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IMPROVING HUMAN COMPUTER INTERACTION

WHEN TWO HUMANS MEET

- × Hi, nice day isn't it?
 - + Yes it is. So what do you do?
- × I am a lecturer at a university
 - + Really? Me too! Which one?
- × QUT. You?
 - + UQ
- × Which school?
 - + School of ITEE
- × I am in IT faculty too
 - + Really! So what do you think of recent drop in student numbers.
- × Well some of the drop is cyclic but we do have start thinking outside the box in terms of student recruitment.

WHEN TWO HUMANS MEET

- ✘ Humans have an internal set of concepts, their ontology, that is based on the environment in which they operate
- ✘ When two humans meet at first the concepts they discuss are general concepts that both may reasonably expect the other to know. I.e. the weather
- ✘ However, if they find that many of their more specialized internal concepts overlap, then the conversation evolves

HUMANS AND COMPUTERS

- ✘ Do not have evolving relationship
- ✘ The computer remains static
- ✘ The human adapts to the computer
- ✘ The human's knowledge evolves over time
- ✘ The human's internal ontology is ever expanding and ever changing
- ✘ The computer doesn't even have an ontology

WHY IS THIS A PROBLEM?

- ✘ Imposes limitations on data use
- ✘ Stops meaningful leap forward in improvements in business and decision making processes
- ✘ Frustrates expert users
- ✘ Does not provide novice users with enough assistance
- ✘ We have now largely moved paper based activities on the computer, but now what?

THE MOTION PICTURE DOMAIN

- ✘ Data intensive - utilizing vast quantities of data for decision making, process control and production
- ✘ Growing realization that the context that surrounds the film is just as valuable
- ✘ Lacks tools and techniques to fully utilize the newly digitized data
- ✘ Lacks an ontology

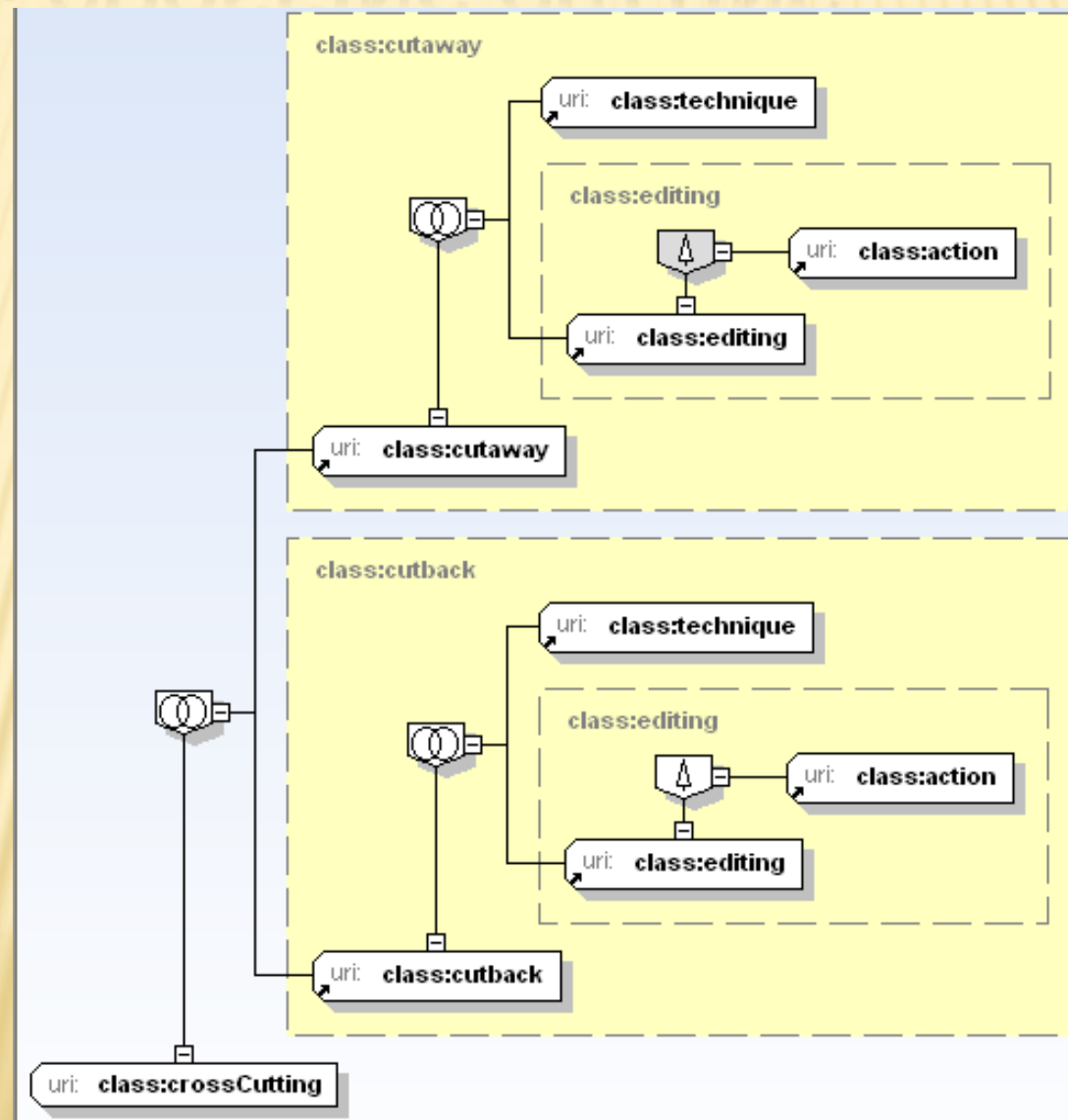
WHAT IS AN ONTOLOGY

- ✘ is a formal representation of a set of concepts within a domain and the relationships between those concepts
- ✘ It is used to reason about the properties of that domain, and may be used to define the domain
- ✘ Ontologies have been used extensively in knowledge engineering and knowledge representation

LOCULUS: THE ONTOLOGY FOR THE MOTION PICTURE INDUSTRY

- ✘ Two part ontology
 - + Part 1: General Terminology Ontology
 - + Part 2: Agent Ontology
- ✘ Together maps all concepts unique to the Motion Picture industry, i.e. Crossing cutting, Producer
- ✘ Also maps certain common concepts that are frequently used in the industry, i.e. address, lunch break
- ✘ The concepts in the two parts are linked through relationships, i.e. “performed by”

EXAMPLE: CROSSING CUTTING



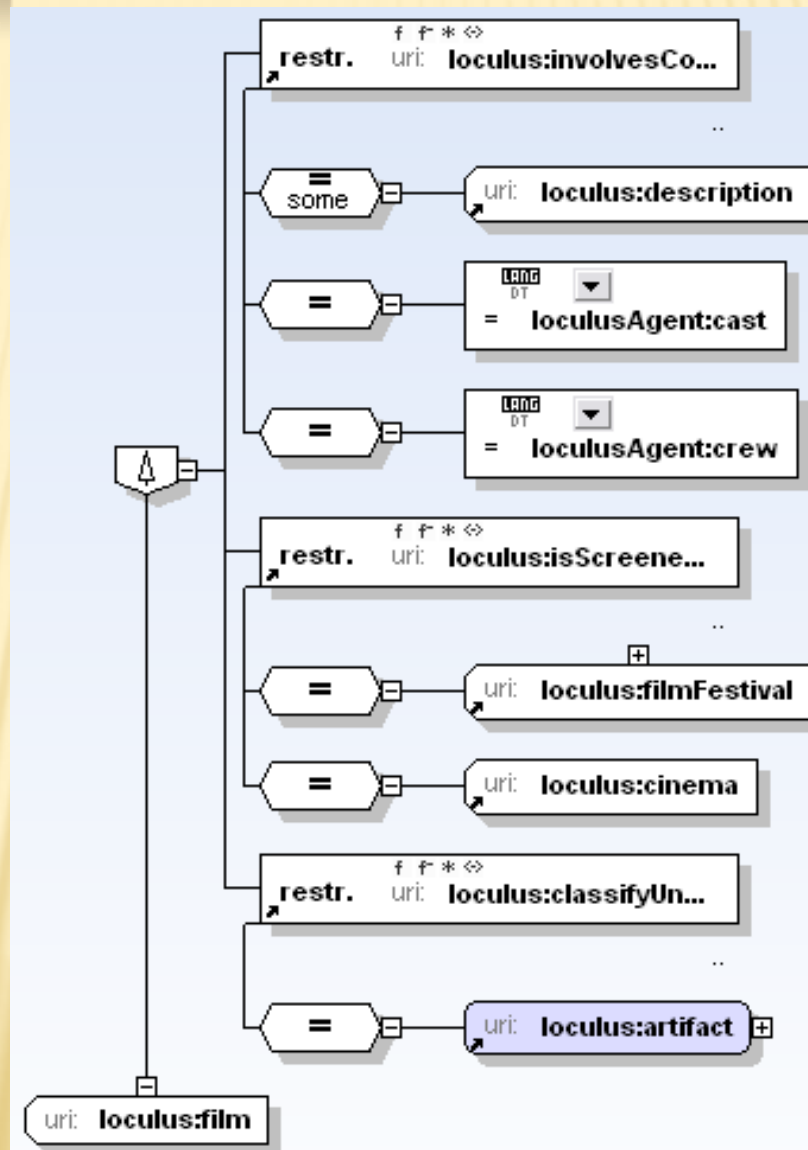
NEAR AND FAR CONCEPTS

- ✘ As humans we understand that two concepts can be linked in a fuzzy and vague sort of way, while others have a more precise and well defined link
- ✘ In addition, as individuals we have a deeper understanding of certain concepts and only a shallow, vague understanding of others
- ✘ Both these ideas are important within Loculus

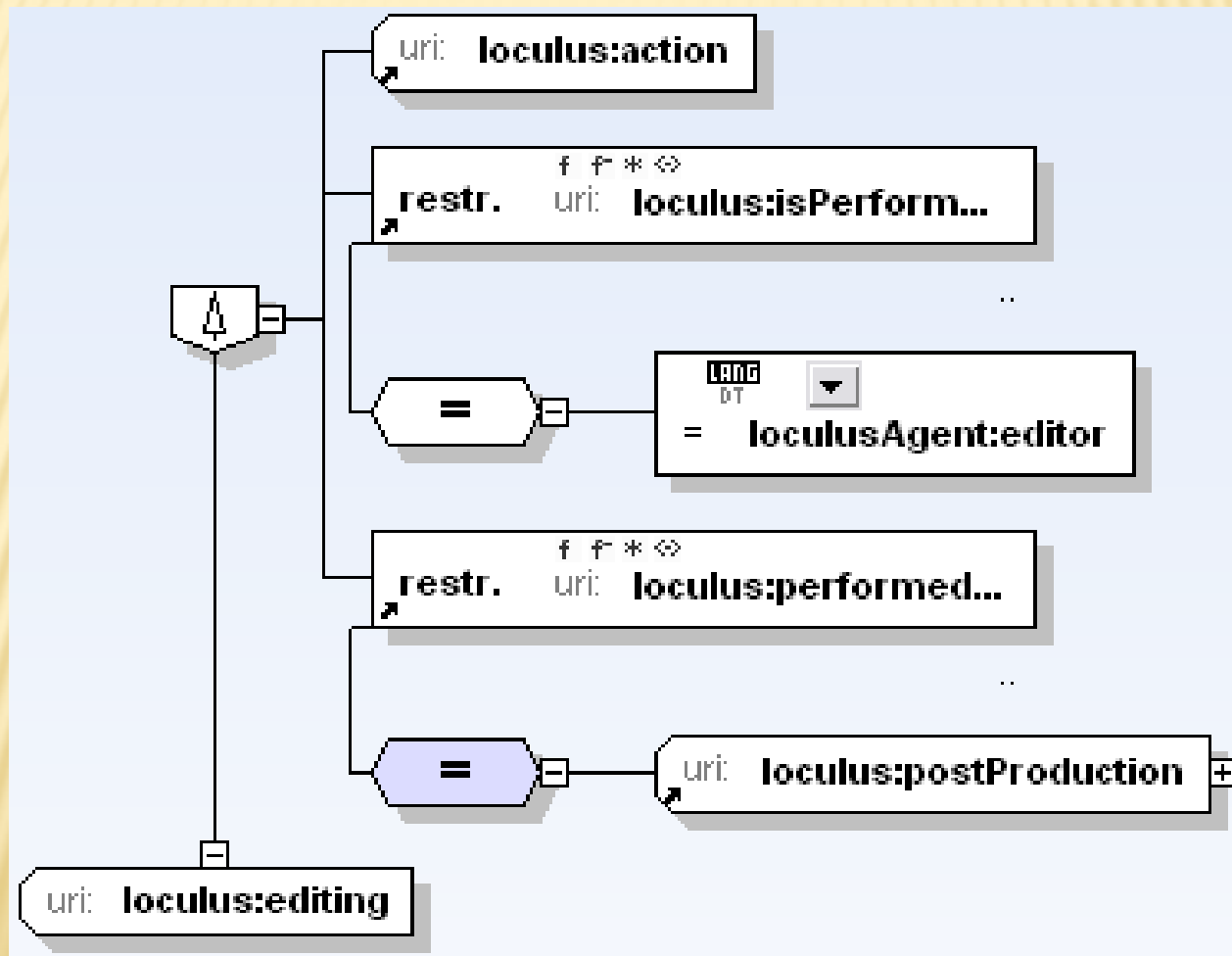
NEAR AND FAR REPRESENTATION IN LOCULUS

- ✘ Near and far is represented through relationships of varying strengths between concepts
- ✘ Weak relationships: Non specific and vague. I.e. “is associated with” and “involves concepts”
- ✘ Strong relationships: Inherit from weak relationships. They are more specific and explicit. I.e. “is screened at”

EXAMPLE: FILM



EXAMPLE: EDITING



HOW THE ONTOLOGY IS TO BE USED

- ✘ It will form the semantic core of the Loculus information system
- ✘ The system will allow users to hold an evolving conversation with the computer
- ✘ Novice user: The system will support them with hints and tips appropriate to their level of understanding
- ✘ Expert user: Will be able to treat the system as if it too were an expert in the field

HOW THE ONTOLOGY IS TO BE USED

- ✘ The system will also use the ontology to classify data that it ingests
- ✘ The ingested data will form part of the systems knowledge base
- ✘ The system can then use the ontology on the knowledge base to enable functionality that is not possible at this current point in time

HOW THE ONTOLOGY IS TO BE USED

- ✘ The system will enable the domain to move into the next sphere of data use
 - + By supporting the decision making process
 - ✘ By providing the appropriate data
 - ✘ By identifying patterns and trends in the data
 - + By providing advance results to query by composing a response from multiple sources as opposed to merely displaying information from various sources that the user has to investigate individually

CONCLUSION

- ✘ Loculus is an ontology for the Motion Picture domain
- ✘ It will dynamically improve human computer interaction
- ✘ Allows tools and techniques to be developed that improve productivity and reduce frustration
- ✘ It will allow data use within the Motion Picture Industry to move into the next level

ANY QUESTIONS?

