User-Centred Systems Design as Organizational Change: A Longitudinal Action Research Project to Improve Usability and the Computerized Work Environment in a Public Authority

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ABSTRACT

This paper presents a longitudinal case study in which six Human-Computer Interaction (HCI) researchers worked extensively in an action research cooperation with a public authority over a period of four years. The purpose of the cooperation was to increase the focus on usability in the authority, and the main research question was how user centred systems design and increased awareness on work environment in relation to computer usage could promote organizational change in a public authority. The overarching research approach in this project has been action research and the data used in this paper is derived from an evaluation performed at the end of the project, as well as through our experiences from working with the project. The results involve aspects relating to organizational issues, management support, strategic documents and end-user participation. Moreover the results include methodological support for bringing users and developers closer together and individual and organisational attitudes to development. The purpose of this paper is to make some general conclusions on how to bring about change when approaching a large public authority with the purpose of introducing usability and user centred systems design. [Article copies are available for purchase from InfoSci-on-Demand.com]

Keywords: Attitudes; Field Studies; Management Perspectives; Organizational Change; Public Authority; Usability; Stress; Systems Development Models; Usability Policy; Usability Index; User Centred Systems Design; User Participation; Vision Seminars; Work Environment

INTRODUCTION

An ever-increasing number of work tasks are performed supported by computers, technology or other IT tools. In Sweden, more than 75 % of all workers daily interact with computers and other information technology. More than 35 % uses computer more than half of their working
More than 15% performs their work in direct contact with computers (According to the Swedish Work Environment Authority, 2006). Within public authorities almost all work is more or less computer supported. For case handlers, administrators, management, etc. the computer is the main tool or the only tool they use. Of course this means that the quality of the computer support systems are of utmost importance for the quality and efficiency of work and in the end also for sustainability of work as well as for health and well being of workers.

Users of computers know that technology can contribute to numerous positive things. You have the opportunity of doing things that otherwise would not have been possible, at the same time as technology contributes to increased efficiency and quality. But often it may lead to various types of problems. Computer systems may be perceived as difficult to understand and use. It may be difficult to trust and rely on systems to work as anticipated. Users may become confused and otherwise bothered. It may be physically challenging to work with computer systems for longer periods, particularly if work is monotonous and includes mouse-handling work with limited variations in postures. Computer systems could make you feel controlled and with limited freedom on how to perform your tasks. Irritation and stress are common feelings. There are many reasons to believe that the computer-related problems may be contributing to inefficiency in work, irritation, stress, and increasing workload and subsequently to health problems and sickness. Quality improvements in the IT systems may be important to prevent decreased abilities to work, unhealthy work environments and sick leaves.

Another problem is related to how the technology is used in the everyday work. Often the development of work, organisation, roles and processes do not take advantage of the opportunities that new technology offer. Instead the computers are used to do the same tasks in the same ways as they were performed before. As a result of this one do not achieve any improvements or simplifications, but a number of new problems relating to deficient technology.

The process according to which the IT systems are being developed and introduced is of utmost importance for how the systems will be perceived by its users and for the organisation. The process for requirements on the new IT system, design, development, deployment, maintenance, continuous improvements and evaluation must be efficient. But, at the same time the development process must see the systems development as a part of the business development, it must show an ability to involve the future users in an appropriate way and it must be able to handle usability and work environment issues from the beginning to the end. Most commercial systems development methods do not live up to these requirements without supplying appropriate additions. Therefore, to be able to contribute to positive development there is a need to develop both the development processes and the knowledge and expertise among those involved in the development work.

So, therefore our main purpose of the project has been to investigate: *How do you introduce usability and user centred systems design issues into a public authority?* We know that it takes numerous changes all the way from processes and principles to organizational issues and human values, knowledge and attitudes, and the aim of this paper is to find some general conclusions on how to bring about such a change.

**PURPOSE AND JUSTIFICATION**

From a research point of view the purpose of the project was to gather knowledge and experiences on the introduction of usability and user centred design into a public authority and how this focus on improving usability and the work environment manifests itself in organizational change. But, as most action research projects, different goals from the different stakeholders involved shape the way in which the project develops and the results obtained. See table 1.
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