# Computer Science Technical Reports

## A GROUPWARE ENVIRONMENT FOR COMPLETE MEETINGS

Ted O'Grady and Saul Greenberg
1993-527-32
December 1, 1993

We describe several components that can be used to support the entire life-cycle of a distributed meeting. Our design is based on the premise that meetings are comprised of three stages: pre-meeting setup, during meeting activities, and post-meeting teardown. Our prototype contains five components to support these stages. A room organizer is used to configure the meeting room. A roster is used for notifying and organizing the participants, who then track and join distributed meetings through their personal calendar. The actual meeting is held in a virtual meeting room, which collects participants and groupware tools. Finally, key meeting events are recorded using a storyboard capture tool.

**INTRODUCTION**

Dubs and Hayne [1] consider the meeting process as three phases, each containing essential and optional components. They argue that a meeting is more than the period in which all the participants are in the same room. The *pre-meeting setup phase* requires an organizer to set meeting goals and agenda, develop a roster, coordinate and schedule participants, gather necessary materials, and book rooms and equipment. The *during meeting phase* includes reviewing the meeting agenda and objectives, interpersonal awareness, sharing work, facilitating interactions, and taking of minutes. Finally, the *post-meeting teardown phase* includes reviewing the meeting and action items, disseminating information, and scheduling follow-up meetings.

We believe that desktop conferencing systems for formal distributed meetings must consider all these facets. We are developing a groupware environment for complete meetings. It contains five prototype components, focused around a meeting room metaphor.
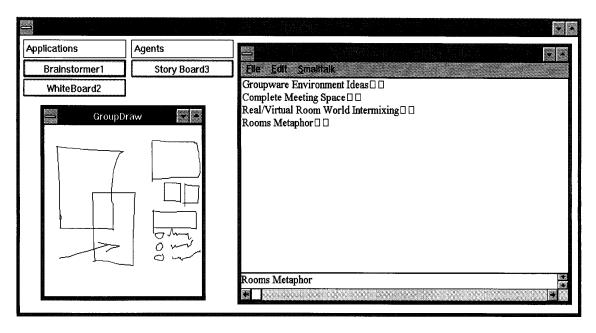


Figure 1. The virtual meeting room.

1   A *virtual meeting room* is the electronic place where meetings actually occur, and collects people, tools, and computer agents into a desktop conference.

2   A *roster* is a tool for developing the list of attendees and informing them about meeting particulars.

3   A *room organizer* is for reserving and customizing the meeting room.

4  A *personal meetings calendar* shows people their meetings schedule and is a gateway into the meeting.

5  A *storyboard capture tool* records and allows reviews of critical meeting aspects.

Our design is influenced by three principles. First, the environment must be both flexible and extensible to accommodate different meeting styles. Second, all aspects of a meeting must be supported, although we expect only different subsets of these to be used during a meeting. Third, the groupware environment must be presented to people through familiar language and meeting concepts.

## DESCRIPTION

The central module of our system is the *virtual meeting room* (figure 1). The meeting room is where the during meeting activities occur. In physical meetings, we usually have: participants who are aware of each other; tools for presenting and manipulating meeting artifacts (overheads, whiteboards, projectors, table-tops); and agreed-upon facilitation methods for resolving and capturing issues (turn-taking, chairpersons, minute recording). Similarly, the virtual meeting room contains: tele-presence support that allows participants to engage each other; tools for tele-data (specific groupware applications); and agents for supporting or automating facilitation. Because meeting processes are dynamic, new tools and facilitation methods can be brought into the environment on the fly.

The *roster* (figure 2) and the *room organizer* (figure 3) are pre-meeting tools that help an organizer set up a meeting. With the roster, the organizer lists potential participants, informs them of the meeting, gives them a brief description of its purpose, and negotiates with them to find a meeting time. The roster is *not* a scheduler, for it does not require participants to maintain calendars. Rather, the roster just tracks individual responses — everything from automated replies generated by calendaring systems, to hand-crafted personal responses.

Through the *room organizer* (figure 3), a person can set up the meeting room. In much the same way that people book physical equipment and meeting rooms, a virtual meeting requires a meeting place and tools that are appropriate to the group and its purpose. Of course, we do expect "standard" meeting rooms, and these are supplied through reasonable default setups. Typical rooms may be: a default room with an audio channel and an electronic whiteboard; a "brainstorm" room (audio + brainstorm tool + round-robin facilitation method); and so on. This makes meeting room organization lightweight: people are more likely to choose and modify existing setups than to create new rooms for every meeting.
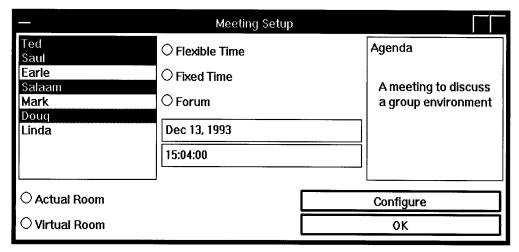
| Meeting Setup | | | |
|---|---|---|---|

| Ted | | |
| Saul | ○ Flexible Time | Agenda |
| Earle | ○ Fixed Time | |
| Salaam | | A meeting to discuss |
| Mark | ○ Forum | a group environment |
| Doug | | |
| Linda | Dec 13, 1993 | |
| | 15:04:00 | |

○ Actual Room    Configure

○ Virtual Room    OK

**Figure 2. The roster.**

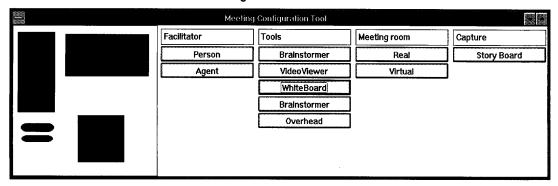| Meeting Configuration Tool | | | |
|---|---|---|---|
| Facilitator | Tools | Meeting room | Capture |
| Person | Brainstormer | Real | Story Board |
| Agent | VideoViewer | Virtual | |
| | WhiteBoard | | |
| | Brainstormer | | |
| | Overhead | | |

**Figure 3. The room organizer**

A property of the roster and room organizer is that they provide for both real and virtual meetings. Booking a room, reserving equipment, and organizing participants in real and virtual meeting rooms are identical.

In real life, people track their meetings in calendars and go to the appropriate room at the required time. In electronic meetings, people can have more power in viewing their meetings in which they are scheduled to participate, and their schedule is also the doorway into the virtual meeting room. This is achieved through the *personal meetings calendar* (figure 4). Using a metaphor similar to Xerox PARC's Rooms system, each person has an overhead view of the rooms in which they are scheduled to meet. A room represents a single meeting room, and its content shows what the meeting contains (the roster, tools, meeting times, etc.). Participants can reconfigure aspects of the room to bring in special tools or material ahead of time.
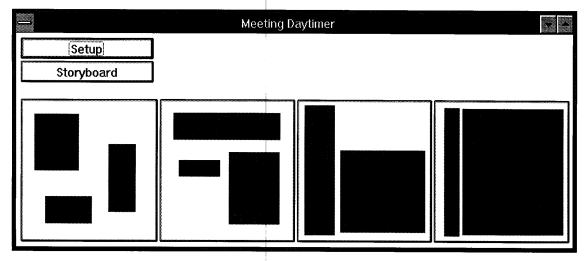
**Figure 4. The personal calendar, with four meetings**

A critical component of any meeting is capture, where key events are recorded. It would be fairly straight-forward to include a group text editor tailored to enter meeting minutes. However, this fails to capture other meeting artifacts developed during the meeting. Another possibility is video or "screen" recordings that capture the entire meeting process at the expense of an extremely tedious review process. We are experimenting with a compromise called *storyboard capture*. Participants capture key meeting events by taking a screen snapshot of the meeting room activity, which can then be annotated. Figure 5 illustrates the storyboard scene capture tool. The annotated storyboard scenes become the meeting minutes. New participants can also use them to catch up on the meeting's key events.
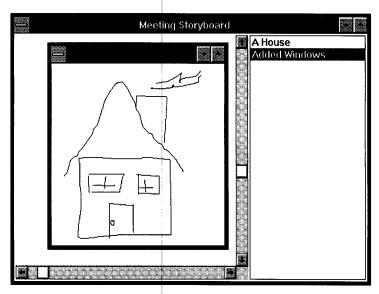


**Figure 5. The storyboard viewer.**

## STATUS

The groupware environment is being developed using a Smalltalk version of GroupKit, a groupware toolkit [2] and a distributed objects infrastructure. GroupKit is founded on the premise of flexibility, and promotes an architecture for customization that is essential to an environment that will allow users to modify meeting rooms to their own needs.

The modules are still being created. We have built screen mockups of each module, and have developed an early prototype of the virtual meeting environment.

## SUMMARY

We have described five modules in a groupware environment that support the activities necessary to create, run and tear down a meeting. Rather than providing a meeting recipe, we recognize that not every meeting is identical. We expect and encourage people to bring in appropriate tools (facilitators, writing surfaces, presentation equipment) into the meeting environment.

## ACKNOWLEDGMENTS

## REFERENCES

1. Dubs, S. & Hayne, S. Distributed Facilitation: A Concept Whose Time Has Come? In *Proc CSCW '92 Conference on Computer Supported Cooperative Work*, ACM/PRESS , N.Y., 1992, pp. 314-321.

2. Roseman, M. & Greenberg, S. Groupkit: A Groupware Toolkit for Building Real-Time Conferencing Applications In *Proc CSCW '92 Conference on Computer Supported Cooperative Work*, ACM/PRESS , N.Y., 1992, pp. 43-49.