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Explorations in an Activity-Centric Collaboration Environment

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ABSTRACT

This demonstration presents a new hybrid collaboration technology that partakes of selected qualities of informal, ad hoc, easy-to-initiate collaborative tools, and more formal, structured, and disciplined collaborative applications. Our approach focuses on the support of lightweight, informally structured, opportunistic activities featuring heterogeneous threads of shared objects with dynamic membership as well as blended synchronous and asynchronous collaboration. We will introduce the system, and then invite audience members to use it in several exercises.

Keywords

CSCW, Computer-mediated communication, Activity-centric collaboration

ACM Classification Keywords

H5.3. Group and organizational interfaces. H4.3. Communications applications.

INTRODUCTION

We will demonstrate ActivityExplorer, the client component of our Instant Collaboration (IC) research program [1]. We began work on this project to solve the following kinds of problems in collaborative environments:

- Ad hoc, informal, easy-to-use systems provide great support for small-scale, brief communication activities. However, they do not scale up gracefully with increases in the number of participants, the duration of the activity, or the number of resources used in the activity.

- Formal, structured, shared workspaces are often quite useful for making sense of large document collections, large communities of collaborators, or long-term projects. However, they are relatively labor-intensive to set up, and generally appear to be too much effort for small collaborations.

- There are respective advantages to both ad hoc, informal environments, and to formal, structured environments. Nonetheless, these diverse kinds of environments are usually separate, and become an ever-increasing number of sites or venues or genres in which groups work. People have to maintain awareness of each such venue, because any of the venues may contain the next item of work, or the next collaborative opportunity. This imposes a divided attention task on people.

- Even if people can work under the conditions of divided attention, they face additional challenges in trying to predict the size and extent of each collaboration. This is a problem because it is difficult to transfer a collaboration from one environment to another. Today's tools do not support collaborations well that emerge from unstructured communication activities to more structured processes. For example, an activity begun as a chat is difficult to transfer into an email thread (typically, one simply pastes the entire chat into a single email message, which creates a big block of message that is followed by much smaller email messages), and an email thread is difficult to transfer into a discussion database. Also, it is difficult to add new collaborators to certain kinds of events that have already occurred – e.g., it is difficult to share an email thread with a new participant in an on-going email-based collaboration. Thus, collaborators must become adept at predicting the future of each collaboration, so as to initiate it in the environment that its eventual size and complexity will require.

- Finally, the diversity of collaboration environments makes it difficult to find collaborators in real time. Some environments (like instant messaging) are designed to provide presence and awareness information; others (like structured databases) usually do not include this kind of information. And the problem that people can be "in" various different and distinct collaborative environments makes finding one another in real time particularly difficult.

ACTIVITYEXPLORER

ActivityExplorer (AE) addresses these problems by providing a single, hybrid environment that can handle brief, ad hoc collaborations (synchronously or asynchronously), as well as structured, more formal discussion threads and document collections, with awareness services that inform people about the status of objects and of persons.

AE is a client application (see Figure 1) that shares objects and status information with other clients through a server. AE provides access to shared objects through an inbox-like list (A) that can be used to filter and search objects. Selecting a shared object in the list displays details in an information pane (B) and shows the context of the selected object within an "activity thread" (C). An activity thread is a tree-structured collection of related objects. AE also lists members by name, email and status message (D). Users interact with objects or members, as displayed in these views, through right-click context menus. Representative icons are highlighted green to cue users of shared object access and member status.
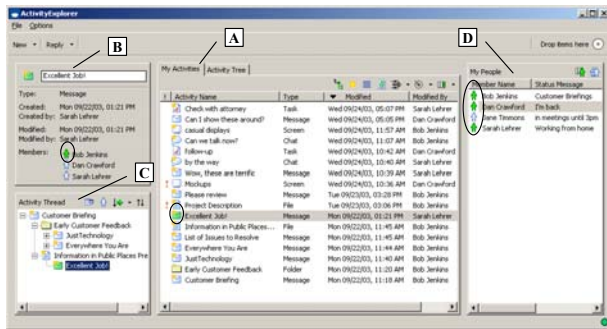

Figure 1: ActivityExplorer

Simple interactions between people can take the form of persistent chats. Complex discussions can take the form of hierarchically structured document collections (activity threads), using any of six types of objects (chats, files, folders, messages, screen-shots, and task/to-do items) in various parent-child relationships. Any object can serve as a parent object for new objects that can be added by any user. Thus, a simple chat or message can serve as a complete interaction, or can become the root of an extended series of interchanges and shared resources. Activity threads can also be set up deliberately if one or more people have a formal plan about how to organize their shared work.

We tested AE in a community of 33 researchers and summer interns during spring and summer of 2003 [2]. Our experiences – based on the collaborative creation of thousands of objects in hundreds of activity threads – showed that people can easily use AE to support brief, informal exchanges (asking a question, arranging a group lunch), planning activities (such as presentations, meetings,

data collection), document co-authoring (including several CHI 2004 submissions), and community-building (a photo-based who's who database, a long pooling of knowledge on "interns' tips and tricks," and an on-going discussion between users and the AE team that became a setting for participatory design of AE itself).

DEMONSTRATION

After more than 150 days of routine use in our research group, AE is a robust prototype that can easily be used by audience members. Our demonstration of AE will begin with a brief presentation of its architecture (now client-server based, unlike our earlier report [1]) and functionality (types of objects, methods of navigation), and one authors-only demonstration to illustrate its functionality (summarized in [2]). We will then invite members of the audience to interact with AE in several tasks. These tasks are likely to include a subset of the following:

- Initiating and conducting chats with presenters and with other members of the audience

- Constructing an asynchronous discussion thread

- Brainstorming in real-time (structured collections of ideas)

- Creating conversations of diverse object types (e.g., a mixture of files, comments, chats, and screen shots, as might occur during the preparation of a paper for CHI, or during the writing of a departmental report)

In addition to these relatively simple exercises, we will also conduct an audience-participation simulation of one or more activities such as the following:

- Reviewing and organizing a set of CHI submissions, including the following steps: Receiving and storing submissions; setting read-permissions for reviewers on submissions (and resetting permissions, as needed for additional reviewers); entering reviews directly into AE; managing reviews by program chairs or associate chairs

- Planning a meeting agenda and conducting a meeting

The demo will close with a brief comparison of AE to other collaborative environments (detailed comparisons and bibliography are provided in [2]).

REFERENCES

1. Geyer, W., Vogel, J., Cheng, L., Muller, M., "Supporting Activity-Centric Collaboration through Peer-to-Peer Shared Objects," *Proc. Group 2003*.

2. Muller, M.J., Geyer, W., Brownholtz, B., Wilcox, E., Millen, D.R. "One hundred days in an activity-centric collaboration environment based on shared objects," *Proc. CHI 2004*.