

Towards an Approach for Developing socio-technical Ubiquitous Computing Applications

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Abstract: The purpose of the paper is to make a step towards a development approach for ubiquitous computing application. Therefore, we answer the following research questions: first, what is ubiquitous computing; second, which challenges of ubiquitous system development poses the particular nature of ubiquitous computing; and third, how to overcome these challenges by combining development methods from different fields. Major challenges in ubiquitous application development are a) dissociation from known user-interfaces, b) end users' difficulties imagining ubicomp possibilities in participatory design settings, c) easy ubicomp application evaluation exceeds possibilities of current prototyping approaches, d) supporting user acceptance for ubicomp technologies is hence limited and e) the impact on society e.g. when introducing concealed sensors for ubicomp systems. This paper elaborates the specific challenges, analyzes to what extend existing development methods can be used to overcome these challenges, and introduces the VENUS approach for developing ubiquitous computing applications including methods for deriving requirements from law to ensure legally and socially compatible technology design, and trust to increase user acceptance of the developed applications.