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Actability Theory Meets Affordance Theory: Clarifying HCI in IT Usage Situations

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Abstract

This paper investigates an approach to human-computer interaction – actability theory – that emphasises human-via-computer-to-human interaction. This social action approach to HCI is confronted with affordance theory by Gibson; an ecological theory of perception. The notion of affordance is compared and related to actability. Different IT usage situations described in actability theory are critically examined. A re-conceptualisation of these situations is made and this refined conceptualisation is used to classify different usage situations of a municipal case coordination system as a small empirical illustration and test. In the last part of the paper, the definition of an actable IT system is revised. The IT affordances of different IT usage situations are clarified.

Keywords: Human-computer interaction, affordance, actability, information system, social action, communication, practical theory.

1 INTRODUCTION

1.1 Towards a social practice understanding of human-computer interaction

The human-computer interaction discipline makes the human user visible in IT usage. However, the social context of the user-IT interaction is not always made visible in the same way. There are many approaches and contributions to making the social context of HCI more explicit. Activity theory (e.g. Nardi, 1996; Gay & Hembroke, 2004) brings in an activity context in which a user utilizes the IT system as an instrument for broader activity purposes. Semiotic engineering of HCI (de Souza, 2005; Andersen, 2001) emphasizes the user interface as a sign intermediary between the designer and the user; and thus bringing a social perspective to HCI. Dourish (2001) brings a phenomenological perspective to HCI and he emphasizes HCI as embodied interaction taking place in a practice context. Yet another approach to a social perspective on HCI is the actability approach (e.g. Ågerfalk, 2003, 2004; Ågerfalk et al, 2002; Cronholm et al, 1999; Goldkuhl & Ågerfalk, 2002; Sjöström & Ågerfalk, 2005). Actability emphasizes, as some of the mentioned approaches above, that the IT artefact is used in a workpractice context. It expresses that an IT system very often implies structured communication between different users. A key concept is *pragmatic duality* (Sjöström & Goldkuhl, 2004). Pragmatic duality means that a user at the same time is 1) interacting with the IT artefact and 2) communicating with other people. This is a conceptual attempt to bring the social, semiotic and technical aspects together (Goldkuhl & Ågerfalk, 2005).

Many theories, methods and other approaches in the information systems (IS) discipline share a common concern to avoid failures with information technology. There are many failures of information systems[1] and many such problems cannot be reduced to technical mistakes. The HCI discipline acknowledges human difficulties and errors in relation to the artefact. There is a need to

[1] I will use 'IT system', 'IT artefact' and 'information system' interchangeably throughout the paper.

expand beyond technical and human errors to social and organisational malfunctions. Although it has been progress both in practice and academia, there is still a great need for improved understanding of the social usages of information technology. There is a great challenge to create an IT artefact and the usage of it to be a human and social success. The actability approach to HCI and IS seems to be promising in this concern. It emphasises the social action character of information systems and its social context. It aims at a socially and pragmatically sensitised approach to information systems. Actability aims at both a good HCI design and an IS well integrated and supportive to the organisation's business processes (Ågerfalk, 2003).

1.2 Purpose

Actability theory has contributed with bringing a social practice perspective into the HCI field. It is however not yet sufficiently detailed and clear concerning IT usage situations. The key notion in the theory ('actablity') needs further explication and theoretical grounding (Goldkuhl & Röstlinger, 2003). The purpose of this paper is to further elaborate the actability concept and especially its application for clarifying IT usage situations. The way forward is to confront the theory with another theory; affordance theory by Gibson (1979). There is a clear theoretical resonance between the two theories, but they are distinct which makes it purposeful to use affordance theory as a conceptual instrument for improving actability theory. Affordance theory – an ecological theory of perception – has already attracted attention in HCI (e.g. Norman, 1988). It is therefore a natural choice, if one wants to challenge and possibly improve a theory in HCI and IS.

The meetings of these two theories are not just a restricted concern for these theories. The aim of the inquiry is to contribute to our understanding of HCI and the social use of IT artefacts. The comparative analysis of actability and affordance theories is thus instrumental in relation to the broader purpose of clarifying IT usage.

The main approach of this paper is a conceptual analysis. Supplementary to this analysis, a smaller empirical investigation will be performed. As a main result of this conceptual study a refined definition of actability will emerge. The earlier definition of IS actability will be critically reviewed. The conceptual analyses will inform a clarification of how information systems are to be seen as instruments for communication. An example of an information system for coordination of enterprise cases in local governments will be used for illustration and a first test of a new actability typology.

2 ACTABILITY THEORY MEETS AFFORDANCE THEORY

2.1 Actability: a social action approach to human-computer interaction

'Actability' has been defined in the following way: "An information system's ability to perform actions, and to permit, promote and facilitate the performance of actions by users, both through the system and based on information from the system, in some business context" (Cronholm et al, 1999; Ågerfalk, 2003). *Information systems are seen as instruments for technology mediated work communication*. Actors in (or related to) an organisation are communicating (i.e. sending and/or receiving messages) through an IS. Actability theory distinguishes three types of communication situations in human-computer interaction. 1) The user interprets the action repertoire implemented and communicated by the designer through the user interface, (as described in semiotic engineering of HCI; de Souza, 2005). 2) The user can read information which originates from other people, i.e. perform interpretive actions. 3) The user can also perform communicative actions by formulating messages which the artefact will keep and distribute to other people according to pre-defined rules and other HCI situations. The user can also manoeuvre the IT artefact, i.e. through navigation trying to reach different communicative situations. The different social roles of a user interface are described in figure 1, where the communication perspective comes through.

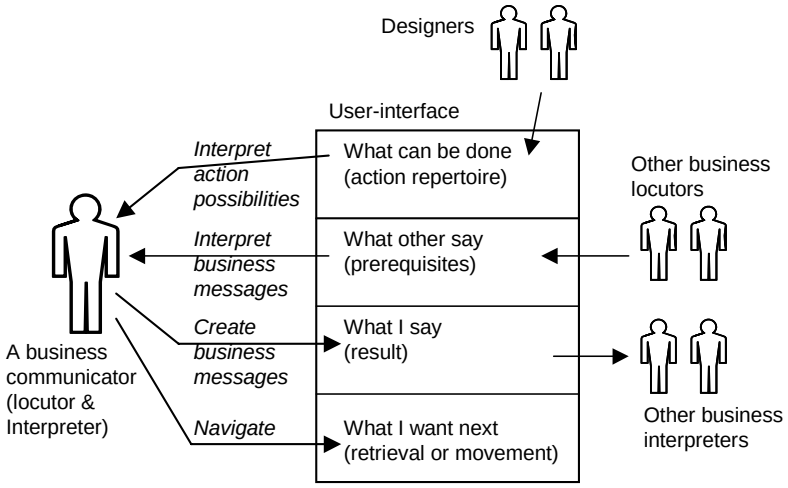

Figure 1. A communicative perspective on user interfaces (from Sjöström & Goldkuhl, 2004)

Actability theory adopts a socio-pragmatic perspective on IT and its uses. The use of an IT system is seen as social actions. This means actions performed on social grounds and with social purposes (Weber, 1978). These social actions are semiotic in their nature. The language action perspective (e.g. Winograd & Flores, 1986) and organisational semiotics (Stamper, 2001) have inspired actability theory (Goldkuhl & Ågerfalk, 2002). As can be seen from figure 1, actability theory adopts a communicative perspective. Human-computer interaction is seen as a part in the broader context of human-via-computer-to-human interaction (HCHI). The IT artefact is seen as a mediator in this human-to-human communication. IT artefacts are mediators with particular features. They do not only have functions to transport and store messages from one user to another. They have abilities to transform messages in different sophisticated ways (Sjöström & Goldkuhl, 2004). This kind of mediation by the IT artefact is considered to be performance of actions. What is done by the IT artefact is seen as actions performed in a workpractice context. These actions are predefined through the rules implemented in the system by its designers. The actability approach acknowledges the action character of IT artefacts but does not go as far as to the symmetrical action view represented in actor-network theory (Latour, 1992).

Actability embodies a co-design approach to IS development. Information systems are to be parts of and support to workpractices in organisations. It is important that information systems fit into workpractices and that they contribute to the overall business objectives. The coherence between an information system and other parts of the organisation should be investigated during IS development. How can we link an information system to different actions within a workpractice? In what ways does an IS give support to the performance of work processes? What information of a workpractice should be contained in an IS? These are important practical issues to be handled in IS development. This view means an emphasis of a *co-design of workpractices and information systems*.

The actability approach has proved to be fruitful for different practical purposes. It has been operationalised into methods for requirements engineering (Ågerfalk, 2003), user interface design (Ågerfalk, 2004; Goldkuhl et al, 2004; Sjöström & Ågerfalk, 2005), conceptual modelling and database design (Ågerfalk & Eriksson, 2004), IS evaluation (Ågerfalk, 2004; Ågerfalk et al, 2002) and also used as an interpretation scheme for IS (Ågerfalk, 2003). Actability theory can be considered as a typical practical theory (Cronen, 2001) with purposes to be used in design and evaluation endeavours.

2.2 Actability and actions

As said above the concept of actability has been defined in relation to information systems. Goldkuhl & Röstlinger (2003) has proposed a widening of the applicability of the actability concept. They question why actability should be restricted to information systems. If one looks closer to the IS

actability definition (quoted above from Cronholm et al, 1999) it says that actability is an information system's "ability to perform actions, and to permit, promote and facilitate the performance of actions by users" (ibid). This means that (IS) actability is a set of properties related to 1) an information system's own actions and 2) the actions of its users being supported by the IS. I state that actability is an attributive concept. It is not an entity of its own. There is nothing that is an actability of its own. The original concept is thus actable (as a property), and actability is substantival derivation from this original attributive concept. There is always something that has or has not actable properties.

When describing what actability is, one must give an account of what an action is. The action concept has been described by many scholars during history. The place is not here to make a thorough analysis of the action concept. I will give some brief, but important, delineations of this concept. An action means the doing performed by someone. When we talk about actions we can designate doings as chopping wood, driving a car, walking, speaking, writing, listening and reading. Some of these actions are aiming at making changes in the external world (intervening) and some actions are aiming at make changes in the inner world of us as human beings. Let us start looking at intervening actions aiming at change in the external world.

Mead (1938) has made a famous description of such actions. Mead divides an action into several phases[1]: A perceptual phase, a manipulatory phase and a consummatory phase. In the initial perceptual phase the actor tries to comprehend the situation and what action possibilities it offers. In the second phase the actor intervenes and changes something. In the third phase the actor consumes the effects of the action, which involves an assessment of the action and its results and effects. I think it is appropriate to include the initial and concluding comprehension of the action situation as Mead does, and not only the active manipulation. However, it is important to acknowledge that it sometimes may be appropriate to see an initial assessment respectively a concluding assessment of the action situation as separate actions. Such actions (investigating the world in order to make sense of it) may sometimes be of such a large extent, that it, for reasons of analysis, may be seen as separate actions. This last comment is important to recognise – what is "seen as separate actions". The doing of a human is a constant stream of activity (Giddens, 1984), and what we delineate as an action is something that we take out from this constant stream of doing and label as an action for reasons of description. For some purpose we can label the uttering of a single sentence an action. For another purpose it may be more adequate to label a whole speech (consisting of many single sentences) as an action.

In Mead's three phases of an action, the first one and the last one are explicitly stated to consist of perception. It is important to add that the active manipulatory phase also includes perception. Giddens (1984) talks about people's constant monitoring of the environment. During the manipulatory phase the actor monitors the world he acts upon and he is attentive to what happens so he can adapt his interventions in proper ways. Just think of driving a car. The driver must be watchful when regulating the speed and the direction of the car. This three-phase model has been depicted in figure 2. In this model I have made a re-labelling of the three phases. The first phase is called *pre-assessment*, the second *intervening* and the third *post-assessment*. In this figure, I have also illustrated the cyclic nature of human actions. A post-assessment of an intervening action can evolve into a pre-assessment and be followed by a new intervention.

In the analysis of the actability concept made by Goldkuhl & Röstlinger (2003), the authors suggest a general definition of actability: "a property of something which enables and/or contributes to the performance of actions" (ibid). The authors distinguish between executable and informative properties within actability. Executable properties are such properties, which enables the action to be performed. Informative properties are such properties, which guides the actor in his choice, performance and assessment of actions. The "informative properties can apply to questions concerning what to do, why

[1] Actually Mead (ibid) distinguishes between four phases. The first two (impulse and perception) have here been grouped together for reasons of simplification.

doing or why not doing, how to perform, when to perform and where to perform and how to assess the outcome" (ibid). The relations to Mead's three phases are obvious. The executable properties apply to the manipulatory phase and the informative properties apply to the phases of perception and consummation and often also, through the constant monitoring in action, to the manipulatory phase.

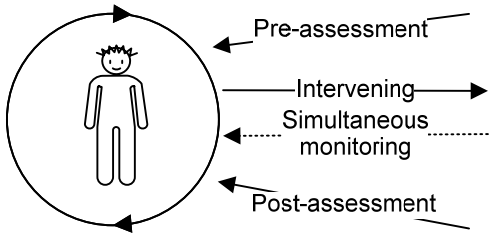

Figure 2. A cyclic model of human action

2.3 Affordances and actability

The objects to act upon must thus be actable. The same goes for the objects supporting the action. Let me use the example of a man chopping wood. When doing this he uses an axe as an instrument. There are two main action objects in this situation: The wood to be chopped and the axe to wield. The actor must comprehend these two objects. Both of them must be actable, but of course in very different ways. The wood must be cleavable and the axe must be keen and possible to cleave the wood. In order to work with these two objects, the actor must assess their properties, i.e. to judge if the wood is cleavable by an axe, and if the axe is keen enough and possible to wield in ways to cleave the wood. There are properties of these objects that afford actions. Such properties are affordances for the actor and his actions. An affordance is a characteristic (or a set of characteristics) of an object, which offers a potential for action. The concept of affordance is articulated by Gibson (1979) in his ecological theory of perception.

Affordances are properties in relation to actors. They are not just physical properties of things. Gibson (ibid, p 127) describes the difference between affordances and pure physical properties. A floor is stand-on-able, walk-on-able and run-over-able when recognising what it affords. These affordances are of course based on certain physical properties (e.g. the floor being horizontal, flat, extended and rigid). On the other side, affordances should not be seen as subjective or mental constructs as Gibson emphasises. The affordances are in the external objects – but these properties are relational properties, i.e. they exist only in relation to an observer/actor. "These positive and negative affordances are properties of things taken with reference to an observer but not properties of the experiences of the observer" (ibid, p 137). The terminology of Gibson ("a floor must be stand-on-able, walk-on-able and run-over-able") has great resonance with the concept of actability. Things should be act-able. The way a floor is actable is that it is stand-on-able, walk-on-able and run-over-able. Affordances of things are what make them actable.

Gibson (ibid) expresses the importance that affordances must be perceivable. "The central question for affordance theory is not whether affordances exist and are real but whether information is available in ambient light for perceiving them" (ibid, p 140). These remarks are congruent with what has been said earlier about actability: An object is actable if it has executable and informative properties. To clarify this further: In order to be an actable object, there should be adequate action possibilities and that these possibilities are visible, comprehensible and accessible. The action possibilities might be of different quality. The axe has an edge, but it can be more or less keen. An actor does not only demand the possibility for action. He demands easiness for action. The affordances should be appropriate in

relation to comfort and other human values[1]. To claim actability raises requirements for existence, appropriateness, visibility, comprehensibility and accessibility of action possibilities. The informative properties can partially be substituted by pre-knowledge of the observer. Many artefacts of today have a concealed functionality and to use them properly requires some pre-knowledge gained by instruction or experience (Norman, 1988).

Sometimes the informative properties are the sole properties of external objects. A written text (as an external object) can consist of an instruction for action. In the text there are no executable properties. There is pure information. The actor observes the text and transforms through his interpretation the text to knowledge for action. The text is used in the pre-assessment stage before the intervening action. The actability of the text can be judged in relation to how informative it is concerning guidance for the actor to perform adequate actions in his situation.

Following affordance theory, actability (in general terms) can be defined provisionally in the following way: Actability of something is properties that support and enable actions. These properties can have informative or executable functions. This follows directly from the discussion concerning affordances above. You do something in relation to things, but in order to perform these doings you must perceive that the things afford such performance to you. In contrast to material objects, signs do only have informative functions.

Actability has been contrasted with usability (e.g. Cronholm et al, 1999). These differences are important but should not be over-emphasised. When utilising an instrument, such an instrument must be usable. An instrument is always utilised within an action. Utilising is one aspect of an action, which means that utilisation always implies action. The actability perspective emphasises the action with results and effects[2]. Utilisation is one aspect of the action, and it should be related clearly to the contents and purposes of the action. When talking about usability, these broader action aspects might be included, but there is no conceptual guarantee for this. The actability concept, founded on an articulated action concept, gives better guarantee for clear relations to these broader action aspects. To sum this up: To investigate usability of an artefact can be done with 1) a narrow instrumental perspective ("how to use the instrument") or 2) a broader actability perspective ("for what actions and purposes this instrument is used"). A restricted instrumental investigation might not be wrong in certain inquiry situations. What is important is that the investigator is fully aware of its limitations.

3 IT USAGE SITUATIONS

3.1 Critical examination of actability concepts

The discussion on actability in section 2 above has consequences for the view on IT actability. The actability properties of an IT system can be more clarified. The informative vs. executable properties of an IT system have not yet been sufficiently distinguished within actability theory. An IT system is a complex phenomenon and to make a nuanced characterisation one must focus different functions of an IT system. In actability theory there is a differentiation into three usage situations (e.g. Goldkuhl & Ågerfalk, 2002; Ågerfalk, 2003); see also figure 3 below:

- Interactive usage situation
- Automatic usage situation

[1] Gibson (1979) explicitly states the value character of affordances: "The perceiving of an affordance is not a process of perceiving a value-free physical object to which meaning is somehow added in a way that no one has been able to agree upon; it is a process of perceiving a value-rich ecological object" (ibid, p 140).

[2] Concerning actions it is important to distinguish between performance, result and effects (von Wright, 1971). Performance is the *doing*; result is what is *done* (i.e. within the range of the actor) and effects are what *follows* as consequences from the action and its results.

- Consequential usage situation

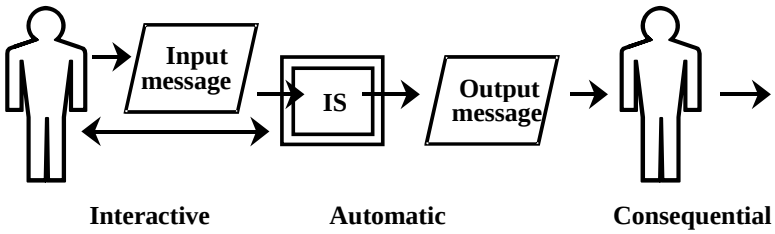

Figure 3. Types of actions related to three IT usage situations (from Goldkuhl & Ågerfalk 2002)

What is labelled *interactive usage situation* (in actability) is a typical HCI situation where a user is interacting with an IT system. As said above, actability also emphasises the human-to-human communication. This means also that users may be informed through this communication through the IT system when performing actions in the workpractice. This is the case of *consequential usage situations*. This is an example of actability theory going beyond a narrow HCI perspective. When designing IT systems and their user interfaces, we need also take into account what kind of other actions that may result from the use of an IT system. The main purpose of an IT system may be these "external" actions. IT systems are instrumental in relation to broader organisational objectives. In actability theory, what is performed by the system is also conceived to be actions (as said above in section 2). This is labelled *automatic usage situations*. These three usage situations, described in actability theory, relate the user to the system in different ways. The automatic situation is an IT *internal* situation. The interactive usage situation is *external* and *directly related* to the user. The consequential usage situation is also *external*, but only *indirectly related* to the system. The user utilizes information from the system, but not the system itself.

Actability theory has thus made some important broadenings of human-computer interaction. I find however, some of the conceptualisations in actability problematic. First, there seems to a blurring of communication and interaction in the interactive usage situation. As can be seen from figure 3, a human inputting information into a system is labelled interactive. The output side of the system, i.e. a human retrieving information from a system, may also be done in an interactive way. Why is only the input part labelled interactive?

Second, in this output part, it is only the consequential intervening action that is acknowledged. The interpretive part, where the user makes sense of what is communicated to him through the user interface (or some other medium) is neglected in the actability conceptualisation. It seems important, following the action model introduced in figure 2, to conceive both the initial reading of a message and the subsequent informed intervening action. The reading of messages from a system is an interpretive action. One consequence of these two objections is that one should distinguish between the *principal communication direction* and the *degree of interaction* between user and system. A *communicative action* means that the user formulates and provides messages to the system to be processed, kept and further communicated to (other) users. An *interpretive action* means that a user reads messages from the system in order to be informed. Many systems are today interactional, but we should not take that for granted. We should for both input and output distinguish between *interactive mode* and *uni-directional mode*. Receiving a paper document from an IT system is a typical example of a uni-directional output situation. There may be input techniques (as different automatic sensor equipments) where no real interaction takes place.

One important model within the actability approach is the elementary interaction loop (Goldkuhl et al, 2004). In this model, HCI situations are divided into four generic stages: 1) the user studying the user interface and informing himself about action possibilities, 2) the user inputs something through the user interface, 3) the IT systems receives the input and performs something and reacts, and 4) the user interprets the feedback from the system. This loop model is theoretically informed by the action phase model by Mead (1938) described in section 2.2 above.

3.2 Re-conceptualisation of the IT usage situations

This analysis has led to a re-conceptualisation of the IT usage situations of actability theory. We distinguish between *provision usage situation* (with communicative actions) and *receiving usage situation* (with interpretive actions). This is a distinction between input and output situations. As said above, an input situation is usually not only input but also output in an interactive way. The same goes for output situations. This is also in line with the elementary interaction loop described above. Often, HCI situations are not restricted just to either providing or receiving situations. Providing and receiving are intertwined in complex conversational patterns. A providing loop can be followed by one or more receiving loops which can be followed by one or more providing loops.

This re-conceptualisation of the actability IT usage situations have also led to a new model of IT usage situations depicted in figure 4. In this model, I have besides the mentioned changes also included a broader context and made some reformulations of concepts. Instead of consequential actions, I use the term *subsequent actions*. In this broader contextualisation I have, besides subsequent actions, included preconditions for providing and receiving situations. I have also included the design of the IT artefact, called regulative actions. As said above, there are actions subsequent to receiving IT situations – users becoming informed by reading messages from the IT system. However, there might be actions, subsequent to providing situations, where users perform actions which are appropriate to succeed after entering some information in the IT system. In the refined model, I have thus added subsequent actions after the providing situation.

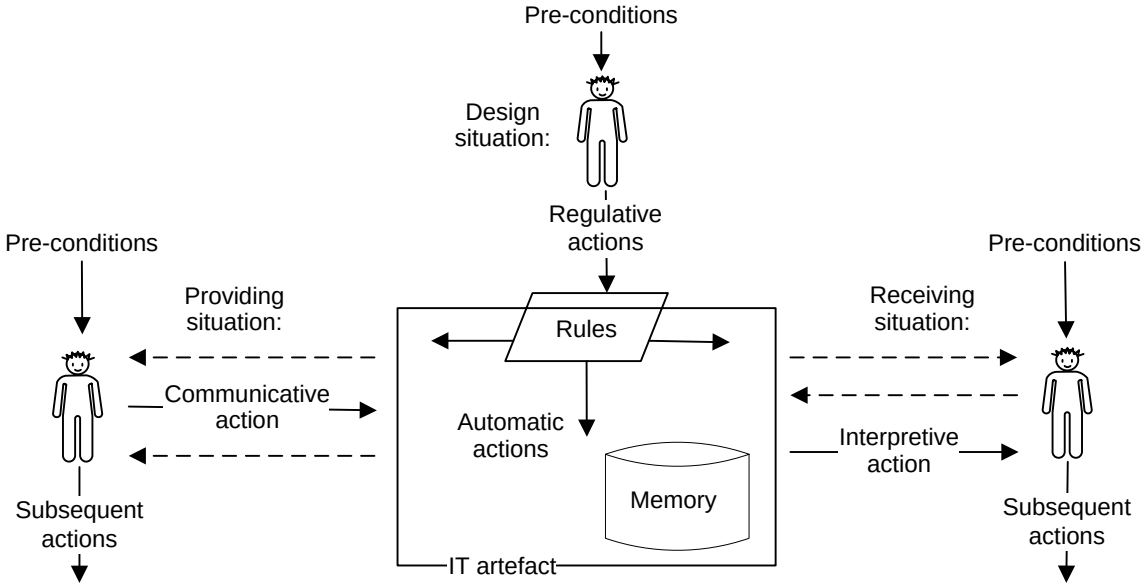

Figure 4. Refined model of HCI and IT usage situations

3.3 A refined definition of actability

Based on the comparative analysis of affordances and actability (section 2.3) and the analysis of IT usage situations (sections 3.1-2) I will now present a proposal to reformulate the definition of information systems actability. The original definition sounds as follows: ”An information system’s ability to perform actions, and to permit, promote and facilitate the performance of actions by users, both through the system and based on information from the system, in some business context” (Cronholm et al, 1999). In this definition, different usage situations come through only in an implicit way. In table 1 below I have reformulated and expanded the definition of IS actability. There, I have distinguished between different usage situations that need different types of affordances of an IS (first column). For each situation I have characterised the type of affordance needed in order to consider it

an actable system (second column). I follow the division made above in section 3.2 between communicative, interpretive[1] automatic[2] and subsequent actions. I have also added navigation as a special kind manoeuvring situation. This was mentioned in section 2.1 above in the figure 1 from Sjöström & Goldkuhl (2004). I have from the three types of interactive situations (providing, receiving and navigation situations) extracted and generalized the pre-assessment phase and post-assessment phase (see figure 2) as separate affordance types.

Affordance situation	**Definition: An information system's ability…**
Pre-assessment affordance (Action repertoire)	to guide and inform users about its action possibilities and consequences for user's potential communicative and interpretative actions
Navigation affordance	to be searchable and navigable for users so they can arrive at desired communication situations
Communication affordance	a) to offer an expressive power for user's communication needs, b) to be executable for users in their performance of communicative actions through the IS
Information affordance	a) to offer a rich potential source for user's information needs, b) to expose messages that are informative and valuable to the users
Post-assessment affordance	to be informative about performed IS actions and their consequences
Processing affordance	to automatically perform actions considered as important for the performance of other IS usage situations/actions
Subsequent action affordance	to be informative to users concerning action conditions, possibilities and demands in the workpractice in ways so users can perform subsequent acts with quality and confidence

Table 1. A refined definition of information systems actability

4 AN EMPIRICAL ILLUSTRATION

The discussion above in section 3 has been conceptual and theoretical. New categories and definitions have been proposed, partially replacing earlier ones. I will now confront this new usage situation typology with a simple empirical case from e-government. The purpose is to make a small empirical test of this typology. An IT system will be studied and different usage situations will be identified and classified using the new typology. The empirical research question is if the new typology is applicable and useful for classification. I will use a municipal IT system dealing with handling and coordination of enterprise cases. This IT system has earlier been studied for other research purposes and the author has first hand knowledge of this empirical case.

During set up of a new enterprise there is usually a need for several permits and advices from the local government. A new enterprise need to be in contact with the local government for several reasons; e.g. advices for start up, buying or renting estate, applying for permits (e.g. building permits, food permits, environmental permits), planning for new roads and local transportation. The idea of this IT system is to avoid the drawbacks of governmental departmentalization leading to fragmentation of enterprise cases. This IT system consists of the following functions: enterprise characterization, contact register, case record overview, case integration into process, process planning, process follow-up, and regulation overview. All these functions will not be described below.

In an early contact between a municipal case handler and a representative from an enterprise (through the telephone or a personal meeting), the case handler will not only answer questions, but will also make an interview according to a checklist held by the IT system. Different characteristics of the

[1] The type of affordance is labeled 'information affordance' in table 1.
[2] The type of affordance is labeled 'processing affordance' in table 1.

enterprise and its business plans will be entered into the system (the function of enterprise characterization). This information will be used by other case handlers in order to be better prepared when the formal cases arrive at the municipality through different applications. This information may also be used by coordinators of enterprise cases in order to group them into processes and thereby plan and coordinate them better.

There are other separate case handling systems in the local governments; e.g. case systems for building permits, food permits. One important idea of this new case coordination system is to present a collected view of all completed, present and planned cases of a particular enterprise. Case records from other case handling systems are made available in an enterprise case overview in the case coordination system. The case record overview can be inspected by case coordinators and by regular case handlers in order to get a more extensive view of an enterprise.

In figure 5, a sketch of this system and its context are depicted. I will now look into some of these functions and use the refined categories of IT usage situations for classification. The first situation I will look into is the entering of enterprise characteristics. The case handler communicates this information, through system, to other persons in the local government. This is a typical provision situation. However, the case handler needs the checklist (of possible characteristics types) from the system in order to put questions to the enterprise representative. The checklist is thus something that needs to be read and interpreted by the case handler (a receiving situation) and then used during the interview (a subsequent use situation). This is an example of an integrated situation, consisting of providing, receiving and subsequent situations. The enterprise characteristics can then be read and used by other case handlers and the case coordinators. This is a typical receiving situation. For the creation of a case record overview the coordination IT system needs to interoperate with case handling systems in order to obtain case records from these systems. This is an example of an automatic usage situation. The case record overview can also be read by case handlers and the case coordinators (a receiving situation). The idea of communicating these types of information to these groups of people is to get them better prepared to deal with case handling and case coordination (subsequent use situations).

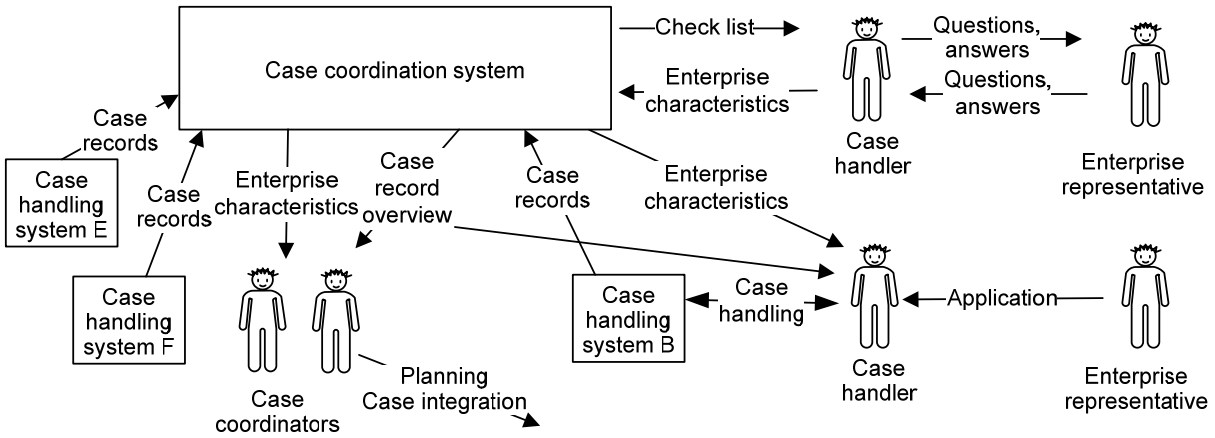

Figure 5. Empirical example: Municipal case coordination system

What did we learn when confronting the new usage categories with this empirical example? The different usage situations fit well into the categorization scheme. The integrated character of enterprise characterization (both receiving and providing situation) was acknowledged above in section 3.2 as a common feature of IT systems. The small test showed also, the need for the category of receiving situation (with interpretive actions), which was only implicit in the earlier actability model. The receiving situations are also interactive as the input situation of registering enterprise characteristics. To receive a case record overview, the user must interact with the system and select the desired enterprise through an (elementary) interaction loop.

5 CONCLUSIONS

The actability approach has earlier been theoretically grounded in different semiotic theories (e.g. Bühler, 1932; Searle, 1969; Habermas, 1984; Clark, 1996) and other socio-pragmatic theories (e.g. Weber, 1978; Ahrne, 1994). Confer examples of groundings in Ågerfalk (2003) and other referenced actability publications. Every time a particular theory meets another theory in a comparative analysis there is a potential for new insights and developments of the theory under scrutiny. Actability theory is claimed to be a theory well founded in different action theories. Therefore, affordance theory by Gibson (1979) – an action oriented theory of perception – was selected for further theoretical grounding of actability theory.

What has happened when actability theory met affordance theory? The concept of affordance has been used as a lens to clarify and sharpen the actability concept. This conceptual analysis led to a revision of the IT usage situation model of actability (section 3.2) and the definition of actability (section 3.3). A small empirical test was performed in section 4 showing the applicability of the new typology of IT usage situations. The new theoretical constructs need to be used in further empirical cases, both for classification, evaluation and design.

The main contribution of this paper has been a clarification of IT usage situations and the different IT affordances of such situations. The stated *affordances* explicate in what different ways an IT system is *actable to its users*. This clarification and conceptualisation was made from the departure point of actability theory. The paper should however not be considered just as a further conceptualisation of this theory. To understand HCI situations and other IT usage situations there is a great need to clarify in what ways an IT artefact should contribute to users' work. Whether you use this particular practical theory (actability theory) or not, these conceptualisations should be fruitful for HCI design and HCI evaluation.

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