

Linköping Electronic Articles in
Computer and Information Science.
Vol. 4(1999): nr 5

From Usability to Actability

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Linköping University Electronic Press
Linköping, Sweden

<http://www.ep.liu.se/ea/cis/1999/005/>

*Published on May 25, 1999 by
Linköping University Electronic Press
581 83 Linköping*

**Linköping Electronic Articles in
computer and information science**
ISSN 1401-9841
Series editor: Erik Sandewall

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Typeset by the authors using MS Word and
formatted using *étendu* style for A4 paper size.

Recommended citation:

*Cronholm S, Ågerfalk P J, Goldkuhl G. From Usability to Actability. Linköping
Electronic Articles in Computer and Information Science, Vol. 4 (1999): nr 5.
<http://www.ep.liu.se/ea/cis/1999/005/>.*

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Abstract

This paper discusses how theories from the Human-Computer-Interaction (HCI) and the information systems development fields can be combined in order to achieve more actable, and thus more usable, information systems. More specifically, one aim of this research is to create a reconciliation of the HCI perspectives of usability with the language action perspective into what we call *actability*. The paper discusses advantages and limitations found in both the language action perspective and in prevalent HCI theories.

This paper has been accepted for the 8th International Conference on Human-Computer Interaction (HCI International'99), August 22-27, 1999, Munich, Germany, and is concurrently published in its conference proceedings.

1 Introduction

To be able to design an information system (IS) that supports users performing business actions, it is necessary to understand both the users and their needs. One way to achieve a better understanding of the users' needs is to use information systems development (ISD) methods.

In the traditional ISD field several methods have been proposed. According to Lif (1998) these ISD methods offer little or no support for usability factors. The ISD methods traditionally focus on how to structure data and how to describe business flows or business processes. They seldom deal with how users should interact with an IS in a business, or how interfaces should be designed in order to permit, promote and facilitate users' business actions.

This paper discusses how theories from the Human-Computer-Interaction (HCI) and ISD fields can be combined in order to achieve better information systems. More specifically, one aim of this research is to create a reconciliation of the HCI perspectives of usability with the language action (LA) perspective into what we call *actability*. The paper discusses advantages and limitations found in both the LA perspective and in prevalent HCI theories. This theoretical discussion will act as a base for developing a method based on actability.

2 Theoretical Analysis Framework

In order to highlight how theories from the HCI field and the LA perspective can be combined, we use a simple and general framework of IS usage (Shackel, 1984), which we believe covers most ISD use-situations. The framework consists of four components – user, task, tool, and environment (see Figure 1). The point of the framework is that none of the components can be considered in isolation from the others.

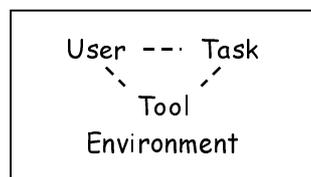


Figure 1. The four components of an IS use-situation (Shackel, 1984)

In the general framework there are relationships between user and task, task and tool, user and tool, as well as between those three and the environment. Our plan is to examine these relationships from each perspective in order to identify strengths and deficiencies.

3 Action and Information Systems

From an action perspective, information systems are viewed as communication systems, as distinct from strict representational views of information. A representational view of information means that designers try to create an 'image' of the reality in order to have the analysed piece of reality properly represented in the systems database. This strict representational view can be challenged, which an action perspective certainly does (e.g. Goldkuhl & Lyytinen, 1982; Winograd & Flores, 1986). In the LA perspective, information systems are not considered as "containers of facts" or "instruments for information transmission" (Ågerfalk & Goldkuhl, 1998). The LA perspective emphasises what users do while communicating through an IS (*ibid.*). Information systems are systems for business action, and business action is the means

by which business relations are created. The aim of an IS is to support, facilitate and enable business actions.

In the LA perspective, the notion of information systems can be defined in the following way (Ågerfalk & Goldkuhl, 1998): an IS consists of 1) an action potential (a repertoire of actions and vocabulary); 2) a record of earlier actions and other prerequisites; and 3) actions performed interactively by the user and the system and/or automatically by the system.

Designing an IS means suggesting and establishing an action potential. An action potential both enables and delimits actions. It entails a repertoire of actions and a related vocabulary. The vocabulary consists of concepts related to the business language. An IS must also offer a record of actions performed. Information about these performed actions can normally be found in the IS database.

It is obvious that the LA perspective focuses on users performing actions (tasks). The meaning and purpose of acting is emphasised. As we can see, the LA perspective also discusses the tool needed for performing tasks. Furthermore, the LA perspective also discusses the performance of actions within a social context (environment). To date, LA approaches do not include sufficient descriptions of the relationships between the user and the tool, even though Ågerfalk & Goldkuhl (1998) have made some preliminary contributions.

4 Usability and Information Systems

In the HCI literature there are several definitions of the concept ‘usability’. One definition is: “Usability is the result of relevance, efficiency, attitude and learnability” (Löwgren, 1993). Another similar definition states: “Usability, a key concept in HCI, is concerned with making systems easy to learn and easy to use” (Preece *et al*, 1994). HCI-research is mainly focused on the interface between a human and a computer. Both human and computer aspects are considered. A popular research area in HCI covers different interaction styles and forms (e.g. Preece *et al*, 1994; Sims, 1994).

In a use-situation (consisting of a user, a task and a tool) the usability perspective aims to cover all these three components. It is well known that all these three components have to be studied equally. As mentioned in section 2, they also have to be studied in a context/environment. However, we argue that there are differences between the usability perspective contributions to each of these three components, and in the relationships between them.

In the HCI literature it is clear that the major contributions to the concept of usability are to the relationship between the user and the tool components (in other words to the Human-Computer relationship), but little has been written about the relationship between the tool and the task component, or about the relationship between the user and the task component.

Our understanding is also that usability is considered mainly from an individual perspective. Human-Computer-Interaction has traditionally focused the dyad of one user using one computer system (Löwgren, 1995). This means that the traditional usability perspective misses the surrounding social context. There is, however, an emerging perspective on usability that consider factors such as the social organisation of work and how computers can be used to support it (*ibid.*).

Traditional ISD methods suffer from limitations in their treatment of cognitive and human factors as well as in their recommendations for the analysis of different interaction styles. Within the HCI field, on the other hand, these aspects are discussed frequently (e.g. Norman, 1988). Nielsen (1993) also discusses the importance of taking into account differences in the experiences of different users. These topics are not stressed in the ISD field and have so far been completely left out in the LA perspec-

tive. Hence, we think that it would be fruitful to combine the usability perspective with that of LA, since the latter primarily focuses on acts (tasks).

5 Actability and Information Systems

Our approach is to combine theories from different fields in order to achieve better information systems. The analysis indicates that the weakness of the LA perspective lies in the relationship between the user and the tool. This relationship is particularly focused on the usability perspective, which offers it good support. Our analysis also indicates that the strength of the LA perspective lies in the relationship between the user and the task, and between the task and the tool. The usability perspective does not offer the same support for these relationships.

When designing IS interaction, usability is important to consider. However, we believe that the common notion of usability is too narrow, since it is often perceived as dealing only with how to design user interfaces. When designing communication through an IS, the question of how to interact is, of course, important. Equally important, however, is what to communicate and why. Moreover, all three aspects must be considered in a context where the communication is taking place – that is, a social context that is never static and fully predictable.

We propose the concept ‘actability’, which is based on theories from the LA perspective and of usability, to assist discussion about the use of information systems in business processes. An information system’s actability is its ability to perform actions, and to permit, promote and facilitate users to perform their actions both through the system and based on messages from the system, in some business context. The ‘degree’ of actability possessed by a certain IS is always related to the particular business context. The business context includes actors’ pre-knowledge and skills relating both to the IS and the business task to be performed. Therefore, IS actability is not a static property of an IS, but depends on the social structures surrounding it.

Please note that the issue is not whether usability should be considered part of actability, and actability an extension of usability, or vice versa. The issue is to make information systems more actable and thus more usable.

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