

NEWSLETTER

Comment on the NSF Industry-University Cooperative Research Center

"The university system was originally founded to protect ideas from the constant threat of society.

This alliance recognizes that the role of the university in the new millennium is, rather, to provide society with the constant threat of ideas."

Kevin Daly, CEO, ATL Products

When Everyone Uses Software...

Research being conducted by: Jonathan Grudin, Professor, Information and Computer Science, University of California, Irvine.

Even today, it is not common to find groups in which everyone is using the same application, except e-mail. This is slowly changing. You can bet that soon it will be commonplace to find all or virtually all members of organizations using specific software to communicate, share information, and coordinate.

With students and colleagues, notably at The Boeing Company and Sun Microsystems, I am studying groups and organizations that do share applications today, in the hope of anticipating the future and seeing how to get there efficiently. Our results have clear implications in several Groupware areas: requirements gathering for acquisition, design, installation, training, support (including FAQ's, help lines, web sites), and internal policy setting.

Our findings apply more broadly than to Groupware alone, but the effects are most evident when the software is used by all members and supports their joint work. Besides, all software will soon be Groupware. The applications we have examined range from generic software such as shared calendars and NetMeeting to specialized software such as 3-D CAD modeling software used together in real time by team members hundreds or thousands of miles apart.

One Name, Many Applications

A powerful finding from the research is that if a single piece of software is used by everyone in an organization, or even if it is used by a heterogeneous subset of people, *do not think* of it as a *single application*. Think of it as a *set of applications*.

Consider the lowly electronic shared calendar. Just a paper calendar put online to help schedule and remind us of meetings and appointments, right? Maybe, But it turns out we haven't all been using paper calendars the same way, and it also turns out that making public what was a private information management tool changes it.

Individual contributors in an organization may not have many meetings and may never print out an online calendar. So why keep it? For the meeting reminder -- features the window that pops up, or the beep that prevents them from accidentally working through a meeting. Now consider the assistant keeping calendars for two busy managers. They have a lot of meetings, they print out their calendars once or twice daily, they refer to them often and need no reminders of meetings -- a beep would be annoying. For them, the benefits of sharing calendar details with other managers may be so great that they provide open access to most calendar information. Finally consider executives. Their calendars can be extraordinarily packed, leading to complicated printing requirements, and the information in the calendar might be more sensitive.

Bad News and Good News

These examples illustrate how the electronic shared calendar is one application, but involves three (or more) very different patterns of use. If you are acquiring, you must identify the set of applications you are acquiring. If designing, you are designing several applications that will masquerade under one name. Installation, training, and support must be manifold as well; one size won't fit all. And policy for use must be broad enough to accommodate all the applications.

We find that these different patterns of use are not considered in design, acquisition, installation,

training, and policy establishment, leading to failed products, major rollout problems, and sub-optimal use. If you have only one set of requirements, one training package, one FAQ list, one home page... then you may well have a big problem.

The very good news: The important patterns are probably limited in number and methodically discovered. Major patterns are based on the structure of our activity, more than on preferences or experience, and activities tend to fall in identifiable patterns.

Henry Mintzberg's "five parts of an organization" is a useful starting point, although choose a more sophisticated tool if you prefer. In the calendar example, the three patterns correspond to Mintzberg's "strategic apex," "middle line," and "operating core." And different patterns may well exist for the technostructure and support staff, his other two parts. Reassessing Wanda Orlikowski's classic Lotus Notes study, the strategic apex saw the benefits of Notes - the operating core had no incentive and resisted - whereas the (technical) support staff, with different incentives, found Notes useful and adopted it. Early studies of e-mail use found that it meant one thing to individual contributors and something quite different to management. We see evidence of a similar pattern in NetMeeting use, although so far this application tends to be adopted by work groups more than organization-wide.

Re-examining Old Issues

As we move into a heavily networked society, in which many people's work will be digital, we have to revisit some issues on which we had achieved a consensus -- or at least narrowed the range of what we thought possible.

For example, the centrality of a strong high-level management mandate in the adoption of a system is almost a mantra. This delivers a strong message to designers: design to please managerial users, in order to obtain that mandate. But with Groupware, we find this is not enough. Shared calendar use, for example, has spread primarily bottom-up in the organizations we have examined, and after a decade of very limited use, it took off only after designers built in features favored by individual contributors.

More broadly, we will have to re-examine the controversy over "technological determinism" -- to what extent does technology drive organizational change, to what extent do organizations dictate technology use, and to what extent is their a mutual adaptation and evolution? Clearly, in situations where everyone is a heavy end-user, the potential for technological influence is greatest. When everyone is networked, the potential for delivering

subtle or overt peer pressure also rises. We see signs that widely used technologies can have powerful influences on shaping the behaviors of groups.

This research was contributed to by Leysia Palen, who conducted field research at Sun Microsystems with the assistance of Ellen Isaacs, Don Gentner, John Tang, and others. Also by Erin Bradner, who has worked with me at The Boeing Company, supported and assisted by Ted Sommer, Rich Harkness, Steven Poltrock, and others. The work has been supported by a grant, from the U.S. National Science Foundation (IRI-9612355) to the author and by the NSF Industry/University Cooperative Research Center.

KRAEMER NAMED TO NEW CHAIR AT UCI

Kenneth L. Kraemer has been named to the Taco Bell Chair in Information Technology Management at the Graduate School of Management. The chair is endowed by a \$500,000 gift from Taco Bell Corp.

"Rapid advances in information technology make Professor Kraemer's research critical," said Chancellor Ralph J. Cicerone. "Taco Bell's generous gift will expand our knowledge of how computers and information affect work and society at large."

Proceeds from the endowment will support Kraemer's research on how information technology is changing the ways that business is done. A number of industries in which information technology would not seem to have an immediate connection, such as food service, actually have a long understood the benefits of broader integration

"I'm grateful to the people of Taco Bell for this gift of an endowed chair to UCI," said Kraemer. "The research the endowment supports will help to generate new knowledge of importance to business and industry. Taco Bell was an early innovator with information technology and has automated many of its operations. It is now focusing on using IT on the customer side," he said.

"Taco Bell is proud to support higher education here in our own community. It's also gratifying to be associated with a noted scholar like Professor Kraemer, whose research goes to the heart of how technology can bring value in transforming business organizations", said Peter Waller, president of Taco Bell Corp.

"Technology plays a vital role in helping Taco Bell delight customers with a great eating experience. Better understanding the vast business and organizational potential of new technologies can help us in our mission to become America's favorite quick food solution."

Taco Bell Corp., a division of Tricon Global Restaurants Inc., is the nation's leading Mexican-style quick service restaurant chain with more than \$4.9 billion in system wide sales, serving more than 55 million consumers each week in its 7,000 restaurants nationwide.

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NATIONAL SCIENCE FOUNDATION INDUSTRY/UNIVERSITY COOPERATIVE RESEARCH CENTER NEWS

Welcome to the newest firm in the NSF Industry/University Cooperative Research Center (I/UCRC): Bristol-Meyers Squibb, Princeton, New Jersey. Steven Passer, Bristol's Director of SAP Performance and Capacity Planning will join other Industry Advisory Board members and selected guests at the June Industry Advisory Board meeting being held at the Graduate School of Management at UCI. During this semi-annual meeting, results of current research projects will be presented by faculty to IAB members.

As well as Bristol-Meyers Squibb, NSF I/UCRC member firms include; ATL Products, The Boeing Company, Canon Information Systems, IBM, Nortel Networks, Rockwell, Seagate Technology, Sun Microsystems, and Systems Management Specialists.

For more information on becoming a member of the NSF I/UCRC, please contact Professor Kenneth Kraemer by e-mail at kkraemer@uci.edu or by phone at (949) 824-5246.

JAPANESE MANAGEMENT GROUP COMES TO CRITO

On May 17-20, 1999 a group of managers from the Japanese American Institute for Management (JAIMS) will be visiting Orange County. The focus of this trip is to gain some detailed understanding of the nature of information technology as used to support logistics. CRITO has hosted management groups from JAIMS for over 10 years. As part of their visit they will hear presentations by John King, "Information Management in Support of Advanced Logistics" and Kenneth Kraemer, "IS Utilization for Supply Chain or Value Chain". The group will make site visits to Kawasaki Motors Corporation, USA, Conexant Systems Inc. and the Irvine Spectrum.

If your firm is interested in hosting a future site visit - JAIMS groups come to CRITO at least twice per year - please contact Nancy Abbott by e-mail nabbott@uci.edu or by phone at (949) 824-6387

ASSOCIATE NEWS

Jason Dedrick, Senior Research Fellow, CRITO, working in conjunction with *Juan Palacios*, Director, Department of Pacific Studies, University of Guadalajara traveled to San Jose to interview Stan Ciraulo, Site General Manager, IBM-Storage Systems Division for their (along with Kenneth Kraemer) study on the "Impacts of Liberalized Trade on the United States and Mexico".

Alladi Venkatesh, Professor, GSM, received the Best Paper Award from the prestigious Journal of Consumer Research for his co-authored paper, "Liberatory Postmodernism and the Re-enchantment of Consumption." The paper was published in the December 1995 issue of the journal. This award is given by the journal *three years* after publication an article on the basis of its originality and impact on the field. The award was presented at the Annual Conference of the Association for Consumer Research, held in Montreal in October 1998. Postmodernism is an emerging topic that has created much discussion and controversy in the social sciences. Venkatesh has been writing in this area since 1989.

TALKS, CONFERENCES, SEMINARS

Mark Ackerman, Associate Professor, ICS, spoke at the IBM/T.J. Watson Research Center on "Re-considering an Organization's Memory". He also gave a talk at the UCI Bay Area Round Table (BART) on "Privacy, the P3P Protocol and Technology Issues".

Mark Bergman, Ph.D. student, ICS, presented "High Level Requirements" at the CSCW98 Doctoral Colloquium, November 1998.

Vijay Gurbaxani, Professor, MIS and Associate Dean MBA Program, Graduate School of Management, Presented "Disaggregating the Return on Investment to IT Capital", Gurbaxani, Kraemer and Melville, at the International Conference on Information Systems, December 1998 in Helsinki, Finland.

Vijay Gurbaxani and Kenneth L. Kraemer, presentation to the Orange County Chief Information Officers Roundtable meeting, "Returns on IT Investments", February 1999.

Jeffrey Kim, Ph.D. student, ICS, presenting "Understanding a Core Competency of Japanese and Korean Semiconductor Industries: The Case of DRAM Manufacturing", at the May 7-8, 1999

University of California Pacific Rim Research Program's Research Briefing at the Haas School, UC Berkeley.

John L. King, Professor, GSM/ICS and *Mark Bergman*, hosted a NSF workshop on Computation and Social Systems (CSS) on March 1-2, 1999 at the Balboa Bay Club, Newport Beach. For more details, see the Workshop Website at: <http://starlight.ics.uci.edu/CSS>.

Kenneth L. Kraemer, Keynote speaker at the May 7-8, 1999 University of California Pacific Rim Research Program's Research Briefing at the Haas School, UC Berkeley. The theme of the conference is "Economic Interdependence in the Pacific Rim: Implications for the State of California".

Paul Tallon, Ph.D. Student, GSM, presented "The Impact of Technology on Ireland's Economic Growth and Development: Lessons for Developing Countries", at the January 1999 Hawaii International Conference on Systems Sciences.

Alladi Venkatesh, "Electronic Commerce and the Emerging Consumer", Domus Academy Conference in Bad Hamburg, Germany, March 16, 1999.

Alladi Venkatesh, "Product Design Strategies for the Home of the Future", Electrolux, Sweden, March 19, 1999.

PUBLICATIONS

Teaching, Learning & Computing - a newsletter, Principal Investigator, *Henry Becker* (Hank), Professor, Department of Education and CRITO Associate, inaugural issue, March, 1999. For more information on how to subscribe, contact Yan Wong by e-mail yantienw@uci.edu.

"Techniques for Supporting Dynamic and Adaptive Workflow," *Mark Bergman*, Peter Kammer, Greg Bolcer, and Richard Taylor, accepted by the CSCW Journal Special Issue on Adaptive Workflow Systems, to be published in 1999.

"New Directions for GDSS", *Paul Gray*, Visiting Scholar, GSM and *Munir Mandviwalla*, Temple University, Group Decision and Negotiation, Kluwer Academic Publishers, October 1998.

"Globalization and Increasing Returns: Implications for the U.S. Computer Industry", *Kenneth L. Kraemer and Jason Dedrick*, Information Systems Research, Vol. 9, No. 4, December, 1998.

"New Information Technologies in the Home: Design Strategies", Working Paper, *Alladi Venkatesh* and Sanjoy Mazumdar.

"Intra-Household Diffusion of New Technologies: Conceptual Foundation and Illustrative Example",

Working Paper, *Alladi Venkatesh* and *Eric Shih*, Ph.D. student, GSM.

Take a moment to visit CRITO's Website for complete information on CRITO activities, current projects and publications

CRITO's Home Page
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SPEAKER SERIES

Recent presentations in the series have included:

"Challenges of Distance: Collaboration Across Geography and Organization", *Suzanne Weisband*, Associate Professor, MIS, University of Arizona, December 1998.

"Information Technology and Intangible Assets: Measurement and Implications for Organizational Changes and Economic Growth", *Shinkyu Yang*, MIT, Sloan School of Management, February 1999.

"Market Making in the Age of Addressability", Professor *John Deighton*, Harvard Business School, February 1999.

"Investing in New Information Technologies Under Competition", *Kevin Zhu*, Stanford University, February 1999.

"Internet, E-Commerce from A Global Perspective", Professor *Nik Dholakia*, Director, RITIM, University of Rhode Island, February 1999.

"A Framework for Measuring the Rate of Quality-Adjusted Price Change in Personal Computers with Applications to IT Value Research", *Paul Chwelos*, University of British Columbia, March 1999.

To be added to the distribution list for future programs, please contact Nancy Abbott by e-mail at nabbott@uci.edu.

