction1 ,
:agent7CafeUserRole1MakeCafeFoodOrderSocialAction1 ;
SocialAction:socialActionAssisterActionHasAgent
:agent9 ;
SocialAction:socialActionAssisterActionInRole
:agent9CafeUserRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent9CafeUserRoleAssister>

Role1PayForCafeFoodOrderSocialActionAssisterAction1

:agent9CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssisterAction1 rdf:type owl:NamedIndividual ,

SocialAction:PayForCafeFoodOrderSocialActionAssisterAction ;

OntoCarer-Link-

Ontology:payforCafeFoodOrderSocialActionAssisterActionOfPayForCafeFoodOrderSocialAction

:agent14CafeUserRole1PayForCafeFoodOrderSocialAction1 ,

:agent15CafeUserRole1PayForCafeFoodOrderSocialAction1 ,

:agent1CafeUserRole1PayForCafeFoodOrderSocialAction1 ,

:agent2CafeUserRole1PayForCafeFoodOrderSocialAction1 ,

:agent3CafeUserRole1PayForCafeFoodOrderSocialAction1 ,

:agent4CafeUserRole1PayForCafeFoodOrderSocialAction1 ,

:agent5CafeUserRole1PayForCafeFoodOrderSocialAction1 ,

:agent6CafeUserRole1PayForCafeFoodOrderSocialAction1 ,

:agent7CafeUserRole1PayForCafeFoodOrderSocialAction1 ;

SocialAction:socialActionAssisterActionHasAgent

:agent9 ;

SocialAction:socialActionAssisterActionInRole

:agent9CafeUserRoleAssisterRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1

;

SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent9CafeUserRoleAssister>

Role1SeeCafeFoodMenuSocialActionAssisterAction1

:agent9CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1 rdf:type owl:NamedIndividual ,

SocialAction:SeeCafeFoodMenuSocialActionAssisterAction ;

OntoCarer-Link-

Ontology:seeCafeFoodMenuSocialActionAssisterActionOfSeeCafeFoodMenuSocial

Action :agent14CafeUserRole1SeeCafeFoodMenuSocialAction1 ,

:agent15CafeUserRole1SeeCafeFoodMenuSocialAction1 ,

:agent1CafeUserRole1SeeCafeFoodMenuSocialAction1 ,

:agent2CafeUserRole1SeeCafeFoodMenuSocialAction1 ,

:agent3CafeUserRole1SeeCafeFoodMenuSocialAction1 ,

:agent4CafeUserRole1SeeCafeFoodMenuSocialAction1 ,

:agent5CafeUserRole1SeeCafeFoodMenuSocialAction1 ,


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:agent6CafeUserRole1SeeCafeFoodMenuSocialAction1 ,
:agent7CafeUserRole1SeeCafeFoodMenuSocialAction1 ;
                                SocialAction:socialActionAssisterActionHasAgent
:agent9 ;
                                SocialAction:socialActionAssisterActionInRole
:agent9CafeUserRoleAssisterRole1 ;
                                SocialAction:socialActionHasDesireIntentionLevel 1 ;
                                SocialAction:socialActionHasQualifier 0 .

```

<http://www.OntoCarer.org/CollegeModel.rdf#agent9DresserBasicFunction>

```

Role1
:agent9DresserBasicFunctionRole1 rdf:type owl:NamedIndividual ,
                                Agent:DresserRole ;
                                Agent:roleHasAgent :agent9 ;
                                Agent:roleHasSocialAction
:agent9DresserBasicFunctionRole1PutClothesOnSocialAction1 ,
:agent9DresserBasicFunctionRole1RemoveClothesSocialAction1 ;
                                Agent:roleHasDesireIntentionalLevel 1 .

```

<http://www.OntoCarer.org/CollegeModel.rdf#agent9DresserBasicFunction>

```

Role1PutClothesOnSocialAction1
:agent9DresserBasicFunctionRole1PutClothesOnSocialAction1 rdf:type owl:NamedIndividual ,
                                SocialAction:PutClothesOnSocialAction ;
                                OntoCarer-Link-
Ontology:putClothesOnSocialActionAssistedByPutClothesOnSocialActionAssisterAction
:agent14DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialAction
AssisterAction1 ,
:agent6DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialAction
AssisterAction1 ;
                                SocialAction:socialActionHasAgent :agent9 ;
                                SocialAction:socialActionInRole
:agent9DresserBasicFunctionRole1 ;
                                SocialAction:socialActionHasDesireIntentionLevel 1 ;
                                SocialAction:socialActionHasQualifier 0 .

```

<http://www.OntoCarer.org/CollegeModel.rdf#agent9DresserBasicFunction>

```

Role1RemoveClothesSocialAction1
:agent9DresserBasicFunctionRole1RemoveClothesSocialAction1 rdf:type owl:NamedIndividual ,
                                SocialAction:RemoveClothesSocialAction ;
                                OntoCarer-Link-
Ontology:removeClothesSocialActionAssistedByRemoveClothesSocialAction
AssisterAction :agent14DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialAction
AssisterAction1 ,
:agent6DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialAction
AssisterAction1 ;
                                SocialAction:socialActionHasAgent :agent9 ;
                                SocialAction:socialActionInRole
:agent9DresserBasicFunctionRole1 ;
                                SocialAction:socialActionHasDesireIntentionLevel 1 ;
                                SocialAction:socialActionHasQualifier 0 .

```

<http://www.OntoCarer.org/CollegeModel.rdf#agent9DrinkerBasicFunction>

Role1

:agent9DrinkerBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:DrinkerRole ;
Agent:roleHasAgent :agent9 ;
Agent:roleHasSocialAction
:agent9DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent9DrinkerBasicFunction>

Role1UseDrinkingUtensilSocialAction1

:agent9DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:UseDrinkingUtensilSocialAction ;
OntoCarer-Link-

Ontology:useDrinkingUtensilSocialActionAssistedByUseDrinkingUtensilSocial
ActionAssisterAction

:agent14DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1 ,

:agent6DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialAction
AssisterAction1 ;

SocialAction:socialActionHasAgent :agent9 ;
SocialAction:socialActionInRole

:agent9DrinkerBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent9DrinkerBasicFunctionRole>

AssisterRole1

:agent9DrinkerBasicFunctionRoleAssisterRole1 rdf:type owl:NamedIndividual ,
Agent:DrinkerRoleAssisterRole ;
Agent:roleAssisterRoleHasAgent :agent9 ;
Agent:roleAssisterRoleHasSocialActionAssisterAction
:agent9DrinkerBasicFunctionRoleAssisterRole1 ;
Agent:roleHasSocialActionAssisterAction

:agent9DrinkerRoleAssisterRole1UseDrinkingUtensilSocialActionAssister
Action1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent9DrinkerBasicFunction>

RoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1

:agent9DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialAction
AssisterAction1 rdf:type owl:NamedIndividual ,

SocialAction:UseDrinkingUtensilSocialActionAssisterAction ;

OntoCarer-Link-

Ontology:useDrinkingUtensilSocialActionAssisterActionOfUseDrinkingUtensil
SocialAction :agent10DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,

:agent11DrinkerRole1UseDrinkingUtensilSocialAction1 ,

:agent12DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,

:agent13DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,

:agent14DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,

:agent15DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,

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:agent1DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent2DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent3DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent4DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent5DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent6DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent7DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ,
:agent8DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1 ;
SocialAction:socialActionAssisterActionHasAgent :agent9 ;
SocialAction:socialActionAssisterActionInRole :agent9DrinkerBasicFunctionRoleAssisterRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent9EaterBasicFunctionRole1
:agent9EaterBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:EaterRole ;
Agent:roleHasAgent :agent9 ;
Agent:roleHasSocialAction
:agent9EaterBasicFunctionRole1FeedSelfSocialAction1 ,
:agent9EaterBasicFunctionRole1UseCutlerySocialAction1 ,
:agent9EaterBasicFunctionRole1UseCutleryToFeedSocialAction1
;
Agent:roleHasDesireIntentionalLevel 1 .

```

```

###
http://www.OntoCarer.org/CollegeModel.rdf#agent9EaterBasicFunctionRole1FeedSelfSocialAction1
:agent9EaterBasicFunctionRole1FeedSelfSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FeedSelfSocialAction ;
OntoCarer-Link-
Ontology:feedSelfSocialActionAssistedByFeedSelfSocialActionAssisterAction
:agent14EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssisterAction1 ,
:agent6EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent9 ;
SocialAction:socialActionInRole :agent9EaterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

```

```

###
http://www.OntoCarer.org/CollegeModel.rdf#agent9EaterBasicFunctionRole1UseCutlerySocialAction1
:agent9EaterBasicFunctionRole1UseCutlerySocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:UseCutlerySocialAction ;
OntoCarer-Link-
Ontology:useCutlerySocialActionAssistedByUseCutlerySocialActionAssisterAction
:agent14EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssisterAction1 ,

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:agent6EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent9 ;
SocialAction:socialActionInRole :agent9EaterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

###

<http://www.OntoCarer.org/CollegeModel.rdf#agent9EaterBasicFunctionRole1UseCutleryToFeedSocialAction1>

:agent9EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:UseCutleryToFeedSocialAction ;
OntoCarer-Link-

Ontology:useCutleryToFeedSocialActionAssistedByUseCutleryToFeedSocialActionAssisterAction
:agent14EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialActionAssisterAction1 ,

:agent6EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent9 ;
SocialAction:socialActionInRole

:agent9EaterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent9EaterBasicFunctionRoleAssisterRole1>

:agent9EaterBasicFunctionRoleAssisterRole1 rdf:type owl:NamedIndividual ,
Agent:EaterRoleAssisterRole ;

Agent:roleAssisterRoleHasAgent :agent9 ;

Agent:roleAssisterRoleHasSocialActionAssisterAction

:agent9EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssisterAction1 ,

:agent9EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssisterAction1 ,

:agent9EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialActionAssisterAction1 ;

Agent:roleHasDesireIntentionLevel 1 ;

Agent:roleHasSocialActionAssisterAction

:agent9EaterRoleAssisterRole1FeedSelfSocialActionAssisterAction1 ,

:agent9EaterRoleAssisterRole1UseCutlerySocialActionAssisterAction1 ,

:agent9EaterRoleAssisterRole1UseCutleryToFeedSocialActionAssisterAction1 .

###

<http://www.OntoCarer.org/CollegeModel.rdf#agent9EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssisterAction1>

:agent9EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssisterAction1 rdf:type
owl:NamedIndividual ,

SocialAction:FeedSelfSocialActionAssisterAction ;

OntoCarer-Link-

Ontology:feedSelfSocialActionAssisterActionOffFeedSelfSocialAction

:agent10EaterBasicFunctionRole1FeedSelfSocialAction1 ,

:agent11EaterBasicFunctionRole1FeedSelfSocialAction1 ,

:agent12EaterBasicFunctionRole1FeedSelfSocialAction1 ,

:agent13EaterBasicFunctionRole1FeedSelfSocialAction1 ,

:agent14EaterBasicFunctionRole1FeedSelfSocialAction1 ,
 :agent15EaterBasicFunctionRole1FeedSelfSocialAction1 ,
 :agent1EaterBasicFunctionRole1FeedSelfSocialAction1 ,
 :agent2EaterBasicFunctionRole1FeedSelfSocialAction1 ,
 :agent3EaterBasicFunctionRole1FeedSelfSocialAction1 ,
 :agent4EaterBasicFunctionRole1FeedSelfSocialAction1 ,
 :agent5EaterBasicFunctionRole1FeedSelfSocialAction1 ,
 :agent6EaterBasicFunctionRole1FeedSelfSocialAction1 ,
 :agent7EaterBasicFunctionRole1FeedSelfSocialAction1 ,
 :agent8EaterBasicFunctionRole1FeedSelfSocialAction1 ;
 SocialAction:socialActionAssisterActionHasAgent
 :agent9 ;
 SocialAction:socialActionAssisterActionInRole
 :agent9EaterBasicFunctionRoleAssisterRole1 ;
 SocialAction:socialActionHasDesireIntentionLevel 1 ;
 SocialAction:socialActionHasQualifier 0 .

###

<http://www.OntoCarer.org/CollegeModel.rdf#agent9EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssisterAction1>
 :agent9EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssisterAction1 rdf:type
 owl:NamedIndividual ,

SocialAction:UseCutlerySocialActionAssisterAction ;
 OntoCarer-Link-
 Ontology:useCutlerySocialActionAssisterActionOfUseCutlerySocialAction
 :agent10EaterBasicFunctionRole1UseCutlerySocialAction1 ,
 :agent11EaterBasicFunctionRole1UseCutlerySocialAction1 ,
 :agent12EaterBasicFunctionRole1UseCutlerySocialAction1 ,
 :agent13EaterBasicFunctionRole1UseCutlerySocialAction1 ,
 :agent14EaterBasicFunctionRole1UseCutlerySocialAction1 ,
 :agent15EaterBasicFunctionRole1UseCutlerySocialAction1 ,
 :agent1EaterBasicFunctionRole1UseCutlerySocialAction1 ,
 :agent2EaterBasicFunctionRole1UseCutlerySocialAction1 ,
 :agent3EaterBasicFunctionRole1UseCutlerySocialAction1 ,
 :agent4EaterBasicFunctionRole1UseCutlerySocialAction1 ,
 :agent5EaterBasicFunctionRole1UseCutlerySocialAction1 ,
 :agent6EaterBasicFunctionRole1UseCutlerySocialAction1 ,

```

:agent7EaterBasicFunctionRole1UseCutlerySocialAction1 ,
:agent8EaterBasicFunctionRole1UseCutlerySocialAction1 ;
                                                    SocialAction:socialActionAssisterActionHasAgent
:agent9 ;
                                                    SocialAction:socialActionAssisterActionInRole
:agent9EaterBasicFunctionRoleAssisterRole1 ;
                                                    SocialAction:socialActionHasDesireIntentionLevel 1
;
                                                    SocialAction:socialActionHasQualifier 0 .

```

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```

http://www.OntoCarer.org/CollegeModel.rdf#agent9EaterBasicFunctionRoleAssisterRole1UseCutlery
ToFeedSocialActionAssisterAction1

```

```

:agent9EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialActionAssisterAction1 rdf:type
owl:NamedIndividual ,

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SocialAction:UseCutleryToFeedSocialActionAssisterAction ;

```

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OntoCarer-Link-

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Ontology:useCutleryToFeedSocialActionAssisterActionOfUseCutleryToFeedSocialAction

```

```

:agent10EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,

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:agent11EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,

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:agent12EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,

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:agent14EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,

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:agent15EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,

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:agent1EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,

```

```

:agent2EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,

```

```

:agent3EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,

```

```

:agent4EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,

```

```

:agent5EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,

```

```

:agent6EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,

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:agent7EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ,

```

```

:agent8EaterBasicFunctionRole1UseCutleryToFeedSocialAction1 ;

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SocialAction:socialActionAssisterActionHasAgent :agent9 ;

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```

SocialAction:socialActionAssisterActionInRole

```

```

:agent9EaterBasicFunctionRoleAssisterRole1 ;

```

```

SocialAction:socialActionHasDesireIntentionLevel 1 ;

```

```

SocialAction:socialActionHasQualifier 0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#agent9ToileterBasicFunctionRole1

```

```

:agent9ToileterBasicFunctionRole1 rdf:type owl:NamedIndividual ,

```

```

Agent:ToileterRole ;

```

```

Agent:roleHasAgent :agent9 ;

```

Agent:roleHasSocialAction
:agent9ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 ,
:agent9ToileterBasicFunctionRole1FindToiletSocialAction1 ,
:agent9ToileterBasicFunctionRole1NavigateToToiletSocialAction1 ,
:agent9ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 ,
:agent9ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 ;
Agent:roleHasDesireIntentionalLevel 1 .

###

<http://www.OntoCarer.org/CollegeModel.rdf#agent9ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1>

:agent9ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:CleanSelfAfterToiletSocialAction ;
OntoCarer-Link-

Ontology:cleanSelfAfterToiletSocialActionAssistedByCleanSelfAfterToiletSocialActionAssisterAction
:agent14ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocialActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent9 ;
SocialAction:socialActionInRole

:agent9ToileterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

###

<http://www.OntoCarer.org/CollegeModel.rdf#agent9ToileterBasicFunctionRole1FindToiletSocialAction1>

:agent9ToileterBasicFunctionRole1FindToiletSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:FindToiletSocialAction ;
OntoCarer-Link-

Ontology:findToiletSocialActionAssistedByFindToiletSocialActionAssisterAction

:agent12ToileterBasicFunctionRoleAssisterRole1FindToiletSocialActionAssisterAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1FindToiletSocialActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1FindToiletSocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent9 ;
SocialAction:socialActionInRole

:agent9ToileterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

###

<http://www.OntoCarer.org/CollegeModel.rdf#agent9ToileterBasicFunctionRole1NavigateToToiletSocialAction1>

:agent9ToileterBasicFunctionRole1NavigateToToiletSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:NavigateToToiletSocialAction ;
OntoCarer-Link-

Ontology:navigateToToiletSocialActionAssistedByNavigateToToiletSocialActionAssisterAction

:agent12ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialActionAssisterAction1 ,

:agent14ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent9 ;
SocialAction:socialActionInRole
:agent9ToileterBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

###

<http://www.OntoCarer.org/CollegeModel.rdf#agent9ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1>

:agent9ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 rdf:type
owl:NamedIndividual ,

SocialAction:RemoveRelevantClothesSocialAction ;
OntoCarer-Link-

Ontology:removeRelevantClothesSocialActionAssistedByRemoveRelevantClothesSocialActionAssisterAction

:agent14ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocialActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocialActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent9 ;
SocialAction:socialActionInRole

:agent9ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

###

<http://www.OntoCarer.org/CollegeModel.rdf#agent9ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1>

:agent9ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1 rdf:type
owl:NamedIndividual ,

SocialAction:RestoreRelevantClothesSocialAction ;
OntoCarer-Link-

Ontology:restoreRelevantClothesSocialActionAssistedByRestoreRelevantClothesSocialActionAssisterAction

:agent14ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocialActionAssisterAction1 ,

:agent6ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocialActionAssisterAction1 ;

SocialAction:socialActionHasAgent :agent9 ;
SocialAction:socialActionInRole

:agent9ToileterBasicFunctionRole1 ;

SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent9WasherBasicFunctionRole1>

:agent9WasherBasicFunctionRole1 rdf:type owl:NamedIndividual ,
Agent:WasherRole ;

Agent:roleHasAgent :agent9 ;
Agent:roleHasSocialAction

:agent9WasherBasicFunctionRole1DrySelfSocialAction1 ,

:agent9WasherBasicFunctionRole1WashSelfSocialAction1 ;
Agent:roleHasDesireIntentionLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent9WasherBasicFunctionRole1>

Role1DrySelfSocialAction1
:agent9WasherBasicFunctionRole1DrySelfSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:DrySelfSocialAction ;
OntoCarer-Link-
Ontology:drySelfSocialActionAssistedByDrySelfSocialActionAssisterAction
:agent14WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssisterAction1 ,
:agent6WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssisterAction1 ;
SocialAction:socialActionHasAgent :agent9 ;
SocialAction:socialActionInRole :agent9WasherBasicFunctionRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent9WasherBasicFunction>

Role1WashSelfSocialAction1
:agent9WasherBasicFunctionRole1WashSelfSocialAction1 rdf:type owl:NamedIndividual ,
SocialAction:WashSelfSocialAction ;
OntoCarer-Link-
Ontology:washSelfSocialActionAssistedByWashSelfSocialActionAssisterAction
:agent14WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssister
Action1 ,
:agent6WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssister
Action1 ;
SocialAction:socialActionHasAgent :agent9 ;
SocialAction:socialActionInRole :agent9WasherBasicFunctionRole1
;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#artsStaffRoom1>

:artsStaffRoom1 rdf:type owl:NamedIndividual ,
Buildings:StaffRoom ;
Buildings:roomHasPortal :artsStaffRoom1Portal1 ;
Buildings:roomsInBuilding :ontoCarerCollegeBuilding ;
Buildings:roomsInCorridor :corridorF0C3 ;
Buildings:roomsOnFloor :floorF0 .

<http://www.OntoCarer.org/CollegeModel.rdf#artsStaffRoom1Portal1>

:artsStaffRoom1Portal1 rdf:type owl:NamedIndividual ,
Buildings:Portal ;
Buildings:portalHasCorridor :corridorF0C3 ;
Buildings:portalHasRoom :artsStaffRoom1 .

<http://www.OntoCarer.org/CollegeModel.rdf#cafe1>

:cafe1 rdf:type owl:NamedIndividual ,
Buildings:CafeRoom ;
Buildings:roomHasPortal :cafe1Portal1 ;
Buildings:roomsInBuilding :ontoCarerCollegeBuilding ;
Buildings:roomsInCorridor :corridorF0C2 ;
Buildings:roomsOnFloor :floorF0 .

<http://www.OntoCarer.org/CollegeModel.rdf#cafe1Portal1>

:cafe1Portal1 rdf:type owl:NamedIndividual ,
Buildings:Portal ;
Buildings:portalHasCorridor :corridorF0C2 ;

Buildings:portalHasRoom :cafe1 .

http://www.OntoCarer.org/CollegeModel.rdf#classroom1
:classroom1 rdf:type owl:NamedIndividual ,
Buildings:ClassRoom ;
Buildings:roomHasPortal :classroom1Portal1 ;
Buildings:roomsInBuilding :ontoCarerCollegeBuilding ;
Buildings:roomsInCorridor :corridorF0C1 ,
:corridorF0C2 ,
:corridorF0C3 ;
Buildings:roomsOnFloor :floorF0 .

http://www.OntoCarer.org/CollegeModel.rdf#classroom1Portal1
:classroom1Portal1 rdf:type owl:NamedIndividual ,
Buildings:Portal ;
Buildings:portalHasCorridor :corridorF0C1 ;
Buildings:portalHasRoom :classroom1 .

http://www.OntoCarer.org/CollegeModel.rdf#classroom2
:classroom2 rdf:type owl:NamedIndividual ,
Buildings:ClassRoom ;
Buildings:roomHasPortal :classroom2Portal1 ;
Buildings:roomsInBuilding :ontoCarerCollegeBuilding ;
Buildings:roomsInCorridor :corridorF0C3 ;
Buildings:roomsOnFloor :floorF0 .

http://www.OntoCarer.org/CollegeModel.rdf#classroom2Portal1
:classroom2Portal1 rdf:type owl:NamedIndividual ,
Buildings:Portal ;
Buildings:portalHasCorridor :corridorF0C3 ;
Buildings:portalHasRoom :classroom2 .

http://www.OntoCarer.org/CollegeModel.rdf#classroom3
:classroom3 rdf:type owl:NamedIndividual ,
Buildings:ClassRoom ;
Buildings:roomHasPortal :classroom3Portal1 ;
Buildings:roomsInBuilding :ontoCarerCollegeBuilding ;
Buildings:roomsInCorridor :corridorF1C4 ,
:corridorF1C5 ,
:corridorF1C6 ;
Buildings:roomsOnFloor :floorF1 .

http://www.OntoCarer.org/CollegeModel.rdf#classroom3Portal1
:classroom3Portal1 rdf:type owl:NamedIndividual ,
Buildings:Portal ;
Buildings:portalHasCorridor :corridorF1C4 ;
Buildings:portalHasRoom :classroom3 .

http://www.OntoCarer.org/CollegeModel.rdf#classroom4
:classroom4 rdf:type owl:NamedIndividual ,
Buildings:ClassRoom ;
Buildings:roomHasPortal :classroom4Portal1 ;
Buildings:roomsInBuilding :ontoCarerCollegeBuilding ;

Buildings:roomsInCorridor :corridorF1C6 ;
Buildings:roomsOnFloor :floorF1 .

http://www.OntoCarer.org/CollegeModel.rdf#classroom4Portal1
:classroom4Portal1 rdf:type owl:NamedIndividual ,
Buildings:Portal ;
Buildings:portalHasCorridor :corridorF1C6 ;
Buildings:portalHasRoom :classroom4 .

http://www.OntoCarer.org/CollegeModel.rdf#classroom5
:classroom5 rdf:type owl:NamedIndividual ,
Buildings:ClassRoom ;
Buildings:roomHasPortal :classroom5Portal1 ;
Buildings:roomsInBuilding :ontoCarerCollegeBuilding ;
Buildings:roomsInCorridor :corridorF1C5 ;
Buildings:roomsOnFloor :floorF1 .

http://www.OntoCarer.org/CollegeModel.rdf#classroom5Portal1
:classroom5Portal1 rdf:type owl:NamedIndividual ,
Buildings:Portal ;
Buildings:portalHasCorridor :corridorF1C5 ;
Buildings:portalHasRoom :classroom5 .

http://www.OntoCarer.org/CollegeModel.rdf#coffeeBar1
:coffeeBar1 rdf:type owl:NamedIndividual ,
Buildings:CoffeeBarRoom ;
Buildings:roomHasPortal :coffeeBar1Portal1 ;
Buildings:roomsInBuilding :ontoCarerCollegeBuilding ;
Buildings:roomsInCorridor :corridorF1C4 ,
:corridorF1C5 ;
Buildings:roomsOnFloor :floorF1 .

http://www.OntoCarer.org/CollegeModel.rdf#coffeeBar1Portal1
:coffeeBar1Portal1 rdf:type owl:NamedIndividual ,
Buildings:Portal ;
Buildings:portalHasCorridor :corridorF1C4 ;
Buildings:portalHasRoom :coffeeBar1 .

http://www.OntoCarer.org/CollegeModel.rdf#computerRoom1
:computerRoom1 rdf:type owl:NamedIndividual ,
Buildings:ComputerRoom ;
Buildings:roomHasPortal :computerRoom1Portal1 ;
Buildings:roomsInBuilding :ontoCarerCollegeBuilding ;
Buildings:roomsInCorridor :corridorF0C3 ;
Buildings:roomsOnFloor :floorF0 .

http://www.OntoCarer.org/CollegeModel.rdf#computerRoom1Portal1
:computerRoom1Portal1 rdf:type owl:NamedIndividual ,
Buildings:Portal ;
Buildings:portalHasCorridor :corridorF0C3 ;
Buildings:portalHasRoom :computerRoom1 .

http://www.OntoCarer.org/CollegeModel.rdf#computerRoom2
:computerRoom2 rdf:type owl:NamedIndividual ,
Buildings:ComputerRoom ;
Buildings:roomHasPortal :computerRoom2Portal1 ;
Buildings:roomsInBuilding :ontoCarerCollegeBuilding ;
Buildings:roomsInCorridor :corridorF1C6 ;
Buildings:roomsOnFloor :floorF1 .

http://www.OntoCarer.org/CollegeModel.rdf#computerRoom2Portal1
:computerRoom2Portal1 rdf:type owl:NamedIndividual ,
Buildings:Portal ;
Buildings:portalHasCorridor :corridorF1C6 ;
Buildings:portalHasRoom :computerRoom2 .

http://www.OntoCarer.org/CollegeModel.rdf#computerRoom3
:computerRoom3 rdf:type owl:NamedIndividual ,
Buildings:ComputerRoom ;
Buildings:roomHasPortal :computerRoom3 ;
Buildings:roomsInBuilding :ontoCarerCollegeBuilding ;
Buildings:roomsInCorridor :corridorF1C6 ;
Buildings:roomsOnFloor :floorF1 .

http://www.OntoCarer.org/CollegeModel.rdf#computerRoom3Portal1
:computerRoom3Portal1 rdf:type owl:NamedIndividual ,
Buildings:Portal ;
Buildings:portalHasCorridor :corridorF1C6 ;
Buildings:portalHasRoom :computerRoom3 .

http://www.OntoCarer.org/CollegeModel.rdf#corridorF0C1
:corridorF0C1 rdf:type owl:NamedIndividual ,
Buildings:Corridor ;
Buildings:corridorHasHandrail :handrail1CorridorF0C1 ,
:handrail2CorridorF0C1 ;
Buildings:corridorHasRoom :classroom1 ,
:femaleToilet1 ,
:reception1 ;
Buildings:corridorHasStairs :stairs1 ;
Buildings:corridorIsOnFloor :floorF0 .

http://www.OntoCarer.org/CollegeModel.rdf#corridorF0C2
:corridorF0C2 rdf:type owl:NamedIndividual ,
Buildings:Corridor ;
Buildings:corridorHasFireExit :fireExit1 ;
Buildings:corridorHasHandrail :handrail1CorridorF0C2 ,
:handrail2CorridorF0C2 ;
Buildings:corridorHasRoom :cafe1 ,
:classroom1 ,
:disabledToilet1 ,
:femaleToilet1 ,
:maleToilet1 ,
:managementRoom1 ,
:office1 ;
Buildings:corridorHasStairs :stairs2 ;
Buildings:corridorIsOnFloor :floorF0 .

http://www.OntoCarer.org/CollegeModel.rdf#corridorF0C3
:corridorF0C3 rdf:type owl:NamedIndividual ,
Buildings:Corridor ;
Buildings:corridorHasFireExit :fireExit2 ;
Buildings:corridorHasHandrail :handrail1CorridorF0C3 ,
:handrail2CorridorF0C3 ;
Buildings:corridorHasLift :lift1 ;
Buildings:corridorHasRoom :artsStaffRoom1 ,
:classroom2 ,
:computerRoom1 ,
:laboratory1 ,
:meetingRoom1 ,
:seminarRoom1 ,
:studentServices1 ,
:techRoom1 ;
Buildings:corridorHasStairs :stairs1 ;
Buildings:corridorIsOnFloor :floorF0 .

http://www.OntoCarer.org/CollegeModel.rdf#corridorF1C4
:corridorF1C4 rdf:type owl:NamedIndividual ,
Buildings:Corridor ;
Buildings:corridorHasHandrail :handrail1CorridorF1C4 ,
:handrail2CorridorF1C4 ;
Buildings:corridorHasRoom :classroom3 ,
:coffeeBar1 ,
:library1 ;
Buildings:corridorHasStairs :stairs1 ;
Buildings:corridorIsOnFloor :floorF1 .

http://www.OntoCarer.org/CollegeModel.rdf#corridorF1C5
:corridorF1C5 rdf:type owl:NamedIndividual ,
Buildings:Corridor ;
Buildings:corridorHasFireExit :fireExit3 ;
Buildings:corridorHasHandrail :handrail1CorridorF1C5 ,
:handrail2CorridorF1C5 ;
Buildings:corridorHasRoom :classroom5 ,
:coffeeBar1 ,
:disabledToilet2 ,
:femaleToilet2 ,
:largeLectureTheatre1 ,
:maleToilet2 ;
Buildings:corridorIsOnFloor :floorF1 .

http://www.OntoCarer.org/CollegeModel.rdf#corridorF1C6
:corridorF1C6 rdf:type owl:NamedIndividual ,
Buildings:Corridor ;
Buildings:corridorHasFireExit :fireExit4 ;
Buildings:corridorHasHandrail :handrail1CorridorF1C6 ,
:handrail2CorridorF1C6 ;
Buildings:corridorHasLift :lift1 ;
Buildings:corridorHasRoom :classroom3 ,
:classroom4 ,
:computerRoom2 ,
:computerRoom3 ,
:laboratory2 ,

:meetingRoom2 ,
:registry1 ,
:sciencesStaffRoom1 ,
:techRoom2 ;
Buildings:corridorHasStairs :stairs1 ;
Buildings:corridorIsOnFloor :floorF1 .

http://www.OntoCarer.org/CollegeModel.rdf#disabledToilet1
:disabledToilet1 rdf:type owl:NamedIndividual ,
Buildings:DisabledToiletRoom ;
Buildings:roomHasAssistingFeatures :handrail1DisabledToilet1 ;
Buildings:roomHasPortal :disabledToilet1 ;
Buildings:roomsInBuilding :ontoCarerCollegeBuilding ;
Buildings:roomsInCorridor :corridorF0C2 ;
Buildings:roomsOnFloor :floorF0 .

http://www.OntoCarer.org/CollegeModel.rdf#disabledToilet1Portal1
:disabledToilet1Portal1 rdf:type owl:NamedIndividual ,
Buildings:Portal ;
Buildings:portalHasCorridor :corridorF0C2 ;
Buildings:portalHasRoom :disabledToilet1 .

http://www.OntoCarer.org/CollegeModel.rdf#disabledToilet2
:disabledToilet2 rdf:type owl:NamedIndividual ,
Buildings:DisabledToiletRoom ;
Buildings:roomHasAssistingFeatures :handrail1DisabledToilet2 ;
Buildings:roomHasPortal :disabledToilet2Portal1 ;
Buildings:roomsInBuilding :ontoCarerCollegeBuilding ;
Buildings:roomsInCorridor :corridorF1C5 ;
Buildings:roomsOnFloor :floorF1 .

http://www.OntoCarer.org/CollegeModel.rdf#disabledToilet2Portal1
:disabledToilet2Portal1 rdf:type owl:NamedIndividual ,
Buildings:Portal ;
Buildings:portalHasCorridor :corridorF1C5 ;
Buildings:portalHasRoom :disabledToilet2 .

http://www.OntoCarer.org/CollegeModel.rdf#entrance1
:entrance1 rdf:type owl:NamedIndividual ,
Buildings:Entrance ;
Buildings:portalHasAssistingFeatures :wheelchairRamp1 ;
Buildings:portalHasCorridor :corridorF0C1 .

http://www.OntoCarer.org/CollegeModel.rdf#entrance1Portal1
:entrance1Portal1 rdf:type owl:NamedIndividual ,
Buildings:Door ,
Buildings:Portal ;
Buildings:portalHasCorridor :corridorF0C1 .

http://www.OntoCarer.org/CollegeModel.rdf#femaleToilet1
:femaleToilet1 rdf:type owl:NamedIndividual ,
Buildings:FemaleToiletRoom ;
Buildings:roomHasPortal :femaleToilet1Portal1 ;

Buildings:roomsInBuilding :ontoCarerCollegeBuilding ;
Buildings:roomsInCorridor :corridorF0C2 ;
Buildings:roomsOnFloor :floorF0 .

http://www.OntoCarer.org/CollegeModel.rdf#femaleToilet1Portal1
:femaleToilet1Portal1 rdf:type owl:NamedIndividual ,
Buildings:Portal ;
Buildings:portalHasCorridor :corridorF0C2 ;
Buildings:portalHasRoom :femaleToilet1 .

http://www.OntoCarer.org/CollegeModel.rdf#femaleToilet2
:femaleToilet2 rdf:type owl:NamedIndividual ,
Buildings:FemaleToiletRoom ;
Buildings:roomHasPortal :femaleToilet2Portal1 ;
Buildings:roomsInBuilding :ontoCarerCollegeBuilding ;
Buildings:roomsInCorridor :corridorF1C5 ;
Buildings:roomsOnFloor :floorF1 .

http://www.OntoCarer.org/CollegeModel.rdf#femaleToilet2Portal1
:femaleToilet2Portal1 rdf:type owl:NamedIndividual ,
Buildings:Portal ;
Buildings:portalHasCorridor :corridorF1C5 ;
Buildings:portalHasRoom :femaleToilet2 .

http://www.OntoCarer.org/CollegeModel.rdf#fireExit1
:fireExit1 rdf:type owl:NamedIndividual ,
Buildings:FireExit ;
Buildings:fireExitHasCorridor :corridorF0C2 .

http://www.OntoCarer.org/CollegeModel.rdf#fireExit2
:fireExit2 rdf:type owl:NamedIndividual ,
Buildings:FireExit ;
Buildings:fireExitHasCorridor :corridorF0C3 .

http://www.OntoCarer.org/CollegeModel.rdf#fireExit3
:fireExit3 rdf:type owl:NamedIndividual ,
Buildings:FireExit ;
Buildings:fireExitHasCorridor :corridorF1C5 .

http://www.OntoCarer.org/CollegeModel.rdf#fireExit4
:fireExit4 rdf:type owl:NamedIndividual ,
Buildings:FireExit ;
Buildings:fireExitHasCorridor :corridorF1C6 .

http://www.OntoCarer.org/CollegeModel.rdf#floorF0
:floorF0 rdf:type owl:NamedIndividual ,
Buildings:Floor ;
Buildings:floorHasCorridor :corridorF0C1 ,
:corridorF0C2 ,
:corridorF0C3 ;
Buildings:floorHasFireExit :fireExit1 ,
:fireExit2 ;

Buildings:floorHasRoom :artsStaffRoom1 ,
:cafe1 ,
:classroom1 ,
:classroom2 ,
:computerRoom1 ,
:femaleToilet1 ,
:laboratory1 ,
:maleToilet1 ,
:managementRoom1 ,
:meetingRoom1 ,
:office1 ,
:reception1 ,
:seminarRoom1 ,
:studentServices1 .

http://www.OntoCarer.org/CollegeModel.rdf#floorF1
:floorF1 rdf:type owl:NamedIndividual ,
Buildings:Floor ;
Buildings:floorHasCorridor :corridorF1C4 ,
:corridorF1C5 ,
:corridorF1C6 ;
Buildings:floorHasFireExit :fireExit3 ,
:fireExit4 ;
Buildings:floorHasRoom :classroom3 ,
:classroom4 ,
:classroom5 ,
:coffeeBar1 ,
:computerRoom2 ,
:computerRoom3 ,
:disabledToilet2 ,
:femaleToilet2 ,
:laboratory2 ,
:largeLectureTheatre1 ,
:library1 ,
:maleToilet2 ,
:meetingRoom2 ,
:registry1 ,
:sciencesStaffRoom1 ,
:techRoom2 .

http://www.OntoCarer.org/CollegeModel.rdf#handrail1CorridorF0C1
:handrail1CorridorF0C1 rdf:type owl:NamedIndividual ,
Buildings:Handrail .

http://www.OntoCarer.org/CollegeModel.rdf#handrail1CorridorF0C2
:handrail1CorridorF0C2 rdf:type owl:NamedIndividual ,
Buildings:Handrail .

http://www.OntoCarer.org/CollegeModel.rdf#handrail1CorridorF0C3
:handrail1CorridorF0C3 rdf:type owl:NamedIndividual ,
Buildings:Handrail .

http://www.OntoCarer.org/CollegeModel.rdf#handrail1CorridorF1C4
:handrail1CorridorF1C4 rdf:type owl:NamedIndividual ,
Buildings:Handrail .

http://www.OntoCarer.org/CollegeModel.rdf#handrail1CorridorF1C5
:handrail1CorridorF1C5 rdf:type owl:NamedIndividual ,
Buildings:Handrail .

http://www.OntoCarer.org/CollegeModel.rdf#handrail1CorridorF1C6
:handrail1CorridorF1C6 rdf:type owl:NamedIndividual ,
Buildings:Handrail .

http://www.OntoCarer.org/CollegeModel.rdf#handrail1DisabledToilet1
:handrail1DisabledToilet1 rdf:type owl:NamedIndividual ,
Buildings:Handrail .

http://www.OntoCarer.org/CollegeModel.rdf#handrail1DisabledToilet2
:handrail1DisabledToilet2 rdf:type owl:NamedIndividual ,
Buildings:Handrail .

http://www.OntoCarer.org/CollegeModel.rdf#handrail1Lift1
:handrail1Lift1 rdf:type owl:NamedIndividual ,
Buildings:Handrail .

http://www.OntoCarer.org/CollegeModel.rdf#handrail1Stairs1
:handrail1Stairs1 rdf:type owl:NamedIndividual ,
Buildings:Handrail .

http://www.OntoCarer.org/CollegeModel.rdf#handrail1Stairs2
:handrail1Stairs2 rdf:type owl:NamedIndividual ,
Buildings:Handrail .

http://www.OntoCarer.org/CollegeModel.rdf#handrail2CorridorF0C1
:handrail2CorridorF0C1 rdf:type owl:NamedIndividual ,
Buildings:Handrail .

http://www.OntoCarer.org/CollegeModel.rdf#handrail2CorridorF0C2
:handrail2CorridorF0C2 rdf:type owl:NamedIndividual ,
Buildings:Handrail .

http://www.OntoCarer.org/CollegeModel.rdf#handrail2CorridorF0C3
:handrail2CorridorF0C3 rdf:type owl:NamedIndividual ,
Buildings:Handrail .

http://www.OntoCarer.org/CollegeModel.rdf#handrail2CorridorF1C4
:handrail2CorridorF1C4 rdf:type owl:NamedIndividual ,
Buildings:Handrail .

http://www.OntoCarer.org/CollegeModel.rdf#handrail2CorridorF1C5
:handrail2CorridorF1C5 rdf:type owl:NamedIndividual ,
Buildings:Handrail .

http://www.OntoCarer.org/CollegeModel.rdf#handrail2CorridorF1C6
:handrail2CorridorF1C6 rdf:type owl:NamedIndividual ,
Buildings:Handrail .

http://www.OntoCarer.org/CollegeModel.rdf#junctionF0J0
:junctionF0J0 rdf:type owl:NamedIndividual ,
Buildings:Junction ;
Buildings:junctionHasCorridor :corridorF0C1 ,
:corridorF0C2 ,
:corridorF0C3 .

http://www.OntoCarer.org/CollegeModel.rdf#junctionF1J1
:junctionF1J1 rdf:type owl:NamedIndividual ,
Buildings:Junction ;
Buildings:junctionHasCorridor :corridorF1C4 ,
:corridorF1C5 ,
:corridorF1C6 .

http://www.OntoCarer.org/CollegeModel.rdf#laboratory1
:laboratory1 rdf:type owl:NamedIndividual ,
Buildings:LaboratoryRoom ;
Buildings:roomHasPortal :laboratory1Portal1 ;
Buildings:roomsInBuilding :ontoCarerCollegeBuilding ;
Buildings:roomsInCorridor :corridorF0C3 ;
Buildings:roomsOnFloor :floorF0 .

http://www.OntoCarer.org/CollegeModel.rdf#laboratory1Portal1
:laboratory1Portal1 rdf:type owl:NamedIndividual ,
Buildings:Portal ;
Buildings:portalHasCorridor :corridorF0C3 ;
Buildings:portalHasRoom :laboratory1 .

http://www.OntoCarer.org/CollegeModel.rdf#laboratory2
:laboratory2 rdf:type owl:NamedIndividual ,
Buildings:LaboratoryRoom ;
Buildings:roomHasPortal :laboratory2Portal1 ;
Buildings:roomsInBuilding :ontoCarerCollegeBuilding ;
Buildings:roomsInCorridor :corridorF1C6 ;
Buildings:roomsOnFloor :floorF1 .

http://www.OntoCarer.org/CollegeModel.rdf#laboratory2Portal1
:laboratory2Portal1 rdf:type owl:NamedIndividual ,
Buildings:Portal ;
Buildings:portalHasCorridor :corridorF1C6 ;
Buildings:portalHasRoom :laboratory2 .

http://www.OntoCarer.org/CollegeModel.rdf#largeLectureTheatre1
:largeLectureTheatre1 rdf:type owl:NamedIndividual ,
Buildings:LectureTheatreRoom ;
Buildings:roomHasPortal :largeLectureTheatre1Portal1 ;
Buildings:roomsInBuilding :ontoCarerCollegeBuilding ;

Buildings:roomsInCorridor :corridorF1C5 ;
Buildings:roomsOnFloor :floorF1 .

http://www.OntoCarer.org/CollegeModel.rdf#largeLectureTheatre1Portal1
:largeLectureTheatre1Portal1 rdf:type owl:NamedIndividual ,
Buildings:Portal ;
Buildings:portalHasCorridor :corridorF1C5 ;
Buildings:portalHasRoom :largeLectureTheatre1 .

http://www.OntoCarer.org/CollegeModel.rdf#library1
:library1 rdf:type owl:NamedIndividual ,
Buildings:LibraryRoom ;
Buildings:roomHasPortal :library1Portal1 ;
Buildings:roomsInBuilding :ontoCarerCollegeBuilding ;
Buildings:roomsInCorridor :corridorF1C4 ;
Buildings:roomsOnFloor :floorF1 .

http://www.OntoCarer.org/CollegeModel.rdf#library1Portal1
:library1Portal1 rdf:type owl:NamedIndividual ,
Buildings:Portal ;
Buildings:portalHasCorridor :corridorF1C4 ;
Buildings:portalHasRoom :library1 .

http://www.OntoCarer.org/CollegeModel.rdf#lift1
:lift1 rdf:type owl:NamedIndividual ,
Buildings:Lift ;
Buildings:liftHasBottomFloor :floorF0 ;
Buildings:liftHasHandrail :handrail1Lift1 ;
Buildings:liftHasTopFloor :floorF1 .

http://www.OntoCarer.org/CollegeModel.rdf#lift1Portal1
:lift1Portal1 rdf:type owl:NamedIndividual ,
Buildings:Portal .

http://www.OntoCarer.org/CollegeModel.rdf#maleToilet1
:maleToilet1 rdf:type owl:NamedIndividual ,
Buildings:MaleToiletRoom ;
Buildings:roomHasPortal :maleToilet1Portal1 ;
Buildings:roomsInBuilding :ontoCarerCollegeBuilding ;
Buildings:roomsInCorridor :corridorF0C2 ;
Buildings:roomsOnFloor :floorF0 .

http://www.OntoCarer.org/CollegeModel.rdf#maleToilet1Portal1
:maleToilet1Portal1 rdf:type owl:NamedIndividual ,
Buildings:Portal ;
Buildings:portalHasCorridor :corridorF0C2 ;
Buildings:portalHasRoom :maleToilet1 .

http://www.OntoCarer.org/CollegeModel.rdf#maleToilet2
:maleToilet2 rdf:type owl:NamedIndividual ,
Buildings:MaleToiletRoom ;
Buildings:roomHasPortal :maleToilet2Portal1 ;

Buildings:roomsInBuilding :ontoCarerCollegeBuilding ;
Buildings:roomsInCorridor :corridorF1C5 ;
Buildings:roomsOnFloor :floorF1 .

http://www.OntoCarer.org/CollegeModel.rdf#maleToilet2Portal1
:maleToilet2Portal1 rdf:type owl:NamedIndividual ,
Buildings:Portal ;
Buildings:portalHasCorridor :corridorF1C5 ;
Buildings:portalHasRoom :maleToilet2 .

http://www.OntoCarer.org/CollegeModel.rdf#managementRoom1
:managementRoom1 rdf:type owl:NamedIndividual ,
Buildings:ManagementRoom ;
Buildings:roomHasPortal :managementRoom1Portal1 ;
Buildings:roomsInBuilding :ontoCarerCollegeBuilding ;
Buildings:roomsInCorridor :corridorF0C2 ;
Buildings:roomsOnFloor :floorF0 .

http://www.OntoCarer.org/CollegeModel.rdf#managementRoom1Portal1
:managementRoom1Portal1 rdf:type owl:NamedIndividual ,
Buildings:Portal ;
Buildings:portalHasCorridor :corridorF0C2 ;
Buildings:portalHasRoom :managementRoom1 .

http://www.OntoCarer.org/CollegeModel.rdf#meetingRoom1
:meetingRoom1 rdf:type owl:NamedIndividual ,
Buildings:MeetingRoom ;
Buildings:roomHasPortal :meetingRoom1Portal1 ;
Buildings:roomsInBuilding :ontoCarerCollegeBuilding ;
Buildings:roomsInCorridor :corridorF0C3 ;
Buildings:roomsOnFloor :floorF0 .

http://www.OntoCarer.org/CollegeModel.rdf#meetingRoom1Portal1
:meetingRoom1Portal1 rdf:type owl:NamedIndividual ,
Buildings:Portal ;
Buildings:portalHasCorridor :corridorF0C3 ;
Buildings:portalHasRoom :meetingRoom1 .

http://www.OntoCarer.org/CollegeModel.rdf#meetingRoom2
:meetingRoom2 rdf:type owl:NamedIndividual ,
Buildings:MeetingRoom ;
Buildings:roomHasPortal :meetingRoom2Portal1 ;
Buildings:roomsInBuilding :ontoCarerCollegeBuilding ;
Buildings:roomsInCorridor :corridorF1C6 ;
Buildings:roomsOnFloor :floorF1 .

http://www.OntoCarer.org/CollegeModel.rdf#meetingRoom2Portal1
:meetingRoom2Portal1 rdf:type owl:NamedIndividual ,
Buildings:Portal ;
Buildings:portalHasCorridor :corridorF1C6 ;
Buildings:portalHasRoom :meetingRoom2 .

```
### http://www.OntoCarer.org/CollegeModel.rdf#office1
:office1 rdf:type owl:NamedIndividual ,
    Buildings:OfficeRoom ;
    Buildings:roomHasPortal :office1Portal1 ;
    Buildings:roomsInBuilding :ontoCarerCollegeBuilding ;
    Buildings:roomsInCorridor :corridorF0C2 ;
    Buildings:roomsOnFloor :floorF0 .
```

```
### http://www.OntoCarer.org/CollegeModel.rdf#office1Portal1
:office1Portal1 rdf:type owl:NamedIndividual ,
    Buildings:Portal ;
    Buildings:portalHasCorridor :office1 ;
    Buildings:portalHasRoom :office1 .
```

```
### http://www.OntoCarer.org/CollegeModel.rdf#ontoCarerCollegeBuilding
:ontoCarerCollegeBuilding rdf:type owl:NamedIndividual ,
    Buildings:CollegeBuilding ;
    Buildings:buildingHasAssistingFeatures :handrail1CorridorF0C1 ,
        :handrail1CorridorF0C2 ,
        :handrail1CorridorF0C3 ,
        :handrail1CorridorF1C4 ,
        :handrail1CorridorF1C5 ,
        :handrail1CorridorF1C6 ,
        :handrail1DisabledToilet1 ,
        :handrail1DisabledToilet2 ,
        :handrail1Lift1 ,
        :handrail1Stairs1 ,
        :handrail1Stairs2 ,
        :handrail2CorridorF0C1 ,
        :handrail2CorridorF0C2 ,
        :handrail2CorridorF0C3 ,
        :handrail2CorridorF1C4 ,
        :handrail2CorridorF1C5 ,
        :handrail2CorridorF1C6 ,
        :wheelchairLift1Stairs2 ,
        :wheelchairRamp1 ;
    Buildings:buildingHasCorridor :corridorF0C1 ,
        :corridorF0C2 ,
        :corridorF0C3 ,
        :corridorF1C4 ,
        :corridorF1C5 ,
        :corridorF1C6 ;
    Buildings:buildingHasEntrance :entrance1 ;
    Buildings:buildingHasFireExit :fireExit1 ,
        :fireExit2 ,
        :fireExit3 ,
        :fireExit4 ;
    Buildings:buildingHasJunction :junctionF0J0 ,
        :junctionF1J1 ;
    Buildings:buildingHasLift :lift1 ;
    Buildings:buildingHasPortal :artsStaffRoom1Portal1 ,
        :cafe1Portal1 ,
        :classroom1Portal1 ,
        :classroom2Portal1 ,
        :classroom3Portal1 ,
        :classroom4Portal1 ,
        :classroom5 ,
        :classroom5Portal1 ,
```

```

:fireExit1 ,
:fireExit2 ,
:fireExit3 ,
:fireExit4 ;
Buildings:buildingHasRoom :artsStaffRoom1 ,
:cafe1 ,
:classroom1 ,
:classroom2 ,
:classroom3 ,
:classroom4 ,
:classroom5 ,
:coffeeBar1 ,
:computerRoom1 ,
:computerRoom2 ,
:computerRoom3 ,
:disabledToilet1 ,
:disabledToilet2 ,
:femaleToilet1 ,
:femaleToilet2 ,
:laboratory1 ,
:laboratory2 ,
:largeLectureTheatre1 ,
:library1 ,
:maleToilet1 ,
:maleToilet2 ,
:meetingRoom1 ,
:meetingRoom2 ,
:office1 ,
:reception1 ,
:registry1 ,
:sciencesStaffRoom1 ,
:seminarRoom1 ,
:studentServices1 ,
:techRoom1 ,
:techRoom2 ;
Buildings:buildingHasStairs :stairs1 ,
:stairs2 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#ontoCarerCollegeOrganisation
:ontoCarerCollegeOrganisation rdf:type owl:NamedIndividual ,
    Organisation:CollegeOrganisation ;
    Organisation:organisationHasBuilding :ontoCarerCollegeBuilding .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#reception1
:reception1 rdf:type owl:NamedIndividual ,
    Buildings:ReceptionRoom ;
    Buildings:roomHasPortal :reception1Portal1 ;
    Buildings:roomsInBuilding :ontoCarerCollegeBuilding ;
    Buildings:roomsInCorridor :corridorF0C1 ;
    Buildings:roomsOnFloor :floorF0 .

```

```

### http://www.OntoCarer.org/CollegeModel.rdf#reception1Portal1
:reception1Portal1 rdf:type owl:NamedIndividual ,
    Buildings:Portal ;
    Buildings:portalHasCorridor :corridorF0C1 ;
    Buildings:portalHasRoom :reception1 .

```

http://www.OntoCarer.org/CollegeModel.rdf#registry1
:registry1 rdf:type owl:NamedIndividual ,
Buildings:RegistryRoom ;
Buildings:roomHasPortal :registry1Portal1 ;
Buildings:roomsInBuilding :ontoCarerCollegeBuilding ;
Buildings:roomsInCorridor :corridorF1C6 ;
Buildings:roomsOnFloor :floorF1 .

http://www.OntoCarer.org/CollegeModel.rdf#registry1Portal1
:registry1Portal1 rdf:type owl:NamedIndividual ,
Buildings:Portal ;
Buildings:portalHasCorridor :corridorF1C6 ;
Buildings:portalHasRoom :registry1 .

http://www.OntoCarer.org/CollegeModel.rdf#sciencesStaffRoom1
:sciencesStaffRoom1 rdf:type owl:NamedIndividual ,
Buildings:StaffRoom ;
Buildings:roomHasPortal :sciencesStaffRoom1Portal1 ;
Buildings:roomsInBuilding :ontoCarerCollegeBuilding ;
Buildings:roomsInCorridor :corridorF1C6 ;
Buildings:roomsOnFloor :floorF1 .

http://www.OntoCarer.org/CollegeModel.rdf#sciencesStaffRoom1Portal1
:sciencesStaffRoom1Portal1 rdf:type owl:NamedIndividual ,
Buildings:Portal ;
Buildings:portalHasCorridor :corridorF1C6 ;
Buildings:portalHasRoom :sciencesStaffRoom1 .

http://www.OntoCarer.org/CollegeModel.rdf#seminarRoom1
:seminarRoom1 rdf:type owl:NamedIndividual ,
Buildings:SeminarRoom ;
Buildings:roomHasPortal :seminarRoom1Portal1 ;
Buildings:roomsInBuilding :ontoCarerCollegeBuilding ;
Buildings:roomsInCorridor :corridorF0C3 ;
Buildings:roomsOnFloor :floorF0 .

http://www.OntoCarer.org/CollegeModel.rdf#seminarRoom1Portal1
:seminarRoom1Portal1 rdf:type owl:NamedIndividual ,
Buildings:Portal ;
Buildings:portalHasCorridor :corridorF0C3 ;
Buildings:portalHasRoom :seminarRoom1 .

http://www.OntoCarer.org/CollegeModel.rdf#stairs1
:stairs1 rdf:type owl:NamedIndividual ,
Buildings:Stairs ;
Buildings:stairsHasBottomCorridor :corridorF0C1 ;
Buildings:stairsHasBottomFloor :floorF0 ;
Buildings:stairsHasHandrail :handrail1Stairs1 ;
Buildings:stairsHasTopCorridor :corridorF1C4 ;
Buildings:stairsHasTopFloor :floorF1 .

http://www.OntoCarer.org/CollegeModel.rdf#stairs2

```

:stairs2 rdf:type owl:NamedIndividual ,
    Buildings:Stairs ;
    Buildings:stairsHasBottomCorridor :corridorF0C2 ;
    Buildings:stairsHasBottomFloor :floorF0 ;
    Buildings:stairsHasHandrail :handrail1Stairs2 ;
    Buildings:stairsHasTopCorridor :corridorF1C5 ;
    Buildings:stairsHasTopFloor :floorF1 ;
    Buildings:stairsHasWheelchairLift :wheelchairLift1Stairs2 .

### http://www.OntoCarer.org/CollegeModel.rdf#studentServices1
:studentServices1 rdf:type owl:NamedIndividual ,
    Buildings:StudentServicesRoom ;
    Buildings:roomHasPortal :studentServices1Portal1 ;
    Buildings:roomsInBuilding :ontoCarerCollegeBuilding ;
    Buildings:roomsInCorridor :corridorF0C3 ;
    Buildings:roomsOnFloor :floorF0 .

### http://www.OntoCarer.org/CollegeModel.rdf#studentServices1Portal1
:studentServices1Portal1 rdf:type owl:NamedIndividual ,
    Buildings:Portal ;
    Buildings:portalHasCorridor :corridorF0C3 ;
    Buildings:portalHasRoom :studentServices1 .

### http://www.OntoCarer.org/CollegeModel.rdf#techRoom1
:techRoom1 rdf:type owl:NamedIndividual ,
    Buildings:TechnicalServicesRoom ;
    Buildings:roomHasPortal :techRoom1Portal1 ;
    Buildings:roomsInBuilding :ontoCarerCollegeBuilding ;
    Buildings:roomsInCorridor :corridorF0C3 ;
    Buildings:roomsOnFloor :floorF0 .

### http://www.OntoCarer.org/CollegeModel.rdf#techRoom1Portal1
:techRoom1Portal1 rdf:type owl:NamedIndividual ,
    Buildings:Portal ;
    Buildings:portalHasCorridor :corridorF0C3 ;
    Buildings:portalHasRoom :techRoom1 .

### http://www.OntoCarer.org/CollegeModel.rdf#techRoom2
:techRoom2 rdf:type owl:NamedIndividual ,
    Buildings:TechnicalServicesRoom ;
    Buildings:roomHasPortal :techRoom2Portal1 ;
    Buildings:roomsInBuilding :ontoCarerCollegeBuilding ;
    Buildings:roomsInCorridor :corridorF1C6 ;
    Buildings:roomsOnFloor :floorF1 .

### http://www.OntoCarer.org/CollegeModel.rdf#techRoom2Portal1
:techRoom2Portal1 rdf:type owl:NamedIndividual ,
    Buildings:Portal ;
    Buildings:portalHasCorridor :corridorF1C6 ;
    Buildings:portalHasRoom :techRoom2 .

### http://www.OntoCarer.org/CollegeModel.rdf#wheelchairLift1Stairs2
:wheelchairLift1Stairs2 rdf:type owl:NamedIndividual ,

```


Buildings:WheelchairLift .

<http://www.OntoCarer.org/CollegeModel.rdf#wheelchairRamp1>
:wheelchairRamp1 rdf:type owl:NamedIndividual ,
Buildings:WheelchairRamp .

<http://www.OntoCarer.org/CollegeModel.rdf#agent15InformationSeeker>
UserRole1HearQuestions&AnswersSocialAction1
:agent15InformationSeekerUserRole1HearQuestions&AnswersSocialAction1 rdf:type
owl:NamedIndividual ,
SocialAction:HearQuestions&AnswersSocialAction ;
SocialAction:socialActionHasAgent :agent15 ;
SocialAction:socialActionInRole
:agent15InformationSeekerUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent1InformationSeeker>
UserRole1HearQuestions&AnswersSocialAction1
:agent1InformationSeekerUserRole1HearQuestions&AnswersSocialAction1 rdf:type
owl:NamedIndividual ,
SocialAction:HearQuestions&AnswersSocialAction ;
SocialAction:socialActionHasAgent :agent1 ;
SocialAction:socialActionInRole
:agent1InformationSeekerUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 4 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent5InformationSeekerUser>
Role1HearQuestions&AnswersSocialAction1
:agent5InformationSeekerUserRole1HearQuestions&AnswersSocialAction1 rdf:type
owl:NamedIndividual ,
SocialAction:HearQuestions&AnswersSocialAction ;
SocialAction:socialActionHasAgent :agent5 ;
SocialAction:socialActionInRole
:agent5InformationSeekerUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent7InformationSeekerUser>
Role1HearQuestions&AnswersSocialAction1
:agent7InformationSeekerUserRole1HearQuestions&AnswersSocialAction1 rdf:type
owl:NamedIndividual ,
SocialAction:HearQuestions&AnswersSocialAction ;
SocialAction:socialActionHasAgent :agent7 ;
SocialAction:socialActionInRole
:agent7InformationSeekerUserRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

<http://www.OntoCarer.org/CollegeModel.rdf#agent8LibraryAssistant>
ProviderRole1HearQuestions&AnswersSocialAction1
:agent8LibraryAssistantProviderRole1HearQuestions&AnswersSocialAction1 rdf:type
owl:NamedIndividual ,

```

;
SocialAction:HearQuestions&AnswersSocialAction
SocialAction:socialActionHasAgent :agent8 ;
SocialAction:socialActionInRole
:agent8LibraryAssistantProviderRole1 ;
SocialAction:socialActionHasDesireIntentionLevel 1 ;
SocialAction:socialActionHasQualifier 0 .

```

Generated by the OWL API (version 4.2.6.20160910-2108) <https://github.com/owlcs/owlapi>

Appendix F

OntoCarer Software Application - Scenarios Data Files RDF/XML files for providing data updates for the 7 scenarios

OntoCarer Scenarios 1-7 RDF/XML Data Files

Scenario 1

agent1Scenario1FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent1 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent1">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent1Scenario1Location1.rdf

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////

//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent1-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent1">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#largeLectureTheatre1"/>
  </owl:NamedIndividual>
</rdf:RDF>

```

agent1Scenario1SocialActionDIChange1.rdf

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////

//

```

```

// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent -->
<owl:NamedIndividual
rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent1StudentUserRole1TakeNotesFromSpeakerSocialAction1">
  <SocialAction:socialActionHasDesireIntentionLevel
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">9</SocialAction:socialActionHasDesireIntentionLevel>

</owl:NamedIndividual>
</rdf:RDF>

```

agent2Scenario1FloorPosition1.rdf

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent2 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent2">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>

```

agent2Scenario1Location1.rdf

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"

```

```
xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
xmlns:owl="http://www.w3.org/2002/07/owl#"
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent2-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent2">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#studentServices1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent3Scenario1FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
```

```
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent3 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent3">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent3Scenario1Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
```

```
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent3-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent3">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#studentServices1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent4Scenario1FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
```

```
xml:base="http://www.OntoCarer.org/"
xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
xmlns:owl="http://www.w3.org/2002/07/owl#"
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent4 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent4">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent4Scenario1Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
```



```
////////////////////////////////////  
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent4-->  
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent4">  
  <Agent:agentHasLocation  
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#largeLectureTheatre1"/>  
  </owl:NamedIndividual>  
</rdf:RDF>
```

agent5Scenario1FloorPosition1.rdf

```
<?xml version="1.0"?>  
<rdf:RDF  
  xmlns="http://www.OntoCarer.org/"  
  xml:base="http://www.OntoCarer.org/"  
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"  
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"  
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"  
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"  
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"  
  xmlns:owl="http://www.w3.org/2002/07/owl#"  
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"  
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"  
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-  
    Link-Ontology.owl#"  
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"  
  xmlns:xml="http://www.w3.org/XML/1998/namespace"  
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--  
////////////////////////////////////  
//  
// Individuals  
//  
////////////////////////////////////  
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent5 -->  
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent5">  
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>  
  </owl:NamedIndividual>  
</rdf:RDF>
```

agent5Scenario1Location1.rdf

```
<?xml version="1.0"?>  
<rdf:RDF  
  xmlns="http://www.OntoCarer.org/"
```

```
xml:base="http://www.OntoCarer.org/"
xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
xmlns:owl="http://www.w3.org/2002/07/owl#"
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent5-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent5">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#classroom2"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent6Scenario1FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
```

-->

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent6 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent6">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent6Scenario1Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
```

```
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent6-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent6">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#largeLectureTheatre1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent6Scenario1SocialActionDIChange1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#">
```

```
xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
xmlns:owl="http://www.w3.org/2002/07/owl#"
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent6 -->
<owl:NamedIndividual
rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent6StudentUserRoleAssisterRole1TakeNotesFromSpeakerSocialActionAssisterAction1">
  <SocialAction:socialActionHasDesireIntentionLevel
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">10</SocialAction:socialActionHasDesireIntentionLevel>
</owl:NamedIndividual>
</rdf:RDF>
```

agent7Scenario1FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
xmlns="http://www.OntoCarer.org/"
xml:base="http://www.OntoCarer.org/"
xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
xmlns:owl="http://www.w3.org/2002/07/owl#"
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
```

```
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent7 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent7">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent7Scenario1Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
```

```
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent7-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent7">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#corridorF0C3"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent8Scenario1FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#">
```

```
xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
xmlns:owl="http://www.w3.org/2002/07/owl#"
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent8 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent8">
    <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent8Scenario1Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
    xmlns="http://www.OntoCarer.org/"
    xml:base="http://www.OntoCarer.org/"
    xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
    xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
    xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
    xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
    xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
    xmlns:owl="http://www.w3.org/2002/07/owl#"
    xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
    xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
    xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
        Link-Ontology.owl#"
    xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
    xmlns:xml="http://www.w3.org/XML/1998/namespace"
    xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
```

-->

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent8-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent8">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#library1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent9Scenario1FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent9 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent9">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent9Scenario1Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#">
```

```
xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
xmlns:owl="http://www.w3.org/2002/07/owl#"
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent9-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent9">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#cafe1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent10Scenario1FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```



```

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent10 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent10">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>

```

agent10Scenario1Location1.rdf

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

```

```

<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->

```

```

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent10-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent10">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#registry1"/>
</owl:NamedIndividual>
</rdf:RDF>

```

agent11Scenario1FloorPosition1.rdf

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"

```

```
xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
xmlns:owl="http://www.w3.org/2002/07/owl#"
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent11 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent11">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent11Scenario1Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent11-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent11">
```

```
<Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#registry1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent12Scenario1FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent12 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent12">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent12Scenario1Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#">
```

```
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent12-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent12">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#reception1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent13Scenario1FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent13 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent13">
```

```
<Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent13Scenario1Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////

//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent13-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent13">
  <Agent:agentHasLocation
    rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#techRoom1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent14Scenario1FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#">
```

```
xmlns:owl="http://www.w3.org/2002/07/owl#"
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent14 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent14">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent14Scenario1Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent14-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent14">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#classRoom2"/>
  </owl:NamedIndividual>
</rdf:RDF>

```

agent15Scenario1FloorPosition1.rdf

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

```

```

<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->

```

```

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent15 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent15">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
  </owl:NamedIndividual>
</rdf:RDF>

```

agent15Scenario1Location1.rdf

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"

```

```

xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////

//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent15-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent15">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#classRoom2"/>
  </owl:NamedIndividual>
</rdf:RDF>

```

Scenario 2

agent1Scenario2FloorPosition1.rdf

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////

//
// Individuals
//

```



```
////////////////////////////////////  
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent1 -->  
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent1">  
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>  
</owl:NamedIndividual>  
</rdf:RDF>
```

agent1Scenario2Location1.rdf

```
<?xml version="1.0"?>  
<rdf:RDF  
  xmlns="http://www.OntoCarer.org/"  
  xml:base="http://www.OntoCarer.org/"  
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"  
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"  
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"  
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"  
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"  
  xmlns:owl="http://www.w3.org/2002/07/owl#"  
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"  
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"  
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-  
    Link-Ontology.owl#"  
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"  
  xmlns:xml="http://www.w3.org/XML/1998/namespace"  
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--  
////////////////////////////////////  
  
//  
// Individuals  
//  
////////////////////////////////////  
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent1-->  
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent1">  
  <Agent:agentHasLocation  
    rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#maleToilet1"/>  
</owl:NamedIndividual>  
</rdf:RDF>
```

agent2Scenario2FloorPosition1.rdf

```
<?xml version="1.0"?>  
<rdf:RDF  
  xmlns="http://www.OntoCarer.org/"  
  xml:base="http://www.OntoCarer.org/"  
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"  
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"  
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"  
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#">
```

```
xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
xmlns:owl="http://www.w3.org/2002/07/owl#"
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent2 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent2">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent2Scenario2Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
```

```
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent2-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent2">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#studentServices1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent3Scenario2FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent3 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent3">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent3Scenario2Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#">
```

```
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent3-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent3">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#studentServices1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent4Scenario2FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent4 -->
```

```
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent4">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent4Scenario2Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent4-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent4">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#largeLectureTheatre1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent5Scenario2FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#">
```

```
xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
xmlns:owl="http://www.w3.org/2002/07/owl#"
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent5 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent5">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent5Scenario2Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent5-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent5">
```

```
<Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#coffeeBar1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent6Scenario2FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#"

  <!--
  ////////////////////////////////////////////////////////////////////
  //
  // Individuals
  //
  ////////////////////////////////////////////////////////////////////
  -->

  <!-- http://www.OntoCarer.org/CollegeModel.rdf#agent6 -->
  <owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent6">
    <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent6Scenario2Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"

```

```
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent6-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent6">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#disabledToilet1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent7Scenario2FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent7 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent7">
```



```
<Agent:agentsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent7Scenario2Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#"

  <!--
  ////////////////////////////////////////////////////////////////////

  //
  // Individuals
  //
  ////////////////////////////////////////////////////////////////////
  -->

  <!-- http://www.OntoCarer.org/CollegeModel.rdf#agent7-->
  <owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent7">
    <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#cafe1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent8Scenario2FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  >
```

```
xmlns:owl="http://www.w3.org/2002/07/owl#"
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent8 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent8">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent8Scenario2Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent8-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent8">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#library1"/>
</owl:NamedIndividual>
```

</rdf:RDF>

agent9Scenario2FloorPosition1.rdf

<?xml version="1.0"?>

<rdf:RDF

```
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#"
```

<!--

////////////////////////////////////

//

// Individuals

//

////////////////////////////////////

-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent9 -->

<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent9">

<Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>

</owl:NamedIndividual>

</rdf:RDF>

agent9Scenario2Location1.rdf

<?xml version="1.0"?>

<rdf:RDF

```
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
```

```
Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
```

```
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent9-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent9">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#cafe1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent10Scenario2FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
```

```
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent10 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent10">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent10Scenario2Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////

//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent10-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent10">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#registry1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent11Scenario2FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
```

```
Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent11 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent11">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent11Scenario2Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent11-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent11">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#registry1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent12Scenario2FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent12 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent12">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent12Scenario2Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#">
```

```
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent12-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent12">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#corridorF1C5"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent12Scenario2SocialActionDIChange1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent6 -->
<owl:NamedIndividual
rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent12LibraryUserRoleAssisterRole1Navigat
eToLibrarySocialActionAssisterAction1">
```



```
<SocialAction:socialActionHasDesireIntentionLevel
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">10</SocialAction:socialActionHasDesire
IntentionLevel>
```

```
</owl:NamedIndividual>
</rdf:RDF>
```

agent13Scenario2FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent13 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent13">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent13Scenario2Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#">
```

```
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent13-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent13">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#techRoom2"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent14Scenario2FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent14 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent14">
```

```

    <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
  </owl:NamedIndividual>
</rdf:RDF>

```

agent14Scenario2Location1.rdf

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

```

```

<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->

```

```

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent14-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent14">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#classroom2"/>
  </owl:NamedIndividual>
</rdf:RDF>

```

agent15Scenario2FloorPosition1.rdf

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"

```

```
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent15 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent15">
  <Agent:agentsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent15Scenario2Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent15-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent15">
```

```

    <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#classroom2"/>
    </owl:NamedIndividual>
</rdf:RDF>

```

Scenario 3

agent1Scenario3FloorPosition1.rdf

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

```

```

<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->

```

```

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent1 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent1">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>

```

agent1Scenario3Location1.rdf

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"

```

```
xmlns:owl="http://www.w3.org/2002/07/owl#"
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
```

```
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent1-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent1">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#stairs2"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent2Scenario3FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
```

```
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent2 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent2">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent2Scenario3Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////

//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent2-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent2">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#studentServices1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent3Scenario3FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#">
```

```
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent3 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent3">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent3Scenario3Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent3-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent3">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#studentServices1"/>
</owl:NamedIndividual>
```


</rdf:RDF>

agent4Scenario3FloorPosition1.rdf

<?xml version="1.0"?>

<rdf:RDF

```
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#"
```

<!--

////////////////////////////////////

//

// Individuals

//

////////////////////////////////////

-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent4 -->

<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent4">

<Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>

</owl:NamedIndividual>

</rdf:RDF>

agent4Scenario3Location1.rdf

<?xml version="1.0"?>

<rdf:RDF

```
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
```

```
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
```

```
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent4-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent4">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#library1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent4 Scenario3SocialActionDIChange1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
```

```
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent4 -->
<owl:NamedIndividual
rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent4LibraryUserRole1SearchCatalogueSocialAction1">
```

```

    <SocialAction:socialActionHasDesireIntentionLevel
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">9</SocialAction:socialActionHasDesireI
ntentionLevel>

</owl:NamedIndividual>
</rdf:RDF>

```

agent5Scenario3FloorPosition1.rdf

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

```

```

<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->

```

```

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent5 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent5">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>

```

agent5Scenario3Location1.rdf

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"

```

```
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent5-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent5">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#coffeeBar1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent6Scenario3FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent6 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent6">
```

```

    <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
  </owl:NamedIndividual>
</rdf:RDF>

```

agent6Scenario3Location1.rdf

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

  <!--
  ////////////////////////////////////////////////////////////////////

  //
  // Individuals
  //
  ////////////////////////////////////////////////////////////////////
  -->

  <!-- http://www.OntoCarer.org/CollegeModel.rdf#agent6-->
  <owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent6">
    <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#cafe1"/>
  </owl:NamedIndividual>
</rdf:RDF>

```

agent7Scenario3FloorPosition1.rdf

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"

```

```
xmlns:owl="http://www.w3.org/2002/07/owl#"
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent7 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent7">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent7Scenario3Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent7-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent7">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#stairs1"/>
```

```
</owl:NamedIndividual>
</rdf:RDF>
```

agent8Scenario3FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#"

  <!--
  ////////////////////////////////////////////////////////////////////
  //
  // Individuals
  //
  ////////////////////////////////////////////////////////////////////
  -->

  <!-- http://www.OntoCarer.org/CollegeModel.rdf#agent8 -->
  <owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent8">
    <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent8Scenario3Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"

```

```
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
```

```
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent8-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent8">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#library1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent8Scenario3SocialActionDICChange1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent8 -->
<owl:NamedIndividual
rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent8LibraryUserRoleAssisterRole1SearchC
atalogueSocialActionAssisterAction1">
```



```
<SocialAction:socialActionHasDesireIntentionLevel
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">10</SocialAction:socialActionHasDesire
IntentionLevel>
```

```
</owl:NamedIndividual>
</rdf:RDF>
```

agent9Scenario3FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent9 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent9">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent9Scenario3Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#">
```

```
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent9-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent9">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#cafe1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent10Scenario3FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent10 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent10">
```

```
<Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent10Scenario3Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#"

  <!--
  ////////////////////////////////////////////////////////////////////

  //
  // Individuals
  //
  ////////////////////////////////////////////////////////////////////
  -->

  <!-- http://www.OntoCarer.org/CollegeModel.rdf#agent10-->
  <owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent10">
    <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#registry1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent11Scenario3FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  >
```

```
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent11 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent11">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent11Scenario3Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent11-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent11">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#registry1"/>
```

```
</owl:NamedIndividual>
</rdf:RDF>
```

agent12Scenario3FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent12 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent12">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent12Scenario3Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
```

```
Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
```

```
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent12-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent12">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#corridorF0C1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent13Scenario3FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
```

```
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent13 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent13">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
```

```
</owl:NamedIndividual>
</rdf:RDF>
```

agent13Scenario3Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent13-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent13">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#computerRoom1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent14Scenario3FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#">
```

```
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent14 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent14">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent14Scenario3Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent14-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent14">
  <Agent:agentHasLocation
  rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#laboratory1"/>
```



```
</owl:NamedIndividual>
</rdf:RDF>
```

agent15Scenario3FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#"

  <!--
  ////////////////////////////////////////////////////////////////////
  //
  // Individuals
  //
  ////////////////////////////////////////////////////////////////////
  -->

  <!-- http://www.OntoCarer.org/CollegeModel.rdf#agent15 -->
  <owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent15">
    <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent15Scenario3Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"

```

```
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
```

```
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent15-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent15">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#coffeeBar1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent1Scenario4FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
```

```
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent1 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent1">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
```

```
</owl:NamedIndividual>
</rdf:RDF>
```

agent1Scenario4Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent1-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent1">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#maleToilet1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent2Scenario4FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#">
```

```
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent2 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent2">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent2Scenario4Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent2-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent2">
  <Agent:agentHasLocation
  rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#studentServices1"/>
```

```
</owl:NamedIndividual>
</rdf:RDF>
```

agent3Scenario4FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#"

  <!--
  ////////////////////////////////////////////////////////////////////
  //
  // Individuals
  //
  ////////////////////////////////////////////////////////////////////
  -->

  <!-- http://www.OntoCarer.org/CollegeModel.rdf#agent3 -->
  <owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent3">
    <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent3Scenario4Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"

```

```

xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////

//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent3-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent3">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#studentServices1"/>
  </owl:NamedIndividual>
</rdf:RDF>

```

agent4Scenario4FloorPosition1.rdf

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////

//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent4 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent4">

```

```
<Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent4Scenario4Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent4-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent4">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#coffeeBar1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent5Scenario4FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#">
```

```
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent5 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent5">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent5Scenario4Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent5-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent5">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#largeLectureTheatre1"/>
</owl:NamedIndividual>
```


</rdf:RDF>

agent6Scenario4FloorPosition1.rdf

<?xml version="1.0"?>

<rdf:RDF

```
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#"
```

<!--

////////////////////////////////////

//

// Individuals

//

////////////////////////////////////

-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent6 -->

<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent6">

<Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>

</owl:NamedIndividual>

</rdf:RDF>

agent6Scenario4Location1.rdf

<?xml version="1.0"?>

<rdf:RDF

```
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
```

```
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent6-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent6">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#disabledToilet2"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent7Scenario4FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent7 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent7">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
```

</rdf:RDF>

agent7Scenario4Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#"

  <!--
  ////////////////////////////////////////////////////////////////////

  //
  // Individuals
  //
  ////////////////////////////////////////////////////////////////////
  -->

  <!-- http://www.OntoCarer.org/CollegeModel.rdf#agent7-->
  <owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent7">
    <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#cafe1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent7Scenario4SocialActionDIChange1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"

```

```
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent7 -->
<owl:NamedIndividual
rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent7DrinkerRole1UseDrinkingUtensilSocial
Action1">
  <SocialAction:socialActionHasDesireIntentionLevel
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">9</SocialAction:socialActionHasDesireI
ntentionLevel>

</owl:NamedIndividual>
</rdf:RDF>
```

agent8Scenario4FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent8 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent8">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
```

```
</owl:NamedIndividual>
</rdf:RDF>
```

agent8Scenario4Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent8-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent8">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#library1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent9Scenario4FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#">
```

```
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent9 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent9">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent9Scenario4Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent9-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent9">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#cafe1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent9Scenario4SocialActionDIChange1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent9 -->
<owl:NamedIndividual
rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent9DrinkerRoleAssisterRole1UseDrinking
UtensilSocialActionAssisterAction1">
  <SocialAction:socialActionHasDesireIntentionLevel
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">10</SocialAction:socialActionHasDesire
IntentionLevel>

</owl:NamedIndividual>
</rdf:RDF>
```

agent10Scenario4FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#">
```

```
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent10 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent10">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent10Scenario4Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent10-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent10">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#registry1"/>
</owl:NamedIndividual>
</rdf:RDF>
```


agent11Scenario4FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent11 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent11">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent11Scenario4Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#">
```

```
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent11 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent11">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#registry1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent12Scenario4FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent12 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent12">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent12Scenario4Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

  <!--
  //////////////////////////////////////
  //
  // Individuals
  //
  //////////////////////////////////////
  -->

  <!-- http://www.OntoCarer.org/CollegeModel.rdf#agent12-->
  <owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent12">
    <Agent:agentHasLocation
  rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#reception1"/>
    </owl:NamedIndividual>
  </rdf:RDF>
```

agent13Scenario4FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
```

```
Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent13 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent13">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent13Scenario4Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent13-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent13">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#techRoom1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent14Scenario4FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent14 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent14">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent14Scenario4Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#">
```

```
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent14-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent14">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#library1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent15Scenario4FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent15 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent15">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent15Scenario4Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent15-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent15">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#largeLectureTheatre1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent1Scenario5FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#">
```

```
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent1 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent1">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent1Scenario5Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent1-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent1">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#library1"/>
</owl:NamedIndividual>
</rdf:RDF>
```


agent2Scenario5FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent1 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent1">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent2Scenario5Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```

<!--
////////////////////////////////////

//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent2-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent2">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#studentServices1"/>
  </owl:NamedIndividual>
</rdf:RDF>

```

agent3Scenario5FloorPosition1.rdf

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

```

```

<!--
////////////////////////////////////

//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent3 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent3">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
  </owl:NamedIndividual>
</rdf:RDF>

```

agent3Scenario5Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent3-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent3">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#studentServices1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent4Scenario5FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#">
```

```
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent4 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent4">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent4Scenario5Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent4-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent4">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#computerRoom1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent5Scenario5FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent5 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent5">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent5Scenario5Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
```

```
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--  
////////////////////////////////////  
  
//  
// Individuals  
//  
////////////////////////////////////  
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent5-->  
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent5">  
  <Agent:agentHasLocation  
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#computerRoom1"/>  
  </owl:NamedIndividual>  
</rdf:RDF>
```

agent5Scenario5SocialActionDICChange1.rdf

```
<?xml version="1.0"?>  
<rdf:RDF  
  xmlns="http://www.OntoCarer.org/"  
  xml:base="http://www.OntoCarer.org/"  
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"  
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"  
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"  
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"  
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"  
  xmlns:owl="http://www.w3.org/2002/07/owl#"  
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"  
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"  
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-  
    Link-Ontology.owl#"  
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"  
  xmlns:xml="http://www.w3.org/XML/1998/namespace"  
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--  
////////////////////////////////////  
  
//  
// Individuals  
//  
////////////////////////////////////  
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent5 -->  
<owl:NamedIndividual  
rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent5StudentUserRoleAssisterRole1Submit  
AssignmentSocialActionAssisterAction1">  
  <SocialAction:socialActionHasDesireIntentionLevel  
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">10</SocialAction:socialActionHasDesire  
IntentionLevel>
```

```
</owl:NamedIndividual>
</rdf:RDF>
```

agent6Scenario5FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent6 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent6">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent6Scenario5Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#">
```

```
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent6-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent6">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#library1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent7Scenario5FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent7 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent7">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```


agent7Scenario5Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////

//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent7-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent7">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#computerRoom1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent7Scenario5SocialActionDIChange1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
```

```
Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent7 -->
<owl:NamedIndividual
rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent7StudentUserRole1SubmitAssignmentS
ocialAction1">
  <SocialAction:socialActionHasDesireIntentionLevel
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">9</SocialAction:socialActionHasDesireI
ntentionLevel>

</owl:NamedIndividual>
</rdf:RDF>
```

agent8Scenario5FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent8 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent8">
```

```
<Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent8Scenario5Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent8-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent8">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#library1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent9Scenario5FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#">
```

```
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent9 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent9">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent9Scenario5Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent9-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent9">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#cafe1"/>
</owl:NamedIndividual>
```

</rdf:RDF>

agent10Scenario5FloorPosition1.rdf

<?xml version="1.0"?>

<rdf:RDF

```
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#"
```

<!--

////////////////////////////////////

//

// Individuals

//

////////////////////////////////////

-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent10 -->

<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent10">

<Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>

</owl:NamedIndividual>

</rdf:RDF>

agent10Scenario5Location1.rdf

<?xml version="1.0"?>

<rdf:RDF

```
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
```

```
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent10 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent10">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#registry1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent11Scenario5FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent11 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent11">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent11Scenario5Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////

//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent11-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent11">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#registry1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent12Scenario5FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer
    Link-Ontology.owl#">
```

```
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent12 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent12">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent12Scenario5Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent12-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent12">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#reception1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```


agent13Scenario5FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent13 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent13">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent13Scenario5Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#">
```

```
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent13-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent13">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#techRoom2"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent14Scenario5FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer
  Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent14 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent14">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent14Scenario5Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////

//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent14-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent14">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#disabledToilet2"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent15Scenario5FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
```

```
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer
Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent15 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent15">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent15Scenario5Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent15-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent15">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#computerRoom2"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent1Scenario6FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent1 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent1">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent1Scenario6Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer
    Link-Ontology.owl#">
```

```
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
```

```
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent1-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent1">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#stairs1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent2Scenario6FloorPosition1.rdf

```
<?xml version="1.0"?>
```

```
<rdf:RDF
```

```
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
```

```
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent2 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent2">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent2Scenario6Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////

//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent2-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent2">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#studentsServices1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent3Scenario6FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
```

```
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer
Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent3 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent3">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent3Scenario6Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer
  Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent3-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent3">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#studentsServices1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```


agent4Scenario6FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent4 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent4">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent4Scenario6Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#">
```

```
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent4-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent4">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#maleToilet1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent5Scenario6FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent5 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent5">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent5Scenario6Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent5-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent5">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#classroom1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent6Scenario6FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#">
```

```
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent6 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent6">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent6Scenario6Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent6-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent6">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#meetingRoom1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent7Scenario6FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent7 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent7">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent7Scenario6Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
```

```
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--  
////////////////////////////////////  
  
//  
// Individuals  
//  
////////////////////////////////////  
-->  
  
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent7 -->  
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent7">  
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#registry1"/>  
</owl:NamedIndividual>  
</rdf:RDF>
```

agent7Scenario6SocialActionDIChange1.rdf

```
<?xml version="1.0"?>  
<rdf:RDF  
  xmlns="http://www.OntoCarer.org/"  
  xml:base="http://www.OntoCarer.org/"  
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"  
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"  
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"  
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"  
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"  
  xmlns:owl="http://www.w3.org/2002/07/owl#"  
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"  
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"  
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer  
    Link-Ontology.owl#"  
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"  
  xmlns:xml="http://www.w3.org/XML/1998/namespace"  
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">  
  
<!--  
////////////////////////////////////  
  
//  
// Individuals  
//  
////////////////////////////////////  
-->  
  
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent7 -->  
<owl:NamedIndividual  
rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent7StudentUserRole1PayCourseFeesSocialAction1">
```

```
<SocialAction:socialActionHasDesireIntentionLevel
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">9</SocialAction:socialActionHasDesireI
ntentionLevel>
```

```
</owl:NamedIndividual>
</rdf:RDF>
```

agent8Scenario6FloorPosition1.rdf

```
<?xml version="1.0"?>
```

```
<rdf:RDF
```

```
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#"
```

```
<!--
```

```
////////////////////////////////////
```

```
//
```

```
// Individuals
```

```
//
```

```
////////////////////////////////////
```

```
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent8 -->
```

```
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent8">
```

```
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
```

```
</owl:NamedIndividual>
```

```
</rdf:RDF>
```

agent8Scenario6Location1.rdf

```
<?xml version="1.0"?>
```

```
<rdf:RDF
```

```
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer
    Link-Ontology.owl#"
```

```
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent8-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent8">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#library1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent9Scenario6FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent9 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent9">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```


agent9Scenario6Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////

//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent9-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent9">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#cafe1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent10Scenario6FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer
```

```
Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent10 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent10">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent10Scenario6Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent10-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent10">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#registry1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent10Scenario6SocialActionDIChange1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent10 -->
<owl:NamedIndividual
rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent10StudentUserRoleAssisterRolePayCou
rseFeesSocialActionAssisterAction1">
  <SocialAction:socialActionHasDesireIntentionLevel
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">10</SocialAction:socialActionHasDesire
IntentionLevel>

</owl:NamedIndividual>
</rdf:RDF>
```

agent11Scenario6FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#">
```

```
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent11 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent11">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent11Scenario6Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent11-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent11">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#registry1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent12Scenario6FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
//
// Individuals
//
//
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent12 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent12">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent12Scenario6Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#">
```

```
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent12-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent12">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#reception1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent13Scenario6FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent13 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent13">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent13Scenario6Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////

//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent13-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent13">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#computerRoom1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent14Scenario6FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
```

```
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer
  Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent14 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent14">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent14Scenario6Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent14-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent14">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#corridorF0C2"/>
  </owl:NamedIndividual>
</rdf:RDF>
```


agent15Scenario6FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
//
// Individuals
//
//
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent15 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent15">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent15Scenario6Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#">
```

```
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent15-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent15">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#classroom1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent1Scenario7FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent1 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent1">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent1Scenario7Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////

//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent1-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent1">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#corridorF1C6"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent2Scenario7FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#">
```

```
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent2 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent2">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent2Scenario7Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent2-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent2">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#studentServices1"/>
</owl:NamedIndividual>
```

</rdf:RDF>

agent3Scenario7FloorPosition1.rdf

<?xml version="1.0"?>

<rdf:RDF

```
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#"
```

<!--

////////////////////////////////////

//

// Individuals

//

////////////////////////////////////

-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent3 -->

<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent3">

<Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>

</owl:NamedIndividual>

</rdf:RDF>

agent3Scenario7Location1.rdf

<?xml version="1.0"?>

<rdf:RDF

```
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
```

```
Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
```

```
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent3-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent3">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#studentServices1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent4Scenario7FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
```

```
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent4 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent4">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
```

```
</owl:NamedIndividual>
</rdf:RDF>
```

agent4Scenario7Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent4-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent4">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#sciencesStaffRoom1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent5Scenario7FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#">
```

```
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent5 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent5">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent5Scenario7Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent5-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent5">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#cafe1"/>
</owl:NamedIndividual>
</rdf:RDF>
```


agent6Scenario7FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent6 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent6">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent6Scenario7Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#">
```

```
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent6-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent6">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#coffeeBar1"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent6Scenario7Location2.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent6-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent6">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#corridorF1C5"/>
```

```
</owl:NamedIndividual>
</rdf:RDF>
```

agent6Scenario7Location3.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent6-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent6">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#disabledToilet2"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent6Scenario7SocialActionDIChange1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#">
```

```
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent6 -->
<owl:NamedIndividual
rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent6ToileterRoleAssisterRole1RemoveRele
vantClothesSocialActionAssisterAction1">
  <SocialAction:socialActionHasDesireIntentionLevel
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">10</SocialAction:socialActionHasDesire
IntentionLevel>

</owl:NamedIndividual>
</rdf:RDF>
```

agent6Scenario7SocialActionDIChange2.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent6 -->
<owl:NamedIndividual
rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent6ToileterRoleAssisterRole1CleanSelfAff
erToiletSocialActionAssisterAction1">
  <SocialAction:socialActionHasDesireIntentionLevel
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">10</SocialAction:socialActionHasDesire
IntentionLevel>

</owl:NamedIndividual>
</rdf:RDF>

```

agent6Scenario7SocialActionDIChange3.rdf

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

```

```

<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->

```

```

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent6 -->
<owl:NamedIndividual
rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent6ToileterRoleAssisterRole1RestoreRele
vantClothesSocialActionAssisterAction1">
  <SocialAction:socialActionHasDesireIntentionLevel
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">10</SocialAction:socialActionHasDesire
IntentionLevel>

</owl:NamedIndividual>
</rdf:RDF>

```

agent7Scenario7FloorPosition1.rdf

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"

```

```
xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
xmlns:owl="http://www.w3.org/2002/07/owl#"
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent7 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent7">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent7Scenario7Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent7-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent7">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#coffeeBar1"/>
  </owl:NamedIndividual>
</rdf:RDF>

```

agent8Scenario7FloorPosition1.rdf

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

```

```

<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->

```

```

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent8 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent8">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
  </owl:NamedIndividual>
</rdf:RDF>

```

agent8Scenario7Location1.rdf

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"

```

```

xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
xmlns:owl="http://www.w3.org/2002/07/owl#"
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer
  Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////

//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent8-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent8">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#library1"/>
</owl:NamedIndividual>
</rdf:RDF>

```

agent9Scenario7FloorPosition1.rdf

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////

//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent9 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent9">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>

```


</rdf:RDF>

agent9Scenario7Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

<!--
////////////////////////////////////

//
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent9-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent9">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#cafe1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent10Scenario7FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#">
```

```
xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
xmlns:owl="http://www.w3.org/2002/07/owl#"
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCare
  Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent10 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent10">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent10Scenario7Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent10-->
```

```

<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent10">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#disabledToilet2"/>
  </owl:NamedIndividual>
</rdf:RDF>

```

agent10Scenario7SocialActionDIChange1.rdf

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

```

```

<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->

```

```

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent10 -->
<owl:NamedIndividual
rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent10ToileterRole1RemoveRelevantClothesSocialAction1">
  <SocialAction:socialActionHasDesireIntentionLevel
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">9</SocialAction:socialActionHasDesireIntentionLevel>
</owl:NamedIndividual>
</rdf:RDF>

```

agent10Scenario7SocialActionDIChange2.rdf

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"

```

```
xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
xmlns:owl="http://www.w3.org/2002/07/owl#"
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent10 -->
<owl:NamedIndividual
rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent10ToileterRole1CleanSelfAfterToiletSocialAction1">
  <SocialAction:socialActionHasDesireIntentionLevel
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">9</SocialAction:socialActionHasDesireIntentionLevel>
</owl:NamedIndividual>
</rdf:RDF>
```

agent10Scenario7SocialActionDIChange3.rdf

```
<?xml version="1.0"?>
<rdf:RDF
xmlns="http://www.OntoCarer.org/"
xml:base="http://www.OntoCarer.org/"
xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
xmlns:owl="http://www.w3.org/2002/07/owl#"
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
```

```

// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent10 -->
<owl:NamedIndividual
rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent10ToileterRole1RestoreRelevantClothes
SocialAction1">
  <SocialAction:socialActionHasDesireIntentionLevel
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">9</SocialAction:socialActionHasDesireI
ntentionLevel>

</owl:NamedIndividual>
</rdf:RDF>

```

agent11Scenario7FloorPosition1.rdf

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

```

```

<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->

```

```

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent11 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent11">
  <Agent:agentsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>

```

agent11Scenario7Location1.rdf

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"

```

```
xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
xmlns:owl="http://www.w3.org/2002/07/owl#"
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer
  Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent11-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent11">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#registry1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent12Scenario7FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
```

```
// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent12 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent12">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent12Scenario7Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
```

```
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent12-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent12">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#corridorF0C2"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent13Scenario7FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
```

```
xmlns="http://www.OntoCarer.org/"
xml:base="http://www.OntoCarer.org/"
xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
xmlns:owl="http://www.w3.org/2002/07/owl#"
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent13 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent13">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent13Scenario7Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////

//
// Individuals
```



```
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent13-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent13">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#computerRoom2"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent14Scenario7FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent14 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent14">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
  </owl:NamedIndividual>
</rdf:RDF>
```

agent14Scenario7Location1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
```

```
xml:base="http://www.OntoCarer.org/"
xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
xmlns:owl="http://www.w3.org/2002/07/owl#"
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
  Link-Ontology.owl#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xml="http://www.w3.org/XML/1998/namespace"
xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
// Individuals
//
////////////////////////////////////
-->
```

```
<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent14-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent14">
  <Agent:agentHasLocation rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#cafe1"/>
</owl:NamedIndividual>
</rdf:RDF>
```

agent15Scenario7FloorPosition1.rdf

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">
```

```
<!--
////////////////////////////////////
//
```

```

// Individuals
//
////////////////////////////////////
-->

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent15 -->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent15">
  <Agent:agentIsOnFloor rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#floorF0"/>
</owl:NamedIndividual>
</rdf:RDF>

```

agent15Scenario7Location1.rdf

```

<?xml version="1.0"?>0
<rdf:RDF
  xmlns="http://www.OntoCarer.org/"
  xml:base="http://www.OntoCarer.org/"
  xmlns:Agent="http://www.OntoCarer.org/Agent.owl#"
  xmlns:SocialAction="http://www.OntoCarer.org/SocialAction.owl#"
  xmlns:BodyAbilities="http://www.OntoCarer.org/BodyAbilities.owl#"
  xmlns:Organisation="http://www.OntoCarer.org/Organisation.owl#"
  xmlns:Buildings="http://www.OntoCarer.org/Buildings.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:OntoCarer-Link-Ontology="http://www.OntoCarer.org/OntoCarer-
    Link-Ontology.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:BodyComponents="http://www.OntoCarer.org/BodyComponents.owl#">

```

```

<!--
////////////////////////////////////

```

```

//
// Individuals
//
////////////////////////////////////
-->

```

```

<!-- http://www.OntoCarer.org/CollegeModel.rdf#agent15-->
<owl:NamedIndividual rdf:about="http://www.OntoCarer.org/CollegeModel.rdf#agent15">
  <Agent:agentHasLocation
rdf:resource="http://www.OntoCarer.org/CollegeModel.rdf#sciencesStaffRoom1"/>
  </owl:NamedIndividual>
</rdf:RDF>

```


Appendix G
OntoCarer CollegeModel Agent profiles

CollegeModel Agent Profiles

Agent1

Roles	Social Actions
Basic Function Roles	
agent1DresserBasicFunctionRole1	agent1DresserBasicFunctionRole1PutClothesOnSocialAction1 agent1DresserBasicFunctionRole1RemoveClothesSocialAction1
agent1DrinkerBasicFunctionRole1	agent1DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1
agent1EaterBasicFunctionRole1	agent1EaterBasicFunctionRole1FeedSelfSocialAction1 agent1EaterBasicFunctionRole1UseCutlerySocialAction1 agent1EaterBasicFunctionRole1UseCutleryToFeedSocialAction1
agent1ToileterBasicFunctionRole1	agent1ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 agent1ToileterBasicFunctionRole1FindToiletSocialAction1 agent1ToileterBasicFunctionRole1NavigateToToiletSocialAction1 agent1ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 agent1ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1
agent1WasherBasicFunctionRole1	agent1WasherBasicFunctionRole1DrySelfSocialAction1 agent1WasherBasicFunctionRole1WashSelfSocialAction1
User Roles	
agent1CafeUserRole1	agent1CafeUserRole1MakeCafeFoodOrderSocialAction1 agent1CafeUserRole1PayForCafeFoodOrderSocialAction1 agent1CafeUserRole1SeeCafeFoodMenuSocialAction1
agent1InformationSeekerUserRole1	agent1InformationSeekerUserRole1AnswerQuestionsSocialAction1 agent1InformationSeekerUserRole1AskQuestionsSocialAction1 agent1InformationSeekerUserRole1FindAnswersSocialAction1 agent1InformationSeekerUserRole1HearQuestions&AnswersSocialAction1
agent1LibraryUserRole1	agent1LibraryUserRole1AnswerQuestionsSocialAction1 agent1LibraryUserRole1AskQuestionsSocialAction1 agent1LibraryUserRole1CheckOutLibraryBookSocialAction1 agent1LibraryUserRole1FindBookOnShelvesSocialAction1 agent1LibraryUserRole1FindLibrarySocialAction1 agent1LibraryUserRole1NavigateToLibrarySocialAction1 agent1LibraryUserRole1ReturnOfLibraryBookSocialAction1 agent1LibraryUserRole1SearchCatalogueSocialAction1
agent1StudentUserRole1	agent1StudentUserRole1AnswerQuestionsSocialAction1 agent1StudentUserRole1AskQuestionsSocialAction1 agent1StudentUserRole1DoPracticalTasksSocialAction1

	agent1StudentUserRole1EnrolOnCourseSocialAction1
	agent1StudentUserRole1ExitTeachingRoomSocialAction1
	agent1StudentUserRole1FindTeachingRoomSocialAction1
	agent1StudentUserRole1HearLectureSocialAction1
	agent1StudentUserRole1NavigateToTeachingRoomSocialAction1
	agent1StudentUserRole1PayCourseFeesSocialAction1
	agent1StudentUserRole1SeeLectureSocialAction1
	agent1StudentUserRole1SubmitAssignmentSocialAction1
	agent1StudentUserRole1TakeNotesFromSpeakerSocialAction1
	agent1StudentUserRole1TakeNotesFromTextSocialAction1
	agent1StudentUserRoleWriteAssignmentSocialAction1
Cooperator Role	
agent1SignerCooperatorRole1	agent1SignerCooperatorRole1MakeSignLanguageSocialAction1
	agent1SignerCooperatorRole1SeeSignLanguageSocialAction1
	agent1SignerCooperatorRole1UnderstandSignLanguageSocialAction1

Agent1	Qualifiers
Body Abilities	
agent1HearingAbility1	4
agent1LeftEarHearingAbility1	4
Body Components	
agent1RightEarHearingAbility1	4
agent1LeftEarComponent1	4
agent1RightEarComponent1	4

Table G.1: Agent1 CollegeModel Profile

Agent2

Roles	Social Actions
Basic Function Roles	
agent2DresserBasicFunctionRole1	agent2DresserBasicFunctionRole1PutClothesOnSocialAction1 agent2DresserBasicFunctionRole1RemoveClothesSocialAction1
agent2DrinkerRole1	agent2DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1
agent2EaterRole1	agent2EaterBasicFunctionRole1FeedSelfSocialAction1 agent2EaterBasicFunctionRole1UseCutlerySocialAction1 agent2EaterBasicFunctionRole1UseCutleryToFeedSocialAction1
agent2ToileterRole1	agent2ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 agent2ToileterBasicFunctionRole1FindToiletSocialAction1 agent2ToileterBasicFunctionRole1NavigateToToiletSocialAction1 agent2ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 agent2ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1
agent2WasherRole1	agent2WasherBasicFunctionRole1DrySelfSocialAction1 agent2WasherBasicFunctionRole1WashSelfSocialAction1
User Roles	
agent2CafeUserRole1	agent2CafeUserRole1MakeCafeFoodOrderSocialAction1 agent2CafeUserRole1PayForCafeFoodOrderSocialAction1 agent2CafeUserRole1SeeCafeFoodMenuSocialAction1
Provider Roles	
agent2InformationAssistantProviderRole1	agent2InformationAssistantProviderRole1AnswerQuestions SocialAction1 agent2InformationAssistantProviderRole1AskQuestions SocialAction1 agent2InformationAssistantProviderRole1FindInformationToAnswerQuestionsSocialAction1
RoleAssisterRoles	
agent2InformationSeekerUserRoleAssisterRole1	agent2InformationSeekerUserRoleAssisterRole1FindAnswers SocialActionAssisterAction1
Cooperator Role	
agent2SignerCooperatorRole1	agent2SignerCooperatorRole1MakeSignLanguageSocialAction1 agent2SignerCooperatorRole1SeeSignLanguageSocialAction1 agent2SignerCooperatorRole1UnderstandSignLanguageSocialAction1
agent2SignerTranslatorCooperatorRole1	agent2SignerTranslatorCooperatorRole1TranslateSignLanguage ToSpokenLanguageSocialAction1 agent2SignerTranslatorCooperatorRole1TranslateSpokenLanguageToSignLanguageSocialAction1

Table G.2: Agent2 CollegeModel Profile

Agent3

Roles	Social Actions
Basic Function Roles	
agent3DresserBasicFunctionRole1	agent3DresserBasicFunctionRole1PutClothesOnSocialAction1
	agent3DresserBasicFunctionRole1RemoveClothesSocialAction1
agent3DrinkerBasicFunctionRole1	agent3DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1
agent3EaterBasicFunctionRole1	agent3EaterBasicFunctionRole1FeedSelfSocialAction1
	agent3EaterBasicFunctionRole1UseCutlerySocialAction1
	agent3EaterBasicFunctionRole1UseCutleryToFeedSocialAction1
agent3ToileterBasicFunctionRole1	agent3ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1
	agent3ToileterBasicFunctionRole1FindToiletSocialAction1
	agent3ToileterBasicFunctionRole1NavigateToToiletSocialAction1
	agent3ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1
	agent3ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1
agent3WasherBasicFunctionRole1	agent3WasherBasicFunctionRole1DrySelfSocialAction1
	agent3WasherBasicFunctionRole1WashSelfSocialAction1
User Roles	
agent3CafeUserRole1	agent3CafeUserRole1MakeCafeFoodOrderSocialAction1
	agent3CafeUserRole1PayForCafeFoodOrderSocialAction1
	agent3CafeUserRole1SeeCafeFoodMenuSocialAction1
Provider Roles	
agent3InformationAssistantProviderRole1	agent3InformationAssistantProviderRole1AnswerQuestions SocialAction1
	agent3InformationAssistantProviderRole1AskQuestions SocialAction1
	agent3InformationAssistantProviderRole1FindInformationToAnswer QuestionsSocialAction1
RoleAssisterRoles	
agent3InformationSeekerUserRoleAssisterRole1	agent3InformationSeekerUserRoleAssisterRole1FindAnswers SocialActionAssisterAction1

Table G.3: Agent3 CollegeModel Profile

Agent4

Roles	Social Actions
Basic Function Roles	
agent4DresserBasicFunctionRole1	agent4DresserBasicFunctionRole1PutClothesOnSocialAction1
	agent4DresserBasicFunctionRole1RemoveClothesSocialAction1
agent4DrinkerBasicFunctionRole1	agent4DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1
agent4EaterBasicFunctionRole1	agent4EaterBasicFunctionRole1FeedSelfSocialAction1
	agent4EaterBasicFunctionRole1UseCutlerySocialAction1
	agent4EaterBasicFunctionRole1UseCutleryToFeedSocialAction1
agent4ToileterBasicFunctionRole1	agent4ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1
	agent4ToileterBasicFunctionRole1FindToiletSocialAction1
	agent4ToileterBasicFunctionRole1NavigateToToiletSocialAction1
	agent4ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1
	agent4ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1
agent4WasherBasicFunctionRole1	agent4WasherBasicFunctionRole1DrySelfSocialAction1
	agent4WasherBasicFunctionRole1WashSelfSocialAction1
User Roles	
agent1CafeUserRole1	agent4CafeUserRole1MakeCafeFoodOrderSocialAction1
	agent4CafeUserRole1PayForCafeFoodOrderSocialAction1
	agent4CafeUserRole1SeeCafeFoodMenuSocialAction1
agent1LibraryUserRole1	agent4LibraryUserRole1AnswerQuestionsSocialAction1
	agent4LibraryUserRole1AskQuestionsSocialAction1
	agent4LibraryUserRole1CheckOutLibraryBookSocialAction1
	agent4LibraryUserRole1FindBookOnShelvesSocialAction1
	agent4LibraryUserRole1FindLibrarySocialAction1
	agent4LibraryUserRole1NavigateToLibrarySocialAction1
	agent4LibraryUserRole1ReturnOfLibraryBookSocialAction1
	agent4LibraryUserRole1SearchCatalogueSocialAction1
Provider Roles	
agent4LecturerProviderRole1	agent4LecturerProviderRole1AnswerQuestionsSocialAction1
	agent4LecturerProviderRole1AskQuestionsSocialAction1
	agent4LecturerProviderRole1ShowLectureSlidesSocialAction1
	agent4LecturerProviderRole1SpeakLectureSocialAction1

Agent4	Qualifier
Body Abilities	4
agent4SeeingAbility1	4
agent4LeftEyeSeeingAbility1	4
agent4RightEyeSeeingAbility1	4
Body Components	
agent4LeftEyeComponent1	4
agent4RightEyeComponent1	4

Table G.4: Agent4 CollegeModel Profile

Agent5

Roles	Social Actions
Basic Function Roles	
agent5DresserBasicFunctionRole1	Agent5DresserBasicFunctionRole1PutClothesOnSocialAction1 agent5DresserBasicFunctionRole1RemoveClothesSocialAction1
agent5DrinkerBasicFunctionRole1	agent5DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1
agent5EaterBasicFunctionRole1	agent5EaterBasicFunctionRole1FeedSelfSocialAction1 agent5EaterBasicFunctionRole1UseCutlerySocialAction1 agent5EaterBasicFunctionRole1UseCutleryToFeedSocialAction1
agent5ToileterBasicFunctionRole1	agent5ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 agent5ToileterBasicFunctionRole1FindToiletSocialAction1 agent5ToileterBasicFunctionRole1NavigateToToiletSocialAction1 agent5ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 agent5ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1
agent5WasherBasicFunctionRole1	agent5WasherBasicFunctionRole1DrySelfSocialAction1 agent5WasherBasicFunctionRole1WashSelfSocialAction1
User Roles	
agent5CafeUserRole1	agent5CafeUserRole1MakeCafeFoodOrderSocialAction1 agent5CafeUserRole1PayForCafeFoodOrderSocialAction1 agent5CafeUserRole1SeeCafeFoodMenuSocialAction1
agent5InformationSeekerUserRole1	agent5InformationSeekerUserRole1AnswerQuestionsSocialAction1 agent5InformationSeekerUserRole1AskQuestionsSocialAction1 agent5InformationSeekerUserRole1FindAnswersSocialAction1 agent5InformationSeekerUserRole1HearQuestions&AnswersSocialAction1
agent5LibraryUserRole1	agent5LibraryUserRole1AnswerQuestionsSocialAction1 agent5LibraryUserRole1AskQuestionsSocialAction1 agent5LibraryUserRole1CheckOutLibraryBookSocialAction1 agent5LibraryUserRole1FindBookOnShelvesSocialAction1 agent5LibraryUserRole1FindLibrarySocialAction1 agent5LibraryUserRole1NavigateToLibrarySocialAction1 agent5LibraryUserRole1ReturnOfLibraryBookSocialAction1 agent5LibraryUserRole1SearchCatalogueSocialAction1
agent5StudentUserRole1	agent5StudentUserRole1AnswerQuestionsSocialAction1 agent5StudentUserRole1AskQuestionsSocialAction1 agent5StudentUserRole1DoPracticalTasksSocialAction1

	agent5StudentUserRole1EnrolOnCourseSocialAction1
	agent5StudentUserRole1ExitTeachingRoomSocialAction1
	agent5StudentUserRole1FindTeachingRoomSocialAction1
	agent5StudentUserRole1HearLectureSocialAction1
	agent5StudentUserRole1NavigateToTeachingRoomSocialAction1
	agent5StudentUserRole1PayCourseFeesSocialAction1
	agent5StudentUserRole1SeeLectureSocialAction1
	agent5StudentUserRole1SubmitAssignmentSocialAction1
	agent5StudentUserRole1TakeNotesFromSpeakerSocialAction1
	agent5StudentUserRole1TakeNotesFromTextSocialAction1
	agent5StudentUserRoleWriteAssignmentSocialAction1

Table G.5: Agent5 CollegeModel Profile

Agent6

Roles	Social Actions
Basic Function Roles	
agent6DresserBasicFunctionRole1	agent6DresserBasicFunctionRole1PutClothesOnSocialAction1
	agent6DresserBasicFunctionRole1RemoveClothesSocialAction1
agent6DrinkerBasicFunctionRole1	agent6DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1
agent6EaterBasicFunctionRole1	agent6EaterBasicFunctionRole1FeedSelfSocialAction1
	agent6EaterBasicFunctionRole1UseCutlerySocialAction1
	agent6EaterBasicFunctionRole1UseCutleryToFeedSocialAction1
agent6ToileterBasicFunctionRole1	agent6ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1
	agent6ToileterBasicFunctionRole1FindToiletSocialAction1
	agent6ToileterBasicFunctionRole1NavigateToToiletSocialAction1
	agent6ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1
	agent6ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1
agent6WasherBasicFunctionRole1	agent6WasherBasicFunctionRole1DrySelfSocialAction1
	agent6WasherBasicFunctionRole1WashSelfSocialAction1
User Roles	
agent6CafeUserRole1	agent6CafeUserRole1MakeCafeFoodOrderSocialAction1
	agent6CafeUserRole1PayForCafeFoodOrderSocialAction1
	agent6CafeUserRole1SeeCafeFoodMenuSocialAction1
Role Assister Roles	
agent6DresserBasicFunctionRoleAssisterRole1	agent6DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialActionAssisterAction1
	agent6DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialActionAssisterAction1
agent6DrinkerBasicFunctionRoleAssisterRole1	agent6DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1
agent6EaterBasicFunctionRoleAssisterRole1	agent6EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssisterAction1
	agent6EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssisterAction1
	agent6EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialActionAssisterAction1
agent6ToileterBasicFunctionRoleAssisterRole1	agent6ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocialActionAssisterAction1
	agent6ToileterBasicFunctionRoleAssisterRole1FindToiletSocialActionAssisterAction1
	agent6ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialActionAssisterAction1

	agent6ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocialActionAssisterAction1
	agent6ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocialActionAssisterAction1
agent6WasherBasicFunctionRoleAssisterRole1	agent6WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssisterAction1
	agent6WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssisterAction1
agent6CafeUserRoleAssisterRole1	agent6CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssisterAction1
	agent6CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssisterAction1
	agent6CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1
agent6LibraryUserRoleAssisterRole1	agent6LibraryUserRoleAssisterRole1FindBookOnShelvesSocialActionAssisterAction1
	agent6LibraryUserRoleAssisterRole1FindLibrarySocialActionAssisterAction1
	agent6LibraryUserRoleAssisterRole1NavigateToLibrarySocialActionAssisterAction1
agent6StudentUserRoleAssisterRole1	agent6StudentUserRoleAssisterRole1AnswerQuestionsSocialActionAssisterAction1
	agent6StudentUserRoleAssisterRole1AskQuestionsSocialActionAssisterAction1
	agent6StudentUserRoleAssisterRole1EnrolOnCourseSocialActionAssisterAction1
	agent6StudentUserRoleAssisterRole1ExitTeachingRoomSocialActionAssisterAction1
	agent6StudentUserRoleAssisterRole1FindTeachingRoomSocialActionAssisterAction1
	agent6StudentUserRoleAssisterRole1NavigateToTeachingRoomSocialActionAssisterAction1
	agent6StudentUserRoleAssisterRole1PayCourseFeesSocialActionAssisterAction1
	agent6StudentUserRoleAssisterRole1SubmitAssignmentSocialActionAssisterAction1
	agent6StudentUserRoleAssisterRole1TakeNotesFromSpeakerSocialActionAssisterAction1
	agent6StudentUserRoleAssisterRole1TakeNotesFromTextSocialActionAssisterAction1
Assister Role	
agent6CareWorkerProviderAssisterRole1	

Table G.6: Agent6 CollegeModel Profile

Agent7

Roles	Social Actions
Basic Function Roles	
agent7DresserBasicFunctionRole1	Agent7DresserBasicFunctionRole1PutClothesOnSocialAction1
	agent7DresserBasicFunctionRole1RemoveClothesSocialAction1
agent7DrinkerBasicFunctionRole1	agent7DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1
agent7EaterBasicFunctionRole1	agent7EaterBasicFunctionRole1FeedSelfSocialAction1
	agent7EaterBasicFunctionRole1UseCutlerySocialAction1
	agent7EaterBasicFunctionRole1UseCutleryToFeedSocialAction1
agent7ToileterBasicFunctionRole1	agent7ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1
	agent7ToileterBasicFunctionRole1FindToiletSocialAction1
	agent7ToileterBasicFunctionRole1NavigateToToiletSocialAction1
	agent7ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1
	agent7ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1
agent7WasherBasicFunctionRole1	agent7WasherBasicFunctionRole1DrySelfSocialAction1
	agent7WasherBasicFunctionRole1WashSelfSocialAction1
User Roles	
agent7CafeUserRole1	agent7CafeUserRole1MakeCafeFoodOrderSocialAction1
	agent7CafeUserRole1PayForCafeFoodOrderSocialAction1
	agent7CafeUserRole1SeeCafeFoodMenuSocialAction1
agent7InformationSeekerUserRole1	agent7InformationSeekerUserRole1AnswerQuestionsSocialAction1
	agent7InformationSeekerUserRole1AskQuestionsSocialAction1
	agent7InformationSeekerUserRole1FindAnswersSocialAction1
	agent7InformationSeekerUserRole1HearQuestions&AnswersSocialAction1
agent7LibraryUserRole1	agent7LibraryUserRole1AnswerQuestionsSocialAction1
	agent7LibraryUserRole1AskQuestionsSocialAction1
	agent7LibraryUserRole1CheckOutLibraryBookSocialAction1
	agent7LibraryUserRole1FindBookOnShelvesSocialAction1
	agent7LibraryUserRole1FindLibrarySocialAction1
	agent7LibraryUserRole1NavigateToLibrarySocialAction1
	agent7LibraryUserRole1ReturnOfLibraryBookSocialAction1
	agent7LibraryUserRole1SearchCatalogueSocialAction1
agent7StudentUserRole1	agent7StudentUserRole1AnswerQuestionsSocialAction1
	agent7StudentUserRole1AskQuestionsSocialAction1
	agent7StudentUserRole1DoPracticalTasksSocialAction1
	agent7StudentUserRole1EnrolOnCourseSocialAction1
	agent7StudentUserRole1ExitTeachingRoomSocialAction1

	agent7StudentUserRole1FindTeachingRoomSocialAction1
	agent7StudentUserRole1HearLectureSocialAction1
	agent7StudentUserRole1NavigateToTeachingRoomSocialAction1
	agent7StudentUserRole1PayCourseFeesSocialAction1
	agent7StudentUserRole1SeeLectureSocialAction1
	agent7StudentUserRole1SubmitAssignmentSocialAction1
	agent7StudentUserRole1TakeNotesFromSpeakerSocialAction1
	agent7StudentUserRole1TakeNotesFromTextSocialAction1
	agent7StudentUserRoleWriteAssignmentSocialAction1

Agent7	Qualifiers
Body Abilities	
agent7LeftHandDexterityAbility1	4
agent7RightHandDexterityAbility1	4
agent7LeftHandMovementAbility1	4
agent7RightHandMovementAbility1	4
Body Components	
agent7LeftHandComponent1	4
agent7RightHandComponent1	4

Table G.7: Agent7 CollegeModel Profile

Agent8

Roles	Social Actions
Basic Function Roles	
agent8DresserBasicFunctionRole1	Agent8DresserBasicFunctionRole1PutClothesOnSocialAction1 agent8DresserBasicFunctionRole1RemoveClothesSocialAction1
agent8DrinkerBasicFunctionRole1	agent8DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1
agent8EaterBasicFunctionRole1	agent8EaterBasicFunctionRole1FeedSelfSocialAction1 agent8EaterBasicFunctionRole1UseCutlerySocialAction1 agent8EaterBasicFunctionRole1UseCutleryToFeedSocialAction1
agent8ToileterBasicFunctionRole1	agent8ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 agent8ToileterBasicFunctionRole1FindToiletSocialAction1 agent8ToileterBasicFunctionRole1NavigateToToiletSocialAction1 agent8ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 agent8ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1
agent8WasherBasicFunctionRole1	agent8WasherBasicFunctionRole1DrySelfSocialAction1 agent8WasherBasicFunctionRole1WashSelfSocialAction1
User Roles	
agent8LibraryUserRole1	agent8LibraryUserRole1AnswerQuestionsSocialAction1 agent8LibraryUserRole1AskQuestionsSocialAction1 agent8LibraryUserRole1CheckOutLibraryBookSocialAction1 agent8LibraryUserRole1FindBookOnShelvesSocialAction1 agent8LibraryUserRole1FindLibrarySocialAction1 agent8LibraryUserRole1NavigateToLibrarySocialAction1 agent8LibraryUserRole1ReturnOfLibraryBookSocialAction1 agent8LibraryUserRole1SearchCatalogueSocialAction1
Provider Roles	
agent8LibraryAssistantProviderRole1	agent8LibraryAssistantProviderRole1AnswerQuestionsSocialAction1 agent8LibraryAssistantProviderRole1AskQuestionsSocialAction1 agent8LibraryAssistantProviderRole1FindAnswersSocialAction1 agent8LibraryAssistantProviderRole1HearQuestions&AnswersSocialAction1 agent8LibraryAssistantProviderRole1ProcessCheckOutLibraryBookSocialAction1 agent8LibraryAssistantProviderRole1ProcessReturnOfLibraryBookSocialAction1
RoleAssister Roles	
agent8LibraryUserRoleAssisterRole1	agent8LibraryUserRoleAssisterRole1CheckOutLibraryBookSocialActionAssisterAction1 agent8LibraryUserRoleAssisterRole1FindBookOnShelvesSocialActionAssisterAction1 agent8LibraryUserRoleAssisterRole1ReturnOfLibraryBookSocialActionAssisterAction1 agent8LibraryUserRoleAssisterRole1SearchCatalogueSocialActionAssisterAction1

Table G.8: Agent8 CollegeModel Profile

Agent9

Roles	Social Actions
Basic Function Roles	
agent9DresserBasicFunctionRole1	agent9DresserBasicFunctionRole1PutClothesOnSocialAction1 agent9DresserBasicFunctionRole1RemoveClothesSocialAction1
agent9DrinkerRole1	agent9DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1
agent9EaterRole1	agent9EaterBasicFunctionRole1FeedSelfSocialAction1 agent9EaterBasicFunctionRole1UseCutlerySocialAction1 agent9EaterBasicFunctionRole1UseCutleryToFeedSocialAction1
agent9ToileterBasicFunctionRole1	agent9ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 agent9ToileterBasicFunctionRole1FindToiletSocialAction1 agent9ToileterBasicFunctionRole1NavigateToToiletSocialAction1 agent9ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 agent9ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1
agent9WasherBasicFunctionRole1	agent9WasherBasicFunctionRole1DrySelfSocialAction1 agent9WasherBasicFunctionRole1WashSelfSocialAction1
User Roles	
agent9CafeUserRole1	agent9CafeUserRole1MakeCafeFoodOrderSocialAction1 agent9CafeUserRole1PayForCafeFoodOrderSocialAction1 agent9CafeUserRole1SeeCafeFoodMenuSocialAction1
Provider Roles	
agent9CafeAssistantProviderRole1	agent9CafeAssistantProviderRole1DeliverCafeFoodOrderSocialAction1 agent9CafeAssistantProviderRole1TakeCafeFoodOrderSocialAction1 agent9CafeAssistantProviderRole1TakePaymentForCafeFoodOrderSocialAction1
RoleAssister Roles	
agent9CafeUserRoleAssisterRole1	agent9CafeUserRoleAssisterRole1MakeCafeFoodOrderSocialActionAssisterAction1 agent9CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssisterAction1 agent9CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1
agent9EaterBasicFunctionRoleAssisterRole1	agent9EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssisterAction1 agent9EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssisterAction1 agent9EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialActionAssisterAction1
agent9DrinkerBasicFunctionRoleAssisterRole1	agent9DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1

Table G.9: Agent9 CollegeModel Profile

Agent10

Roles	Social Actions
Basic Function Roles	
agent10DresserBasicFunctionRole1	agent10DresserBasicFunctionRole1PutClothesOnSocialAction1
	agent10DresserBasicFunctionRole1RemoveClothesSocialAction1
agent10DrinkerBasicFunctionRole1	agent10DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1
agent10EaterBasicFunctionRole1	agent10EaterBasicFunctionRole1FeedSelfSocialAction1
	agent10EaterBasicFunctionRole1UseCutlerySocialAction1
	agent10EaterBasicFunctionRole1UseCutleryToFeedSocialAction1
agent10ToileterBasicFunctionRole1	agent10ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1
	agent10ToileterBasicFunctionRole1FindToiletSocialAction1
	agent10ToileterBasicFunctionRole1NavigateToToiletSocialAction1
	agent10ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1
	agent10ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1
agent10WasherRole1	agent10WasherBasicFunctionRole1DrySelfSocialAction1
	agent10WasherBasicFunctionRole1WashSelfSocialAction1
Provider Role	
agent10BursarProviderRole1	agent10BursarProviderRole1AnswerQuestionsSocialAction1
	agent10BursarProviderRole1AskQuestionsSocialAction1
	agent10BursarProviderRole1TakePaymentForCourseFeesSocialAction1
Role Assister Role	
agent10StudentUserRoleAssisterRole1	agent10StudentUserRoleAssisterRolePayCourseFeesSocialActionAssisterAction1

Agent10	Qualifier
Body Abilities	
agent10StandingAbility1	4
agent10Walkingability1	4
Body Components	
agent10LeftLegComponent1	4
agent10RightLegComponent1	4

Table G.10: Agent10 CollegeModel Profile

Agent11

Roles	Social Actions
Basic Function Roles	
agent11DresserBasicFunctionRole1	agent11DresserBasicFunctionRole1PutClothesOnSocialAction1
	agent11DresserBasicFunctionRole1RemoveClothesSocialAction1
agent11DrinkerBasicFunctionRole1	agent11DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1
agent11EaterBasicFunctionRole1	agent11EaterBasicFunctionRole1FeedSelfSocialAction1
	agent11EaterBasicFunctionRole1UseCutlerySocialAction1
	agent11EaterBasicFunctionRole1UseCutleryToFeedSocialAction1
agent11ToileterBasicFunctionRole1	agent11ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1
	agent11ToileterBasicFunctionRole1FindToiletSocialAction1
	agent11ToileterBasicFunctionRole1NavigateToToiletSocialAction1
	agent11ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1
	agent11ToileterRole1RestoreRelevantClothesSocialAction1
agent11WasherBasicFunctionRole1	agent11WasherBasicFunctionRole1DrySelfSocialAction1
	agent11WasherBasicFunctionRole1WashSelfSocialAction1
Provider Roles	
agent11RegistrarProviderRole1	agent11RegistrarProviderRole1AnswerQuestionsSocialAction1
	agent11RegistrarProviderRole1AskQuestionsSocialAction1
	agent11RegistrarProviderRole1EnrolStudentOnCourseSocialAction1
Role Assister Roles	
agent11StudentUserRoleAssisterRole1	agent11StudentUserRoleAssisterRoleEnrolOnCourseSocialActionAssisterAction1

Table G.11: Agent11 CollegeModel Profile

Agent12

Roles	Social Actions
Basic Function Roles	
agent12DresserBasicFunctionRole1	agent12DresserBasicFunctionRole1PutClothesOnSocialAction1
	agent12DresserBasicFunctionRole1RemoveClothesSocialAction1
agent12DrinkerBasicFunctionRole1	agent12DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1
agent12EaterBasicFunctionRole1	agent12EaterBasicFunctionRole1FeedSelfSocialAction1
	agent12EaterBasicFunctionRole1UseCutlerySocialAction1
	agent12EaterBasicFunctionRole1UseCutleryToFeedSocialAction1
agent12ToileterBasicFunctionRole1	agent12ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1
	agent12ToileterBasicFunctionRole1FindToiletSocialAction1
	agent12ToileterBasicFunctionRole1NavigateToToiletSocialAction1
	agent12ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1
	agent12ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1
agent12WasherBasicFunctionRole1	agent12WasherBasicFunctionRole1DrySelfSocialAction1
	agent12WasherBasicFunctionRole1WashSelfSocialAction1
Provider Roles	
agent12SecurityGuardProviderRole1	agent12SecurityGuardProviderRole1AnswerQuestionsSocialAction1
	agent12SecurityGuardProviderRole1AskQuestionsSocialAction1
	agent12SecurityGuardProviderRole1TakeSecurityActionSocialAction1
Role Assister Roles	
agent12LibraryUserRoleAssisterRole1	agent12LibraryUserRoleAssisterRole1FindLibrarySocialActionAssisterAction1
	agent12LibraryUserRoleAssisterRole1NavigateToLibrarySocialActionAssisterAction1
agent12StudentUserRoleAssisterRole1	agent12StudentUserRoleAssisterRole1FindTeachingRoomSocialActionAssisterAction1
	agent12StudentUserRoleAssisterRole1NavigateToTeachingRoomSocialActionAssisterAction1

Table G.12: Agent12 CollegeModel Profile

Agent13

Roles	Social Actions
Basic Function Roles	
agent13DresserBasicFunctionRole1	agent13DresservRole1PutClothesOnSocialAction1
	agent13DresserBasicFunctionRole1RemoveClothesSocialAction1
agent13DrinkerRole1	agent13DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1
agent13EaterRole1	agent13EaterBasicFunctionRole1FeedSelfSocialAction1
	agent13EaterBasicFunctionRole1UseCutlerySocialAction1
	agent13EaterBasicFunctionRole1UseCutleryToFeedSocialAction1
agent13ToileterBasicFunctionRole1	agent13ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1
	agent13ToileterBasicFunctionRole1FindToiletSocialAction1
	agent13ToileterBasicFunctionRole1NavigateToToiletSocialAction1
	agent13ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1
	agent13ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1
agent13WasherBasicFunctionRole1	agent13WasherBasicFunctionRole1DrySelfSocialAction1
	agent13WashervRole1WashSelfSocialAction1
Provider Roles	
agent13TechnicianProviderRole1	agent13TechnicianProviderRole1AnswerQuestionsSocialAction1
	agent13TechnicianProviderRole1AskQuestionsSocialAction1
	agent13TechnicianProviderRole1DeliverAssisterAidSocialAction1
	agent13TechnicianProviderRole1DeliverEquipmentSocialAction1
	agent13TechnicianProviderRole1SetUpAssisterAidSocialAction1
	agent13TechnicianProviderRole1SetUpEquipmentSocialAction1

Table G.13: Agent13 CollegeModel Profile

Agent14

Roles	Social Actions
Basic Function Roles	
agent14DresserBasicFunctionRole1	agent14DresserBasicFunctionRole1PutClothesOnSocialAction1
	agent14DresserBasicFunctionRole1RemoveClothesSocialAction1
agent14DrinkerRole1	agent14DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1
agent14EaterRole1	agent14EaterBasicFunctionRole1FeedSelfSocialAction1
	agent14EaterBasicFunctionRole1UseCutlerySocialAction1
	agent14EaterBasicFunctionRole1UseCutleryToFeedSocialAction1
agent14ToileterBasicFunctionRole1	agent14ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1
	agent14ToileterBasicFunctionRole1FindToiletSocialAction1
	agent14ToileterBasicFunctionRole1NavigateToToiletSocialAction1
	agent14ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1
	agent14ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1
agent14WasherBasicFunctionRole1	agent14WasherBasicFunctionRole1DrySelfSocialAction1
	agent14WasherBasicFunctionRole1WashSelfSocialAction1
User Roles	
agent14CafeUserRole1	agent14CafeUserRole1MakeCafeFoodOrderSocialAction1
	agent14CafeUserRole1PayForCafeFoodOrderSocialAction1
	agent14CafeUserRole1SeeCafeFoodMenuSocialAction1
Role Assister Roles	
agent14DresserBasicFunctionRoleAssisterRole1	agent14DresserBasicFunctionRoleAssisterRole1PutClothesOnSocialActionAssisterAction1
	agent14DresserBasicFunctionRoleAssisterRole1RemoveClothesSocialActionAssisterAction1
agent14DrinkerBasicFunctionRoleAssisterRole1	agent14DrinkerBasicFunctionRoleAssisterRole1UseDrinkingUtensilSocialActionAssisterAction1
agent14EatervRoleAssisterRole1	agent14EaterBasicFunctionRoleAssisterRole1FeedSelfSocialActionAssisterAction1
	agent14EaterBasicFunctionRoleAssisterRole1UseCutlerySocialActionAssisterAction1
	agent14EaterBasicFunctionRoleAssisterRole1UseCutleryToFeedSocialActionAssisterAction1
agent14ToileterBasicFunctionRoleAssisterRole1	agent14ToileterBasicFunctionRoleAssisterRole1CleanSelfAfterToiletSocialActionAssisterAction1
	agent14ToileterBasicFunctionRoleAssisterRole1FindToiletSocialActionAssisterAction1
	agent14ToileterBasicFunctionRoleAssisterRole1NavigateToToiletSocialActionAssisterAction1
	agent14ToileterBasicFunctionRoleAssisterRole1RemoveRelevantClothesSocialActionAssisterAction1
	agent14ToileterBasicFunctionRoleAssisterRole1RestoreRelevantClothesSocialActionAssisterAction1
agent14WashervRoleAssisterRole1	agent14WasherBasicFunctionRoleAssisterRole1DrySelfSocialActionAssisterAction1
	agent14WasherBasicFunctionRoleAssisterRole1WashSelfSocialActionAssisterAction1

agent14CafeUserRoleAssisterRole1	agent14CafeUserRole1MakeCafeFoodOrderSocialAction1
	agent14CafeUserRoleAssisterRole1PayForCafeFoodOrderSocialActionAssisterAction1
	agent14CafeUserRoleAssisterRole1SeeCafeFoodMenuSocialActionAssisterAction1
agent14LibraryUserRoleAssisterRole1	agent14LibraryUserRoleAssisterRole1FindBookOnShelvesSocialActionAssisterAction1
	agent14LibraryUserRoleAssisterRole1FindLibrarySocialActionAssisterAction1
	agent14LibraryUserRoleAssisterRole1NavigateToLibrarySocialActionAssisterAction1
agent14StudentUserRoleAssisterRole1	agent14StudentUserRoleAssisterRole1AnswerQuestionsSocialActionAssisterAction1
	agent14StudentUserRoleAssisterRole1AskQuestionsSocialActionAssisterAction1
	agent14StudentUserRoleAssisterRole1EnrolOnCourseSocialActionAssisterAction1
	agent14StudentUserRoleAssisterRole1ExitTeachingRoomSocialActionAssisterAction1
	agent14StudentUserRoleAssisterRole1FindTeachingRoomSocialActionAssisterAction1
	agent14StudentUserRoleAssisterRole1NavigateToTeachingRoomSocialActionAssisterAction1
	agent14StudentUserRoleAssisterRole1PayCourseFeesSocialActionAssisterAction1
	agent14StudentUserRoleAssisterRole1SubmitAssignmentSocialActionAssisterAction1
	agent14StudentUserRoleAssisterRole1TakeNotesFromSpeakerSocialActionAssisterAction1
	agent14StudentUserRoleAssisterRole1TakeNotesFromTextSocialActionAssisterAction1
Assister Role	
Agent14CareWorkerProviderAssisterRole1	

Table G.14: Agent14 CollegeModel Profile

Agent15

Roles	Social Actions
Basic Function Roles	
agent15DresserBasicFunctionRole1	agent15DresserBasicFunctionRole1PutClothesOnSocialAction1 agent15DresserBasicFunctionRole1RemoveClothesSocialAction1
agent15DrinkerBasicFunctionRole1	agent15DrinkerBasicFunctionRole1UseDrinkingUtensilSocialAction1
agent15EaterBasicFunctionRole1	agent15EaterBasicFunctionRole1FeedSelfSocialAction1 agent15EaterBasicFunctionRole1UseCutlerySocialAction1 agent15EaterBasicFunctionRole1UseCutleryToFeedSocialAction1
agent15ToileterBasicFunctionRole1	agent15ToileterBasicFunctionRole1CleanSelfAfterToiletSocialAction1 agent15ToileterBasicFunctionRole1FindToiletSocialAction1 agent15ToileterBasicFunctionRole1NavigateToToiletSocialAction1 agent15ToileterBasicFunctionRole1RemoveRelevantClothesSocialAction1 agent15ToileterBasicFunctionRole1RestoreRelevantClothesSocialAction1
agent15WasherBasicFunctionRole1	agent15WasherBasicFunctionRole1DrySelfSocialAction1 agent15WasherBasicFunctionRole1WashSelfSocialAction1
User Roles	
agent15CafeUserRole1	agent15CafeUserRole1MakeCafeFoodOrderSocialAction1 agent15CafeUserRole1PayForCafeFoodOrderSocialAction1 agent15CafeUserRole1SeeCafeFoodMenuSocialAction1
agent15InformationSeekerUserRole1	agent15InformationSeekerUserRole1AnswerQuestionsSocialAction1 agent15InformationSeekerUserRole1AskQuestionsSocialAction1 agent15InformationSeekerUserRole1FindAnswersSocialAction1 agent15InformationSeekerUserRole1HearQuestions&AnswersSocialAction1
agent15LibraryUserRole1	agent15LibraryUserRole1AnswerQuestionsSocialAction1 agent15LibraryUserRole1AskQuestionsSocialAction1 agent15LibraryUserRole1CheckOutLibraryBookSocialAction1 agent15LibraryUserRole1FindBookOnShelvesSocialAction1 agent15LibraryUserRole1FindLibrarySocialAction1 agent15LibraryUserRole1NavigateToLibrarySocialAction1 agent15LibraryUserRole1ReturnOfLibraryBookSocialAction1

	agent15LibraryUserRole1SearchCatalogueSocialAction1
Provider Roles	
agent15LecturerProviderRole1	agent15LecturerProviderRole1AnswerQuestionsSocialAction1
	agent15LecturerProviderRole1AskQuestionsSocialAction1
	agent15LecturerProviderRole1ShowLectureSlidesSocialAction1
	agent15LecturerProviderRole1SpeakLectureSocialAction1
Role Assister Roles	
agent15StudentUserRoleAssisterRole1	agent15StudentUserRoleAssisterRole1DoPracticalTasksSocialActionAssisterAction1
	agent15StudentUserRoleAssisterRoleSubmitAssignmentSocialActionAssisterAction1

Table G.15: Agent15 CollegeModel Profile

Appendix H
Social Action Education & OntoCarer-Link Domain Ontology
Additional Classes, Properties & Class diagrams

SocialAction Ontology – Domain Extensions

This appendix contains the Social Action Ontology domain extension classes and properties not included in Chapter 4. Along with related the OntoCarer-Link-Ontology proerties.

The domain roles and AssisterAids that are included in this appendix are the domain ontology extensions for the following Social Actions:

Basic Function Roles & AssisterAids:

- EaterBasicFunctionRole, DresserBasicFunctionRole, WasherBasicFunctionRole, ToileterBasicFunctionRole
- EaterBasicFunctionRoleAssisterRole, DresserBasicFunctionRoleAssisterRole, WasherBasicFunctionRoleAssisterRole, ToileterBasicFunctionRoleAssisterRole
- EaterAssisterAids, DresserAssisterAids, WasherAssisterAids, ToileterAssister-Aids

Adminstration & Support Roles & AssisterAids

- LibraryAssistantProviderRole, CafeAssistantProviderRole, RegistrarProviderRole, InformationAssistantProviderRole, SecurityGuardProviderRole, TechnicianProviderRole
- LibraryAssistantProviderRoleAssisterRole, CafeAssistantProviderRoleAssisterRole, RegistrarProviderRoleAssisterRole, InformationAssistantProviderRoleAssisterRole, SecurityGuardProviderRoleAssisterRole, TechnicianProviderRoleAssisterRole
- LibraryAssistant-AssisterAids, CafeAssistant-AssisterAids, Registrar-AssisterAids, InformationAssistant-AssisterAids, SecurityGuard-AssisterAids, TechnicianProvider-AssisterAids

User Roles for Support Services & Assister Aids

- InforomationSeekerUserRole, LibraryUserRole, CafeUserRole
- InforomationSeekerUserRoleAssisterRole, LibraryUserRoleAssisterRole, CafeUserRoleAssisterRole
- InforomationSeeker-AssisterAids, LibraryUser-AssisterAids, CafeUser-AssisterAids

SignerRole and Signer Translator Role & Assister Aids

- SignerRole, SignerTranslator Role
- SignerRoleAssisterRole, SignerTranslatorRoleAssisterRole
- SignerRoleAssisterAids, SignerTranslatorRoleAssisterAids

Domain Social Actions Concepts and Class diagrams

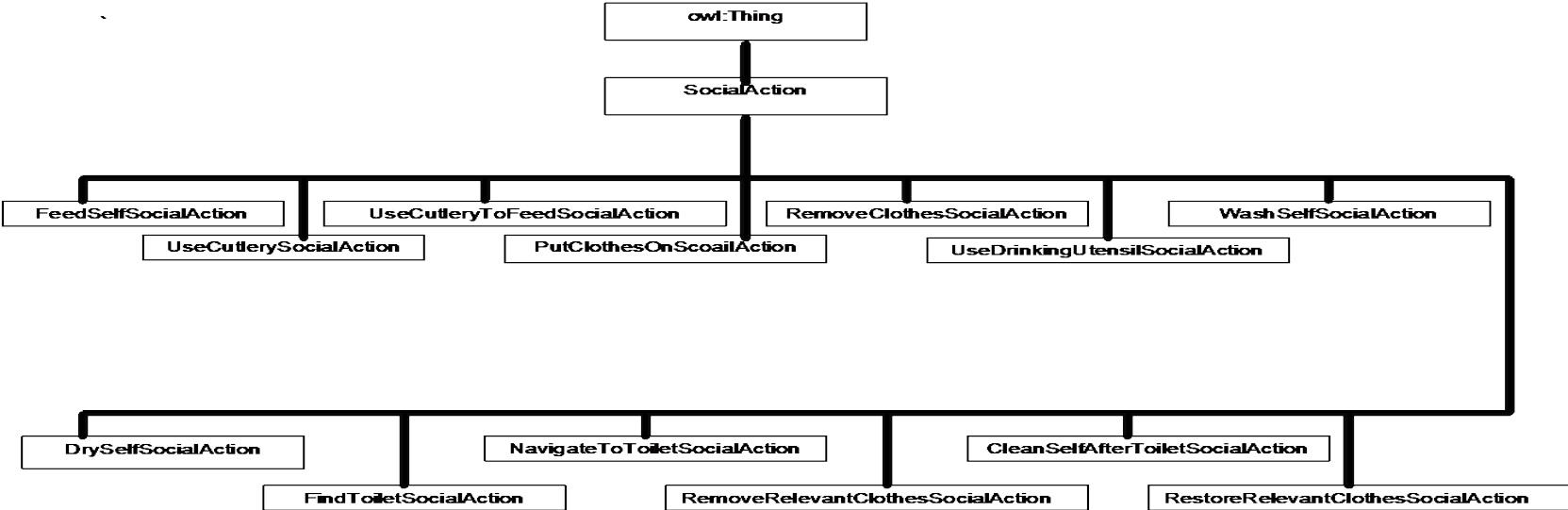


Figure H.1 Domain Social Actions – Basic Functions

SocialActions for Basic Function Roles

Role	Concept	Super-Concept	Definition
EaterBasicFunctionRole	FeedSelfSocialAction	SocialAction	Action of feeding oneself
EaterBasicFunctionRole	UseCutlerySocialAction	SocialAction	Action of using cutlery
EaterBasicFunctionRole	UseCutleryToFeedSocialAction	SocialAction	Action of using cutlery to feed oneself
DresserBasicFunctionRole	PutClothesOnSocialAction	SocialAction	Action of putting on clothes
DresserBasicFunctionRole	RemoveClothesSocialAction	SocialAction	Action of removing clothes
DrinkerBasicFunctionRole	UseDrinkingUtensilSocialAction	SocialAction	Action of using a drinking utensil
WasherBasicFunctionRole	WashSelfSocialAction	SocialAction	Action of washing oneself
WasherBasicFunctionRole	DrySelfSocialAction	SocialAction	Action of drying oneself
ToileterBasicFunctionRole	FindToiletSocialAction	SocialAction	Action of finding a toilet
ToileterBasicFunctionRole	NavigateToToiletSocialAction	SocialAction	Action of navigating to a toilet
ToileterBasicFunctionRole	RemoveRelevantClothesSocialAction	SocialAction	Action of removing relevant clothes
ToileterBasicFunctionRole	CleanSelfAfterToiletSocialAction	SocialAction	Action of cleaning oneself after using a toilet

Table H.1 Domain Social Actions – Basic Functions

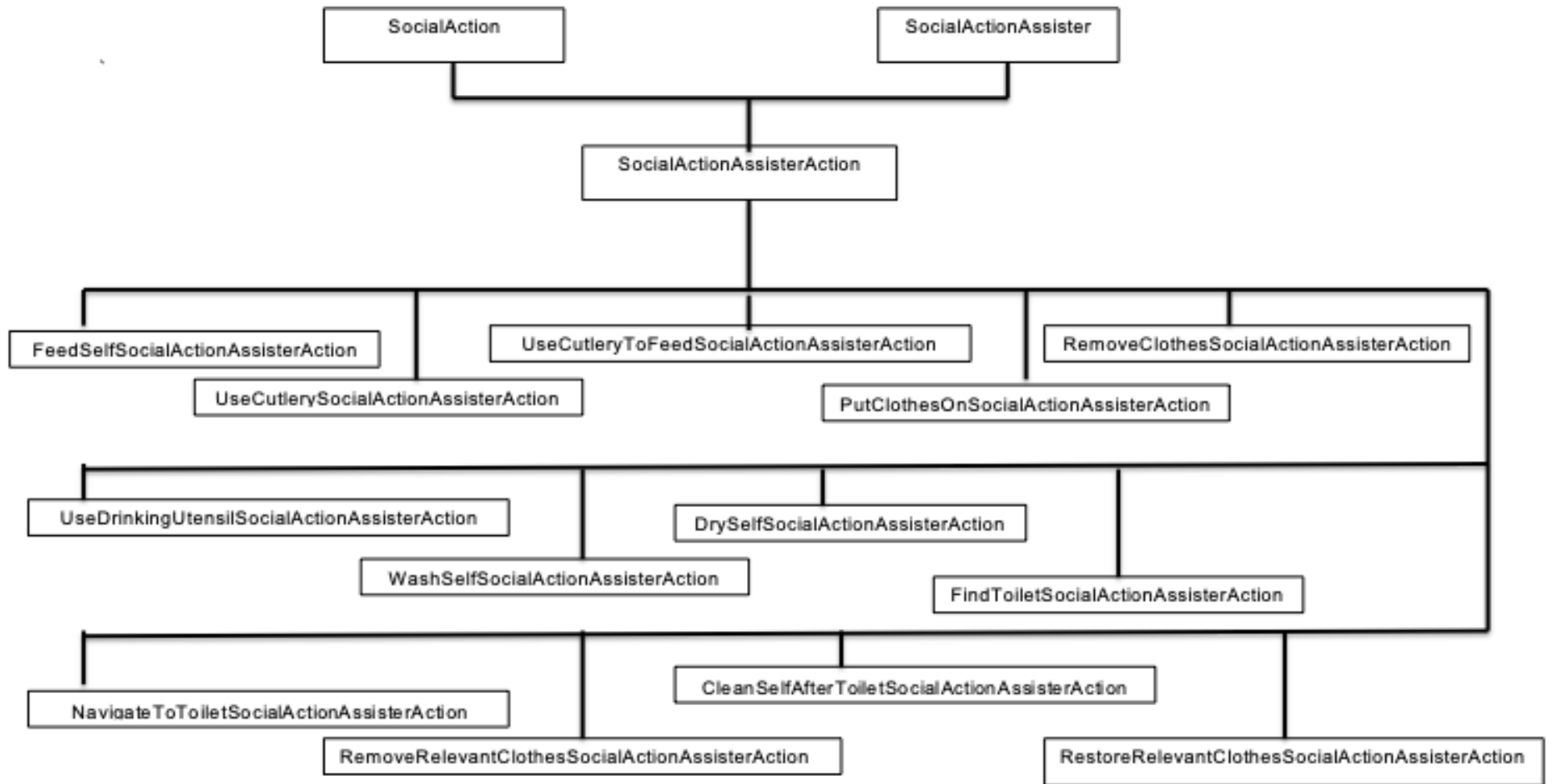


Figure H.2 Domain Social ActionAssisterActions – Basic Functions

SocialActionAssisterActions for Basic Function Role - RoleAssisterRoles

Role	Concept	Super-Concept	Definition
EaterBasicFunction RoleAssisterRole	FeedSelfSocialActionAssisterAction	SocialActionAssisterAction	Action to assist feeding
EaterBasicFunction RoleAssisterRole	UseCutlerySocialActionAssisterAction	SocialActionAssisterAction	Action to assist use of cutlery
EaterBasicFunction RoleAssisterRole	UseCutleryToFeedSocialActionAssisterAction	SocialActionAssisterAction	Action to assist use of cutlery to feed
DresserBasicFunction RoleAssisterRole	PutClothesOnSocialActionAssisterAction	SocialActionAssisterAction	Action to assist in putting on clothes
DresserBasicFunction RoleAssisterRole	RemoveClothesActionSocialActionAssisterAction	SocialActionAssisterAction	Action to assist in removing clothes
DrinkerBasicFunction RoleAssisterRole	UseDrinkingUtensilSocialActionAssisterAction	SocialActionAssisterAction	Action to assist using drinking utensil
WasherBasicFunction RoleAssisterRole	WashSelfSocialActionAssisterAction	SocialActionAssisterAction	Action to assist in washing body
WasherBasicFunction RoleAssisterRole	DrySelfSocialActionAssisterAction	SocialActionAssisterAction	Action to assist in drying body
ToileterBasicFunction RoleAssisterRole	FindToiletSocialActionAssisterAction	SocialActionAssisterAction	Action to assist in finding toilet
ToileterBasicFunction RoleAssisterRole	NavigateToToiletSocialActionAssisterAction	SocialActionAssisterAction	Action to assist navigating to toilet
ToileterBasicFunction RoleAssisterRole	RemoveRelevantClothesSocialActionAssisterAction	SocialActionAssisterAction	Action to assist removing relevant clothes
ToileterBasicFunction RoleAssisterRole	CleanSelfAfterToiletSocialActionAssisterAction	SocialActionAssisterAction	Action to assist clean body after toilet use
ToileterBasicFunction RoleAssisterRole	RestoreRelevantClothesSocialActionAssisterAction	SocialActionAssisterAction	Action to restore relevant clothes

Table H.2 SocialActionAssisterActions for Basic Function Role - RoleAssisterRoles

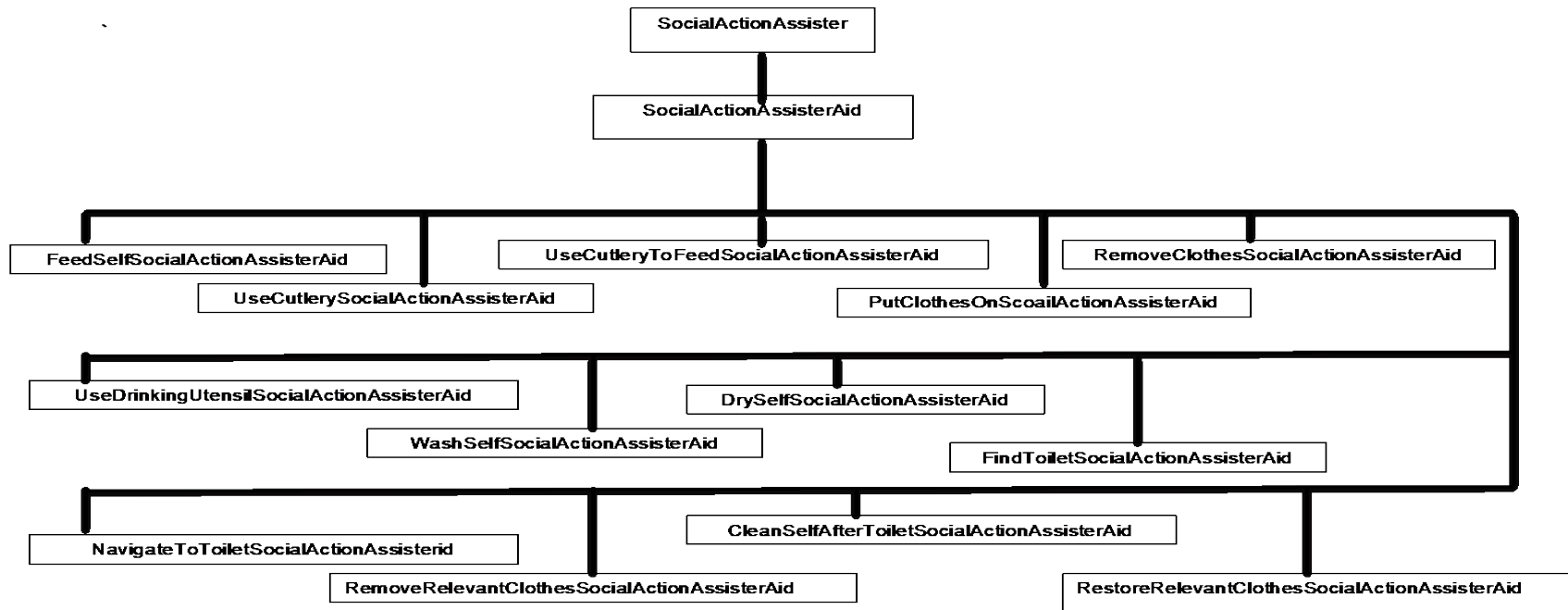


Figure H.3 SocialActionAssisterAid classes for Basic Function Roles

SocialActionAssisterAid classes for Basic Function Roles

Role Assisted by Aid	Concept	Super-Concept	Definition
EaterBasicFunctionRole	FeedSelfSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist feeding
EaterBasicFunctionRole	UseCutlerySocialActionAssisterAid	SocialActionAssisterAid	Aid to assist use of cutlery
EaterBasicFunctionRole	UseCutleryToFeedSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist use of cutlery to feed
DresserBasicFunctionRole	PutClothesOnSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in putting on clothes
DresserBasicFunctionRole	RemoveClothesActionSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in removing clothes
DrinkerBasicFunctionRole	UseDrinkingUtensilSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist using drinking utensil
WasherBasicFunctionRole	WashSelfSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in washing body
WasherBasicFunctionRole	DrySelfSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in drying body
ToileterBasicFunctionRole	FindToiletSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in finding toilet
ToileterBasicFunctionRole	NavigateToToiletSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist navigating to toilet
ToileterBasicFunctionRole	RemoveRelevantClothesSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist removing relevant clothes
ToileterBasicFunctionRole	CleanSelfAfterToiletSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist clean body after toilet use
ToileterBasicFunctionRole	RestoreRelevantClothesSocialActionAssisterAid	SocialActionAssisterAid	Aid to restore relevant clothes

Figure H.4 SocialActionAssisterAid classes for Basic Function Roles

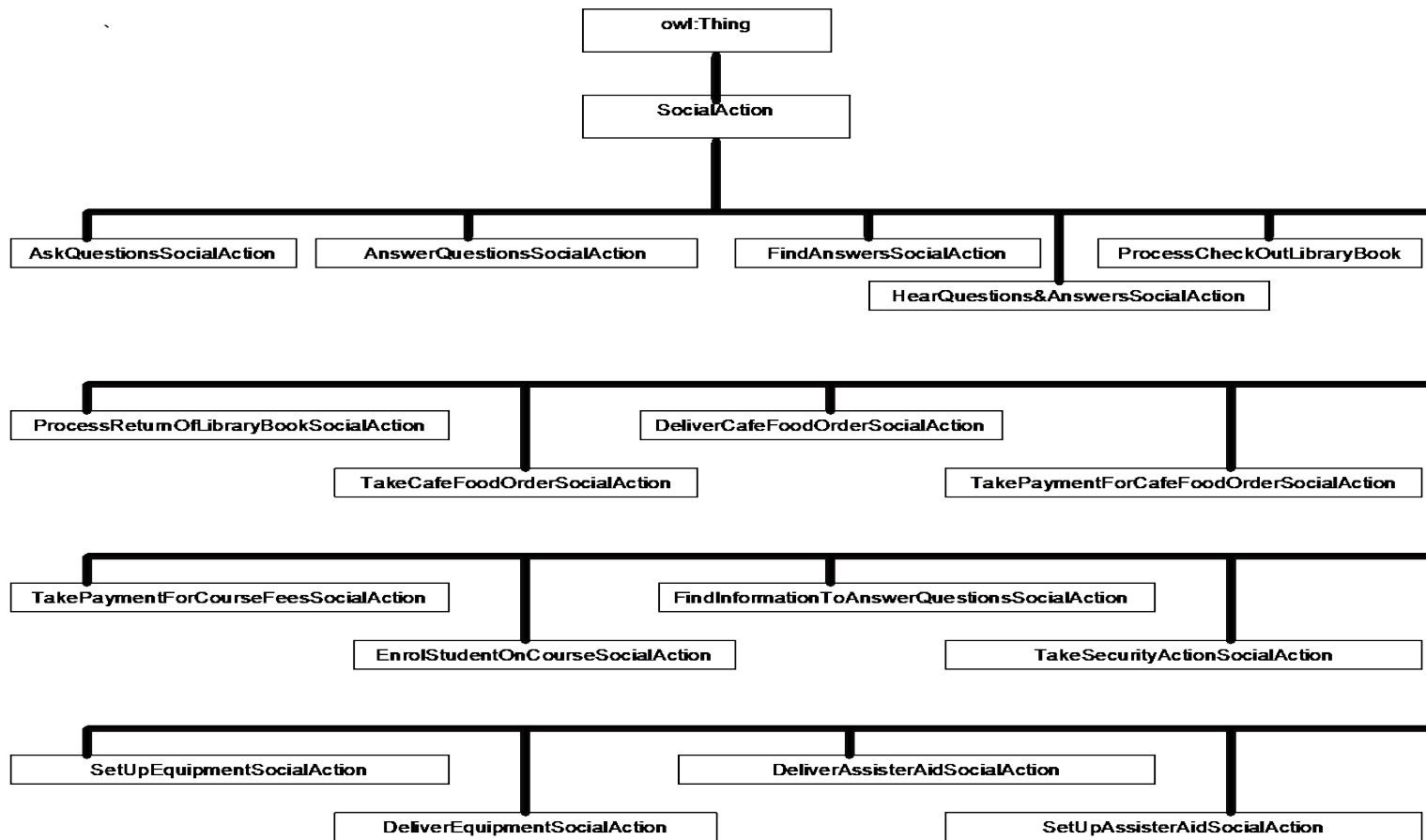


Figure H.4 SocialActions for Administration & Support Roles

SocialActions for Administration & Support Roles

Role	Concept	Super-Concept	Definition
LibraryAssistantProviderRole	AskQuestionsSocialAction	SocialAction	Action to ask questions
LibraryAssistantProviderRole	AnswerQuestionsSocialAction	SocialAction	Action to answer questions
LibraryAssistantProviderRole	FindAnswersSocialAction	SocialAction	Action to find answers
LibraryAssistantProviderRole	HearQuestions&AnswersSocialAction	SocialAction	Action to hear questions
LibraryAssistantProviderRole	ProcessCheckOutLibraryBookSocialAction	SocialAction	Action to process checking out a library book
LibraryAssistantProviderRole	ProcessReturnOfLibraryBookSocialAction	SocialAction	Action to to process return of a library book
CafeAssistantProviderRole	TakeCafeFoodOrderSocialAction	SocialAction	Action to take café food order
CafeAssistantProviderRole	DeliverCafeFoodOrderSocialAction	SocialAction	Action to deliver café food order
CafeAssistantProviderRole	TakePaymentForCafeFoodOrderSocialAction	SocialAction	Action to take payment for café food order
BursarProviderRole	AskQuestionsSocialAction	SocialAction	Action to ask questions
BursarProviderRole	AnswerQuestionsSocialAction	SocialAction	Action to answer questions
BursarProviderRole	TakePaymentForCourseFees	SocialAction	Action to take payment for course fees
RegistrarProviderRole	AskQuestionsSocialAction	SocialAction	Action to ask questions
RegistrarProviderRole	AnswerQuestionsSocialAction	SocialAction	Action to answer questions
RegistrarProviderRole	EnrolStudentOnCourse	SocialAction	Action to enrol student on a course
InformationAssistantProviderRole	AskQuestionsSocialAction	SocialAction	Action to ask questions
InformationAssistantProviderRole	AnswerQuestionsSocialAction	SocialAction	Action to answer questions
InformationAssistantProviderRole	FindInformationToAnswerQuestionsSocialAction	SocialAction	Action to find answers to questions
SecurityGuardProviderRole	AskQuestionsSocialAction	SocialAction	Action to ask questions
SecurityGuardProviderRole	AnswerQuestionsSocialAction	SocialAction	Action to answer questions
SecurityGuardProviderRole	TakeSecurityActionSocialAction	SocialAction	Action to take a security measures
TechnicianProviderRole	AskQuestionsSocialAction	SocialAction	Action to ask questions
TechnicianProviderRole	AnswerQuestionsSocialAction	SocialAction	Action to answer questions
TechnicianProviderRole	SetUpEquipmentSocialAction	SocialAction	Action to set up equipment
TechnicianProviderRole	DeliverEquipmentSocialAction	SocialAction	Action to deliver equipment to a location
TechnicianProviderRole	DeliverAssisterAidSocialAction	SocialAction	Action to deliver an assistive Aid to a location
TechnicianProviderRole	SetUpAssisterAidSocialAction	SocialAction	Action to set up an assistive Aid

Table H.5 SocialActions for Administration & Support Roles

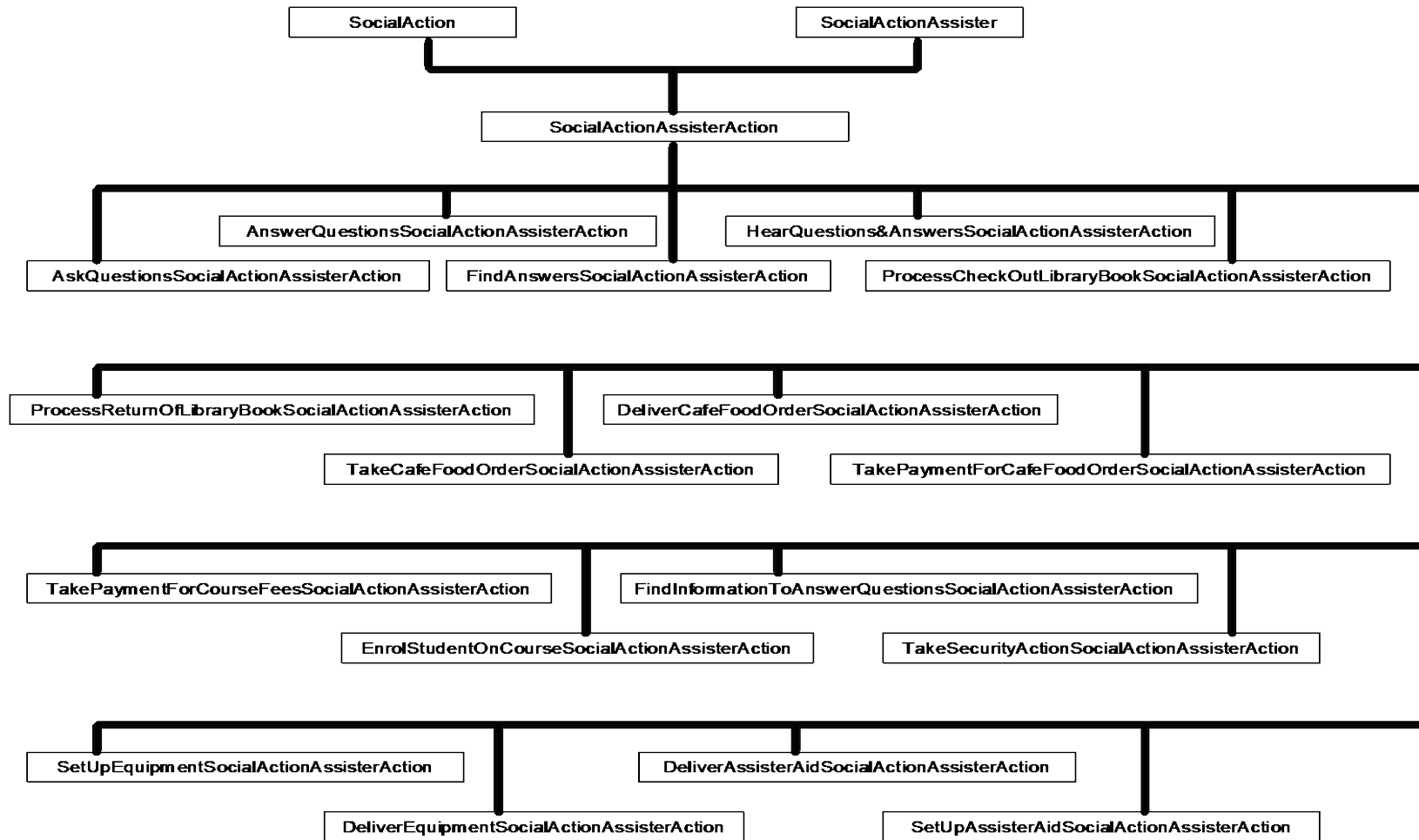


Figure H.5 SocialActionAssisterActions for Administration & Support Roles

SocialActionAssisterActions for Administration & Support Roles

Role	Concept	Super-Concept	Definition
LibraryAssistantProviderRoleAssisterRole	AskQuestionsSocialActionAssisterAction	SocialActionAssisterAction	Action to assist asking questions
LibraryAssistantProviderRoleAssisterRole	AnswerQuestionsSocialActionAssisterAction	SocialActionAssisterAction	Action to assist answering questions
LibraryAssistantProviderRoleAssisterRole	FindAnswersSocialActionAssisterAction	SocialActionAssisterAction	Action to assist finding answers
LibraryAssistantProviderRoleAssisterRole	HearQuestions&AnswersSocialActionAssisterAction	SocialActionAssisterAction	Action to assist hearing questions
LibraryAssistantProviderRoleAssisterRole	ProcessCheckOutLibraryBookSocialActionAssisterAction	SocialActionAssisterAction	Action to assist process checking out a library book
LibraryAssistantProviderRoleAssisterRole	ProcessReturnOfLibraryBookSocialActionAssisterAction	SocialActionAssisterAction	Action to assist process return of a library book
CafeAssistantProviderRoleAssisterRole	TakeCafeFoodOrderSocialActionAssisterAction	SocialActionAssisterAction	Action to assist taking café food order
CafeAssistantProviderRoleAssisterRole	DeliverCafeFoodOrderSocialActionAssisterAction	SocialActionAssisterAction	Action to assist delivery of café food order
CafeAssistantProviderRoleAssisterRole	TakePaymentForCafeFoodOrderSocialActionAssisterAction	SocialActionAssisterAction	Action to assist taking payment for café food order
BursarProviderRoleAssisterRole	AskQuestionsSocialActionAssisterAction	SocialActionAssisterAction	Action to assist asking questions
BursarProviderRoleAssisterRole	AnswerQuestionsSocialActionAssisterAction	SocialActionAssisterAction	Action to assist answering questions
BursarProviderRoleAssisterRole	TakePaymentForCourseFeesAssisterAction	SocialActionAssisterAction	Action to assist taking payment for course fees
RegistrarProviderRoleAssisterRole	AskQuestionsSocialActionAssisterAction	SocialActionAssisterAction	Action to assist asking questions
RegistrarProviderRoleAssisterRole	AnswerQuestionsSocialActionAssisterAction	SocialActionAssisterAction	Action to assist answering questions
RegistrarProviderRoleAssisterRole	EnroleStudentOnCourseAssisterAction	SocialActionAssisterAction	Action to assist enrolling student on a course
InformationAssistantProviderRoleAssisterRole	AskQuestionsSocialActionAssisterAction	SocialActionAssisterAction	Action to assist asking questions
InformationAssistantProviderRoleAssisterRole	AnswerQuestionsSocialActionAssisterAction	SocialActionAssisterAction	Action to assist answering questions
InformationAssistantProviderRoleAssisterRole	FindInformationToAnswerQuestionsSocialActionAssisterAction	SocialActionAssisterAction	Action to assist finding answers to questions
SecurityGuardProviderRoleAssisterRole	AskQuestionsSocialActionAssisterAction	SocialActionAssisterAction	Action to assist asking questions
SecurityGuardProviderRoleAssisterRole	AnswerQuestionsSocialActionAssisterAction	SocialActionAssisterAction	Action to assist answering questions
SecurityGuardProviderRoleAssisterRole	TakeSecurityActionSocialActionAssisterAction	SocialActionAssisterAction	Action to assist taking security measures
TechnicianProviderRoleAssisterRole	AskQuestionsSocialActionAssisterAction	SocialActionAssisterAction	Action to assist asking questions
TechnicianProviderRoleAssisterRole	AnswerQuestionsSocialActionAssisterAction	SocialActionAssisterAction	Action to assist answering questions
TechnicianProviderRoleAssisterRole	SetUpEquipmentSocialActionAssisterAction	SocialActionAssisterAction	Action to assist setting up equipment
TechnicianProviderRoleAssisterRole	DeliverEquipmentSocialActionAssisterAction	SocialActionAssisterAction	Action to assist delivering equipment to a location
TechnicianProviderRoleAssisterRole	DeliverAidSocialActionAssisterAction	SocialActionAssisterAction	Action to assist delivering an assistive Aid to a location
TechnicianProviderRoleAssisterRole	SetUpAidSocialActionAssisterAction	SocialActionAssisterAction	Action to assist setting up an assistive Aid

Table H.6 SocialActionAssisterAid classes for Administration & Support Roles

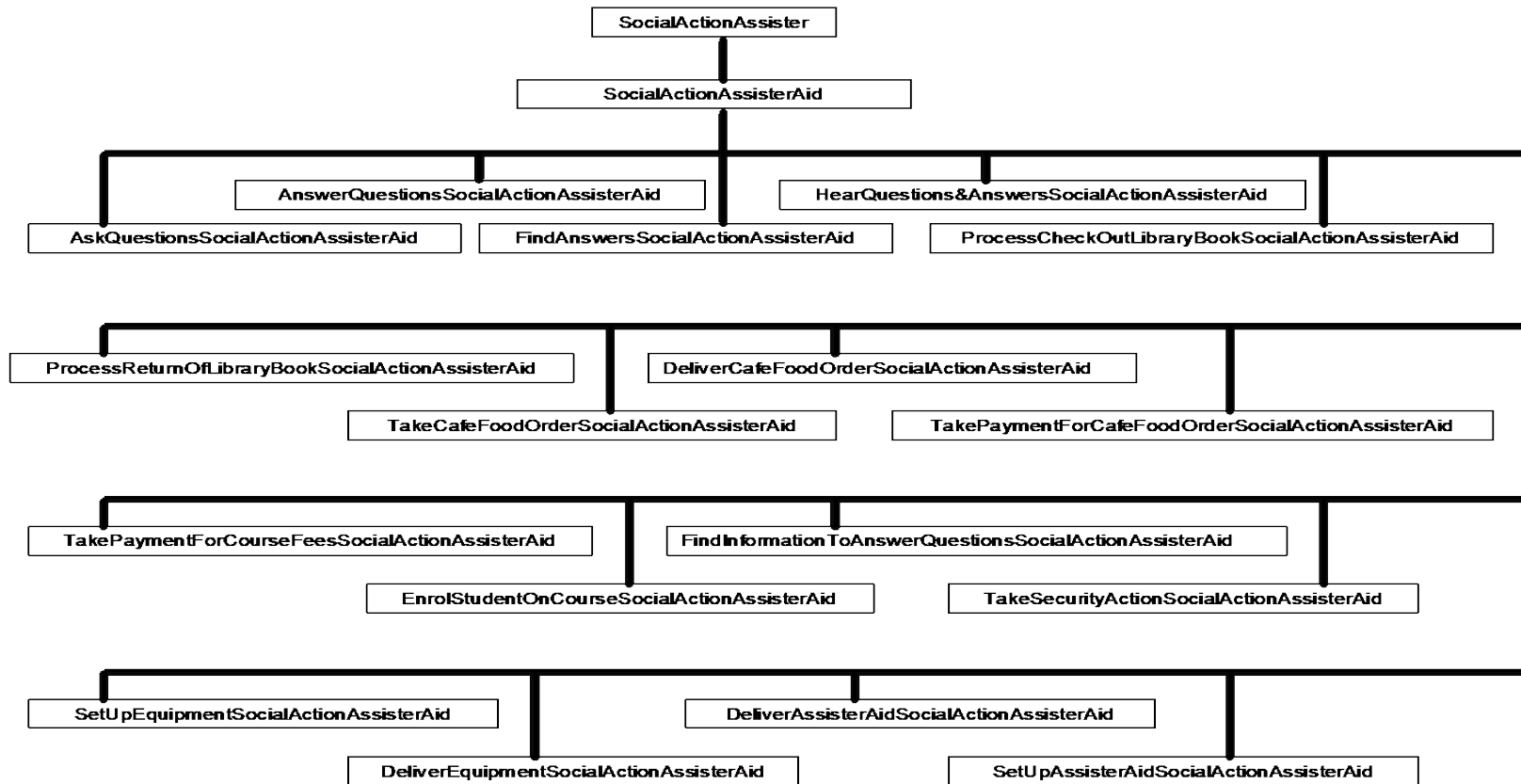


Figure H.6 SocialActionAssisterAid classes for Administration & Support Roles

SocialActionAssisterAid classes for Administration & Support Roles

Role Assisted by Aid	Concept	Super-Concept	Definition
LibraryAssistantProviderRole	AskQuestionsSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in asking questions
LibraryAssistantProviderRole	AnswerQuestionsSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in answering questions
LibraryAssistantProviderRole	FindAnswersSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in finding answers
LibraryAssistantProviderRole	HearQuestions&AnswersSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in hearing questions
LibraryAssistantProviderRole	ProcessCheckOutLibraryBookSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in processing checking out a library book
LibraryAssistantProviderRole	ProcessReturnOfLibraryBookSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in processing return of a library book
CafeAssistantProviderRole	TakeCafeFoodOrderSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in taking café food order
CafeAssistantProviderRole	DeliverCafeFoodOrderSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in delivering café food order
CafeAssistantProviderRole	TakePaymentForCafeFoodOrderSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in taking payment for café food order
BursarProviderRole	AskQuestionsSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in asking questions
BursarProviderRole	AnswerQuestionsSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in answering questions
BursarProviderRole	TakePaymentForCourseFeesAssisterAid	SocialActionAssisterAid	Aid to assist in taking payment for course fees
RegistrarProviderRole	AskQuestionsSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in asking questions
RegistrarProviderRole	AnswerQuestionsSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in answer questions
RegistrarProviderRole	EnroleStudentOnCourseSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in enrolling student on a course
InformationAssistantProviderRole	AskQuestionsSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in asking questions
InformationAssistantProviderRole	AnswerQuestionsSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in answering questions
InformationAssistantProviderRole	FindInformationToAnswerQuestionsSocialAction	SocialActionAssisterAid	Aid to assist in finding answers to questions
SecurityGuardProviderRole	AskQuestionsSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in asking questions
SecurityGuardProviderRole	AnswerQuestionsSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in answering questions
SecurityGuardProviderRole	TakeSecurityActionSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in taking a security measures
TechnicianProviderRole	AskQuestionsSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in asking questions
TechnicianProviderRole	AnswerQuestionsSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in answering questions
TechnicianProviderRole	SetUpEquipmentSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in setting up equipment
TechnicianProviderRole	DeliverEquipmentSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in delivering equipment to a location
TechnicianProviderRole	DeliverAidSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in delivering an assistive Aid to a location
TechnicianProviderRole	SetUpAidSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist in setting up an assistive Aid

Table H.7 SocialActionAssisterAid classes for Administration & Support Roles

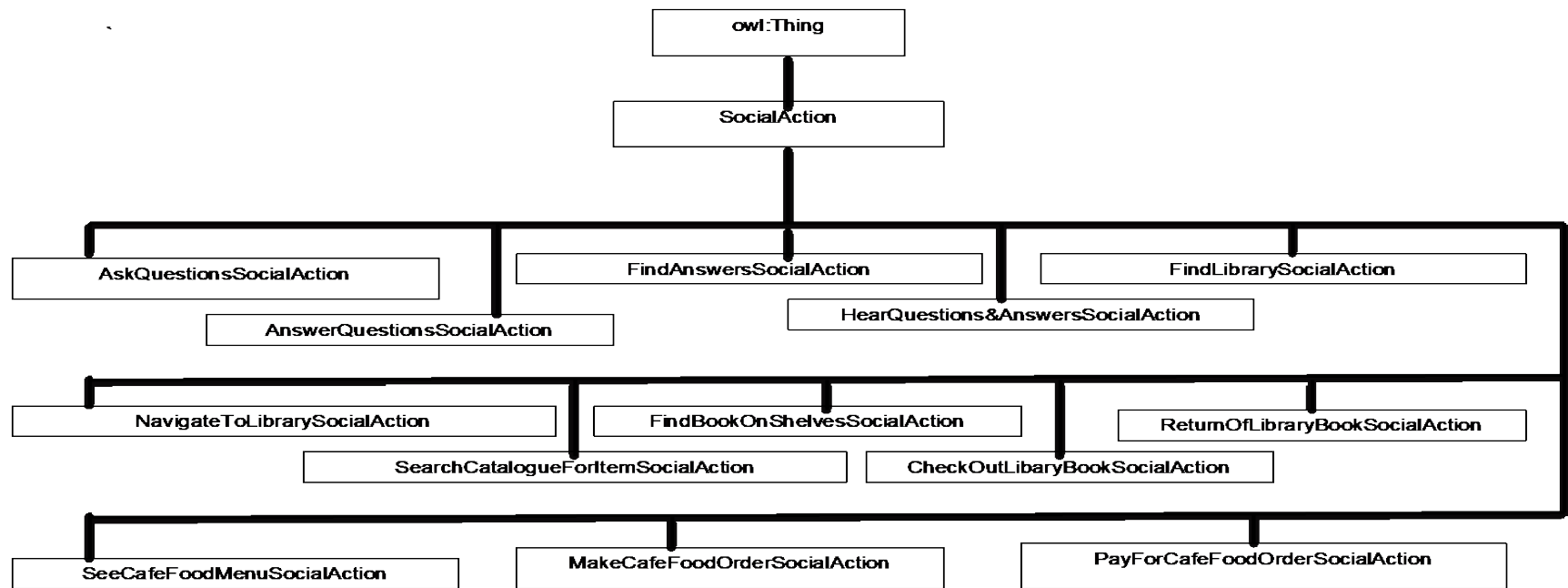


Figure H.8 SocialActions for User Roles for Support Services

SocialActions for User Roles for Support Services

Role	Concept	Super-Concept	Definition
InformationSeekerUserRole	AskQuestionsSocialAction	SocialAction	Action to ask questions
InformationSeekerUserRole	AnswerQuestionsSocialAction	SocialAction	Action to answer questions
InformationSeekerUserRole	FindAnswersSocialAction	SocialAction	Action to find answers
InformationSeekerUserRole	HearQuestions&AnswersSocialAction	SocialAction	Action to hear questions and answers
LibraryUserRole	AskQuestionsSocialAction	SocialAction	Action to ask questions
LibraryUserRole	AnswerQuestionsSocialAction	SocialAction	Action to answer questions
LibraryUserRole	FindLibrarySocialAction	SocialAction	Action to find a library
LibraryUserRole	NavigateToLibrarySocialAction	SocialAction	Action to navigate to a library
LibraryUserRole	SearchCatalogueForItemSocialAction	SocialAction	Action to search a catalogue for items
LibraryUserRole	FindBookOnShelvesSocialAction	SocialAction	Action to find a book on the shelves
LibraryUserRole	CheckOutLibraryBookSocialAction	SocialAction	Action to check out a library book
LibraryUserRole	ReturnOfLibraryBookSocialAction	SocialAction	Action to return a library book
CafeUserRole	SeeCafeFoodMenuSocialAction	SocialAction	Action to see a café menu
CafeUserRole	MakeCafeFoodOrderSocialAction	SocialAction	Action to make a café food order
CafeUserRole	PayForCafeFoodOrderSocialAction	SocialAction	Action to pay for a café food order

Table H.8 SocialActions for User Roles for Support Services

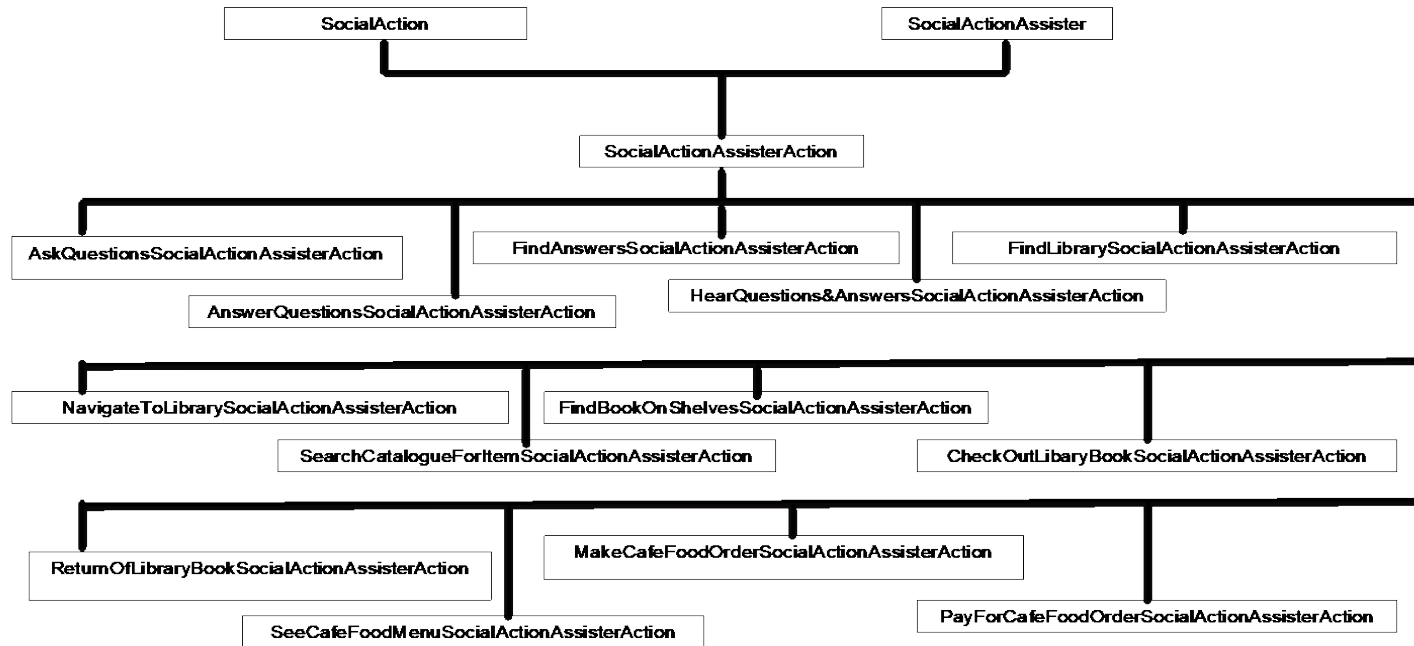


Figure H.9 SocialActionAssisterActions for UserRoleAssisterRoles for Support Services

SocialActionAssisterActions for UserRoleAssisterRoles for Support Services

Role	Concept	Super-Concept	Defintion
InformationSeekerUserRoleAssisterRole	AskQuestionsSocialActionAssisterAction	SocialActionAssisterAction	Action to assist asking questions
InformationSeekerUserRoleAssisterRole	AnswerQuestionsSocialActionAssisterAction	SocialActionAssisterAction	Action to assist answering questions
InformationSeekerUserRoleAssisterRole	FindAnswersSocialActionAssisterAction	SocialActionAssisterAction	Action to assist finding answers
InformationSeekerUserRoleAssisterRole	HearQuestions&AnswersSocialActionAssisterAction	SocialActionAssisterAction	Action to assist hearing questions and answers
LibraryUserRoleAssisterRole	AskQuestionsSocialActionAssisterAction	SocialActionAssisterAction	Action to assist asking questions
LibraryUserRoleAssisterRole	AnswerQuestionsSocialActionAssisterAction	SocialActionAssisterAction	Action to assist answering questions
LibraryUserRoleAssisterRole	FindLibrarySocialActionAssisterAction	SocialActionAssisterAction	Action to assist finding a library
LibraryUserRoleAssisterRole	NavigateToLibrarySocialActionAssisterAction	SocialActionAssisterAction	Action to assist navigating to a library
LibraryUserRoleAssisterRole	SearchCatalogueForItemSocialActionAssisterAction	SocialActionAssisterAction	Action to assist searching a catalogue
LibraryUserRoleAssisterRole	FindBookOnShelvesSocialActionAssisterAction	SocialActionAssisterAction	Action to assist finding a book on a shelf
LibraryUserRoleAssisterRole	CheckOutLibraryBookSocialActionAssisterAction	SocialActionAssisterAction	Action to assist checking out a library book
LibraryUserRoleAssisterRole	ReturnOfLibraryBookSocialActionAssisterAction	SocialActionAssisterAction	Action to assist return of a library book
CafeUserRoleAssisterRole	SeeCafeFoodMenuSocialActionAssisterAction	SocialActionAssisterAction	Action to assist seeing a café food menu
CafeUserRoleAssisterRole	MakeCafeFoodOrderSocialActionAssisterAction	SocialActionAssisterAction	Action to assist making a café food order
CafeUserRoleAssisterRole	PayForCafeFoodOrderSocialActionAssisterAction	SocialActionAssisterAction	Action to assist paying for a café food order

Table H.9 SocialActionAssisterActions for UserRoleAssisterRoles for Support Services

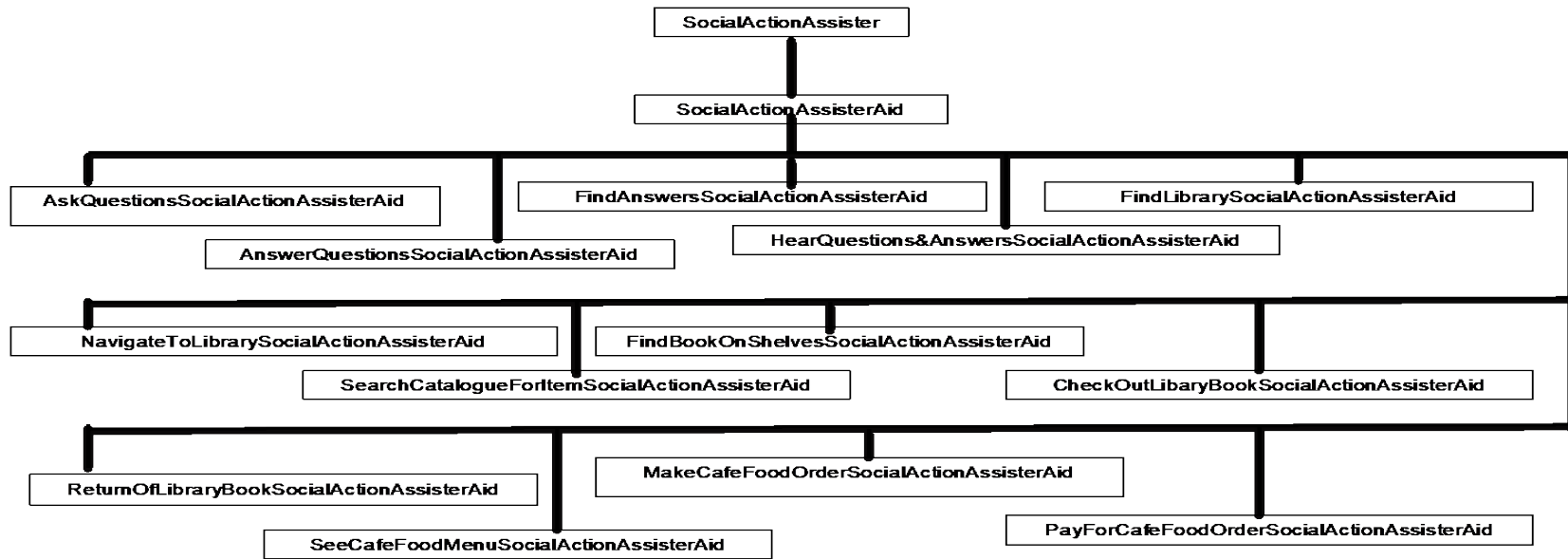


Figure H.10 SocialActionAssisterAids for Support Services UserRoles

SocialActionAssisterAids for Support Services UserRoles

Role (assisted by AssisterAid)	Concept	Super-Concept	Definition
InformationSeekerUserRole	AskQuestionsSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist asking questions
InformationSeekerUserRole	AnswerQuestionsSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist answering questions
InformationSeekerUserRole	FindAnswersSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist finding answers
InformationSeekerUserRole	HearQuestions&AnswersSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist hear questions and answers
LibraryUserRole	AskQuestionsSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist asking questions
LibraryUserRole	AnswerQuestionsSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist answering questions
LibraryUserRole	FindLibrarySocialActionAssisterAid	SocialActionAssisterAid	Aid to assist finding a library
LibraryUserRole	NavigateToLibrarySocialActionAssisterAid	SocialActionAssisterAid	Aid to assist navigating to a library
LibraryUserRole	SearchCatalogueForItemSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist searching a catalogue for items
LibraryUserRole	FindBookOnShelvesSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist finding a book on the shelves
LibraryUserRole	CheckOutLibraryBookSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist checking out a library book
LibraryUserRole	ReturnOfLibraryBookSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist returning a library book
CafeUserRole	SeeCafeFoodMenuSocialActionAssisterAid	SocialActionAssisterAid	Aid to assisting see a café menu
CafeUserRole	MakeCafeFoodOrderSocialActionAssisterAid	SocialActionAssisterAid	Aid to assisting making a café food order
CafeUserRole	PayForCafeFoodOrderSocialActionAssisterAid	SocialActionAssisterAid	Aid to assisting paying for a café food order

Table H.11 SocialActionAssisterAids for Support Services UserRoles

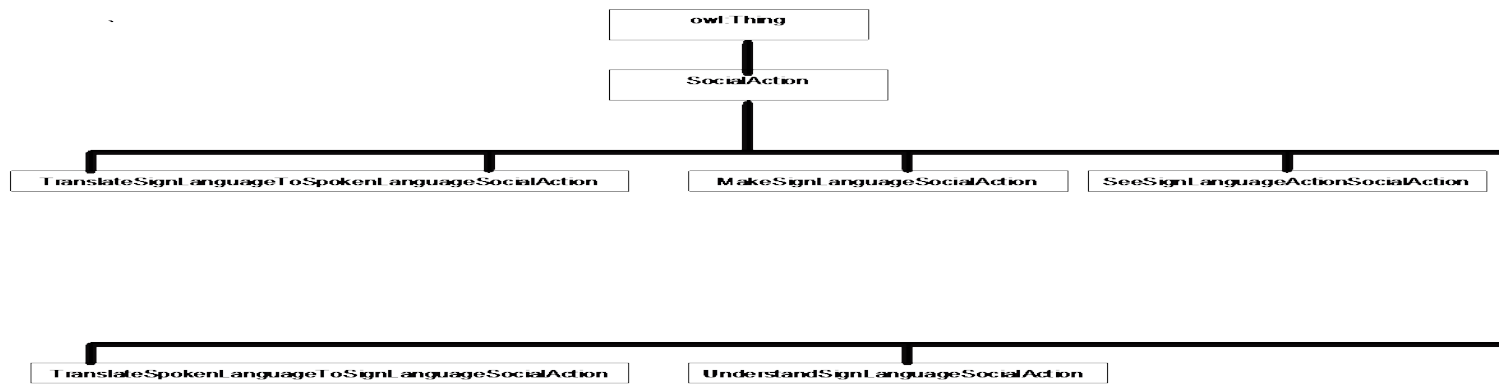


Figure H.12 Social Actions for SignerCooperatorRole and SignerTranlatorCooperatorRole

Social Actions for SignerCooperatorRole and SignerTranlatorCooperatorRole

Role	Concept	Super-Concept	Definition
SignerCooperatorRole	UnderstandSignLanguageSocialAction	SocialAction	Action to understand sign language
SignerCooperatorRole	MakeSignLanguageSocialAction	SocialAction	Action to make sign language
SignerCooperatorRole	SeeSignLanguageActionSocialAction	SocialAction	Action to see sign language actions
SignerTranslatorCooperatorRole	TranslateSpokenLanguageToSignLanguageSocialAction	SocialAction	Action to translate spoken language to sign language
SignerTranlatorCooperatorRole	TranslateSignLanguageToSpokenLanguageSocialAction	SocialAction	Action to translate sign language to spoken language

Table H.12 Social Actions for SignerCooperatorRole and SignerTranlatorCooperatorRole

SocialActionAssisterActions for Signer Role and SignerTranlatorRole

Role	Concept	Super-Concept	Definition
SignerCooperatorRoleAssisterRole	UnderstandSignLanguageSocialActionAssisterAction	SocialActionAssisterAction	Action to assist understanding sign language
SignerCooperatorRoleAssisterRole	MakeSignLanguageSocialActionAssisterAction	SocialActionAssisterAction	Action to assist making sign language
SignerCooperatorRoleAssisterRole	SeeSignLanguageActionSocialActionAssisterAction	SocialActionAssisterAction	Action to assist seeing sign language actions
SignerTranslatorCooperatorRoleAssisterRole	TranslateSpokenLanguageToSignLanguageSocialActionAssisterAction	SocialActionAssisterAction	Action to assist translating spoken language to sign language
SignerTranlatorCooperatorRoleAssisterRole	TranslateSignLanguageToSpokenLanguageSocialActionAssisterAction	SocialActionAssisterAction	Action to translating sign language to spoken language

Table H.13 SocialActionAssisterActions for Signer Role and SignerTranlatorRole

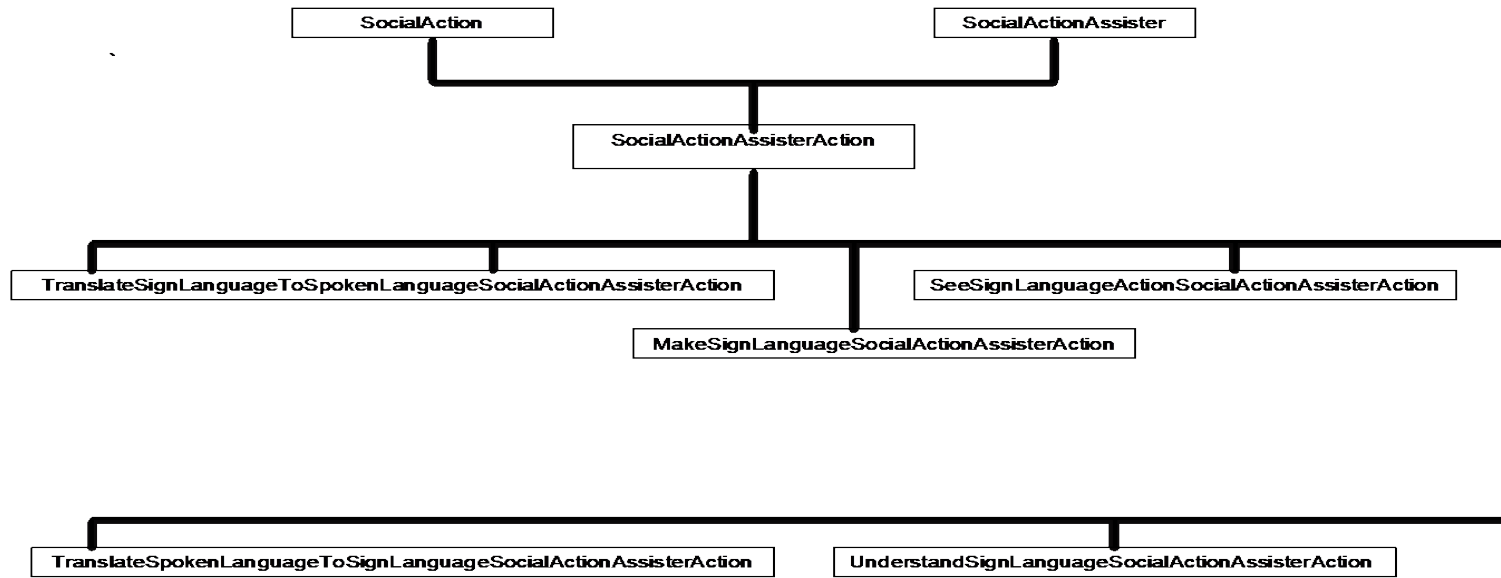


Figure H.13 SocialActionAssisterActions for SignerCooperatorRole and SignerTranlatorCooperatorRole

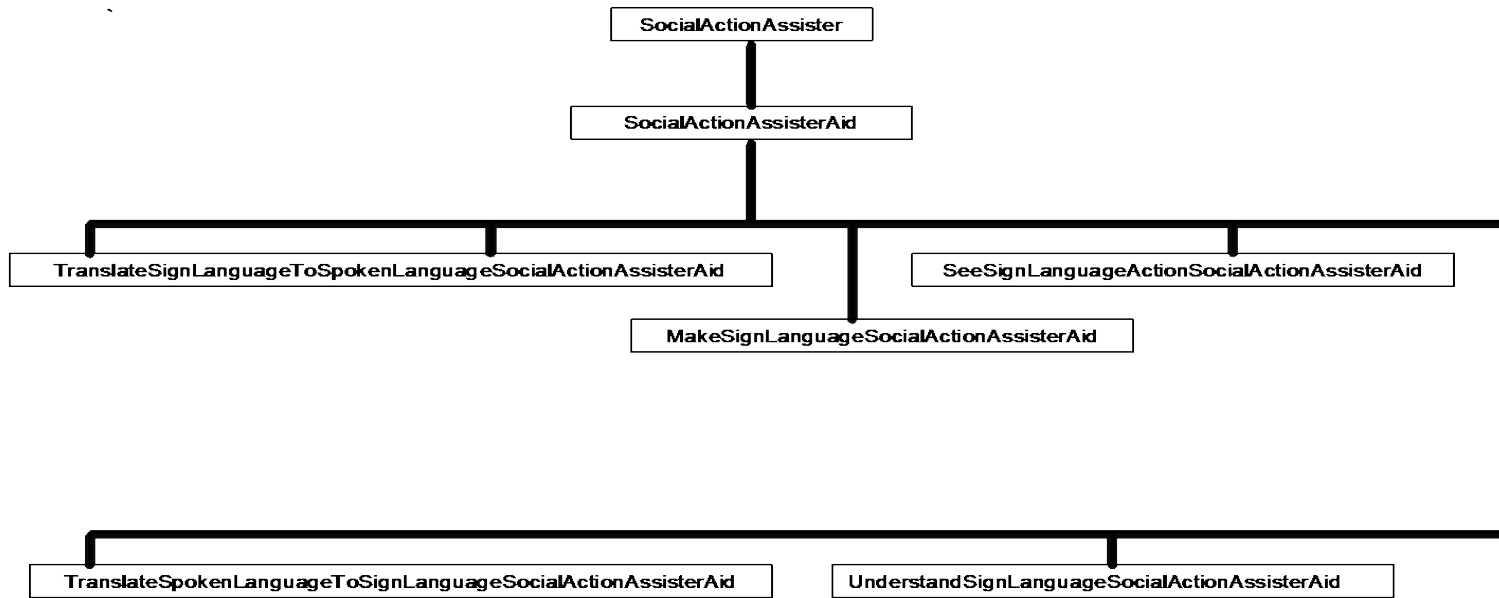


Figure H.14 SocialActionAssisterAids for SignerCooperatorRole and SignerTranslatorCooperatorRole

SocialActionAssisterAids for Signer Role and SignerTranslatorRole

Role	Concept	Super-Concept	Definition
SignerCooperatorRole	UnderstandSignLanguageSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist to understand sign language
SignerCooperatorRole	MakeSignLanguageSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist to make sign language
SignerCooperatorRole	SeeSignLanguageActionSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist to see sign language actions
SignerTranslatorCooperatorRole	TranslateSpokenLanguageToSignLanguageSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist to translate spoken language to sign language
SignerTranlatorCooperatorRole	TranslateSignLanguageToSpokenLanguageSocialActionAssisterAid	SocialActionAssisterAid	Aid to assist to translate sign language to spoken language

Table H.14 SocialActionAssisterAids for Signer Role and SignerTranslatorRole

Domain Social Action Properties tables

ToileterBasicFunctionRole– SocialActionAssisterAction AssistedBy properties – Domain subproperties

Property	Domain	Range	Cardinality
findToiletSocialActionAssistedByFindToiletSocialActionAssisterAction	FindToiletSocialAction	FindToiletSocialAction AssisterAction	1:0..*
navigateToToiletSocialActionAssistedByNavigateToToiletSocialActionAssisterAction	NavigateToToiletSocial Action	NavigateToToiletSocial ActionAssisterAction	1:0..*
RemoveRelevantClothesSocialAction	RemoveRelevantClothes SocialAction	RemoveRelevantClothes SocialActionAssisterAction	1:0..*
cleanSelfAfterToiletSocialActionAssistedByCleanSelfAfterToiletSocialActionAssisterAid	CleanSelfAfterToilet SocialAction	CleanSelfAfterToiletSocialAction AssisterAction	1:0..*
restoreRelevantClothesSocialActionAssistedByRestoreRelevantClothesSocialActionAssisterAid	RestoreRelevantClothes SocialAction	RestoreRelevantClothes SocialActionAssisterAction	1:0..*

Table H.15 ToileterBasicFunctionRole– SocialActionAssisterAction AssistedBy properties – Domain subproperties

ToileterBasicFunctionRole– SocialActionAssisterAidAssistedBy properties – Domain subproperties

Property	Domain	Range	Cardinality
findToiletSocialActionAssistedByFindToiletSocialActionAssisterAid	FindToiletSocialAction	FindToiletSocialActionAssisterAid	1:0..*
navigateToToiletSocialActionAssistedByNavigateToToiletSocialActionAssisterAid	NavigateToToiletSocial Action	NavigateToToiletSocial ActionAssisterAid	1:0..*
removeRelevantClothesSocialActionAssistedByRemoveRelevantClothesSocialActionAssisterAid	RemoveRelevantClothes SocialAction	RemoveRelevantClothes SocialActionAssisterAid	1:0..*
cleanSelfAfterToiletSocialAction AssistedBy CleanSelfAfterToiletSocialActionAssisterAid	CleanSelfAfterToilet SocialAction	CleanSelfAfterToiletSocialAction AssisterAid	1:0..*
restoreRelevantClothesSocialAction AssistedBy RestoreRelevantClothesSocialActionAssisterAid	RestoreRelevantClothes SocialAction	RestoreRelevantClothes SocialActionAssisterAid	1:0..*

Table H.16 ToileterBasicFunctionRole– SocialActionAssisterAidAssistedBy properties – Domain subproperties

The inverses of these Toileter Role Social Action AssistedBy properties are:

ToileterBasicFunctionRole– SocialActionAssisterAction Of properties – Domain subproperties

Property	Domain	Range	Cardinality
socialActionAssisterActionOfFindToiletSocialAction	FindToiletSocialAction AssisterAction	FindToiletSocialAction	0..*:1
navigateToToiletSocialActionAssisterActionOfNavigateToToiletSocialAction	NavigateToToiletSocial ActionAssisterAction	NavigateToToilet SocialAction	0..*:1
removeRelevantClothesSocialActionAssisterActionOfRemoveRelevantClothesSocialAction	RemoveRelevantClothes SocialActionAssisterAction	RemoveRelevantClothes SocialAction	0..*:1
cleanSelfAfterToiletSocialActionAssisterActionOfCleanSelfAfterToiletSocialAction	CleanSelfAfterToilet SocialActionAssisterAction	CleanSelfAfterToilet SocialAction	0..*:1
restoreRelevantClothesSocialActionAssisterActionOfrestoreRelevantClothesSocialAction	RestoreRelevantClothes SocialActionAssisterAction	RestoreRelevantClothes SocialAction	0..*:1

Table H.17 ToileterBasicFunctionRole– SocialActionAssisterAction Of properties – Domain subproperties

ToileterBasicFunctionRole – SocialActionAssisterAid Of properties – Domain subproperties

Property	Domain	Range	Cardinality
socialActionAssisterAidOfFindToiletSocialAction	FindToiletSocialAction	FindToiletSocialAction AssisterAid	0..*:1
navigateToToiletSocialActionAssisterAidOfNavigateToToiletSocialAction	NavigateToToiletSocialAction AssisterAid	NavigateToToiletSocialAction	0..*:1
removeRelevantClothesSocialActionAssisterAidOfRemoveRelevantClothesSocialAction	RemoveRelevantClothes SocialActionAssisterAid	RemoveRelevantClothes SocialAction	0..*:1
cleanSelfAfterToiletSocialActionAssisterAidOf CleanSelfAfterToiletSocialAction	CleanSelfAfterToiletSocial ActionAssisterAid	CleanSelfAfterToilet SocialAction	0..*:1
restoreRelevantClothesSocialActionAssisterAidOfRestoreRelevantClothesSocialAction	RestoreRelevantClothes SocialActionAssisterAid	RestoreRelevantClothes SocialAction	0..*:1

Table H.18 ToileterBasicFunctionRole – SocialActionAssisterAid Of properties – Domain subproperties

Education Roles – Social Action AssisterAction Properties

Library User Role – SocialActionAssisterAction properties AssistedBy – Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialActionAssistedByAskQuestionsSocialActionAssisterAction	AskQuestionsSocialAction	AskQuestionsSocialActionAssisterAction	1:0..*
answerQuestionsSocialActionAssistedByAnswerQuestionsSocialActionAssisterAction	AnswerQuestionsSocialAction	AnswerQuestionsSocialActionAssisterAction	1:0..*
findLibrarySocialActionAssistedByFindLibrarySocialActionAssisterAction	FindLibrarySocialAction	FindLibrarySocialActionAssisterAction	1:0..*
navigateToLibrarySocialActionAssistedByNavigateToLibrarySocialActionAssisterAction	NavigateToLibrarySocialAction	NavigateToLibrarySocialActionAssisterAction	1:0..*
searchCatalogueForItemSocialActionAssistedBySearchCatalogueForItemSocialActionAssisterAction	SearchCatalogueForItemSocialAction	SearchCatalogueForItemSocialActionAssisterAction	1:0..*
findBookOnShelvesSocialActionAssistedByFindBookOnShelvesSocialActionAssisterAction	FindBookOnShelvesSocialAction	FindBookOnShelvesSocialActionAssisterAction	1:0..*
checkoutLibraryBookSocialActionAssistedByCheckoutLibraryBookSocialActionAssisterAction	CheckoutLibraryBookSocialAction	CheckoutLibraryBookSocialActionAssisterAction	1:0..*
returnOfLibraryBookSocialActionAssistedByReturnOfLibraryBookSocialActionAssisterAction	ReturnOfLibraryBookSocialAction	ReturnOfLibraryBookSocialActionAssisterAction	1:0..*

Table H.19 Library User Role – SocialActionAssisterAction properties AssistedBy – Domain subproperties

Library User Role – AssisterAid properties AssistedBy – Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialActionAssistedByAskQuestionsSocialActionAssisterAid	AskQuestionsSocialAction	AskQuestionsSocialAction AssisterAid	1:0..*
answerQuestionsSocialActionAssistedByAnswerQuestionsSocialAction AssisterAid	AnswerQuestionsSocialAction	AnswerQuestionsSocial ActionAssisterAid	1:0..*
findLibrarySocialActionAssistedByFindLibrarySocialActionAssisterAid	FindLibrarySocialAction	FindLibrarySocialAction AssisterAid	1:0..*
navigateToLibrarySocialActionAssistedByNavigateToLibrary SocialActionAssisterAid	NavigateToLibrarySocialAction	NavigateToLibrarySocial ActionAssisterAid	1:0..*
searchCatalogueForItemSocialActionAssistedBy SearchCatalogueForItemSocialActionAssisterAid	SearchCatalogueForItemSocialAction	SearchCatalogueForItem SocialActionAssisterAid	1:0..*
findBookOnShelvesSocialActionAssistedBy FindBookOnShelvesSocialActionAssisterAid	FindBookOnShelvesSocial Action	FindBookOnShelvesSocialAction AssisterAid	1:0..*
checkOutLibraryBookSocialActionAssistedBy CheckOutLibraryBookSocialActionAssisterAid	CheckOutLibraryBookSocial Action	CheckOutLibraryBookSocial ActionAssisterAid	1:0..*
returnOfLibraryBookSocialActionAssistedBy ReturnOfLibraryBookSocialActionAssisterAid	ReturnOfLibraryBookSocial Action	ReturnOfLibraryBookSocial ActionAssisterAid	1:0..*

Table H.20 Library User Role – AssisterAid properties AssistedBy – Domain subproperties

The inverses of these Library User Role Social Action AssistedBy properties are:

Library User Role – SocialActionAssisterAction properties Of – Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialAction AssisterActionOfAskQuestionsSocialAction	AskQuestionsSocialAction AssisterAction	AskQuestionsSocial Action	0..*:1
answerQuestionsSocial ActionAssisterActionOfAnswerQuestionsSocialAction	AnswerQuestionsSocialActi onAssisterAction	AnswerQuestions SocialAction	0..*:1
findLibrarySocialActionAssisterActionOfFindLibrarySocialAction	FindLibrarySocialAction AssisterAction	FindLibrarySocial Action	0..*:1
navigateToLibrarySocialActionAssisterActionOfNavigateToLibrarySocialAction	NavigateToLibrarySocial ActionAssisterAction	NavigateToLibrary SocialAction	0..*:1
searchCatalogueForItemSocialActionAssisterActionOfSearchCatalogueForItem SocialAction	SearchCatalogueForItem SocialActionAssisterAction	SearchCatalogueForItem SocialAction	0..*:1
findBookOnShelves SocialActionAssisterActionOfFindBookOnShelvesSocialAction	FindBookOnShelves SocialActionAssisterAction	FindBookOnShelves SocialAction	0..*:1
checkOutLibraryBook SocialActionAssisterActionOfcheckOutLibraryBookSocialAction	CheckOutLibraryBookSocial ActionAssisterAction	CheckOutLibraryBook SocialAction	0..*:1
returnOfLibraryBook SocialActionAssisterActionOfReturnOfLibraryBookSocialAction	ReturnOfLibraryBookSocial ActionAssisterAction	ReturnOfLibraryBook SocialAction	0..*:1

Table H.21 Library User Role – SocialActionAssisterAction properties Of – Domain subproperties

Library User Role – AssisterAid properties Of – Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialActionAssisterAidOfAskQuestionsSocialAction	AskQuestionsSocialActionAssisterAid	AskQuestionsSocialAction	0..*:1
answerQuestionsSocialActionAssisterAidOfAnswerQuestionsSocialAction	AnswerQuestionsSocialActionAssisterAid	AnswerQuestionsSocialAction	0..*:1
findLibrarySocialActionAssisterAidOfFindLibrarySocialAction	FindLibrarySocialActionAssisterAid	FindLibrarySocialAction	0..*:1
navigateToLibrarySocialActionAssisterAidOfNavigateToLibrarySocialAction	NavigateToLibrarySocialActionAssisterAid	NavigateToLibrarySocialAction	0..*:1
searchCatalogueForItemSocialActionAssisterAidOfSearchCatalogueForItemSocialAction	SearchCatalogueForItemSocialActionAssisterAid	SearchCatalogueForItemSocialAction	0..*:1
findBookOnShelvesSocialActionAssisterAidOfFindBookOnShelvesSocialAction	FindBookOnShelvesSocialActionAssisterAid	FindBookOnShelvesSocialAction	0..*:1
checkOutLibraryBookSocialActionAssisterAidOfCheckOutLibraryBookSocialAction	CheckOutLibraryBookSocialActionAssisterAid	CheckOutLibraryBookSocialAction	0..*:1
returnOfLibraryBookSocialActionAssisterAidOfReturnOfLibraryBookSocialAction	ReturnOfLibraryBookSocialActionAssisterAid	ReturnOfLibraryBookSocialAction	0..*:1

Table H.22 Library User Role – AssisterAid properties Of – Domain subproperties

Information User Role – SocialActionAssisterAction properties AssistedBy– Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialActionAssistedByAskQuestionsSocialActionAssisterAction	AskQuestionsSocialAction	AskQuestionsSocialActionAssisterAction	1:0..*
answerQuestionsSocialActionAssistedByAnswerQuestionsSocialActionAssisterAction	AnswerQuestionsSocialAction	AnswerQuestionsSocialActionAssisterAction	1:0..*
findAnswersSocialActionAssistedByFindAnswersSocialActionAssisterAction	FindAnswersSocialAction	FindAnswersSocialActionAssisterAction	1:0..*
hearQuestions&AnswersSocialActionAssistedByHearQuestions&AnswersSocialActionAssisterAction	HearQuestions&AnswersSocialAction	HearQuestions&AnswersSocialActionAssisterAction	1:0..*

Table H.23 Information User Role – SocialActionAssisterAction properties AssistedBy– Domain subproperties

Information User Role – AssisterAid properties AssistedBy – Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialActionAssistedByAskQuestionsSocialActionAssisterAid	AskQuestionsSocialAction	AskQuestionsSocialActionAssisterAid	1:0..*
answerQuestionsSocialActionAssistedByAnswerQuestionsSocialActionAssisterAid	AnswerQuestionsSocialAction	AnswerQuestionsSocialActionAssisterAid	1:0..*
findAnswersSocialActionAssistedByFindAnswersSocialActionAssisterAid	FindAnswersSocialAction	FindAnswersSocialActionAssisterAid	1:0..*
hearQuestions&AnswersSocialActionAssistedByHearQuestions&AnswersSocialActionAssisterAid	HearQuestions&AnswersSocialAction	HearQuestions&AnswersSocialActionAssisterAid	1:0..*

Table H.24 Information User Role – AssisterAid properties AssistedBy – Domain subproperties

The inverses of these Library User Role Social Action AssistedBy properties are:

Information User Role – SocialActionAssisterAction properties Of– Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialActionAssisterActionOfAskQuestionsSocialAction	AskQuestionsSocialActionAssisterAction	AskQuestionsSocialAction	0..*:1
answerQuestionsSocialActionAssisterActionOfAnswerQuestionsSocialAction	AnswerQuestionsSocialActionAssisterAction	AnswerQuestionsSocialAction	0..*:1
findAnswersSocialActionAssisterActionOfFindAnswersSocialAction	FindAnswersSocialActionAssisterAction	FindAnswersSocialAction	0..*:1
hearQuestions&AnswersSocialActionAssisterActionOfHearQuestions&AnswersSocialAction	HearQuestions&AnswersSocialActionAssisterAction	HearQuestions&AnswersSocialAction	0..*:1

Table H.25 Information User Role – SocialActionAssisterAction properties Of– Domain subproperties

Information User Role – AssisterAid properties Of – Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialActionAssisterAidOfAskQuestionsSocialAction	AskQuestionsSocialAction AssisterAid	AskQuestionsSocialAction	0..*:1
answerQuestionsSocialActionAssisterAidOfAnswerQuestionsSocialAction	AnswerQuestionsSocial ActionAssisterAid	AnswerQuestionsSocial Action	0..*:1
findAnswersSocialActionAssisterAidOfFindAnswersSocialAction	FindAnswersSocialAction AssisterAid	FindAnswersSocialAction	0..*:1
hearQuestions&AnswersSocialActionAssisterAidOf hearQuestions&AnswersSocialAction	HearQuestions&Answers SocialActionAssisterAid	HearQuestions&Answers SocialAction	0..*:1

Table H.26 Information User Role – AssisterAid properties Of – Domain subproperties

Café User Role – SocialActionAssisterAction properties AssistedBy – Domain subproperties

Properties	Domain	Range	Cardinality
seeCafeFoodMenuSocialActionAssistedBy SeeCafeFoodMenuSocialActionAssisterAction	SeeCafeFoodMenuSocialAction	SeeCafeFoodMenuSocialActionAssisterAction	1:0..*
makeCafeFoodOrderSocialActionAssistedBy MakeCafeFoodOrderSocialActionAssisterAction	MakeCafeFoodOrderSocialAction	MakeCafeFoodOrderSocialAction AssisterAction	1:0..*
payForCafeFoodOrderSocialActionAssistedBy PayForCafeFoodOrderSocialActionAssisterAction	PayForCafeFoodOrderSocialAction	PayForCafeFoodOrderSocialAction AssisterAction	1:0..*

Table H.27 Café User Role – SocialActionAssisterAction properties AssistedBy – Domain subproperties

Café User Role – AssisterAid properties AssistedBy – Domain subproperties

Properties	Domain	Range	Cardinality
seeCafeFoodMenuSocialActionAssistedBy SeeCafeFoodMenuSocialActionAssisterAid	SeeCafeFoodMenuSocialAction	SeeCafeFoodMenuSocialAction AssisterAid	1:0..*
makeCafeFoodOrderSocialActionAssistedByMakeCafeFoodOrderSocial ActionAssisterAid	MakeCafeFoodOrderSocialAction	MakeCafeFoodOrderSocial ActionAssisterAid	1:0..*
payForCafeFoodOrderSocialActionAssistedByPayForCafe FoodOrderSocialActionAssisterAid	PayForCafeFoodOrderSocial Action	PayForCafeFoodOrderSocial ActionAssisterAid	1:0..*

Table H.28 Café User Role – AssisterAid properties AssistedBy – Domain subproperties

The inverses of these Cafe User Role Social Action AssistedBy properties are:

Café User Role – SocialActionAssisterAction properties of – Domain subproperties

Properties	Domain	Range	Cardinality
seeCafeFoodMenuSocialActionAssistedBy SeeCafeFoodMenuSocialActionAssisterActionOf	SeeCafeFoodMenuSocialAction	SeeCafeFoodMenuSocialActionAssisterAction	0..*:1
makeCafeFoodOrderSocialActionAssistedBy MakeCafeFoodOrderSocialActionAssisterActionOf	MakeCafeFoodOrderSocialAction	MakeCafeFoodOrderSocialAction AssisterAction	0..*:1
payForCafeFoodOrderSocialActionAssistedBy PayForCafeFoodOrderSocialActionAssisterActionOf	PayForCafeFoodOrderSocialAction	PayForCafeFoodOrderSocialAction AssisterAction	0..*:1

Table H.29 Café User Role – SocialActionAssisterAction properties of – Domain subproperties

Café User Role – AssisterAid properties Of– Domain subproperties

Properties	Domain	Range	Cardinality
seeCafeFoodMenuSocialActionAssisterAidOfSeeCafeFoodMenuSocial Action	SeeCafeFoodMenuSocialActionAssister Aid	SeeCafeFoodMenuSocialAction	0..*:1
makeCafeFoodOrderSocialActionAssisterAidOfmakeCafeFoodOrder SocialAction	MakeCafeFoodOrderSocial ActionAssisterAid	MakeCafeFoodOrderSocialAction	0..*:1
payForCafeFoodOrderSocialActionAssisterAidOfPayForCafeFoodOrder SocialAction	PayForCafeFoodOrderSocial ActionAssisterAid	PayForCafeFoodOrderSocial Action	0..*:1

Table H.30 Café User Role – AssisterAid properties Of– Domain subproperties

Library Assistant role – SocialActionAssisterAction properties AssistedBy – Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialActionAssistedByAskQuestionsSocialActionAssisterAction	AskQuestionsSocialAction	AskQuestionsSocialActionAssisterAction	1:0..*
answerQuestionsSocialActionAssistedByAnswerQuestionsSocialActionAssisterAction	AnswerQuestionsSocialAction	AnswerQuestionsSocialActionAssisterAction	1:0..*
findAnswersSocialActionAssistedByFindAnswersSocialActionAssisterAction	FindAnswersSocialAction	FindAnswersSocialActionAssisterAction	1:0..*
hearQuestions&AnswersSocialActionAssistedByHearQuestions&AnswersSocialActionAssisterAction	HearQuestions&AnswersSocialAction	HearQuestions&AnswersSocialActionAssisterAction	1:0..*
processCheckOutLibraryBookSocialActionAssistedByProcessCheckOutLibraryBookSocialActionAssisterAction	ProcessCheckOutLibraryBookSocialAction	ProcessCheckOutLibraryBookSocialActionAssisterAction	1:0..*
processReturnOfLibraryBookSocialActionAssistedByProcessReturnOfLibraryBookSocialActionAssisterAction	ProcessReturnOfLibraryBookSocialAction	ProcessReturnOfLibraryBookSocialActionAssisterAction	1:0..*

Table H.31 Library Assistant role – SocialActionAssisterAction properties AssistedBy – Domain subproperties

Library Assistant role – AssisterAid properties AssistedBy – Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialActionAssistedByAskQuestionsSocialActionAssisterAid	AskQuestionsSocialAction	AskQuestionsSocialActionAssisterAid	1:0..*
answerQuestionsSocialActionAssistedByAnswerQuestionsSocialActionAssisterAid	AnswerQuestionsSocialAction	AnswerQuestionsSocialActionAssisterAid	1:0..*
findAnswersSocialActionAssistedByFindAnswersSocialActionAssisterAid	FindAnswersSocialAction	FindAnswersSocialActionAssisterAid	1:0..*
hearQuestions&AnswersSocialActionAssistedByHearQuestions&AnswersSocialActionAssisterAid	HearQuestions&AnswersSocialAction	HearQuestions&AnswersSocialActionAssisterAid	1:0..*
processCheckOutLibraryBookSocialActionAssistedByProcessCheckOutLibraryBookSocialActionAssisterAid	ProcessCheckOutLibraryBookSocialAction	ProcessCheckOutLibraryBookSocialActionAssisterAid	1:0..*
processReturnOfLibraryBookSocialActionAssistedByProcessReturnOfLibraryBookSocialActionAssisterAid	ProcessReturnOfLibraryBookSocialAction	ProcessReturnOfLibraryBookSocialActionAssisterAid	1:0..*

Table H.32 Library Assistant role – AssisterAid properties AssistedBy – Domain subproperties

Library Assistant role – SocialActionAssisterAction propertiesOf– Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialAction AssisterActionOfAskQuestionsSocialAction	AskQuestionsSocialAction AssisterAction	AskQuestionsSocialAction	0..*:1
answerQuestionsSocial ActionAssisterActionOfAnswerQuestionsSocialAction	AnswerQuestionsSocial ActionAssisterAction	AnswerQuestionsSocialAction	0..*:1
findAnswersSocialAction AssisterActionOfFindAnswersSocialAction	FindAnswersSocialAction AssisterAction	FindAnswersSocialAction	0..*:1
hearQuestions& AnswersSocialActionAssisterActionOfHearQuestions&AnswersSocialAction	HearQuestions&Answers SocialActionAssisterAction	HearQuestions&AnswersSocial Action	0..*:1
processCheckOutLibraryBookSocialActionAssisterActionOfProcessCheckOu LibraryBookSocialAction	ProcessCheckOutLibrary BookSocialActionAssisterAction	ProcessCheckOutLibraryBook SocialAction	0..*:1
processReturnOfLibraryBookSocialActionAssisterActionOfProcessReturnOf LibraryBookSocialAction	ProcessReturnOfLibraryBookSocial ActionAssisterAction	ProcessReturnOfLibraryBook SocialAction	0..*:1

Table H.32 Library Assistant role – SocialActionAssisterAction propertiesOf– Domain subproperties

Library Assistant role – AssisterAid properties Of – Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialAction AssisterAidOfaskQuestionsSocialAction	AskQuestionsSocial ActionAssisterAid	AskQuestionsSocialAction	0..*:1
answerQuestionsSocial ActionAssisterAidOfAnswerQuestionsSocialAction	AnswerQuestionsSocial ActionAssisterAid	AnswerQuestionsSocialAction	0..*:1
findAnswersSocialAction AssisterAidOfFindAnswersSocialAction	FindAnswersSocialAction AssisterAid	FindAnswersSocialAction	0..*:1
hearQuestions& AnswersSocialActionAssisterAidOfHearQuestions&AnswersSocialAction	HearQuestions&AnswersSocialAction AssisterAid	HearQuestions&AnswersSocial Action	0..*:1
Process CheckOutLibraryBookSocialActionAssisterAidOfprocessCheckOutLibrary BookSocialAction	ProcessCheckOutLibrary BookSocialActionAssisterAid	ProcessCheckOutLibraryBook SocialAction	0..*:1
Process ReturnOfLibraryBookSocialActionAssisterAidOfprocessReturnOfLibraryBook SocialAction	ProcessReturnOfLibrary BookSocialActionAssisterAid	ProcessReturnOfLibraryBook SocialAction	0..*:1

Table H.33 Library Assistant role – AssisterAid properties Of – Domain subproperties

Bursar Role – SocialActionAssisterAction properties AssistedBy – Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialActionAssistedByAskQuestionsSocialActionAssisterAction	AskQuestionsSocialAction	AskQuestionsSocialActionAssisterAction	1:0..*
answerQuestionsSocialActionAssistedByAnswerQuestionsSocialActionAssisterAction	AnswerQuestionsSocialAction	AnswerQuestionsSocialActionAssisterAction	1:0..*
takePaymentForCourseFeesSocialActionAssistedByTakePaymentForCourseFeesSocialActionAssisterAction	TakePaymentForCourseFeesSocialAction	TakePaymentForCourseFeesSocialActionAssisterAction	1:0..*

Table H.33 Bursar Role – SocialActionAssisterAction properties AssistedBy – Domain subproperties

Bursar Role – AssisterAid properties AssistedBy – Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialActionAssistedByAskQuestionsSocialActionAssisterAid	AskQuestionsSocialAction	AskQuestionsSocialActionAssisterAid	1:0..*
answerQuestionsSocialActionAssistedByAnswerQuestionsSocialActionAssisterAid	AnswerQuestionsSocialAction	AnswerQuestionsSocialActionAssisterAid	1:0..*
takePaymentForCourseFeesSocialActionAssistedByTakePaymentForCourseFeesSocialActionAssisterAid	TakePaymentForCourseFeesSocialAction	TakePaymentForCourseFeesSocialActionAssisterAid	1:0..*

Table H.34 Bursar Role – AssisterAid properties AssistedBy – Domain subproperties

Bursar Role – SocialActionAssisterAction properties Of– Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialAction AssisterActionOfAskQuestionsSocialAction	AskQuestionsSocialAction AssisterAction	AskQuestionsSocialAction	0..*:1
answerQuestionsSocial ActionAssisterActionOfAnswerQuestionsSocialAction	AnswerQuestionsSocial ActionAssisterAction	AnswerQuestionsSocialAction	0..*:1
takePaymentForCourseFeesSocialActionAssisterActionOf TakePaymentForCourseFeesSocialAction	TakePaymentForCourseFees SocialActionAssisterAction	TakePaymentForCourseFeesSocialAction	0..*:1

Table H.35 Bursar Role – SocialActionAssisterAction properties Of– Domain subproperties

Bursar Role – AssisterAid properties Of – Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialAction AssisterAidOfaskQuestionsSocialAction	AskQuestionsSocial ActionAssisterAid	AskQuestionsSocialAction	0..*:1
answerQuestionsSocial ActionAssisterAidOfAnswerQuestionsSocialAction	AnswerQuestionsSocial ActionAssisterAid	AnswerQuestionsSocialAction	0..*:1
TakePaymentForCourseFeesSocialActionAssisterAidOfTakePaymentForCourse FeesSocialAction	TakePaymentForCourseFeesSocial ActionAssisterAid	TakePaymentForCourseFees SocialAction	0..*:1

Table H.36 Bursar Role – AssisterAid properties Of – Domain subproperties

Registrar Role – SocialActionAssisterAction properties AssistedBy – Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialActionAssistedByAskQuestionsSocialAction AssisterAction	AskQuestionsSocialAction	AskQuestionsSocialAction AssisterAction	1:0..*
answerQuestionsSocialActionAssistedByAnswerQuestionsSocial ActionAssisterAction	AnswerQuestionsSocialAction	AnswerQuestionsSocial ActionAssisterAction	1:0..*
enrolStudentOnCourseSocialActionAssistedBy EnrolStudentOnCourseSocialActionAssisterAction	EnrolStudentOnCourseSocial Action	EnrolStudentOnCourseSocialActionAssister Action	1:0..*

Table H.37 Registrar Role – SocialActionAssisterAction properties AssistedBy – Domain subproperties

Registrar Role – AssisterAid properties AssistedBy – Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialActionAssistedByAskQuestionsSocialActionAssisterAid	AskQuestionsSocialAction	AskQuestionsSocialActionAssisterAid	1:0..*
answerQuestionsSocialActionAssistedByAnswerQuestionsSocialActionAssisterAid	AnswerQuestionsSocialAction	AnswerQuestionsSocialActionAssisterAid	1:0..*
enrolStudentOnCourseSocialActionAssistedByEnrolStudentOnCourseSocialActionAssisterAid	EnrolStudentOnCourseSocialAction	EnrolStudentOnCourseSocialActionAssisterAid	1:0..*

Table H.38 Registrar Role – AssisterAid properties AssistedBy – Domain subproperties

Registrar Role – SocialActionAssisterAction properties Of– Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialActionAssisterActionOfAskQuestionsSocialAction	AskQuestionsSocialActionAssisterAction	AskQuestionsSocialAction	0..*:1
answerQuestionsSocialActionAssisterActionOfAnswerQuestionsSocialAction	AnswerQuestionsSocialActionAssisterAction	AnswerQuestionsSocialAction	0..*:1
enrolStudentOnCourseSocialActionAssisterActionOfEnrolStudentOnCourseSocialAction	EnrolStudentOnCourseSocialActionAssisterAction	EnrolStudentOnCourseSocialAction	0..*:1

Table H.39 Registrar Role – SocialActionAssisterAction properties Of– Domain subproperties

Registrar Role – AssisterAid properties Of – Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialActionAssisterAidOfaskQuestionsSocialAction	AskQuestionsSocialActionAssisterAid	AskQuestionsSocialAction	0..*:1
answerQuestionsSocialActionAssisterAidOfAnswerQuestionsSocialAction	AnswerQuestionsSocialActionAssisterAid	AnswerQuestionsSocialAction	0..*:1
TakePaymentForCourseFeesSocialActionAssisterAidOfTakePaymentForCourseFeesSocialAction	TakePaymentForCourseFeesSocialActionAssisterAid	TakePaymentForCourseFeesSocialAction	0..*:1

Table H.40 Registrar Role – AssisterAid properties Of – Domain subproperties

Information Assistant role – SocialActionAssisterAction properties AssistedBy – Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialActionAssistedByAskQuestionsSocialActionAssisterAction	AskQuestionsSocialAction	AskQuestionsSocialActionAssisterAction	1:0..*
answerQuestionsSocialActionAssistedByAnswerQuestionsSocialActionAssisterAction	AnswerQuestionsSocialAction	AnswerQuestionsSocialActionAssisterAction	1:0..*
findInformationToAnswerQuestionsSocialActionAssistedByFindInformationToAnswerQuestionsSocialActionAssisterAction	FindInformationToAnswerQuestionsSocialAction	FindInformationToAnswerQuestionsSocialActionAssisterAction	1:0..*

Table H.41 Information Assistant role – SocialActionAssisterAction properties AssistedBy – Domain subproperties

Information Assistant role – AssisterAid properties AssistedBy – Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialActionAssistedByAskQuestionsSocialActionAssisterAid	AskQuestionsSocialAction	AskQuestionsSocialActionAssisterAid	1:0..*
answerQuestionsSocialActionAssistedByAnswerQuestionsSocialActionAssisterAid	AnswerQuestionsSocialAction	AnswerQuestionsSocialActionAssisterAid	1:0..*
findInformationToAnswerQuestionsSocialActionAssistedByFindInformationToAnswerQuestionsSocialActionAssisterAid	FindInformationToAnswerQuestionsSocialAid	FindInformationToAnswerQuestionsSocialActionAssisterAid	1:0..*

Table H.42 Information Assistant role – AssisterAid properties AssistedBy – Domain subproperties

Information Assistant role – SocialActionAssisterAction propertiesOf– Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialActionAssisterActionOfAskQuestionsSocialAction	AskQuestionsSocialActionAssisterAction	AskQuestionsSocialAction	0..*:1
answerQuestionsSocialActionAssisterActionOfAnswerQuestionsSocialAction	AnswerQuestionsSocialActionAssisterAction	AnswerQuestionsSocialAction	0..*:1
findInformationToAnswerQuestionsSocialActionAssisterActionOfFindInformationToAnswerQuestionsSocialAction	FindInformationToAnswerQuestionsSocialActionAssisterAction	FindInformationToAnswerQuestionsSocialAction	0..*:1

Table H.43 Information Assistant role – SocialActionAssisterAction propertiesOf– Domain subproperties

Information Assistant role – AssisterAid properties Of – Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialAction AssisterAidOfAskQuestionsSocialAction	AskQuestionsSocial ActionAssisterAid	AskQuestionsSocialAction	0..*:1
answerQuestionsSocial ActionAssisterAidOfAnswerQuestionsSocialAction	AnswerQuestionsSocial ActionAssisterAid	AnswerQuestionsSocialAction	0..*:1
findInformationToAnswerQuestionsSocialAction AssisterAidOfFindInformationToAnswerQuestionsSocialAction	FindInformationToAnswerQuestions SocialActionAssisterAid	FindInformationToAnswer QuestionsSocialAction	0..*:1

Table H.44 Information Assistant role – AssisterAid properties Of – Domain subproperties

Security Guard role – SocialActionAssisterAction properties AssistedBy – Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialActionAssistedByAskQuestionsSocialAction AssisterAction	AskQuestionsSocialAction	AskQuestionsSocialAction AssisterAction	1:0..*
answerQuestionsSocialActionAssistedByAnswerQuestionsSocial ActionAssisterAction	AnswerQuestionsSocialAction	AnswerQuestionsSocial ActionAssisterAction	1:0..*
takeSecurityActionSocialActionAssistedByTakeSecurityActionSocialAction AssisterAction	TakeSecurityActionSocialAction	TakeSecurityActionSocialAction AssisterAction	1:0..*

Table H.45 Security Guard role – SocialActionAssisterAction properties AssistedBy – Domain subproperties

Security Guard role – AssisterAid properties AssistedBy – Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialActionAssistedByAskQuestionsSocialAction AssisterAid	AskQuestionsSocialAction	AskQuestionsSocialAction AssisterAid	1:0..*
answerQuestionsSocialActionAssistedByAnswerQuestionsSocial ActionAssisterAid	AnswerQuestionsSocialAction	AnswerQuestionsSocial ActionAssisterAid	1:0..*
TakeSecurityActionSocialActionAssistedByTakeSecurityActionSocialAction AssisterAid	TakeSecurityActionSocialAction	TakeSecurityActionSocialAction AssisterAid	1:0..*

Table H.46 Security Guard role – AssisterAid properties AssistedBy – Domain subproperties

Security Guard role – SocialActionAssisterAction propertiesOf– Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialAction AssisterActionOfAskQuestionsSocialAction	AskQuestionsSocialAction AssisterAction	AskQuestionsSocialAction	0..*:1
answerQuestionsSocial ActionAssisterActionOfAnswerQuestionsSocialAction	AnswerQuestionsSocial ActionAssisterAction	AnswerQuestionsSocialAction	0..*:1
takeSecurityActionSocialActionAssisterActionOfTakeSecurityActionSocialAction	TakeSecurityActionSocialAction AssisterAction	TakeSecurityActionSocialAction	0..*:1

Table H.47 Security Guard role – SocialActionAssisterAction propertiesOf– Domain subproperties

Security Guard role – AssisterAid properties Of – Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialAction AssisterAidOfaskQuestionsSocialAction	AskQuestionsSocial ActionAssisterAid	AskQuestionsSocialAction	0..*:1
answerQuestionsSocial ActionAssisterAidOfAnswerQuestionsSocialAction	AnswerQuestionsSocial ActionAssisterAid	AnswerQuestionsSocialAction	0..*:1
takeSecurityActionSocialActionAssisterAidOfTakeSecurityActionSocialAction	TakeSecurityActionSocialAction AssisterAid	TakeSecurityActionSocialAction	0..*:1

Table H.48 Security Guard role – AssisterAid properties Of – Domain subproperties

Technician role– SocialActionAssisterAction properties AssistedBy – Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialActionAssistedByAskQuestionsSocialAction AssisterAction	AskQuestionsSocialAction	AskQuestionsSocialAction AssisterAction	1:0..*
answerQuestionsSocialActionAssistedByAnswerQuestionsSocial ActionAssisterAction	AnswerQuestionsSocialAction	AnswerQuestionsSocial ActionAssisterAction	1:0..*
setUpEquipmentSocialActionAssistedBySetUpEquipmentSocialActionAssister Action	SetUpEquipmentSocialAction	SetUpEquipmentSocialAction AssisterAction	1:0..*
deliverEquipmentSocialActionAssistedByDeliverEquipmentSocialActionAssister Action	DeliverEquipmentSocialAction	DeliverEquipmentSocialAction AssisterAction	1:0..*
setUpAssisterAidSocialActionAssistedBySetupAssisterAidSocialActionAssister Action	SetupAssisterAidSocialAction	SetupAssisterAidSocialAction AssisterAction	1:0..*

Table H.49 Technician role– SocialActionAssisterAction properties AssistedBy – Domain subproperties

Technician role– AssisterAid properties AssistedBy – Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialActionAssistedByAskQuestionsSocialAction AssisterAid	AskQuestionsSocialAction	AskQuestionsSocialAction AssisterAid	1:0..*
answerQuestionsSocialActionAssistedByAnswerQuestionsSocial ActionAssisterAid	AnswerQuestionsSocialAction	AnswerQuestionsSocial ActionAssisterAid	1:0..*
setUpEquipmentSocialActionAssistedBySetUpEquipmentSocialAction Assister Aid	SetUpEquipmentSocialAction	SetUpEquipmentSocialAction AssisterAid	1:0..*
deliverEquipmentSocialActionAssistedByDeliverEquipmentSocialAction Assister Aid	DeliverEquipmentSocialAction	DeliverEquipmentSocialAction AssisterAid	1:0..*
setUpAssisterAidSocialActionAssistedBySetupAssisterAidSocialAction Assister Aid	SetupAssisterAidSocialAction	SetupAssisterAidSocialAction AssisterAid	1:0..*

Table H.50 Technician role– AssisterAid properties AssistedBy – Domain subproperties

Technician role– SocialActionAssisterAction properties Of – Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialAction AssisterActionOfAskQuestionsSocialAction	AskQuestionsSocialAction AssisterAction	AskQuestionsSocialAction	0..*:1
answerQuestionsSocial ActionAssisterActionOfAnswerQuestionsSocialAction	AnswerQuestionsSocial ActionAssisterAction	AnswerQuestionsSocialAction	0..*:1
setUpEquipmentSocialActionAssisterActionOf SetUpEquipmentSocialAction	SetUpEquipmentSocialAction AssisterAction	SetUpEquipmentSocialAction	0..*:1
deliverEquipmentSocialActionAssisterActionOfDeliverEquipmentSocialAction	DeliverEquipmentSocialAction AssisterAction	DeliverEquipmentSocialAction	0..*:1
setupAssisterAidSocialActionAssisterActionOfSetupAssisterAidSocialAction	SetupAssisterAidSocialAction AssisterAction	SetupAssisterAidSocialAction	0..*:1

Table H.51 Technician role– SocialActionAssisterAction properties Of – Domain subproperties

Technician role– AssisterAid properties Of – Domain subproperties

Property	Domain	Range	Cardinality
askQuestionsSocialAction AssisterAidOf AskQuestionsSocialAction	AskQuestionsSocialAction AssisterAid	AskQuestionsSocialAction	0..*:1
answerQuestionsSocial ActionAssisterAidOfAnswerQuestionsSocialAction	AnswerQuestionsSocial ActionAssisterAid	AnswerQuestionsSocialAction	0..*:1
setUpEquipmentSocialActionAssisterAidOf SetUpEquipmentSocialAction	SetUpEquipmentSocialAction AssisterAid	SetUpEquipmentSocialAction	0..*:1
deliverEquipmentSocialActionAssisterAidOfDeliverEquipmentSocialAction	DeliverEquipmentSocialAction AssisterAid	DeliverEquipmentSocialAction	0..*:1
setUpAssisterAidSocialActionAssisterAidOfSetupAssisterAidSocialAction	SetupAssisterAidSocialAction AssisterAid	SetupAssisterAidSocialAction	0..*:1

Table H.52 Technician role– AssisterAid properties Of – Domain subproperties

Café Assistant Role – SocialActionAssisterAction properties AssistedBy– Domain subproperties

Property	Domain	Range	Cardinality
takeCafeFoodOrderSocialActionAssistedByTakeCafeFoodOrderSocialAction AssisterAction	TakeCafeFoodOrderSocial Action	TakeCafeFoodOrderSocialActionAssisterAction	1:0..*
deliverCafeFoodOrderSocialActionAssistedByDeliverCafeFoodOrderSocial ActionAssisterAction	DeliverCafeFoodOrderSocial Action	DeliverCafeFoodOrderSocialActionAssister Action	1:0..*
takePaymentForCafeFoodOrderSocialActionAssistedByTakePaymentForCafe FoodOrderSocialActionAssisterAction	TakePaymentForCafeFoodOrder ScoilAction	TakePaymentForCafeFoodOrderSocialAction AssisterAction	1:0..*

Table H.53 Café Assistant Role – SocialActionAssisterAction properties AssistedBy– Domain subproperties

Café Assistant Role – AssisterAid Action properties AssistedBy – Domain subproperties

Property	Domain	Range	Cardinality
takeCafeFoodOrderSocialActionAssistedByTakeCafeFoodOrder SocialActionAssisterActionAid	TakeCafeFoodOrderSocialAction	TakeCafeFoodOrderSocialActionAssisterAid	1:0..*
deliverCafeFoodOrderSocialActionAssistedByDeliverCafeFood OrderSocialActionAssisterAid	DeliverCafeFoodOrderSocialAction	DeliverCafeFoodOrderSocialActionAssister Aid	1:0..*
takePaymentForCafeFoodOrderSocialActionAssistedBy TakePaymentForCafeFoodOrderSocialActionAssisterAid	TakePaymentForCafeFoodOrderSocialAction	TakePaymentForCafeFoodOrderSocialAction AssisterAid	1:0..*

Table H.54 Café Assistant Role – AssisterAid Action properties AssistedBy – Domain subproperties

Café Assistant Role – SocialActionAssisterAction properties Of– Domain subproperties

Property	Domain	Range	Cardinality
takeCafeFoodOrderSocialActionAssisterActionOf TakeCafeFoodOrderSocialAction	TakeCafeFoodOrderSocialActionAssisterAction	TakeCafeFoodOrderSocialAction	0..*:1
deliverCafeFoodOrderSocialActionAssisterActionOf DeliverCafeFoodOrderSocialAction	DeliverCafeFoodOrderSocialActionAssisterAction	DeliverCafeFoodOrderSocialAction	0..*:1
takePaymentForCafeFoodOrderSocialActionAssisterActionOf TakePaymentForCafeFoodOrderSocialAction	TakePaymentForCafeFoodOrderSocialActionAssisterAction	TakePaymentForCafeFoodOrderSocialAction	0..*:1

Table H.55 Café Assistant Role – SocialActionAssisterAction properties Of– Domain subproperties

Café Assistant Role – AssisterAid Action properties AssistedBy – Domain subproperties

Property	Domain	Range	Cardinality
takeCafeFoodOrderSocialActionAssisterAidOf TakeCafeFoodOrderSocialAction	TakeCafeFoodOrderSocialActionAssisterAid	TakeCafeFoodOrderSocialAction	1:0..*
deliverCafeFoodOrderSocialActionAssisterAidOf DeliverCafeFoodOrderSocialAction	DeliverCafeFoodOrderSocialActionAssisterAid	DeliverCafeFoodOrderSocialAction	1:0..*
takePaymentForCafeFoodOrderSocialActionAssisterAidOf TakePaymentForCafeFoodOrderSocialAction	TakePaymentForCafeFoodOrderSocialActionAssisterAid	TakePaymentForCafeFoodOrderSocialAction	1:0..*

Table H.56 Café Assistant Role – AssisterAid Action properties AssistedBy – Domain subproperties

SignerCooperatorRole – SocialActionAssisterAction properties AssistedBy– Domain subproperties

Property	Domain	Range	Cardinality
understandSignLanguageSocialActionAssistedBy UnderstandSignLanguageSocialActionAssisterAction	UnderstandSignLanguageSocialAction	UnderstandSignLanguageSocialActionAssisterAction	1:0..*
makeSignLanguageSocialAction AssistedBy MakeSignLanguageSocialActionAssisterAction	MakeSignLanguageSocialAction	MakeSignLanguageSocialActionAssisterAction	1:0..*
seeSignLanguageActionSocialActionAssistedBySeeSignLanguageActionSocialAction AssisterAction	SeeSignLanguageActionSocialAction	SeeSignLanguageActionSocialActionAssisterAction	1:0..*

Table H.57 SignerCooperatorRole – SocialActionAssisterAction properties AssistedBy– Domain subproperties

SignerCooperatorRole – AssisterAid properties AssistedBy– Domain subproperties

Property	Domain	Range	Cardinality
understandSignLanguageSocialActionAssistedBy UnderstandSignLanguageSocialActionAssisterAid	UnderstandSignLanguageSocial Action	UnderstandSignLanguageSocialAction AssisterAid	1:0..*
makeSignLanguageSocialAction AssistedBy MakeSignLanguageSocialActionAssisterAid	MakeSignLanguageSocialAction	MakeSignLanguageSocialActionAssisterAid	1:0..*
seeSignLanguageActionSocialActionAssistedBySeeSignLanguageActionSocialAction AssisterAid	SeeSignLanguageActionSocial Action	SeeSignLanguageActionSocialAction AssisterAid	1:0..*

Table H.58 SignerCooperatorRole – AssisterAid properties AssistedBy– Domain subproperties

SignerCooperatorRole – SocialActionAssisterAction properties Of – Domain subproperties

Property	Domain	Range	Cardinality
understandSignLanguageSocialActionAssisterActionOf UnderstandSignLanguageSocialAction	UnderstandSignLanguageSocialActionAssister Action	UnderstandSignLanguageSocial Action	0..*:1
makeSignLanguageSocialActionAssisterActionOf MakeSignLanguageSocialAction	MakeSignLanguageSocialActionAssisterAction	MakeSignLanguageSocialAction	0..*:1
seeSignLanguageActionSocialActionAssisterActionOfSeeSignLanguageAction SocialAction	SeeSignLanguageActionSocialActionAssister Action	SeeSignLanguageActionSocial Action	0..*:1

Table H.59 SignerCooperatorRole – SocialActionAssisterAction properties Of – Domain subproperties

SignerCooperatorRole – AssisterAid properties Of – Domain subproperties

Property	Domain	Range	Cardinality
understandSignLanguageSocialActionAssisterAidOf UnderstandSignLanguageSocialAction	UnderstandSignLanguageSocialAction AssisterAid	UnderstandSignLanguageSocial Action	0..*:1
makeSignLanguageSocialActionAssisterAidOf MakeSignLanguageSocialAction AssistedBy	MakeSignLanguageSocialActionAssisterAid	MakeSignLanguageSocialAction	0..*:1
seeSignLanguageActionSocialActionAssisterAidOfSeeSignLanguageActionSocial ActionAssistedBy	SeeSignLanguageActionSocialAction AssisterAid	SeeSignLanguageActionSocialAction	0..*:1

Table H.60 SignerCooperatorRole – AssisterAid properties Of – Domain subproperties

SignerTranslatorCooperatorRole – SocialActionAssisterAction properties AssistedBy– Domain subproperties

Property	Domain	Range	Cardinality
translateSpokenLanguageToSignLanguageSocialActionAssistedBy TranslateSpokenLanguageToSignLanguageSocialActionAssisterAction	TranslateSpokenLanguageToSignLanguageSocialAction	TranslateSpokenLanguageToSignLanguageSocialActionAssisterAction	1:0..*
TranslateSignLanguageToSpokenLanguageSocialActionAssistedBy TranslateSignLanguageToSpokenLanguageSocialActionAssisterAction	TranslateSignLanguageToSpokenLanguageSocialAction	TranslateSignLanguageToSpokenLanguageSocialActionAssisterAction	1:0..*

Table H.61 SignerTranslatorCooperatorRole – SocialActionAssisterAction properties AssistedBy– Domain subproperties

SignerTranslatorCooperatorRole – AssisterAid properties AssistedBy– Domain subproperties

Property	Domain	Range	Cardinality
translateSpokenLanguageToSignLanguageSocialActionAssistedBy TranslateSpokenLanguageToSignLanguageSocialActionAssisterAid	TranslateSpokenLanguageToSignLanguageSocialAid	TranslateSpokenLanguageToSignLanguageSocialActionAssisterAid	1:0..*
TranslateSignLanguageToSpokenLanguageSocialActionAssistedBy TranslateSignLanguageToSpokenLanguageSocialActionAssisterAid	TranslateSignLanguageToSpokenLanguageSocialAid	TranslateSignLanguageToSpokenLanguageSocialActionAssisterAid	1:0..*

Table H.62 SignerTranslatorCooperatorRole – AssisterAid properties AssistedBy– Domain subproperties

SignerTranslatorCooperatorRole – SocialActionAssisterAction properties Of– Domain subproperties

Property	Domain	Range	Cardinality
translateSpokenLanguageToSignLanguageSocialActionAssisterActionOf TranslateSpokenLanguageToSignLanguageSocialAction	TranslateSpokenLanguageToSignLanguageSocialActionAssisterAction	TranslateSpokenLanguageToSignLanguageSocialAction	0..*:1
translateSignLanguageToSpokenLanguageSocialActionAssisterActionOf TranslateSignLanguageToSpokenLanguageSocialAction	TranslateSignLanguageToSpokenLanguageSocialActionAssisterAction	TranslateSignLanguageToSpokenLanguageSocialAction	0..*:1

Table H.63 SignerTranslatorCooperatorRole – SocialActionAssisterAction properties Of– Domain subproperties

SignerTranslatorCooperatorRole – AssisterAid properties Of– Domain subproperties

Property	Domain	Range	Cardinality
TranslateSpokenLanguageToSignLanguageSocialAction AssisterAidOf translateSpokenLanguageToSignLanguageSocialAction	TranslateSpokenLanguageToSignLanguageSocialAction AssisterAid	TranslateSpokenLanguageToSignLanguage SocialAid	0..*:1
translateSignLanguageToSpokenLanguageSocialAction AssisterAidOf TranslateSignLanguageToSpokenLanguageSocialAction	TranslateSignLanguageToSpokenLanguageSocialAction AssisterAid	TranslateSignLanguageToSpokenLanguage SocialAid	0..*:1

Table H.64 SignerTranslatorCooperatorRole – AssisterAid properties Of– Domain subproperties

SignerCooperatorRole – CooperatesWith - SocialAction Domain subproperties

Property	Domain	Range	Cardinality
makeSignLanguageSocialActionCooperatesWithSee SignLanguageSocialAction	MakeSignLanguageSocial Action	SeeSignLanguageActionSocial Action	1:0..*
seeSignLanguageActionSocial ActionCooperatesWith MakeSignLanguageSocial Action	SeeSignLanguageActionSocial Action	MakeSignLanguageSocial Action	1:0..*
makeSignLanguageSocialActionCooperatesWithUnderstand SignLanguageSocialAction	MakeSignLanguageSocial Action	UnderstandSignLanguageSocialAction	1:0..*
understandSignLanguageSocialActionCooperatesWith MakeSignLanguageSocialAction	UnderstandSignLanguageSocialAc tion	MakeSignLanguageSocial Action	1:0..*

Table H.65 SignerCooperatorRole – CooperatesWith - SocialAction Domain subproperties

SignerTranslatorCooperatorRole – CooperatesWith - SocialAction Domain subproperties

Property	Domain	Range	Cardinality
makeSignLanguageSocialActionCooperatesWithTranslate SignLanguageToSpokenLanguageSocialAction	MakeSignLanguageSocialAction	TranslateSignLanguageToSpokenLanguageSocialAction	1:0..*
translateSignLanguageToSpokenLanguageSocialActionCooperatesWith MakeSignLanguageSocialAction	TranslateSignLanguageToSpokenLanguageSocialAction	MakeSignLanguageSocialAction	1:0..*
translateSpokenLanguageToSignLanguageSocialActionCooperatesWith MakeSignLanguageSocialAction	TranslateSpokenLanguageToSignLanguageSocialAction	MakeSignLanguageSocialAction	1:0..*
makeSignLanguageSocialActionCooperatesWithTranslateSpoken LanguageToSignLanguageSocialAction	MakeSignLanguageSocialAction	TranslateSpokenLanguageToSignLanguageSocialAction	1:0..*

Table H.66 SignerTranslatorCooperatorRole – CooperatesWith - SocialAction Domain subproperties