

Usability Design: Integrating User-Centred Systems Design in the Software Development Process

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Abstract: In practice today, usability professionals have problems, given the limited space when it comes to times and resources, applying their knowledge in systems development projects. Lots of methods have been developed to address the problems of usability but without thoroughly integrating them into the systems development process. The purpose of this tutorial is to show the audience that there is such a thing as a development process that can be focused on usability and user-centred systems design throughout the system lifecycle.

Keywords: usability, user-centred systems design, software engineering, process development, prototypes

1 Contents and benefits

In the beginning Human-Computer Interaction (HCI) grew out of computer science because of the need to address issues relating to the use of the systems but with an influence of a large number of other disciplines. In practice today, usability professionals have problems, given the limited space when it comes to times and resources, applying their knowledge in systems development projects. These are numerous reports describing these problems. Over the years a large number of methods have been developed to address the problems of usability. The problem with these methods is that they are not thoroughly integrated into the systems development process. The purpose of this tutorial is to show the audience that there is such a thing as a development process that can be focused on usability and user-centred systems design throughout the system lifecycle.

The tutorial will provide an overview of the definitions of usability and user-centred systems design. It will introduce 12 key principles for user-centred systems design usable for implementation and assessment of a user-centred development process. The tutorial will then walk through and discuss a fully user-centred development process in relation to a commercial development process, such

as the Rational Unified Process (RUP). No previous experience in RUP is required.

Our definition of and view on user-centred systems design is that: User-centred design is a process focusing on usability throughout the entire development process and further throughout the system life cycle. The following key principles communicate the core of this process:

- **User focus**—the goals of the activity, the work domain or context of use, the users' goals, tasks and needs should control the development.
- **Active user involvement**—representative users should actively participate, early and continuously throughout the entire development process and throughout the system lifecycle.
- **Evolutionary systems development**—the systems development should be both iterative and incremental.
- **Simple design representations**—the design must be represented in such ways that it can be easily understood by users and all other stakeholders.
- **Prototyping**—early and continuously, prototypes should be used to visualize and evaluate ideas and design solutions in cooperation with the end users.

- **Evaluate use in context**—base lined usability goals and design criteria should control the development.
- **Explicit and conscious design activities**—the development process should contain dedicated design activities.
- **A professional attitude**—the development process should be conducted by effective multidisciplinary teams.
- **Usability champion**—usability experts should be involved from the start of project to the very end.
- **Holistic design**—all aspects that influence the future use situation should be developed in parallel.
- **Process customisation**—the UCD process must be specified, adapted and implemented locally in each organization. Usability cannot be achieved without a user-centred process. There is, however, no one-size-fits-all process.
- **A user-centred attitude must be established**—UCD requires a user-centred attitude throughout the project team, the development organisation and the client organisation.

2 Objectives

The main goals for the tutorial are to:

- supply the attendants with the means for producing a truly user-centred software development project.
- discuss the definition and power of a quantitatively measurable view on usability.

- introduce easy-to-apply, low-tech user-centred methods.
- discuss their application in a lifecycle perspective.
- define a role as usability designer in the development process.
- relate the knowledge to a commercially available software development process.

3 Target audience

This tutorial is intended for practitioners; software developers, HCI specialists, user representatives or project managers who want to develop and deploy an user-centred systems design process in their development organisation.

4 Brief biographical sketches

Jan Gulliksen, associate professor of Human Computer Interaction at Uppsala University, Sweden. Jan is a Swedish expert in ISO-standardisation within software ergonomics and human-computer dialogues and also the chairman of the IFIP working group on Methodologies for User-Centred Systems Design.

Bengt Göransson is a usability designer at Enea Redina AB in Uppsala, Sweden and a PhD student in Human-Computer Interaction at Uppsala University. Bengt has more than 15 years of experience in doing user-centred systems design as a consultant.

