

Persistence in Interactive Workspaces

Maria Croné

Department of Computer and Systems Sciences, Stockholm University/KTH
mariac@dsv.su.se

Abstract. The iLounge is a ubiquitous interactive space intended for collaborative design work. Apart from being a research environment it will be used as a learning resource at the university. Users will move in and out of the workspace and need to be able to move their work with them, both in time and space. How can we make the learning space persistent through easy reconfiguration, state capturing and restoration? We need an infrastructure that keeps track of the state of the work, and allows it to be moved to configurations that have different device capabilities, different temporal settings (e.g., files may have changed), and changes to the set of participants.

Introduction

The iLounge

The iLounge is a ubiquitous interactive space in the KTH Kista Forum building. It was designed and built during the first quarter of 2002 by the KTH research group FUSE, with support from architect Gullström Architects AB. The intended use of the room is collaborative design work. Apart from being a research environment for ubiquitous interactive environments it will gradually be used more for everyday work by student groups on project oriented courses at KTH Kista. These student groups will also be used for field studies that will be scaled up over time.

The atmosphere in the iLounge is planned to be more studio- or theatre-like than office-like. High quality wooden floor, choice of wall fabrics and textiles in combination with flexible light setting should contribute to this effect. There are holes of varying size in the curved inner wall for additional equipment, The holes are covered with semi-transparent plastic “bubbles”, back-lit by fiber-optic light. By changing the colour of the light, a subtle visual effect is achieved that can be used e.g. for output.

Parallel multi-modal interaction is supported both by traditional input/output channels like wireless keyboards, pointing devices and the various computer displays as well as newer ways of interacting like tangible interactive elements, a high quality sound installation together with video equipment. A specific feature is the possibility to transform the room from a more to a less technology dominated room and the integration of IT devices with more traditional interior design elements.

In the iLounge there is an interactive wall consisting of two large, touch sensitive wall displays built into a curved inner wall. The displays are 72” back projected SmartBoards. If not needed the interactive wall can be “hidden” either physically by

drawing curtains or by displaying suitable wall paper patterns and art work. In front of the interactive wall is the interactive table. It is the size of a normal conference room table, with an embedded horizontal 50" Pioneer plasma display and a SmartMatisse for plasma displays that is touch sensitive. It is big enough for six to eight people to sit around it, and there is space on the table surface to put laptops, pocket or pad computers.

A smaller area in the window corner of the room has a more relaxed atmosphere and can be used for smaller groups discussing a sub-problem or doing individual work. In this smaller area there is a 42" Sony plasma display on the wall, a small table and three easy-chairs. In a default mode the display shows a selected painting but can be activated for both messaging, video or as a work area. This wall display is not touch sensitive, it is controlled via a wireless mouse and a keyboard

Persistence

I am involved in a persistence project together with researchers from Stanford University. The persistence project is part of a larger project called iSpace[1] and tackles a problem that arises in the use of facilities such as the iLounge, and the iRoom at Stanford. If the space were dedicated to a single user group full time, people would be able to come and go at will, with material spread around on the various devices, visible to whoever uses the room whenever they want. But in any real setting, a technological resource of this type will be shared among many project groups. It needs to be treated in the same way as a time-sharing computer system. Whenever someone is using it, they feel it is theirs, but in the meantime, someone else can be "swapped in" and out. How can we make the learning space persistent through easy reconfiguration, state capturing and restoration? We need an infrastructure that keeps track of the state of the work, and allows it to be moved to configurations that have different device capabilities, different temporal settings (e.g., files may have changed), and changes to the set of participants.

A persistence prototype has been developed at Stanford Computer Science department this spring and will be tested by different project groups working in the iRoom. At KTH we will modify the user interface of the Stanford persistence prototype and run user studies in the beginning of 2003.

Other issues for the FUSE research activities in the iLounge:

- To establish a user perception of interacting with the whole room rather than with singular devices, and to study the implications of this from a human-machine interaction perspective.
- To create a system in which public/private devices, wearable/stationary devices as well as IT/non-IT devices are integrated, mixed and dynamically configured.
- To create co-ordinated multi-modal interaction through synchronised use of many fine-grained input and output media.

- To enable context sensitive functionality of services in the room. To adapt functionality to specific user groups and to facilitate both initial and repeated use of the room.
- To facilitate the transparent access to both local and distributed services and study mobility issues for users moving between interactive spaces.
- To explore the functionality of services and devices with more intelligence, and study the implications of such functionality.

Expectations of the workshop

My expectation of this workshop is to get inspiration from other researchers on new ways of interaction, suitable for this kind of environments. I hope to get ideas for new user scenarios and to learn something about sensor techniques. I also want to get feedback on my own work.

My background

I graduated from Stockholm University one year ago, after four years of studies in Computer and Systems Science. My area of interest is HCI. In October 2001 I started as a PhD student at DSV. Apart from the iSpace persistence project, I am also involved in the DC project FEEL. The FEEL project is about handling parallel activities in a ubiquitous interactive space and will be presented at the jamboree that is taking place in Göteborg the same date as the Ubicomp conference.

References

1. Stanford Interactive Workspaces Project, <http://graphics.stanford.edu/projects/iwork/>