

# Collaboration with Interactive Walls and Tables: Pin&Play

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**Abstract.** We introduce the concept of Pin&Play which augments common surfaces (e.g. walls) and objects (e.g. pins) into a network so that they can easily be used to create ad hoc networks. The concept is described together with current plans to collect ideas for future work, namely using workshops where video is used as the primary documenting tool.

## 1 Introduction

People often use surfaces for the purpose of attaching things that are of interest and/or of high importance and for the purpose of getting a better overview of something. However, surfaces such as common notice boards often get cluttered after a while when layers of notes have served their purpose but are still attached and now hidden under a new layer of more relevant notes. If these things attached to the notice board could communicate and e.g. let the user know which thing is most important and when it is important, the user could gain a better control and overview of the surface and its objects. Pin&Play (Van Laerhoven et al. 2002) is about augmenting everyday items such as common surfaces (e.g. walls) and objects (e.g. pins) into a network where objects attached to the surface can communicate. The surface is made into a network and easily attachable connectors contain relevant information such as clock, priority, alarm and calendar. The smart notice board is only one simple application using the concept of Pin&Play, which could facilitate the everyday environment at work, at home or in public places.

## 2 Implementation

Pin&Play mainly consists of two components. The first one is a (possibly large) surface, e.g. a wall, augmented with a conductive material that makes the two-dimensional network media (which also provides power to connected objects).

Multiple layers of fiber sheets constitute the surface which design is aimed at simplicity and low-cost. The second component is a pushpin-like connector that can be easily attached to or removed from the surface, thus employing a truly ubiquitous device that is commonplace in home and work environments. An important idea of Pin&Play is to let users ‘upgrade’ items that they normally attach to vertical surfaces to networked objects, while retaining the items original appearance, purpose and use. To validate the Pin&Play concept, a smart notice board is built where attached pins communicate to support notification.

### 3 Application Scenarios

In order to further demonstrate the flexibility of the Pin&Play concept, future work will involve workshops to find areas of use and thereafter the construction of prototypes within these areas. Moreover, general optimization would e.g. be to make the network support large-scale surfaces such as entire walls. The following workshops, all focusing on face-to-face collaboration, have been discussed:

**Filmfestivalen (Göteborg Film Festival).** A workshop with the organization of Filmfestivalen in Göteborg that schedule the film program of approximately 500 films (divided into themes), several cinemas and ‘performance times’ using Post-It notes on a large wall. It would be interesting to explore the benefits of using the Pin&Play concept on a large-scale surface when scheduling the film program.

**Learning tool.** A workshop with junior level teachers, parents and children in order to examine the possibility of using the Pin&Play concept in teaching. For example, instead of small pins, large numbers and mathematical signs could be used on a large surface to provide children with a fun and easy (collaborate) learning tool.

**Large areas.** A workshop with employees of botanical gardens or zoos, in order to examine the possibility of using the Pin&Play concept in planning and running very large areas of land. A possible face-to-face collaboration surface would then be the Pin&Play network designed as a large map of the relevant area. Employees may use the map as support in daily work or in the planning of more long-term plans.

Generally, the workshops will be carried out using video as the primary documenting tool. Therefore, video artifacts (Mackay et al. 2000) will be the main result, e.g. brainstorming sessions with workshop participants (video brainstorming), scenario making (video scenarios) and discussions with workshop participants about future prototypes (video prototyping). The outcome will hopefully serve as an important tool in the communication between the scenario development team and the prototype development team, as well as benefit the prototype development team during the development of the future prototypes.

### 4 Conclusions

Pin&Play focuses on an important trend in ubiquitous computing namely the integration into everyday environments and homes. Because of the kept affordance and familiarity of the basic concept of Pin&Play, prototypes built on the concept will

have a good foundation, which can be used to create an intuitive system for e.g. face-to-face collaboration. Moreover, using workshops with conceivable future users in combination with the familiar concept in Pin&Play has the potential of leading to easy, supportive collaborative tools.

## 5 Biographies and expectations of the authors towards the workshop

Maria Håkanson joined the Future Applications Lab (FAL) at the Viktoria Institute in Göteborg, Sweden, as a Ph.D. student in August 2002. She received a Master's degree in computational linguistics at Göteborg University in May 2002. In FAL, she joined the Pin&Play project where she will organize workshops in order to collect ideas of future work using e.g. video scenarios.

Kristof Van Laerhoven works as a Research Associate at the Ubicomp group at Lancaster University, UK, under supervision of Hans-Werner Gellersen. He started his research as a student at the University of Brussels' AI Lab, working mainly on neural networks and robotics. Continuing to work on machine learning techniques and sensing algorithms at Starlab Research, he became a key researcher in the EC-funded TEA project (mobile computing) and Starlab's iWear consortium (wearable computing). His main interests are the integration of sensors and adaptive algorithms in ubiquitous and wearable computing, to improve interaction with augmented artifacts by making them more perceptive of both environment and situation.

At the workshop, the aim is to present and provoke thoughts on the application aspects of large surfaces such as walls and notice boards. It would additionally be an ideal forum for introducing the most recent progress made in the recently started Pin&Play project.

## References

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