A Cooperative Media Space to Remix and Separate Rooms

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ABSTRACT
In this paper we introduce our current work on the concept and implementation of a cooperative meeting space that connects two remote labs via a permanent audio-video channel and supports single-user, single-group, and group-to-group interaction on synchronised large displays.

Author Keywords
Computer-Supported Cooperative Work; Computer-Mediated Communication; Media Space.

ACM Classification Keywords
H.5.2 [Information Interfaces and Presentation]: User Interfaces—Graphical User Interfaces, User-Centred Design; H.5.3 [Information Interfaces and Presentation]: Group and Organization Interfaces—Computer-Supported Cooperative Work.

INTRODUCTION

In our cooperative meeting space we aim to build a flexible environment supporting easy communication and cooperation within collocated groups, and among distributed sub-groups. We combine concepts for easy interaction among remote users based on permanent audio or video connections, and for easy interaction among collocated users based on shared hardware and software.

This research is based on a background of computer-supported cooperative work, and human-computer interaction. In computer-supported cooperative work and computer-mediated communication several concepts and systems for remote interaction have been developed within the last decades. For instance, media spaces are systems that 'support distributed work groups through access to information that supports general awareness', which 'may lead to informal interactions, spontaneous connections...' [2]. They were motivated by the fact that 'informal interaction, spontaneous conversations, and even general awareness of people and events at other sites' should not be neglected in geographically distributed groups [1]. In human-computer interaction several novel styles of single-user and cooperative interaction with emerging hardware have been developed. For instance, the i-LAND environment consists of several Roomware components that are 'computer-augmented objects integrating room elements with information technology [7]. Two prominent Roomware components are the DynaWall: a very large display that can be shared among users and that features some novel interaction styles; and the InteracTable: a tabletop that can be used cooperatively.

The cooperative meeting space has to meet both requirements for general awareness and informal communication from traditional media spaces and additional requirements for enhanced cooperation support.

In this position paper we give a summary of the base concepts and technology we developed, and we sketch some user-centred scenarios for which we developed technology with our base concepts and technology.

BASE CONCEPTS AND TECHNOLOGY

In order to have a sophisticated, yet easy to use base platform for effective and efficient development of cooperative media spaces, we developed the Sens-ation platform with the SensBase reference implementation. Details on Sens-ation and SensBase can be found in [4] and on the peer-to-peer extended infrastructure SensBution in [6]. Here we just want to give an overall impression (Figure 1 shows the components of a SensBution peer). The main concepts of Sens-ation are: it provides multifarious sensors for capturing information in meeting rooms, it stores the captured data persistently and allows inferencing on the data, and it provide multifarious interfaces for querying simple data and inference engines.

USER-CENTRED SCENARIOS

We have developed several infrastructures based on Sens-ation. In a work-related scenario, the CMS provides the users of a cooperative media room with awareness and communication on large displays (i.e., general awareness among the users in the same room, and between the users in distributed rooms); easy and intuitive single-user and cooperative interaction based on large displays; and distributed cooperation among distant sub-groups based on large displays [3]. In a leisure-related scenario, the Cooperative Media Space for Social TV CoMeST supports a Social TV scenario. CoMeST is a context-aware ubiquitous environment allowing natural interaction beyond traditional graphical user interfaces and supporting easy social interaction within co-located groups of users and among distributed groups. In order to support non-intrusive social interaction, information about the current activities of the users, their locations in space, their social environments, and their availability for conversations and for watching TV is needed. Sensors capturing various data allow for inferring about users and users' context states. Through actuators the environment can support the users in their specific situation and balance between the needs of different users [5].

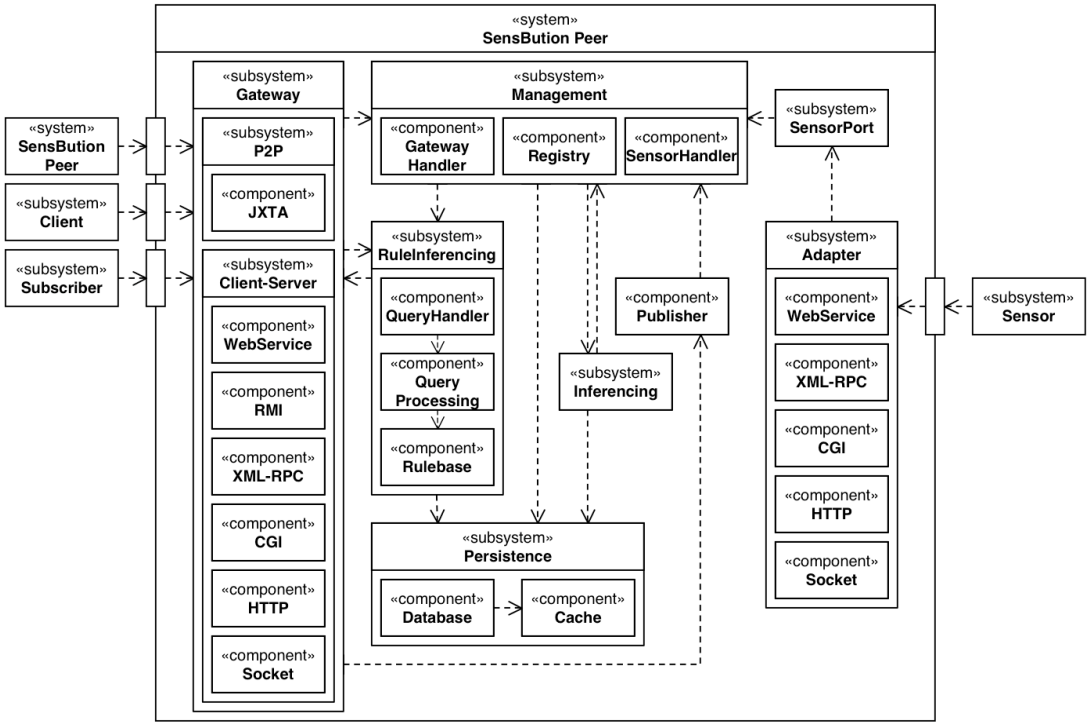

Figure 1. Components of a SensBution peer. Source: [6].

CONCLUSIONS

The topics suggested in the workshop call for position papers are very interesting. In the workshop I would be particularly interested in discussing both: supporting specific groups settings of existing groups with various devices, and also the transitions between settings when mobile users join and leave the room.

BIOGRAPHICAL INFORMATION

Tom Gross is associate professor for Computer-Supported Cooperative Work and head of the Cooperative Media Lab at the Faculty of Media of the Bauhaus-University Weimar, Germany. His research interests include Computer-Supported Cooperative Work, Human-Computer Interaction, and Ubiquitous Computing. Since beginning of 2008 he is Prorektor (vice-president) of the Bauhaus-University Weimar. From 1999 to 2003 he was a senior researcher at the Fraunhofer Institute for Applied Information Technology FIT in St. Augustin, Germany. He holds a diploma and a doctorate degree in Applied Computer Science from the Johannes Kepler University Linz, Austria.

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