THE BEGINNINGS OF COLLABORATION TECHNOLOGY

Galen Gruman, Editor

IS COLLABORATION TECHNOLOGY an emerging technology, or is it a merely label applied to an ill-defined set of products and aspirations? The Second Conference on Organizational Computing, Coordination, and Collaboration, held Feb. 24-26 in Austin, Texas, brought together experts from computer science, sociology, human factors, and management science to show that the technology is nascent but real, whether called by its popular labels "groupware" and "workgroup computing" or the newer label "collaboration technology."

Collaboration technology offers many promises, including more interaction among disperse researchers or employees, more sharing of resources among divisions of a company or even among companies, and "enterprise integration systems" that help business managers and employees communicate with themselves and each other effectively. This should result in "a reduced need for capital investment and time to market while increase the network of people, like customers, in the process," said Craig Fields, president of the Microelectronics and Computer Technology Corp. in his opening address.

UNDERPINNINGS WEAK. The speakers presentations showed that the field must address several areas fundamental to developing a formal framework as its basis. For example, very little is understood by psychologists and sociologists on how people actually work at their desks, very little is known on people work together in groups of three or more, and less is known on how technology like electronic mail has affected communication.

Managers spend 85 percent of their time communicating, according to Ray Panko, a decision-science professor at the University of Hawaii, and less than 30 percent of that is in one-on-one communication, which is the most studied form of human exchange. Professionals spend about 60 percent of their time communicating, and 25 percent of that communicating one on one.

Developers of collaboration systems must understand the kinds of communication people do, how much they do each time, and what the requirements of each type are before they can develop effective systems, Panko said. Furthermore, developers must understand what people do when they are not communicating, since the work they do alone depends on what happens in their communication, he said.

Traditional approaches treat people as passive, well-behave participants, but in reality, a group of people is a group of "intelligent processors actively trying to program each other," Panko said. Information exchange takes the bulk of a group's time, not decision making.

Because of this lack of knowledge, it is "premature" to instantiate in collaboration systems the technology-transfer process, warned Les Belady, director of MCC's Software Technology Program. Even if it were possible, a group's work processes change too quickly for developers to update their systems in time, he said.

The audience seemed to agree with one comment from the floor that the lack of participation in collaboration technology by personnel experts might cause the technology to go the way of office information systems, which also developed without the input

of personnel experts and which the participants repeatedly cited as a stillborn technology.

EMERGING TECHNOLOGY. Although the underlying management and sociological theory and studies are weak, some technical progress has been made in implementing collaborative systems. Baldev Singh, who manages MCC's coordination theory and technology project, demonstrated a system based on roles that lets people coordinate work yet retain control over their responsibilities. Users may have multiple roles, define how those roles are to be handled (to avoid micromanaging employees), and transfer roles to other willing users. The prototype system was used as a model by NCR for an upcoming workgroup product.

Researchers at the University of Toronto have developed Cavecat, a telepresence system that is an extended form of videoconferencing. In the prototype system, cameras are mounted on all workstations so people can see each other when talking. The system provides locked-door, please-knock, and other privacy features to simulate the privacy protocols that people unconsciously use in day-to-day communication. Work on telepresence is also being done at Xerox's Palo Alto Research Center, Bellcore, and US West.

COLLABORATION RESULTS. Conference speakers had little implemented technology to report on. Of several presentations on experiences with collaboration technology in business, all focused on e-mail and bulletin-board systems. The biggest changes in these decade-old technologies has been the introduction of Lotus Notes, presenters agreed, a WYSIWYG system that uses a file metaphor that most users seem to learn easily.

Based on preliminary results from a study examining the effects of computer-integrated manufacturing on a few manufacturing companies, the introduction of CIM resulted in many pay innovations that rewarded performance and skills, increasingly centralized operational decisions, and increasingly decentralized finance and control decisions. Vijay Gurbaxani, a management-science professor at the University of California at Irvine, reported the results.

Extreme centralization and extreme decentralization produce the same results, according to a preliminary study by Anitesh Barua, a business professor at the University of Texas at Austin. But most businesses do not lie at the extremes, he said. For them, centralized systems seem to work best for companies with few branch offices, assuming that the business is driven more by global factors than by local ones, he said, while a decentralized approach works better for businesses with many branches or many local variables.

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WHO'S IN CHARGE? A fundamental question pervading the presentations and questions on the collaboration systems described was "Who controls the system?"

For example, some audience members criticized the MCC collaboration system because it appeared to give users like secretaries "too much" control over their work. (Singh replied that the level of flexibility would be determined by the system administrator and that his model was designed to support both loosely and tightly managed systems.) Yet other participants decried a system developed specifically for researchers that limited their flexibility and control.

"It is hard to create a market for collaboration technology because users say, 'I don't work that way,' " said Steve Poltrock, a senior computer science at Boeing Computer Services, "The entire organization would have to change." He recommended the use of integrators whose job is to be the users' advocate in both research and development.

Several participants raised concerns over privacy, both about the telepresence system, which has several features to ensure privacy, and e-mail. For e-mail, participants were unable to agree on the degree of control and access managers had to employee communication. One manager said he thought it appropriate for employees to send personal messages, since it was no different than chatting in the hall or via the internal phone system, but he said he would not let his management know that employees used e-mail for personal communication. The question was also raised for bulletin boards.

Another issue was how much personal communication should be allowed on e-mail systems. One company has set aside a space for personal notices because it believes such communication fosters employee cooperation and collaboration, but another forbids such notes, citing concerns that tax lawyers could interpret such personal use as a reason to deny capital write-offs for such equipment.