Pre-ICIS
The First Annual Workshop on
HCI Research in MIS (HCI/MIS ’02)
Organized by AIS SIGHCI
http://melody.syr.edu/hci

WORKSHOP PROGRAM

December 14, 2002
Barcelona, Spain
Hotel Princesa Sofia

Workshop Chair
Ping Zhang

Program Co-Chairs
Fiona Fui-Hoon Nah
Sid Davis

http://melody.syr.edu/hci/pre_icis02_wksp.cgi

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The School of Information Studies: Who We Are

The School of Information Studies is an international leader in the information field. The first of its kind in the nation, the school not only enjoys an established national ranking, but also boasts a tremendous demand for its education, its research, and the skills of its graduates.

The purpose of the School of Information Studies is to expand human capabilities through information. Our core values guide us to see service as central to our mission; we focus on people and not just technology, and we strive to make a positive impact on individuals, organizations, and society. This year we celebrate 28 years of the transformation and renaming of our school—The School of Information Studies—the first in the field to embrace information as an area of study. We have the right to claim ours as “The Original Information School.”

During the past three years, the School of Information Studies has had the fastest growing undergraduate program of any in the University, due partially to the explosive growth of the information field, and partly to the unique nature of our programs. Driven by the popular recognition of the field, the critical need for knowledge workers, and the high starting salaries of its graduates, the school has grown some 350% during the past decade. Our undergraduate program was listed as Syracuse University’s most popular major in a Princeton Review publication of the 311 best colleges.

The School of Information Studies is ranked among the best in the nation, and the school’s faculty is internationally renowned. In 1999 U.S. News and World Report rated the school’s master’s in library science program third nationally, up from fourth in the previous rankings. The school was also rated second in the information systems specialty according to the same report. The school’s Ph.D. program and the overall quality of its faculty were ranked second in a 1993 survey of 1,700 educators nationwide, and nearly half of its graduates have won national awards for their dissertation research. The faculty impacts the information field through their highly productive research and development programs. In a recent study in the Journal of the American Society for Information Science four members of the school’s faculty were ranked among the most influential in the field.

The School of Information Studies Research and Development Centers

The School of Information Studies supports eight research and development centers. Centers provide an important focus for both faculty and student research as well as opportunities for active learning. The centers only operate on multi-million dollar government and corporate R&D contracts. The School ranked third in the university among the colleges with the largest sponsored research, and the School’s faculty is first in per capita research productivity. (See inside of back page)
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ABOUT AIS SIGHCI (http://melody.syr.edu/hci)

AIS SIGHCI is the Special Interest Group on Human-Computer Interaction affiliated with the Association for Information Systems (AIS). It is one of the first six SIGs announced in ISWORLD in July 2001.

AIS SIGHCI is a forum for AIS members to discuss, develop, and promote a range of issues related to the history, reference disciplines, theories, practice, methodologies and techniques, new developments, and applications of the interaction between humans, tasks, information technologies, and contexts (organizational, cultural, etc.). Possible topics include, but are not limited to, the following:

- The behavioral, cognitive, motivational, and affective aspects of human/technology interaction
- User task analysis and modeling
- Digital documents/genres and human information seeking behavior
- Integrated and/or innovative approaches, guidelines, and standards for analysis, design, and development of interactive devices and systems
- Design of computer interfaces for single-user or collaborative decision support, including design of standard computer interfaces, as well as design for small-screen mobile devices and pervasive computing
- Development and applications of multi-dimensional information visualizations
- Usability engineering metrics and methods for user interface assessment and evaluation
- Usability studies for end-user computing in work or non-work environment, especially in the Internet era
- Information technology acceptance and diffusion issues from cognitive, motivational, cultural, and user interface design perspectives
- The impact of interfaces/information technology on attitudes, behavior, performance, perception, and productivity
- Issues in software learning and training, including perceptual, cognitive, and motivational aspects of learning
- Gender and technology
- Issues related to the elderly, young, and special needs populations
- Issues in teaching HCI courses

The SIG’s mission is twofold:
- To facilitate the exchange, development, communication, and dissemination of information among AIS members, and
- To promote research related to human-computer interaction within business, managerial, and organizational contexts among AIS members and to the larger community of practitioners and scholars.

Any AIS member is welcome to join SIGHCI through the AIS website (http://aisnet.org). Currently the annual dues are $10 for SIG, and $65/$40 (academic/student) for AIS. For more information about SIGHCI, contact Ping Zhang (pzhang@syr.edu), Fiona Nah (fnah2@unl.edu), or any of the SIGHCI officers.
WELCOME MESSAGE FROM THE WORKSHOP CHAIR

On behalf of the entire organizing committee, I welcome you to the First Pre-ICIS Workshop on HCI Research in MIS (HCI/MIS’02)

HCI in MIS is concerned with the macro level of Human-Computer Interaction analysis. The objective of the workshop is to provide an open and constructive discussion forum for important HCI research in IS that addresses the ways humans interact with information, technologies, and tasks - especially in the business, managerial, organizational, and cultural contexts.

This first year’s program offers a diverse set of timely and interesting research topics. We are very fortunate to have four highly regarded scholars to present their perspectives and research studies. In addition, the program co-chairs and the program committee worked very hard to select the top peer-reviewed articles from a pool of very high quality submissions. I hope you will enjoy these presentations and actively participate in open discussions and networking.

This workshop is a collaboration of many people’s efforts. Members of the Advisory Committee have provided both support and concrete suggestions that enhanced my confidence of organizing such an important event. Several individuals, such as Drs. Ben Shneiderman, Jenny Preece, and Dennis Galletta, have provided very interesting and inspiring ideas for the workshop. Dr. Fiona Nah, the program co-chair, worked closely with me on many important issues. The ICIS local organizing agency assisted with logistics (although a bit frustrating at times), and the AIS headquarters office handled the registration process. Our local organizing committee, especially Dr. Xavier Ferre, provided the video equipment and took care of the logistics during the workshop. Last but not the least is dean Ray von Dran, who not only generously provided financial support to the workshop, but also staff time and a Graduate Assistant to help out. I would like to take this opportunity to express my sincerely appreciation for all the assistance, cooperation, and collaboration that make the workshop a success.

Ping Zhang
Workshop Chair

WELCOME MESSAGE FROM THE WORKSHOP PROGRAM CO-CHAIRS

The First Annual Workshop on HCI Research in MIS (HCI/MIS) attracted a total of 16 very good submissions, of which 8 were accepted after a rigorous, double blind review process (i.e., acceptance rate of 50%). Because of the high quality of submissions, the competition was very intense, resulting in the acceptance of only the very top research papers. The Program Committee played a key role in the review process by providing timely and insightful comments on the manuscripts submitted. Some of the authors were also involved in the review process. Of the 16 submissions, four of them received four reviews, eleven received three reviews, and one received two reviews. Based on the reviewers’ comments and recommendations, eight papers were selected for presentation. Among these eight papers, six are completed research, and two are research-in-progress.

As the Program Co-chairs of the workshop, we would like to express our sincere thanks and appreciation to the Program Committee and the reviewers for their high quality reviews that ensured the very best quality of the workshop, and to the authors for submitting their outstanding research to the workshop.

Enjoy the workshop!

Fiona Fui-Hoon Nah & Sid Davis
Program Co-chairs
HCI/MIS’02 WORKSHOP COMMITTEE

Advisory Committee:

Izak Benbasat, University of British Columbia
Jane Carey, Arizona State University West
Fred Davis, University of Arkansas
Dennis Galletta, University of Pittsburgh
Diane Strong, Worcester Polytechnic Institute
Andrew B. Whinston, University of Texas at Austin

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Nancy Lightner, University of South Carolina
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Radhika Santhanam, University of Kentucky
Keng Siau, University of Nebraska-Lincoln
Ananth Srinivasan, University of Auckland
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Ozgur Turetken, Temple University
Susan Wiedenbeck, Drexel University
Vance Wilson, University of Wisconsin-Milwaukee
Mariam Zahedi, University of Wisconsin-Milwaukee
Wenli Zhu, Microsoft Corporation

Local Organizing Committee:

Xavier Ferre, Universidad Politecnica de Madrid
Natalia Juristo, Universidad Politecnica de Madrid
INTRODUCING THE INVITED SPEAKERS

Jenny Preece is professor of Information Systems at the University of Maryland, Baltimore County where she teaches online communities and human-computer interaction. She has developed a model for researching and developing online communities that is composed of four components: people, the purposes that bring them together, the polices that direct their behavior, and the software that supports them. Jenny Preece is author, co-author or editor of eight books and numerous journal, conference and technical papers. Two recently published books are: Online Communities: Designing Usability, Supporting Sociability, Jenny Preece, 2000, New York: John Wiley & Sons, and Interaction Design: Beyond human-computer interaction, Jenny Preece, Yvonne Rogers & Helen Sharp (co-authors), 2002, New York: John Wiley & Sons. More information about Jenny and her research can be found at http://www.ifsm.umbc.edu/~preece.

Ben Shneiderman is Professor in the Department of Computer Science, Founding Director (1983-2000) of the Human-Computer Interaction Laboratory, and Member of the Institute for Advanced Computer Studies and the Institute for Systems Research, all at the University of Maryland at College Park. He has taught previously at the State University of New York and at Indiana University. He was made a Fellow of the ACM in 1997, elected a Fellow of the American Association for the Advancement of Science in 2001, and received the ACM CHI (Computer Human Interaction) Lifetime Achievement Award in 2001. Ben Shneiderman has been on the Editorial Advisory Boards of nine journals. He edited the Ablex Publishing Co. book series on Human-Computer Interaction. He has consulted and lectured for many organizations including Apple, AT&T, Citicorp, GE, Honeywell, IBM, Intel, Library of Congress, Microsoft, NASA, NCR, and university research groups. More information about Ben and his research can be found at http://www.cs.umd.edu/users/ben/.

Diane M. Strong is Associate Professor in the Management Department at Worcester Polytechnic Institute. She received her Ph.D. in Information Systems from Carnegie Mellon University. Dr. Strong’s research centers on data and information quality, task-technology fit models, and MIS application systems, especially ERP systems. Her publications have appeared in leading journals such as Communications of the ACM, ACM Transactions on Information Systems, Journal of Systems and Software, Journal of Management Information Systems, and Information & Management. She was program co-chair for AMCIS 2001, and is currently serving as an AIS Council representative for the Americas region. She is a member of the AIS, ACM, and INFORMS.

Dov Te'eni is on the faculty of management at Tel-Aviv University, Israel. He is also the director of Bar-Ilan University's E-learning center and the founding director of the interdisciplinary center for Global Knowledge Management. Dov studies several related areas of information systems in the organizational context: human-computer interaction, computer support for decision making and systems design. In addition, he is interested in information systems for non-profit organizations. His research usually combines model building, laboratory and field experiments and the development of prototype systems such as Spider and kMail. He is currently working on the design of adaptive Web articles and the use of information technology for supporting communication within multi-national corporations. For a full list of publications see http://faculty.biu.ac.il/~teenid/publications.htm
INTRODUCING THE AUTHORS OF PEER-REVIEWED PRESENTATIONS

Izak Benbasat is Canada Research Chair in Information Technology Management at the Faculty of Commerce & Business Administration, University of British Columbia. He received his B.A. from Robert College (Istanbul, Turkey) and M.S. and Ph.D. in Management Information Systems from the University of Minnesota. He is a Senior Editor of the Journal of the Association for Information Systems.

Kevin K.Y. Kuan is a PhD Candidate in the Computer and Information Systems Department at the University of Michigan Business School. His research interests include trust and reputation in computer-mediated environment, information presentation and decision-making, human-computer interaction, IT adoption and diffusion, and electronic commerce.

Kevin Desouza is a doctoral candidate in the Information and Decision Sciences Department at University of Illinois at Chicago. He has authored Managing Knowledge with Artificial Intelligence (Quorum Books), and several articles either published or forthcoming in the CACM, Business Horizons, International Journal of Healthcare Technology Management, Competitive Intelligence Review, European Management Journal, Business Process Management Journal, and Emergence.

King-Tim Mak is an Associate Professor with the Information and Decision Sciences Department at University of Illinois at Chicago. Prof. Mak teaches Operations Management and Supply Chain Management. He has broad research interest in the applications of technology to business, and recently he has been focused on understanding the architecture of knowledge supply networks.

William Fuerst is the Dean and H.D. Price Professor of Business in the School of Business at the University of Kansas. In addition to his administrative duties, his teaching and research interests are in the areas of emerging information technologies, information systems planning, and systems analysis and design, with special emphasis on user interfaces.

Scott McCoy is Assistant Professor of MIS in the Management Department at WPI. He earned his PhD in Information Systems from the University of Pittsburgh. He teaches HCI, Telecommunications, Ecommerce, and Programming. His research interests include HCI, Cross-Cultural Issues in IS, Telecommunications Policy, and IT in Developing Countries.

Dennis Galletta (PhD, University of Minnesota) is Associate Professor at the University of Pittsburgh, and an AIS Fellow. He investigates user attitudes, behavior, and performance, and teaches HCI (since 1986). He has publications in Management Science, ISR, JMIS, Decision Sciences, CACM, CAIS, Database, and others. He has editorial board experience (MISQ, Data Base) and a variety of AIS service positions.

Fiona Fui-Hoon Nah is Assistant Professor of MIS at the University of Nebraska-Lincoln. She received her Ph.D. in Management Information Systems from the University of British Columbia. Her research interests include computer-supported collaborative work, HCI issues in the group context, group versus individual decision-making, and enterprise resource planning.

Raymond Henry is a doctoral candidate in Information Systems at the Katz Graduate School of Business of the University of Pittsburgh. He holds a Master of Science in Information Systems from Virginia Commonwealth University and a bachelor’s degree from the University of Virginia. His research interests include IT governance, social aspects of information technology, the use and design of information sources, and knowledge management.

Hui Kun Neo is a Masters of Science student in the School of Computing at the National University of Singapore (NUS). She earned her B.Sc. (Hons.) degree in Computer Science (2001) from NUS. Her research interests include electronic commerce, Web design, and user interface evaluation. Her research work has been published in Pacific Asia Conference on Information Systems (PACIS).
INTRODUCING AUTHORS OF PEER-REVIEWED PRESENTATIONS (CONT’D)

Judith Olson is the Richard W. Pew Chair in Human Computer Interaction at the University of Michigan Business School, the School of Information and the Psychology Department. She earned her Ph.D. at the University of Michigan, did a postdoctoral fellowship at Stanford. Her current research interests are computer supported cooperative work, both the technology and the social practices, focusing in particular on trust and uneven communication technologies.

Kwok Kee Wei is Professor of Information Systems in the School of Computing at the National University of Singapore (NUS). He is also the founding Head of the newly formed Department of Information Systems at NUS. He received his PhD in Data Communications from York University. His research interests include group decision support, Human-Computer Interaction, and inter-organizational systems.

Peter Polak is assistant professor at the School of Business Administration, University of Miami. He obtained his doctorate in 2002 at the University of Pittsburgh with a major in MIS and a minor in telecommunications. His research interests are in the areas of user attitudes and performance, interface design, and knowledge sharing. He teaches Introduction to Telecommunications and Data Communications and Networking.

John Wells is an Assistant Professor of Management Information Systems at Washington State University. He received his B.B.A. degree in Management from the University of Oklahoma and M.S./Ph.D. degrees in Management Information Systems from Texas A&M University. His active research areas include Electronic Commerce Strategy, B2C Interface Design, and the Virtual Representation of Products and Services.

Arkalgud Ramaprasad is a Professor in and Head of the Department of Information and Decision Sciences (IDS) at the University of Illinois at Chicago (UIC). He is also the Director of the Center for Research in Information Management (CRIM) there. His current research interests include eMedicine, eBusiness Strategy, Information Systems Discontinuity, and Information Systems Operability.

Gisela M. von Dran is assistant professor of strategy & human resources at Syracuse University, School of Management. Her Ph.D. is from Arizona State University. Her research interests include management of information-based organizations and information user interface studies from a motivational perspective. Her work has appeared in IJEC, e-Service Journal, Journal of the American Society for Information Science, among others.

Jeffrey Stanton is an assistant professor at the School of Information Studies, Syracuse University. His Ph.D. in psychology is from The University of Connecticut. His research examines the behavioral aspects of technology in work organizations including the new area of behavioral information security: http://www.behavioralinfosec.org.

Sherrie Xiao is a Ph.D. candidate at the Division of MIS, the Faculty of Commerce, University of British Columbia, Canada. She is expected to graduate in Summer 2003. Her research interests include e-commerce, human-computer interaction, trust, computer agents, knowledge-based systems, and decision support systems.

Gek Woo Tan is Assistant Professor in the School of Computing at the National University of Singapore (NUS). She received her Ph.D. degree in Business Administration from University of Illinois at Urbana-Champaign (UIUC). Dr Tan teaches E-commerce and Management Information Systems. Her research interests include Website design, information sharing in supply chain network and multi-agent systems.

Ping Zhang is Associate Professor at the School of Information Studies, Syracuse University. Her Ph.D. in Information Systems is from The University of Texas at Austin. She teaches HCI, Systems Analysis and Design, Database Management, and other IT topics. She is interested in user perception, attitude and behavior, interface evaluation, trust, affective aspect of HCI, information visualization, and online advertising.
WORKSHOP SESSIONS

Session I (9:30-11:00)
Session Theme: HCI in MIS
Session Chair: Dennis Galletta, University of Pittsburgh

1. Human-Computer Interaction (HCI): The Perfect Topic for Information Systems Researchers! (Invited)
   Jenny Preece, Ph.D.
   University of Maryland Baltimore County
   preece@umbc.edu

   Information Systems differs from its cousin, computer science, in being application oriented. We require
   graduate students to know some programming and networking, to be proficient in systems analysis and design,
   to design and implement data bases, to have a broad knowledge of management information systems and
   human-computer interaction and many other topics, such as e-commerce, e-government, AI, health
   informatics.

   Computer science curricula, in contrast, tend to emphasize programming languages, system architecture,
   algorithms and data structures. Information Systems takes a socio-technical perspective, whereas computer
   science takes an engineering and science perspective. Information Systems recognizes both the social
   and technical components of any system involving computers. Socio-technical systems are composed of: people,
   the social and physical environment in which technology is used and the technology itself. In order to develop
   successful socio-technical systems all of these components must be taken into account early and throughout
   system development.

   Human-computer interaction (HCI) is about people interacting with computer systems and with each other via
   computer systems. Consequently HCI fits within a socio-technical philosophy well. In fact, I will argue that HCI
   should be part of all information systems graduate programs and department research profiles. This is
   particularly important now that HCI has matured and broadened beyond just the human-computer interface – or
   man-machine interface as it used to be known. New areas such as computer-supported co-operative work
   (CSCW) and more recently, online communities (OCs) and Internet and society research, push the boundaries
   of HCI even further in the socio- direction.

   In my presentation I will suggest, as I argue above, that HCI should be represented in all information systems
   departments. In addition, it is the duty of HCI faculty in information systems departments to promote HCI by
   encouraging cross-disciplinary research within information systems departments and with other associated
   departments. I will illustrate this point by first mapping out a research agenda for HCI in information systems
   and showing how our department at UMBC contributes to this vision. Finally, I will use my own research in
   online communities as an example of a strongly socio-technical research area that bridges across a number of
   disciplines in information systems, social psychology, sociology, medical informatics, and education. I even
   have interesting opportunities to work with students in a language, literature and culture (LLC) program.

2. Management Information Space (MIS*) (Peer-reviewed)
   Arkalgud Ramaprasad, Kevin C. Desouza, King-Tim Mak
   University of Illinois at Chicago
   {prasad, kdesou1, mak}@uic.edu

   This paper extends the connotation of MIS (Management Information System) to MIS* (Management
   Information Space). Structurally MIS* consists of information objects, information processing agents, and
information flow media. Functionally it extends the manager's sensory space digitally and seamlessly to wherever and whenever necessary within the manager's organization and its environment. It also sustains the semiosis in an organization and extend the semiotic capability and capacity of the manager by: (a) using different semiotic agents, (b) using a variety of information objects, and (c) by facilitating the information flow among these agents and objects via a variety of media. The overall question for the HCI research in MIS* is to be able to make the MIS* pervasive and ubiquitous and yet make the manager feel omniscient, omnipotent, and omnipresent – the Master of his or her universe, and not feel overwhelmed. The manager should be able to imagine the MIS* but it should not become an illusion; the manager she should be able to immerse himself or herself in the MIS* without getting lost; and the manager should be able to interact with the logical and physical organization through the MIS* without loss of control. The problem of HCI in MIS* is perhaps best paraphrased by the following lines from William Blake's (1757-1827) poem "Auguries of Innocence" (Eliot 1909-1914):

To see a world in a grain of sand,
And a heaven in a wild flower,
Hold infinity in the palm of your hand,
And eternity in an hour.

A manager would like to sense his or her entire universe that could be spatially infinite and temporally eternal on a device that is comparatively miniscule in scale – such as a computer monitor, or even smaller a personal digital assistant (PDA) screen. Having sensed, the manager seeks to create order from the disorder, organization from chaos through that minute window.

3. A Unified Model of IT Use Choices: Contributions from TAM, TTF, and CSE (Invited)

Diane M. Strong
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An MIS approach to HCI (MIS/HCI) addresses a key aspect of users' interactions with computer systems, namely usefulness. While the usability focus of traditional HCI research encourages us to ask “Usable by whom?”, usefulness encourages us to ask “Useful for what?” Since a person in an organization interacting with a computer system is typically trying to accomplish some organizational task, a focus on the tasks users are performing is a critical part of MIS/HCI. Furthermore, the concept of “task” differs between the traditional HCI approach and the MIS/HCI approach. In the traditional HCI approach, “task” means computer activities, e.g., insert data, query a table, insert a column. From an MIS/HCI approach, “task” refers to a business or organizational task, e.g., manage a budget, decide how much inventory to order, process a customer order.

These observations about the role of task in an MIS approach to HCI support our belief that models of Task-Technology Fit are core to MIS/HCI research. Task-Technology Fit (TTF) models, as well as the Technology Acceptance Model (TAM), have been used in the MIS literature to help us understand user choices about software utilization. In these models, the extent to which individuals in organizations choose to use an information technology is explained by usability, usefulness, and in general, how well the technology fits or supports the needs of the users' tasks.

The research described in this talk is part of a stream of research exploring the similarities and differences among models and constructs that help MIS researchers understand users' choices about the software to use. The goal of this research stream is to propose and test unified models that help us understand better users' choices about software. Specifically, we have proposed and tested a model combining the TAM with a TTF model. TAM captures beliefs about usability and usefulness. To this, the TTF model adds constructs for task, technology, and the fit between the two. Together, this unified model provides better explanatory power than either model alone.

To the combined TAM/TTF model, we are exploring the addition of constructs that capture individual abilities. Users' choices about information technology are not only influenced by task needs and technology functionality, but also by their experience and abilities related to the task and to the technology. Specifically,
we are testing the addition of Experience and Computer Self-Efficacy (CSE) constructs to the combined TAM/TTF model.

As we move toward a unified model of Task-Technology Fit, we need to address some key research questions including: How should we conceptualize and model information technology? How should we conceptualize and model organizational tasks and processes? What are the key dimensions of fit between task and technology? What are the critical dimensions of user abilities? How can we re-conceptualize models developed from individual-level theories so that they can be applied to organizational-level tasks, technologies, and fit?

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### Session II (11:30-1:00)

**Session Theme: Issues in Website Design**

**Session Chair: Eleanor Loiacono, Worcester Polytechnic Institute**

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#### 4. Communication Theory as a Basis for Designing Adaptive Websites: Levels of Abstraction and Scope (Invited)

Dov Te’eni  
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Websites such as professional web-books, online tutorials and other information intensive websites have traditionally been designed on the basis of an augmented book metaphor. In this talk, I take an alternative view in which the website is an active agent of communication that adapts to the needs of the reader (who is seen as a partner to the communication). This leads to a notion of adaptation on two dimensions: scope and levels of abstraction (high levels are abstract representations and low levels are detailed and concrete).

People communicate at different levels of abstraction, depending on the task at hand and the complexity of the communication. Models of communication can predict these moves across levels and can therefore serve as a basis for websites that adapt to the needs of the reader (user). Similarly, if the system can be informed (by the reader or otherwise) of the current area of the reader’s interest, the scope of website can be adapted accordingly.

In order to examine these ideas empirically, we studied the use of websites that could adapt the presentation of materials to different levels of abstraction and different scopes. In one study, we constructed a website from a 100-page article that was reorganized as a Web-book built around four levels of abstraction, i.e., low levels consist of specific and concrete descriptions of reality, while high levels consist of general principles abstracted from specific cases. A field study of unsolicited readers, as well as a group of solicited readers who were assigned specific problems, tapped their access patterns. The findings suggest that users vary their allocation of attention to different levels of abstraction and choose to hide or ignore lower levels for certain reading tasks. An experiment further investigated under what conditions users move from one level to another and found that complexity triggers transitions between levels. A second study looked at the effects of adapting the scope of a website on the effectiveness and satisfaction of users. It turned out that the effects of adaptation are mixed and may be time dependent. I hope to involve the participants in a discussion of these issues.

#### 5. The Impact of Cognitive Mapping on Effective Website Design (Peer-reviewed)

Hui Kun Neo, Gek Woo Tan, Kwok Kee Wei  
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For Internet retailers to survive, it is important for them to design effective Websites. In surveys conducted by CommerceNet and GVU, the inability to find and access information in the Website was cited as main concerns in obstructing e-commerce, causing user dissatisfaction and hindering user performance. Current academic research on Website design models fall into three dimensions: purport – meaning conveyed or implied by the contents of the Website (for example: Katerattanakul and Siau, 1999), semblance – appearance or outward forms of the Website (for example: Zhang et al., 2000a; Zhang et al., 1999; Turban, 1999), and morphology – organization and inter-linkages of the Webpages (for example: Troyer, 1999; Larson and Czerwinski, 1998). The existence of poor Website design is due to current models that have focused on identifying specific Website features to improve user performance, which is determined by user effectiveness, efficiency and satisfaction in performing task. However, user performance cannot be explained simply by existence of a Website feature. With increasing sophistication in Web technology, there are infinite arrays of features to be incorporated into the Website design... We postulate that the cognitive mapping of the users' mental model (i.e. a mental representation of the Website environment) to the actual Website is crucial in task accomplishment. Based on wayfinding theory, a person would form a mental model of the real environment and then perform a cognitive mapping between the mental model and the real environment in order to navigate the environment (Passini, 1984). In this study, we proposed that a molar perspective of Website design dimensions facilitates the cognitive mapping of user's mental model of the Website to the physical Website environment and consequently improves user performance. The main contribution of this study lies in the proposal of a parsimonious framework for measuring these dimensions in relation to user performance, to be carried out through experimentation. This would give us insights as to the formulation of guidelines that would assist designers to better identify the areas for improvement such that the user performance can be optimised and ultimately, create genuine effective Websites.

6. Designing Business-To-Consumer (B2C) Interface Metaphors: An Empirical Investigation (Peer-reviewed)

John D. Wells  William L. Fuerst
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The emergence of electronic commerce has pushed information technology to an increasingly heterogeneous set of users (e.g., customers) who interact with a wide variety of user interfaces. As a result, the need for user-friendly, intuitive interfaces has become an urgent issue in electronic commerce. In business-to-consumer (B2C) electronic commerce, a primary goal is the ability to present a virtual representation of products and/or services. Because metaphors are defined by a user’s perception of objects in his/her environment (Lackoff & Johnson, 1980), business domains are a viable source for deriving B2C interface metaphors. For instance, these domains can include the product domain (e.g., graphical representation of a product) or the service domain where products/services are consumed (e.g., restaurant). This research explores the use of concrete attributes derived from the physical business domain as a technique for designing B2C interface metaphors. A laboratory experiment was designed to test the effectiveness of a concrete interface metaphor for presenting both textual and graphical information, as compared to an abstract interface metaphor. The independent variables were mode of interface and domain familiarity. The dependent variable consisted of a measure for user information retention/recall. Textual and graphical information were measured separately to make a distinction between symbolic and spatial information types. The subjects for this study were undergraduate students who were enrolled in an introductory management information systems course at a major university. A total of eighty-eight subjects (twenty-two in each treatment group) participated in the experiment. A questionnaire was administered to measure the subject's information retention/recall. The retention/recall of the information was measured for the two different interface metaphors, with subjects being tested both the day of the treatment and after a two-day lag. Results revealed that the concrete interface metaphor stimulated higher levels of retention/recall of information, particularly for customers who possess a weak mental model of the business domain. In addition, it was observed that the concrete interface metaphor stimulated a higher level of graphical information retention/recall without adversely affecting the retention/recall of textual information.
7. Seal of Approval and Multidimensionality of Perceived Trustworthiness in Online Service Adoption (Peer-reviewed)

Kevin K.Y. Kuan, Judith S. Olson
University of Michigan Business School
{kkuan, jsolson}@umich.edu

This paper examines the concept of perceived trustworthiness and its effect on adoption of online service. Perceived trustworthiness has been argued as a higher-level concept reflected by three distinct beliefs: (1) perceived ability (the extent to which the trustee is perceived as competent), (2) perceived integrity (the extent to which the trustee is perceived as being adherent to a set of dependable and reliable principles), and (3) perceived benevolence (the extent to which the trustee is perceived as caring beyond an egocentric profit). An experiment based on an online service was conducted with 112 subjects at a major mid-west university. Modeled as a second-order factor, perceived trustworthiness was found to have a significant effect on intention to adopt the online service. Consistent with TAM, perceived usefulness and perceived ease of use were found to have significant effects on intention. Furthermore, perceived usefulness was found to have a significant effect on perceived trustworthiness. This paper also examines the effect of seal of approval by TRUSTe on the three dimensions of trustworthiness. It was found that TRUSTe seal improved perceived integrity but not perceived ability and perceived benevolence. The results suggest that, as a high level concept, perceived trustworthiness is generally important to the adoption on online services. Yet, different dimensions may be of different importance to different online services, and can be enhanced by different or multiple seals of approval. Online service providers should look at the nature of their services, identify the dimensions of trustworthiness that are important to the customers, and make sure their images with respect to those dimensions are well communicated to the customers. Finally, the effect of perceived usefulness on perceived trustworthiness suggests that the perception on the online service provider can be affected by the perception on the online service itself. Therefore, when focusing on its trust image, an online service provider should not overlook the fundamental importance of providing a good service.

8. The Impact of Internalization and Familiarity On Trust and Adoption of Recommendation Agents (Peer-reviewed)

Sherrie Xiao, Izak Benbasat
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This paper develops and tests a research model which reflects our postulation that in agent-mediated ecommerce, a customer will adopt a customer agent, such as a recommendation agent (RA), because the customer agent (an agent) will internalize the real needs of the customer (a principal). We think that Internalization will increase the customer's intention to adopt the RA through increased cognitive trust and emotional trust, which is not purely cognitive nor rational.

Our research model conceptualizes that both internalization and familiarity will affect customer trust in an RA (including both cognitive trust and emotional trust), and that customer trust in an RA will affect the intention to adopt an RA as a delegated agent or as a decision aid. Internalization refers to a customer's perception of how well an RA represents the customer's real needs. New measures of cognitive trust, emotional trust, the intention to adopt an RA as a delegated agent, the intention to adopt an RA as a decision aid, and internalization have been developed. We have conducted a lab experiment and used PLS to analyze the data.
The results support our postulation. We find that the total effects of internalization on the two intentions to adopt an RA are 0.46 and 0.47 respectively. This means that a one standard deviation increase in internalization will result in a 0.46 standard deviation increase in a customer’s intention to adopt the RA as a delegated agent and a 0.47 standard deviation increase in a customer’s intention to adopt the RA as a decision aid. One standard deviation increase in internalization affects the intention to adopt an RA through a 0.67 standard deviation increase in cognitive trust and through a 0.61 standard deviation increase in emotional trust. It is interesting to find that cognitive trust fully mediates the impact of internalization on emotional trust, and that emotional trust fully mediates the impact of cognitive trust on the intention to adopt an RA as a delegated agent or as a decision aid. In addition, familiarity significantly increases cognitive trust, while it does not significantly affect emotional trust.

9. A Motivational Model of Evaluation for Information Seeking Environments (Peer-reviewed)

Jeffrey Stanton, Ping Zhang, Gisela von Dran
Syracuse University
jmstanto@syr.edu, pzhang@syr.edu, gvondran@som.syr.edu

In this paper, we develop a framework that emphasizes the role of motivation and emotion in user evaluation of artifacts (such as information seeking environments) and how emotions resulting from artifact use may impact future behavior. We suggest that the hedonic outcomes of a user’s experience with an artifact, such as an information-seeking environment, influence the likelihood of his or her future goal-oriented behavior pertaining to that artifact. We review earlier models of evaluation to identify areas of overlap and similarity. Then by adding perspectives of two current theories from the behavioral science research literature we attempt to understand the psychological processes underlying user evaluation of an artifact. We focus this examination on the level of the immediate experiences of individuals as they use an artifact rather than on the larger contexts of social and organizational influences on artifact use, although we recognize that these larger contexts can have substantial importance, particularly with regard to the behavior that follows user evaluation. The framework, which we have called the “joint evaluation model” (JEM), takes as a basic orientation the idea that evaluation outcomes stem from an interaction of user characteristics and artifact characteristics rather than one or the other alone.

To examine whether the new framework could provide a satisfactory guide for future research, we reinterpret results from two previous studies in light of the new framework. We also present preliminary results from a user evaluation study that helped us to develop the framework. The artifact in this study was a set of web-based information-seeking environments that allowed users to conduct a brief information search and self-tutorial. Although results from our analyses of these data were mixed, some hopeful signs emerged that our framework’s focus on changes to emotional states across the evaluation process was potentially fruitful. With further development, we hope that the framework can eventually be generalized to other artifacts (e.g., smartphones, PDAs) with which people interact for achieving a particular goal.

Session IV (5:00-6:30)
Session Theme: Human and Technology
Session Chair: Larry Seligman, University of Georgia


Ben Shneiderman
University of Maryland
ben@cs.um.edu
Recent research on computer user frustration with 111 experienced users has revealed that 30-45% of user time is wasted. This appalling record should push developers to dramatically improve the usability of existing systems. The potential productivity gains are enormous. Second, future designs can and should address the need for universal usability: device independence, user independence, and knowledge independence. Third, the largest opportunity is in new products and services that are truly in harmony with user needs. The Activities and Relationship Table is one guide for innovation. This talk proposes Leonardo da Vinci as an inspirational muse for the "new computing." The old computing is about what computers can do; the new computing is about what users can do.  http://www.cs.umd.edu/hcil/newcomputing  http://mitpress.mit.edu/leonardoslaptop

11. Web Site Delays: How Slow can You Go? (Peer-reviewed)

Dennis F. Galletta  Raymond Henry  Scott McCoy  Peter Polak  
University of Pittsburgh  University of Pittsburgh  Worcester Polytechnic  University of Miami  
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Web page loading speed continues to vex users, even as broadband adoption continues to increase. Sources of delay are too diverse to support a single "silver bullet." Several studies have addressed delays both in the context of web sites as well as interactive corporate systems, and a wide range of "rules of thumb" have been recommended. Some studies conclude that response times should be allowed to grow to no greater than 2 seconds while other studies caution on delays of 12 seconds or more. One of the strongest conclusions was that complex tasks seemed to allow longer response times. This study, the first of a series of three so far, examined delay times of 0, 2, 4, 6, 8, 10, and 12 seconds using 196 undergraduate students in an experiment. The subjects were randomly assigned a constant delay time and were asked to complete 9 search tasks, exploring a site with familiar and unfamiliar material (categories and content). Plots of performance, attitudes, and behavioral intentions suggested that a moderate amount of each outcome can be explained by delay, using both linear and non-linear regression. Non-linear regression explained 2%, 5%, and 7% of each variable, respectively. More interestingly, focusing only on the familiar site, explained variance in attitudes and behavioral intentions grew to about 16%. The curve for behavioral intentions is shown below.

A sensitivity analysis was performed on the data. It was interesting to find that our study supports strongly previous survey data that names delay as the worst problem. There were sharp, significant decreases in all dependent variables when delay was moved from 0 to 2 seconds. As delay increased, decreases in performance and behavioral intentions began to flatten when the delays extend to 4 seconds or longer, and attitudes flatten when the delays extend to 8 seconds or longer. Our follow-on studies include additional factors, including site depth/breadth, delay variability, and delay feedback. Future studies should examine user expectations, and other outcomes such as actual purchasing behavior, in more fully understanding the effects of delays in today's web environment.
Due to the increasing use of knowledge-based technology to support knowledge management and group decision-making in organizations, we need to more fully understand the impact of such support in a multi-individual decision-making context. Knowledge-based systems (KBS), which represent the knowledge and problem-solving expertise of human experts as well as other sources of expertise in narrow knowledge domains, have been used in organizations to support group decision-making. This study is the first to investigate how the domain expertise of users moderates the impact of KBS in the group setting. Specifically, it examined the use of a KBS and its explanation facilities to support group decision-making of experts versus novices in a laboratory setting. Consistent with predictions from social judgment theory, the results indicate that experts exhibit a higher level of criticality and involvement in their area of expertise; this not only decreases their likelihood of being persuaded by the KBS, but also accounts for a lower group consensus among experts as compared to novices after KBS use. In other words, the group judgments of novices were more in line with the KBS than the group judgments of experts, and novices utilizing the KBS in a group achieved a higher level of consensus than experts. As a consequence, novices found the KBS to be more useful than experts did. From a theoretical perspective, this research integrates social judgment theory from the persuasion literature into research on group use of KBS. From a practitioner perspective, this study highlights both the benefits and limitations of KBS use in organizations.
### WORKSHOP PARTICIPANTS (AS OF 11/20/2002)

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The Center for Natural Language Processing seeks to advance the development of human-like language understanding software capabilities for government, commercial, and consumer applications. The dramatic increase in electronic text has heightened the interest in, and need for, improved automatic processing of language to accomplish strategic corporate missions as well as daily consumer tasks.

Community and Information Technology Institute (CITI) provides research and development, consulting, technology transfer, and educational outreach services for the nonprofit community of Central New York. These organizations include government, health and human service agencies, and schools.

The Center for Digital Commerce researches the underlying processes, methods, and technologies used in electronic commerce. The World Wide Web and its business applications have drastically transformed the business landscape of many industries and professions. The center also explores user behavior, markets, and strategies in connection with business conducted in electronic environments.

The Information Institute of Syracuse (IIS) serves as the umbrella organization for a number of highly visible and widely successful digital education information services. The IIS focuses on projects related to information and instructional technology in education and administers the ERIC Clearinghouse on Information & Technology, the award-winning Internet-based AskERIC question and answer service, the Virtual Reference Desk project and the Gateway to Educational Materials (GEM).

The Center for Emerging Network Technology with its Network Computing Laboratory allows School’s faculty and students to work side by side with Network Computing technology editors testing the latest network-oriented hardware and software technology, often before it is available to the general public.

The Convergence Center supports research on and experimentation with media convergence. The Center is a joint effort of the School of Information Studies and the S.I. Newhouse School of Public Communications. Its mission is to understand the future of digital media and to engage students and faculty in the process of defining and shaping that future.

The Center for Systems Assurance provides an interactive environment for faculty focusing on system assurance. Systems assurance focuses on the correctness, integrity, reliability, and security of information systems. The center is a shared effort of the School of Information Studies, the College of Engineering and Computer Science, the S. I. Newhouse School of Public Communication, and the Maxwell School of Citizenship and Public Affairs.

The Center for Digital Literacy does research, development, and training in the areas of information, technology, and media literacy. Co-sponsored by the School of Information Studies, the School of Education, and the S.I. Newhouse School of Public Communication. The center was created to form a national and international “presence” for Syracuse University in the critical area of digital literacy.

Raymond F. von Dran is Dean of the School of Information Studies at Syracuse University, has served as a consultant creating new information schools and curriculum, as well as on IT strategic planning at over a score of universities in North America. He has also had IT planning leadership at both Syracuse University and the University of North Texas, where he was dean from 1987 to 1995.

While in Texas, he created and directed the Interdisciplinary Ph.D. degree program in Information Science, which leveraged the faculties of the Departments of Computer Science, Business Computer Information Systems, Communication Studies, Technology and Cognition, and the School of Information Sciences.

From 1983 to 1987 he served as Dean at Catholic University of America in Washington, DC. He was senior consultant to the Library of Congress, serving on the National Database Design Project, and served as consultant to NASA, EPA, and other federal agencies. He received federal funding to create the National Rehabilitation Information Center, where he was executive director.

Pre-ICIS HCI/MIS’02 Workshop Session Schedule at a Glance

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<tr>
<th>Time</th>
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<tr>
<td>9:00-9:30</td>
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| 9:30-11:00 | I: HCI in MIS               | 1. Human-Computer Interaction (HCI): The Perfect Topic for Information Systems Researchers! By Jenny Preece  
2. Management Information Space (MIS*). By Arkalgud Ramaprasad and Kevin Desouza  
3. A Unified Model of IT Use Choices: Contributions from TAM, TTF, and CSE. By Diane Strong |
| 11:00-11:30| Break and Refreshments     |                                                                             |
| 11:30-1:00 | II: Issues in Website Design| 4. Communication Theory as a Basis for Designing Adaptive Websites: Levels of Abstraction and Scope. By Dov Te‘eni  
5. The Impact of Cognitive Mapping on Effective Website Design. By Hui Kun Neo, Gek Woo Tan, and Kwok Kee Wei  
| 1:00-3:00  | Lunch; Luncheon Speech by Dean Raymond von Dran |                                                                             |
| 3:00-4:30  | III: Trust and Motivation  | 7. Seal of Approval and Multidimensionality of Perceived Trustworthiness in Online Service Adoption. By Kevin Kuan and Judith Olson  
8. The Impact of Internalization and Familiarity On Trust and Adoption of Recommendation Agents Abstrac By Sherrie Xiao and Izak Benbasat  
9. A Motivational Model of Evaluation for Information Seeking Environments. By Jeff Stanton, Ping Zhang, and Gisela von Dran |
| 4:30-5:00  | Break and Refreshments     |                                                                             |