

Tailoring Public Displays for Small, Co-located Groups

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ABSTRACT

Public displays used to foster awareness have typically focused on the problem of providing information across remote locations or within large groups whose members lack awareness of each other's activities or interests. We have, however, identified many additional benefits for an awareness system that displays information within a small, co-located group in which the members are already highly aware of each other's activities. Using Semi-Public Displays, shared displays scoped for small groups, we make information that is relevant to the group members visible and persistent in the environment, promoting collaboration and providing lightweight information about group activity.

Keywords

Peripheral displays, awareness, CSCW, community, information visualization, ubiquitous computing.

INTRODUCTION

We are focusing on the application of public displays to small co-located group environments, and specifically the lab setting. Members of a lab usually work within the same space and are likely to be aware of each other's activities, yet we have identified several benefits that public interactive displays would offer in a small group setting. By making useful information persistent in the environment, these displays can provide information about group members, and foster coordination and collaboration.

Public displays have typically been utilized to promote awareness within larger or distributed workgroups [4], but the information they convey tends to be very general in nature, such as live video, presenting known problems of privacy, information relevance, audience targeting, and information scooping.

In our observations of small group interaction, we found that group members utilize many sources of information, such as instant messaging status, weekly status reports, and word-of-mouth to stay aware of each other and collaborate. The tools and methods are the motivation and inspiration for the applications we designed for our system. Since the information they afford is clearly important to group members, we aimed to provide similar information consolidated into a single location easily viewed by group members in a fashion not intrusive to their personal workspace.

We are deploying Semi-Public Displays in our lab environment because we believe they provide many benefits to our group, including a forum for asynchronous collaboration, opportunities for sharing targeted information, and visual representations of lab activity.

SEMI-PUBLIC DISPLAYS: DESIGN AND SYSTEM

Our prototype consists of a montage of applications that are projected onto a SmartBoard™ and are meant to be displayed and available for interacting whenever the surface is not needed for other functions, such as meetings.

The applications serve two general purposes: supporting collaboration and asynchronous brainstorming, and fostering lightweight awareness of group activities and interests.

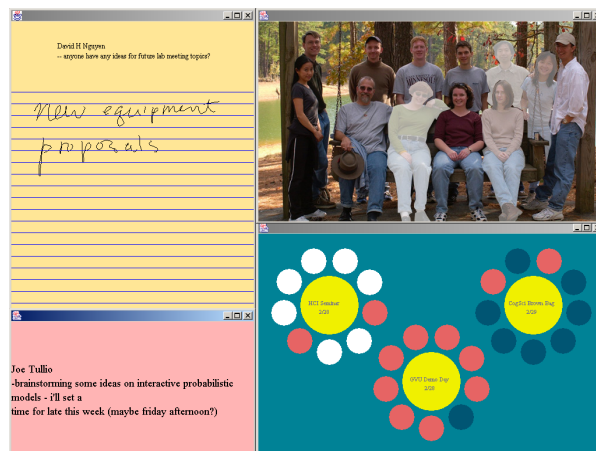


Figure 1. Current prototype (clockwise from upper left): Collaboration Space (1a), Active Portrait (1b), Attendance Panel (1c), and Reminder Panel (1d).

Reminders and Collaboration Space

While communication channels, such as word of mouth or email, are effective, there are types of information that would be most useful if they were kept persistently visible in the environment. These channels generally do not afford this benefit. For example, when one member of the lab sends out an email to her labmates stating, "If anyone has some time, I'd like some help revising my CSCW short paper," many of the lab members may be willing to help, but without regular email reminders, they are likely to forget, necessitating another round of mass email.

Our lab puts requests of this sort into weekly status report emails. The Reminder Panel (fig. 1d) of the Semi-Public Display parses these requests from the emails and displays them cyclically, thus making them persistently visible, but non-intrusive to personal workspace.

For certain types of help requests, the display is used for asynchronous brainstorming. Brainstorming conventionally takes place in discrete sessions during which many people participate synchronously. In our system, requests such as “help me think of names for my system” are displayed in areas designated for editing, feedback, and collaboration. The Collaboration Space (fig. 1a) in our design keeps the request visible and provides an explicit space for brainstorming and scribbling at all times, unlike conventional whiteboards, whose content group members are often wary of erasing or editing outside of brainstorming sessions.

Lightweight Group Awareness

Our current design also includes two tools that provide lightweight views of group activity and interests. These tools protect the privacy of group members by showing only abstract representations without showing details about people’s specific activities or whereabouts.

The first application that we use to display an abstract representation of group activity consists of a group photograph of the lab members. In the Active Portrait (1b), each person’s image is displayed in full color if he or she is present in the lab. A person’s image fades slowly over time when he or she leaves the lab. If a group member has not been in the space for several days or more, his image fades nearly to white, but retains some color value for recognizability. The resulting composite image provides viewers with a quick, at-a-glance picture of colleagues’ recent presence in the lab. It allows the viewer to have some context about lab activity, especially when she has just entered the space. Unlike tools such as shared calendars or in-out boards, however, the image does not provide specific information about the exact times when a person left or entered the space, or a person’s current whereabouts.

The second application that we use to provide lightweight group awareness is the Attendance Panel (1c). The panel displays several “flowers,” which consist of a large circle with an event title as a label, surrounded by a ring of smaller circles. Each flower is a representation of an upcoming event, such as a seminar or a talk. When a user touches the center circle of a flower, the event description appears. The smaller circles, or “petals,” represent users. Each petal has three states: blue for “not planning on attending,” bright pink for “planning on attending,” and white for “haven’t decided yet.” When a new event is added to the panel, it creates a flower whose petals are all white on a blue background, indicating that no one has yet updated his or her status. If a user elects to not attend the event, she toggles one of the petals to the “not attending” state, which is a slightly darker blue than the background, therefore blending with it. If a user chooses to attend the event, she toggles an arbitrary petal to the “attending” state, which is bright pink, contrasting significantly with the background. Because users are free to select any petal that has not already been taken, their identities cannot be discerned by the position of the petal on the flower, thus protecting their privacy.

The colors of the states create a visual image that brings the petals in the attending state to the foreground, while camouflaging the petals in the not attending state. As a result, a viewer can look at the panel and easily discern what events are of importance or interest to the group, or of potential relevance to him by the “completeness” of the flowers.

These two applications provide group members with simple ways of viewing both retrospective and prospective group activity, without compromising group members’ privacy.

RELATED WORK

The Notification Collage [2] addresses a similar environment, but serves more as a bulletin board and remote communication tool than a forum for collaboration. Media Spaces [1] also address small groups, but are viewed by individuals on a desktop. The Synthetic Group Portrait [3] is a graphical representation of group presence, but is also tailored to individual viewers and does not provide a sense of recency. We posit that the semi-public displays better support shared collective understanding and collaboration, while desktop interfaces promote individual monitoring and interaction. Finally, video walls, which can be applied to any sized group, deal more with remote communication than information that is relevant to an entire group.

CONCLUSION

We have presented a prototype for Semi-Public Displays, consisting of four applications to support awareness and collaboration within small groups. In our initial deployment of the prototype, we observed increased discussion within the group regarding topics posted to display as compared to the amount generated only by the weekly status emails prior to the deployment. The future challenges we will address are finding other compelling applications and information for the displays, and evaluating the system’s effectiveness in much greater depth. Since awareness systems for large groups often have problems motivating people to input information, we will also explore whether small group members’ sense of social responsibility to each other encourages them to contribute content and allows them to derive more benefit from doing so.

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