
Home or Factory, Mobile or Multimodal: Challenges for Today's HCI Researchers

Regina Bernhaupt

ICT&S Center, University of
Salzburg
Sigmund-Haffner-Gasse 18
5020 Salzburg, Austria
Regina.Bernhaupt@sbg.ac.at

Abstract

In this position paper we describe today's challenges for HCI researchers. Various factors like locations, usage patterns, time, configuration and composition of input and output devices influence today's defiances in usability and user experience research. We give a brief overview of several projects we are currently working on and highlight limitations of current methods in HCI. Most of the limitations are related to the various contexts today's products are used in. We finalize with a short curriculum vitae of the author.

Keywords

Method, limitations, contextual factors, mobile, multimodal, home, industrial settings.

ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction

Researcher in human-computer interaction must face various challenges in their daily work. At the ICT&S Center, HCI & Usability Unit [12] we are confronted with various testing environments, sophisticated input

and output devices, and even (nearly) disappearing interfaces. In the next section we want to give a brief overview of some of the most challenging projects we currently work on.

Projects related to mobile Testing

We are involved in several projects for developing and testing various applications and services for mobile phones. The issue for testing ranges from e-tourism applications to more general applications for cell phones. In our projects we learned that there is an ongoing debate on which methods to be used best in what contexts.

In an literature overview [4] showed, that a majority of articles in the field of mobile HCI is related to applied research, 31 % used user tests in labors, 20 % conducted some kind of field research. The authors conclude, that further studies in the field, for example ethnographic studies, should be conducted.

Since then several publications addressed the shortcomings of various methods used in mobile contexts [5, 3, 10]. For example [11] reports some advantages when extending heuristic evaluation methodologically. But the success of testing applications in the field is still discussed controversial. [6] reports for example no advantages for testing in the field compared with testing in 'enhanced' laboratories, when conducting a heuristic evaluation. An enhanced laboratory is additionally equipped with furniture, sports facilities to simulate running and other equipment related to the context of use. Even when we know when to test in laboratory or when to test in the field, results may still not be valid. To try to say it short: field testing depends on the locations used.

Activity patterns when using mobile phones vary when used in public places or in the home [7]. We were confronted with several methodological shortcomings, when studying users being mobile. Mobile devices can be used almost everywhere. Especially for the context of home usage, we have some experiences in conducting research in the home, especially when using interactive TV.

Projects on Interactive TV

Starting in June 2004 we participated in a project on interactive TV, based on MHP using DVB-C. During the field trial we applied several methods to ensure usability and to further explore acceptance of interactive TV. The field trial contained 80 households, with about 300 participants respectively [2].

To ensure the usability of the developed iTV services we used a combination of several methods. We conducted heuristic evaluations during the design process, we used more quantitative methods like questionnaires, logging of all iTV services requested from the servers, semi-structured interviews. We conducted a usability test [1] and further explored usage patterns in the households conducting ethnographic studies combined with cultural probing [9]. Currently we are preparing the second phase of the field trial with more information oriented services. This second trial will start in March 2006.

What we learned in these projects are the various shortcomings of methods when used in the so called home context.

Other Projects

Testing mobile devices and testing in special environments like the home are only the starting point for the challenges we have to face in the near future. We are currently setting up two new projects. We have to develop methods to evaluate multi-modal interfaces in safety critical systems (where a testing on-site, using a real system is not appropriate, but maybe necessary to show the real usability flaws). In the second project we have to ensure the usability and the user experience of human-robot interaction in industrial settings. Both projects are in their starting phase, and the workshop on HCI challenges in non-traditional environments can give us insights for the set-up phase of these projects.

About the Author

Regina Bernhaupt is currently working as assistant professor at the HCI Unit of the ICT&S-Center, University of Salzburg. She holds a masters degree in psychology and in computer science from the Salzburg University. In 2002 she finished her technical dissertation in computer science in the field of intelligent systems (time coded artificial neural networks). She is a lecturer at the applied university Salzburg (multimedia networks, user interface design, interactive TV) and teaches programming courses, user interface techniques and human-computer interaction at the Salzburg University. She was organizer of the Mobile HCI 2005 conference in Salzburg.

Her current research interest mainly addressed the user experience and the psychological foundations of HCI. She is actively involved in all of the named projects (e-tourism applications for mobile devices, interactive TV and interactive TV at home, development of remote controls for interactive TV for elderly people, evaluation

of multi-modal interfaces in safety-critical systems). She is further involved in the project MAUSE (Towards the MAturation of Information Technology USability Evaluation). This project addresses several of the methodological issues already stated. The main objective of the MAUSE project [8] is threefold:

- to deepen the understanding about the inherent strengths and weaknesses of individual Usability Evaluation Methods (UEMs);
- to identify reliable and valid methods to compare different UEMs in terms of their effectiveness, efficiency as well as scope of applicability;
- to develop efficacious strategies for extracting useful information from the results of UEMs to improve the system tested;

My main interest in this workshop will be to learn from other people and other case studies, to effectively address the shortcomings of various methods, when used in non-traditional environments.

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