UBIQUITOUS INFORMATION ENVIRONMENTS: CONCEPTS AND TOOLS

Tom Gross, Thilo Paul-Stueve[1]

In this paper we provide an overview of concepts and tools in ubiquitous computing, context-aware computing, and computer-supported cooperative work that can be applied and used to facilitate the design and development of ubiquitous information environments thorough literature review. And we discuss how these concepts and tools can leverage ubiquitous information environments from a users' perspective.

1 Introduction

Many advanced information systems go beyond the traditional interaction paradigm of windows-icons-mice-pointing devices (WIMP) and graphical user interfaces (GUI) in order to provide users with ubiquitous access to information and services. The ubiquitous computing including the calm technology paradigm bring many advantages for users that can only be realised if the corresponding progress in concepts and technologies are made [11]. In fact, for users this 'move toward ubiquitous computing, in which computers will be embedded in our natural movements and interactions with our environments—both physical and social … will help organise and mediate social interactions wherever and whenever these situations might occur.' [8, p. 63].

Developing concepts and tools for such ubiquitous information environments is still a challenge for the team responsible for the result—even if the team is interdisciplinary. We have already developed the UbiProcess model—a generic model describing the interaction process between the users and the information interface [5].

In this paper we analyse how existing concepts and tools can be used by developers of ubiquitous information environments that are based on the UbiProcess model. In particular we provide an overview of concepts and tools in ubiquitous computing, context-aware computing, and computer-supported cooperative work that can be applied and used to facilitate the design and development

[1] Faculty of Media, Bauhaus-University Weimar, Germany
<firstname.lastname>(at)medien.uni-weimar.de

of ubiquitous information environments thorough literature review. And we discuss how these concepts and tools can leverage ubiquitous information environments from a users' perspective.

In the following sections we introduce the ubiquitous computing, context-aware computing, and computer-supported cooperative work paradigms as well as their concepts and tools respectively and we then describe how these concepts and tools can be used for designing and developing ubiquitous information environments.

2 The Ubiquitous Computing Paradigm

In this section we will characterise the ubiquitous computing paradigm and briefly describe is concepts [e.g., 1, 2] and tools [e.g., 6, 9].

3 The Context-Aware Computing Paradigm

In this section we will characterise the context-aware computing paradigm and briefly describe is concepts [e.g., 3] and tools [e.g., 7].

4 The Computer-Supported Cooperative Work Paradigm

In this section we will characterise the computer-supported cooperative work paradigm and briefly describe is concepts [e.g., 4] and tools [e.g., 10].

5 Concepts and Tools for Ubiquitous Information Environments

In this section we will provide a systematic overview of the concepts and tools of the previous three chapters and will provide guidance how they can be successfully applied to ubiquitous information environments based on the UbiProcess model.

6 Conclusions

In this section we will summarise the paper and provide and outlook.

7 References

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