UbiSoc 2005: First International Workshop on Social Implications of Ubiquitous Computing

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MOTIVATION

Over the last few years, ubiquitous computing has shifted more and more out of laboratories and into everyday applications, such as toll ways or navigation systems. Consequently, ubiquitous computing has also entered the conscience of an ever increasing part of the general public, as the latest discussions about consumer privacy with respect to the commercial use of tracking technologies have shown.

The public discourse often lacks an exact understanding of the technologies involved and sometimes tends to overestimate the short-term risks involved in the deployment of pervasive and ubiquitous computing systems. However, the fears involved herein are easily understandable if we take a precise look at the vision behind ubiquitous computing. With its orientation towards the public as well as the private, the personal as well as the commercial, it aspires to create technology that will accompany us throughout our whole lives, day in and day out. This ongoing development may have a long-term impact on everyday life, with far-reaching consequences for the society's ethical values.

In recent years, the community has made quite some effort to initiate dialogue regarding the potential privacy threats posed by ubiquitous computing systems. There remain, however,

several other important social issues other than privacy that are impacted by ubiquitous computing. As researchers begin to identify and address these critical issues, we believe it is important to open a community dialogue to share these findings, create awareness regarding new research in these areas, and collaborate to work towards these new challenges.

The large number of social issues in regards to ubiquitous computing can provide a wealthy source of design ideas and improvements. The increasing role and importance of ubiquitous systems in our daily lives implies that the design decisions we make have a direct impact on our lives. Consequently, a good source of ideas for improvement of our designs can have a direct impact on our lives. We believe that the social issues that this workshop addresses affect our daily lives to a great extent. Because they are so relevant to us, they can have a direct and important impact on the design of ubiquitous systems.

GOALS AND EXPECTED AUDIENCE

The aim of the workshop is threefold. First, we would like to address several relevant social aspects beyond privacy (see below). Second, we wish to focus our discussion on deriving design guidelines for ubiquitous computing systems, based on the debate and analysis of these social implications. Last but not least, we hope that the workshop will help in building a community of researchers interested in the social implications of ubiquitous computing and in promoting the dialogue with the general public.

The areas of contributions include a broad range of challenges related to the design of socially compatible ubiquitous computing systems. We especially encourage submissions related to the following topics:

- **Ecologic impact**. How will ubiquitously available computing systems affect the ecological balance? On the one hand, there are many promises for positive ecological impacts (e.g., due to better deployed resources,

or better recycling of tagged items). On the other hand, many of these savings could be counterweigh due to the so-called rebound-effect. The energy needed to power all these pervasive systems and the newly generated electronic waste are also relevant issues.

- **Making the invisible socially acceptable**. Humans are used to receive feedback to their actions. The vision of ubiquitous computers working in the background without humans even noticing it, however, contradicts this paradigm. What could the social impact caused by this loss of visibility be? When and how should feedback loops be built into ubiquitous systems?

- **Delegation of control**. In order to cope with the complexity of computing systems, humans will have to delegate much of the control to automated decision making tools. This, however, raises many questions related to reliability, usability, accountability, responsibility, and liability. What impact could this have on our daily lives?

- **Consequences for discriminated minorities**. One of the potential advantages of ubiquitous computing seems to be the everyday support of unprivileged minorities like physically or mentally impaired, elderly, or even children. Are there any generic rules for ubiquitous computing system design, so that such minorities will easily benefit from the deployment of these systems?

- **Ethics**. What ethical implications are to be expected from deploying ubiquitous computing and the implied surveillance for care giving and other domains? These issues may be discussed from both an end-user perspective as well as from a designer perspective. Can there be a code of ethics for designers of ubiquitous systems?

- **Information accuracy/dependability**. The example of the World Wide Web shows that much information also means much wrong, outdated, or simply unavailable information. If ubiquitous computing systems are to govern much more of our lives than just our online presence, what problems are to be expected and how should the systems cope with these?

- **Influence through information**. Which entities will control the ubiquitous information flow and how far-reaching could their influence be? Can researchers guarantee a certain fairness of and/or control over the information?

- **Economic consequences**. What benefits and new threats are to be expected in an economy that essentially depends on large amounts of real-time information? How might existing practices and business models be affected?

- **Ubiquitous computing as a public service**. What role will government and governing bodies play in the development and deployment of infrastructures for ubiq-

uitous computing services? Will this be similar to the construction and maintenance of roads or power lines? What sorts of infrastructures could/should be provided: communication, information, etc.?

- **Ubiquitous systems and the built environment**. A big part of our lives is affected by the build environment we inhabit and its architecture. If ubiquitous systems are going to have the same degree of impact on our lives, they probably should be designed and deployed in a way that is compatible with the architecture. What effects could our systems have on architecture, and how could architecture impact ubiquitous systems?

- **Socially acceptable design**. We would encourage submissions that address one or more of the above issues at the level of design implications. An analysis of the above issues can have many implications for how we design ubiquitous systems, and we would like to see submissions that follow through and discuss these implications.

The organizers of this workshop believe that developers of ubiquitous computing systems could benefit from a careful evaluation of the consequences of such technology within the framework of established concepts from the fields of social sciences. Thus, the workshop will try to bring together computer scientists and social scientists with a shared interest in the area of socially sustainable design of ubiquitous computing systems.

CONTRIBUTIONS AND FORMAT

We solicit short papers (max. 4 pages) of ongoing work, recent results and position statements. Papers should encompass some of the workshop's core themes related to social implications of ubiquitous computing systems and design guidelines drawn from these consequences. Papers will be peer-reviewed and will be selected according to their significance to the scope of the workshop, their quality of presentation, and their ability to stimulate discussions. Before the workshop, all selected papers will be made available to the participants. At the workshop, printed proceedings will be distributed. A website with the workshop's results will be established and maintained after the workshop, to help the emerging community staying in touch. We will also attempt to publish selected submissions in a special issue of a major Journal or Periodical. The workshop will open with short presentations of the papers selected by the program committee. Before lunch, participants will brainstorm about key topics suitable for subgroup work in the afternoon. In the afternoon session, the audience will split up. Each subgroup will work on important issues, problems, and proposed solutions regarding their topic. The "Knowledge Café" methodology will be used to maximize the interaction and knowledge sharing among the participants. An important part of the afternoon will be reserved for the presentation of each group and subsequent discussions with the plenary.