3rd International Workshop on Ubiquitous and Collaborative Computing (iUBICOM)

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ABSTRACT

It is recognised that the traditional methods of requirements capture are not suitable when applied to ubiquitous and collaborative systems. With these sorts of systems what is important is an understanding of the social characteristics of work itself as well as the people who operate in the work environment. User-centred design and evaluation approaches have been used to do this however these approaches may not be straightforward in situations where perceptive technology is involved. The purpose of this workshop is to bring multi-disciplinary researchers together in order to discuss different models and theories that can be used to design and evaluate ubiquitous and collaborative systems. Particularly, the focus of the third International Workshop on Ubiquitous and Collaborative Computing (iUBICOM) is on user-centred design and evaluation of ubiquitous and collaborative computing including ethnography.

Categories and Subject Descriptors

H.5.3 [Information interfaces]: Group and organization interfaces – Collaborative computing - Computer-supported collaborative work; J.4. [Computer applications]: Social and behavioural sciences – Sociology.

General Terms

Design, Human Factors, Design, Human Factors, Theory, Verification

Keywords

User-Centred Design, Formative and Summative Evaluation.

1. INTRODUCTION

Mark Weiser [1] put forth a vision of ubiquitous computing, according to which people and environments are augmented with computational resources which provide information and services whenever and wherever required. Achieving this vision required communication and interoperability between different

applications and devices. The availability of information through a wide range of media including mobile devices and sensors has given a new momentum to collaborative computing by providing people with new opportunities to communicate with geographically dispersed teams and to conduct business.

The development of ubiquitous and collaborative systems requires a significant understanding of the cooperative work taking place in real world as the system interface moves into the world of work. The desire to service this need encapsulates the problems for the traditional forms of requirements capture as ubiquitous and collaborative systems moves beyond the individual user to recognise the socially organised character of work that should be included within the requirements engineering process. To acknowledge the fact that work has a social dimension to it, researchers need to move literally as well as metaphorically from the laboratory to the field to inform both ubiquitous and collaborative systems.

Research shows how and why many large-scale projects in the past have failed [2]. One of the key reasons for their failure is inadequate analysis of user requirements. Most importantly, social, political and cultural factors have not been considered during the development of these systems. For example, the failure of ‘office automation’ systems to support a group of individuals in the workplace was due to concentrating on the functional requirements of the tasks rather than the group dynamics affecting how well they performed them. It is in this respect that traditional analytic approaches are found wanting, representing an intrusion of the ‘engineering mentality’ into areas where it is inappropriate. To get a better idea of how different researchers are dealing with the issue of user requirements, we have provided an overview of different methods in [3].

In the following section, we will briefly talk about several large-scale projects in Europe and the United States that focus on supporting human-human communication and collaboration. Following that issues and questions to be addressed in the workshop are outlined. In the last section, theme of the workshop is highlighted. Contributions to this workshop are mainly expected to be from colleagues involved in large-scale projects. Of particular importance are people working in multi-disciplined teams involving different levels of collaboration

2. CURRENT PROJECTS

Developments in perceptive technologies (most notably computer vision and speech recognition) and the availability of multi-user devices (like non-desktop devices and portable devices) have triggered renewed interest in supporting communi-

cation and collaboration. The ability to maintain a context model through perceiving what is going on has opened possibilities for services that anticipate people's needs and can take action to support people's communication and collaboration in a contextually and socially appropriate way.

Recently, a number of research projects have started to actively investigate these issues, for example the EU-funded Integrated Projects Computers in the Human Interaction Loop [4], Augmented Multiparty Interaction [5], the Canadian Network for Effective Collaboration Technologies through Advanced Research [6], The MeetingManager [7], InterSpace project at the Fraunhofer Institute [8] and Organizes [9].

Rather than just driving developments from the technology perspective, user-centred design and service evaluation are central concerns in these projects. For more conventional interaction design, the User-centred Design philosophy has been well established. In the early stages of the design process, information is obtained from the users through simulations (i.e. low-fi prototypes such as drawings, sketches, interactive PowerPoint simulations etc) that help the designers to obtain requirements and elaborate the concept in an iterative fashion. Also, in most cases the evaluation metrics are straightforward. However, the design for ubiquitous and collaborative computing is more complex and therefore the traditional forms of requirements capture are found wanting.

3. ISSUES AND QUESTIONS TO ADDRESS IN THE WORKSHOP

Applying user-centred design approaches to the development of ubiquitous and collaborative systems to support human-human communication and collaboration is more complex. Building simulations is already a major effort and involves many decisions without proper guidance from user data, in the awareness that the decisions will strongly affect the user experience. Also, many of the perceptual components cannot easily be simulated. Therefore, formative evaluation is a slow and laborious process, which runs counter to the ideas underlying User-centred Design, namely to obtain the information in the early stages of the design process. Similarly, extensive summative evaluation is a challenging task.

Against this background, we propose a workshop on ubiquitous and collaborative computing focusing on user-centred design and evaluation with the aim to bring together researchers from different backgrounds to share experiences. Building on our previous workshop that has been organised on user-centred design and evaluation (<http://www.industrialdesign.tue.nl/ICMI/eval-workshop/>) and our ongoing workshop on ubiquitous and collaborative computing (<http://www.coventry.ac.uk/dsm/iUBICOM/>), the main goals are, to exchange information about

the design and development of ubiquitous and collaborative systems to support human-human communication and collaboration. The main questions to answer are given below:

- What are proper methodologies and metrics for formative and summative evaluation?
- What is the role of theory in conducting evaluations and what are the theoretical frameworks that different researchers employ?
- What is the role of ethnography to inform system design and how it could be achieved in an effective and efficient way?

We expect that the discussion will help to construct, elaborate and refine a framework for formative and summative evaluation that can be used for ubiquitous and collaborative systems.

4. THEME OF THE WORKSHOP

The main theme of this workshop is User-Centred Design and Evaluation for Ubiquitous and Collaborative Computing. In this workshop, we invite contributions from researchers whose interests lie in the area of user-centred design of ubiquitous and collaborative computing. Contribution on summative evaluation using formal concepts or pragmatic approaches is particularly welcome.

5. REFERENCE

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