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# INFORMATION-SHARING SYSTEMS IN SUPPORT OF COLLABORATIVE WORK, II

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- N E W D O C -

# **INFORMATION-SHARING SYSTEMS IN SUPPORT OF COLLABORATIVE WORK, II**

**Chair: Lee Sproull**  
Carnegie Mellon University and  
Stanford University

## **"Beyond Personal Computing: Computer Tools for Interpersonal Work"**

This panel will report three of the most recent developments in building computer tools for interpersonal work. One suite of tools helps people manage and process their electronic mail. A second helps people comment electronically on their colleagues' or students' papers. A third helps people manage collaborative work such as project meetings. The speakers and their projects follow.

## **"Information Lens: An Intelligent System for Information Sharing and Coordination"**

**Thomas Malone**  
Sloan School of Management  
Massachusetts Institute of Technology

This report will describe an intelligent system that (1) helps people filter, sort, and prioritize electronic messages they receive, (2) helps them find useful messages or other documents they would not otherwise have seen, and (3) supports common actions they may take on receiving certain kinds of messages. The system exploits concepts from artificial intelligence such as frames, production rules, and inheritance networks, but it avoids the unsolved problems of natural language understanding by providing users with a rich set of semi-structured message templates.

In addition to electronic mail, bulletin boards, and conferencing, this basic framework supports a surprising variety of other applications including a simple calendar management application demonstrated here. The user interface for the system is based on a consistent set of "direct manipulation" editors that expose the underlying knowledge representations in a way that is simple for non-programmers to use and that can be incrementally adopted and enhanced by members of a group.

## **"Comments: Computer Support for Response to Writing"**

**Christine M. Neuwirth**  
College of Humanities and Social Sciences  
Carnegie Mellon University

Written comments constitute one of the most widespread means of providing writers with response. Carnegie Mellon's Center for Educational Computing in English has created the Comments program in order to study computer support for response to writing. Underlying the development of the Comments program is the following design principle: a program to support response to writing should be a communication-support program. Writers and readers can use the Comments program to "talk" about a piece of writing asynchronously over a campus-wide network of advanced-function workstations. Besides facilitating written dialogues, computer-based comments may be more effective than handwritten comments for several reasons. First, handwritten comments in the margins of hard copy documents are limited by space and tend to be somewhat "telegraphic" and difficult to interpret. On the other hand, comments at the end of documents are less closely tied to specific locations in a document and tend to be correspondingly less specific. In

contrast, computer-based comments allow readers to respond to specific locations in a document without space restrictions. A second reason computer-based comments may be more effective than handwritten comments is that computer-based comments can support multiple purposes. A reader may want to make comments on a text that are intended as personal reminders rather than as messages to the document's author. It is more difficult to support multiple purposes with handwritten comments on a hard copy document than with a computer. Finally, computer-based comments can support multiple readers more easily than handwritten comments. The long-range goal of the Comments project is to conduct research on how computer tools affect response and to make response to writing more effective.

### **"Colab: Electronic Laboratory for Collaborative Work"**

**Dr. Mark Stefik  
Palo Alto Research Center  
Xerox Corporation**

Colab is a project about the technological support of collaborative work. It is a room, some software and a collection of ideas. The Colab room is equipped with four workstations and a very large, touch-sensitive screen that is intended to provide at least the functionality of a chalkboard. Users can flip a switch to display work on the screen at the front of the room. The software tools express our current understanding of what helps people work together on different tasks whether in the Colab itself or, less formally, in other situations where computers are available.

Our primary concern is how to support people working on complex design issues of the kind that have traditionally required face-to-face communication. Rather than replacing existing techniques, we are concerned with augmenting them. Colab can be used to support a meeting facilitator or a record keeper and it may be used to let people make personal meeting records and gain easy access to data. Our most developed Colab tool, Cognoter, starts from the idea of a whiteboard by allowing the unconstrained use of space. However, Cognoter boards are expandible, permanent and rearrangable. Additionally, Colab opens itself to new possibilities by insisting that each person have a computer and have equal access to the public display. Crucially, this means that the computer can be a channel of communication in its own right. Therefore, when Cognoter provides open-ended support for a brainstorming process, it changes our understanding and experience of the particulars of brainstorming.

A major part of the Colab project is observation and experimentation. We are creating and using the "video analyst's workstation," a tool to allow social scientists to create and study the synchronized computational and video records of what happens in the Colab.

We are considering a variety of ideas about what collaboration is, when it is useful, and how to make it richer and more extensive.