

In what way collaborative work is supported in ubiquitous service environments

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Biographical note

I am a PhD student at Department of Computer and Systems Sciences (DSV) in Kista, outside Stockholm, since October 2002. The research group I belong to is the FUSE group¹ (FUSE is an acronym for Future Ubiquitous Service Environments). I have studied Cognitive science and have a master's degree in Social Sciences from Linköping University.

Research field

My research is part of the field of ubiquitous computing. The idea behind ubiquitous computing is to get away from the one user – one computer situation. In a ubiquitous service environment the computers are spread out in the environment and the user should get the feeling that she is interacting with the whole environment and not with separate computing devices.

At KTH in Kista there is a ubiquitous service environment called the iLounge. The room was designed and built by the FUSE group during spring 2002. The Wallenberg Foundation has given funding for the construction and development. The intention is to explore how new technology and interaction techniques can support collaborative work. The iLounge will both serve as a learning facility, to be used by students on project-oriented courses, and as a laboratory for researchers at KTH. The room is equipped with three large displays on the walls, where two are touch-sensitive. Another large touch-sensitive display is build into a table in the middle of the room. There is a wireless LAN and users bringing personal equipment only need a WLAN-card to get access to the local network. The environment is also equipped with special services for making it easy to share work and information between the different computers, which also offers new ways for interacting between people and artefacts.

¹ More information about the FUSE group is to be found at <http://www.dsv.su.se/fuse/>

Research questions

My general research question is: *In what way do ubiquitous service environments (USE) support collaborative work?* According to the general question other questions follow. Ubiquitous service environments offer a different way of working, compared to other settings. From this perspective raised questions are:

- *How do people make use of the workspace that a USE offers to a user?*
- *How is the work divided between people when working in a USE? And does it change over time?*
- *To what extent do people move around in the workspace? And why and when?*
- *How is the working pattern constituted when working in a USE? Is this depending on the activity?*

In the first phase of my work I will have all these questions in mind, and both be explorative and descriptive in my work, later on I will choose one or two of those to particularly focus on.

Method

To answer the research questions I will do a number of user studies. The groups will consist of students attending design oriented courses and project groups (researchers, employees at firms, or students) having more or less structured meetings.

In the end of March I made my first user study. The study was to a large extent explorative. Two student groups (4-5 members in each group) in a five-point course called "Methodology for design of interactive systems" worked in the iLounge. Their task was to design a multimedia guide for the Swedish Museum of Natural History. I followed the groups for two weeks when they were doing the conceptual design. During this time each group had five three-hour sessions in the iLounge. The sessions were video filmed. Data was also collected by questionnaires and semi-structural group interviews. Initial results e.g. show that the work in an environment like the iLounge gets more effective, and focused. All participants liked to work in an environment like the iLounge, but more interesting they all said that normally when having group work sessions, people get different roles (as leader, coordinator, problem solver, etc), but when working in the iLounge all group members had equal status. They all grasped the new services available in the iLounge fast. They used the whole workspace, but mostly they used the two big wall displays. It was interesting to see how they actually worked with one document and how the work proceeded using the new interaction possibilities offered in the room. Next step is to complete the compilation of the questionnaires, interviews and start making analysis of the video films.

In the middle of May I will make another user study, which in many ways is similar to the one described above. In this study the focus lies on how to support the collaborative work according to the structure. With this focus I also follow a research group when they are having meetings.