

## JAY F. NUNAMAKER JR.

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### Education

Ph.D.	Operations Research and Systems Engineering	Case Institute of Technology	1969
M.S.	Industrial and Systems Engineering	University of Pittsburgh	1965
B.S.	Industrial Management	Carnegie-Mellon University	1964
B.S.	Mechanical Engineering	University of Pittsburgh	1960

Ph.D. Dissertation: Design and Optimization of Information Processing Systems  
Major Professor: Daniel Teichroew, University of Michigan, Ann Arbor

Professional Engineer, Commonwealth of Pennsylvania, 1965 - Present

### Academic and Professional Experience

**University of Arizona** (1974 - Present): Regents Professor, 1994 – Present and Soldwedel Professor, 1998—present, of MIS, Computer Science and Communication. Director and P.I., The National Center for Border Security and Immigration (BORDERS), 2008—Present, Director and founder, Center for Management of Information (CMI), 1987 – Present, research center to study collaboration technology, knowledge management, e-commerce and decision support; Professor of Management Information Systems and Computer Science, 1976 - present; Head, Department of Management Information Systems, 1977 - 1992; Chair, MIS Program, 1974 - 1977; Associate Professor of MIS and Computer Science, with tenure, 1974 - 1976.

**Purdue University** (1969 - 74): Associate Professor of Computer Sciences and Industrial Administration, with tenure, 1973 - 1974; Assistant Professor 1969 - 1973.

**ISDOS Project**, Case Institute of Technology, University of Michigan (1967 - 69): Research Assistant; Design and Development of PSL, PSA and SODA languages and software.

**Case Institute of Technology** (1965 - 68): Case Institute Fellowship, National Defense Education Act Fellowship.

**University of Pittsburgh** (1964 - 65): Research Assistant and Computer Programmer, University Computing Center and NASA Knowledge Availability Systems Center.

**Shippingport Atomic Power Facility** (1960 - 64): Atomic Energy Commission and U. S. Navy project with Westinghouse Electric and Duquesne Light Company, Pittsburgh, Pennsylvania: Test and Design Engineer and Computing Systems Engineer, member of a team that designed and implemented multi-way valve for failed element detection and location and implemented a data acquisition computer system for pressurized water nuclear reactors of the class for nuclear submarine fleet, enterprise aircraft carrier class and other nuclear ships.

**U. S. Steel Corporation**, National Tube Works, production of seamless pipe, McKeesport, Pennsylvania (1959): Engineering Trainee in Operations, apprentice foreman in blast furnace, open hearth and rolling mill.

## **Recognition and Awards**

**National Mentoring Day** received an email from Jim Cash, a former student at Purdue. Who said the following in email. “As I thought about the meaning of today, I wanted to email and thank you for all the support you provided when I first arrived at Purdue, and many years later. The confidence I gained from initial conversations with you and the introduction to Andy Whinston were clearly life-changing for me. THANKS!!!” October 27, 2023

**The Extraordinary Faculty Award**, in recognition of distinguished service and leadership that brings honor, pride and distinction to the University of Arizona. Arizona Alumni Advisory Council, Eller College of Management. October 20, 2023.

**The 2023 Practical Impacts Award**, in recognition of an Information Systems Academic who has Demonstrated Outstanding Leadership and Sustained Impact on the Industry. Information Systems Society of the Institute for Operations Research and the Management Sciences. Phoenix, AZ. October 15-18, 2023.

**Distinguished Alumni Award**, recipient of the 2017 Distinguished Alumni Award from the Mechanical Engineering and Material Sciences Department, Swanson School of Engineering, The University of Pittsburgh, March 2017.

**Most prolific author award for the past 50 years**, 101 papers, Hawaii International Conference on System Sciences, January 7, 2017.

**AIS/ICIS Best Publication of 2010**, “Detecting Fake Websites: The Contribution of Statistical Learning Theory,” *MISQ* article, awarded, December 2011.

**The Informs ISS Design Science Award, 2010**, for the project “Avatar-based Kiosk for Automated Interviewing and Deception Detection.”

**Governor’s Innovator of the Year-Academia Award finalist.**

**Technical Innovation Award**, University of Arizona, March 25, 2008.

**Information Systems Design Hall of Fame**, Atlanta, May 9, 2008.

**AIS LEO Award 2002**, for Lifetime Exceptional Achievement in Information Systems.

**AIS Fellows 2000**, The purpose of the award is to recognize individuals who have made outstanding contributions to the Information Systems discipline in terms of research, teaching, and service.

**Educator of the Year Award** from International Association for Computer Information Systems, October 2000.

**Soldwedel Chaired Professor**, November 1, 1997.

**Educator of the Year Award** from Data Processing Management Association Education Foundation, 1996.

**Editor’s Choice Award** received from PC Magazine, June. 1994.

**Regents Professorship** awarded Spring 1994. Highest faculty rank reserved for those who have brought the University of Arizona national and/or international distinction (up to 3% of the faculty).

**Groupware Achievement Award**, GroupWare 93 Conference in San Jose: The *Groupware Achievement Award* was initiated by the conference committee in 1992 to acknowledge contributions by a person, group or company who has helped to promote groupware worldwide. Last year's recipient was Lotus Development Corporation. In presenting the award to Jay Nunamaker, Esther Dyson, editor of *Release 1.0* and *Rel-EAST*, said, "Our goal in this award is to encourage Jay and his team to keep experimenting and sharing their insights...to move groupware forward."

**Group Achievement Award** (received along with Volpe National Transportation Center, Coopers and Lybrand) as part of the Defense Transportation System Corporate Information Management Team. The award recognized the outstanding contribution in support of logistics effort from the "factory to the foxhole," December 1993.

Dr. Paul Straussman, Office of the Secretary of Defense, upon reviewing the results said, "It is the best CIM product I have seen in my career at DOD." December 1993.

**Best of Show 1993 Award**, GroupSystems software and concept in the Group Decision Support Systems Category. Awards ceremony attended by 4,000 people at the GroupWare 93 conference. The criteria in the Group Decision Support Systems category included scope of application support, customer base and strength, breadth of functions, maturity of product, pricing and documented results and software that supported real group processes.

**Andersen Consulting Professor of the Year** award, 1992-1993. In recognition of achievements of a college faculty member who had made unusually strong contributions symbolizing the total role of professor as scholar, educator and community leader.

**Best Publication in Information Systems for 1992**, in an Academy of Management publication including the *Academy of Management Journal*, the *Academy of Management Review* and the *Academy of Management Executive*, for the article titled "Electronic Brainstorming and Group Size."

**Best Paper of 1992 Award** from Alpha Kappa Psi Foundation, Business Communicat. Association, for "Electronic Brainstorming and Group Size," published in the *demy of Management Journal*. The award received October 30, 1993, in Mont. l, Canada.

**One of Four Finalist for the First Educator of the Year** Award in internationally known field of candidates, from the Data Processing Management Association, September 1992.

**Finalist, Best Research Paper** in the 1990 Decision Support Systems Conference Competition for "Experience with GroupSystems," May 1990, Cambridge, Massachusetts.

**Finalist in the Computer World - Smithsonian Award Competition** (In Search of Heroes) for innovation in software for electronic meeting systems to facilitate group work and improve the effectiveness of meetings. June 21, 1989, New York City.

**Second Place for Creative Concepts and Applications in IS Management**, Implementing Electronic Meeting Systems at IBM, to the University of Arizona and IBM GroupSystems research team (University of Arizona: Nunamaker, Martz, Vogel; IBM: Grohowski and McGoff) for 1989 from the Society for Information Management Award Competition Atlanta, Georgia.

**Best Paper of Conference for Group Systems Research** at the Annual Hawaii International Conference on System Sciences (HICSS).

“An Exploratory Study into Deception Detection in Text-based Computer-mediated Communication,” selected for best paper award, 2003.

“Thinklets-A Comparable Unit of Analysis for Experiments,” selected for best paper award, 2001.

“Developing and Validating an Instrument to Measure the Impact of Group Support Technology on Affective Reward,” selected for best paper award, 1995.

“Electronic Meeting System Experience at IBM,” selected as second place winner, 1989.

“Knowledge-Based Systems Support for Information Centers,” selected for best paper award, 1988.

“Facilitating Group Creativity: Experience with a Group Decision Support System,” selected for best paper award, 1987.

“Automating Planning Environments: Knowledge Integration and Model Scripting,” selected for Best Paper Award, 1986.

**Elected to Beta Gamma Sigma**, Business Administration Honorary Society, 1982.

**Third Place in Best Paper Competition** at the Spring Joint Computer Conference, 1971.

### **Professional Activities**

#### **National Science Foundation**

Member, NSF Advisory Panel for Presidential Young Investigators Awards, 1990. Member, Committee for Evaluation of Computer Equipment Research Grants, 1979; Reviewer, Research Proposals, 1970 - Present; member, committee involved with cooperative research with Soviet Scientists, member of delegation to research institutions in USSR, 1978; host, Russian Delegation in U. S., 1978, 1979. Member of Organizing Committee for NSF sponsored workshops on productivity issues in information systems. East - West Center, University of Hawaii, July 1986, July 1983, March 1982, December 1981. Tokyo, Japan, September 1985. Member of numerous site evaluation teams.

#### **Editorial Positions**

Advisory Board Chair, *ACM Transactions on Management Information Systems*, 2011.

Senior advisor, *ACM Journal of Data and Information Quality*, 2008.

Group Decision and Negotiation, Special Issues, “Toward Computer Aided Support of the Detection of Deception,” Vol. 13, Issues 1 and 2, 2004.

Co-Editorial Advisor, *Electronic Commerce Research and Applications Journal* 2004, Vol. 3, Issues 1-4.

Co-Editor in Chief, *Electronic Commerce Research and Applications Journal*, 2003, Vol. 2, Issues 1-4.

Co-Editor in Chief, *Electronic Commerce Research and Applications Journal*, 2002, Vol. 1, Issues 1-4.

ITPro, Editor and Advisory Board Member, 1998-present.

Editorial Advisory Group member of *Information Systems Frontiers: Emerging Vistas* (ISF), 1997-present.

Editorial Board Member of *Information Systems Journal*, Institute for Operations Research and the Management Sciences, 1997.

Editor-in-Chief, *Informatica: The Journal of Information Systems Development*, William C. Brown publishing (Started New Journal December 1992, first issue). (Journal is inactive at this time.)

Department Editor, Group Decision Support Systems, *Journal of Group Process and Negotiation*, Kluwer Academic Publishing, 1990 - Present.

Advisory Editor, *Journal of International Information Systems*, Dryden Press, 1990 - Present.

Associate Editor, *Journal of Decision Support Systems*, 1984 – (resigned March 2010).

Associate Editor, *Journal of Information Systems*, Blackwell Scientific Publications, 1990 - Present.  
Associate Editor, *Journal of Management Information Systems*, 1987 - Present.  
Associate Editor, *Journal of Information Resources Management*, 1988 - Present.  
Consulting Editor in MIS, Addison/Wesley Publishers, 1982 - 1986.

### **Curriculum Activities**

Association of Computing Machinery: Chair, Curriculum Committee on Information Systems, 1976 - 1990. Member 1974 - 1976. The committee has published guidelines and standards for curriculum in Information Systems. Member ACM Education Board, 1976 - 1990. Published Information Systems Curriculum Guidelines for the 80's and the 90's.

### **Conferences and Workshops**

Co-Chair, ICIS Executive Committee, 2010.

Co-Chair, International Conference on Information Systems (ICIS) 2009, Phoenix, Arizona, USA, December 15-18, 2009. "Doing IT Research that Matters."

Co-Chair, CITeR, November 2009, 2008, 2007...

### **AMIS**

Presenter at the fifth annual conference of The PhD Project Information Systems Doctoral Students Association, Long Beach, California, August 2000.

### **GroupSystems Conference**

Member of founding group of the International Conference on Information Systems (ICIS), 1978, Chair, Executive Committee of ICIS, 1985 - 1986. Conference Chair, November 1984, major meeting for academics and researchers in Information Systems.

Hawaii International Conference on System Sciences: Decision Support and Knowledge Based Systems, Track Coordinator, 23rd, 24th, 25th and 26th International Meeting on Systems Sciences, January 2, 1990, January 8, 1991, January 7, 1992, and January 6, 1993. Plenary Luncheon Speaker in Distinguished Lecturer Series, at the 22nd International Meeting on Systems Sciences, January 4, 1989, Kona, Hawaii. Presented one day tutorials on Collaborative Technology, January 1989, 1990, 1991, 1992 and 1993.

American Assembly of Collegiate Schools of Business, (AACSB) MIS Faculty Development Institute, University of Minnesota, Summers of 1983 and 1984. Advanced Institute, Indiana University, Summer 1985. Organizer of AACSB Workshop on Development of MIS programs, Tucson, January 1985. Conducted AACSB workshops in Boise, Idaho; San Antonio, Texas, and Phoenix, Arizona, 1984 - 1986. Member of AACSB accreditation Review Team, 1987.

Harvard University: Member, Information Systems Research Advisory Committee, 1986 - 1990. Conducted a series of five workshops on research methodology as part of a Harvard Research Colloquium. A series of monographs were produced that define research methodology in the MIS field. Co-director of the project is Professor James Cash, Harvard Graduate School of Business.

Conducted a series of 30 workshops and lectures on group decision making during the summers 1985 - 1988: June - July 1988 -- Italy, France, England and Scotland; July - August 1987 -- Japan, Hong Kong and Singapore; July 1986 - Consortium of Japan companies and government agencies in Hawaii; July - August 1985 -- Japan and Hong Kong.

Chair of Task Force on Organizational Decision Support Systems. The purpose of the task force is to bring scholars from other disciplines together to investigate how information technology can be used to support a broad range of goal directed activities in organizations. Partially financed by TIMS/ORSA and NSF, 1990 - Present.

Chair, Conference on Information Systems Development, April 30, 1977, Tucson, Arizona.

### **Government Service**

- Member, Information Systems Advisory Panel, U. S. Air Force, 1986 - 1987.
- Member, Special Task Force on Telecommunications, (established by the Governor of Arizona), Office of Economic Planning and Development, State of Arizona, 1981 - 1982.
- Border Mayors Conference, 2011.
- On behalf of Dept. for Federal Relations at the University of Arizona, presentation given and met with U. S.
- Customs and Border Protection Agency Commissioner Alan Bersin, March 10, 2011.

### **Invited Talks**

University of Utah, University of Maryland, Baltimore County, Stanford University, MIT, Oxford University, Manchester University, University of ULM - Germany, University of Wisconsin, Northwestern University, University of Michigan, University of Iowa, University of Texas, University of Maryland, University of Chicago, University of Pittsburgh, UCLA, UC at Santa Barbara, University of Toronto, University of Pennsylvania, University of Minnesota, University of Cologne, University of Rochester, IBM San Jose, University of Sao Paulo, Catholic University of Rio de Janeiro, University of Chile, University of Argentina, University of Dayton, National University of Mexico, ITESM, Technical Institute of Monterrey, National University of Singapore, Chinese University in Hong Kong, Tokyo Institute of Technology. ORSA, TIMS Meetings, ACM Meetings, National Computer Conference.

### **University of Arizona Service (partial listing)**

#### Special Committees

Advisory Committee to President Robbins, 2018-present  
Regents Professor Advisory Committee 2019-present  
Member, MIS Dept. 30<sup>th</sup> Anniversary Committee  
Member, Task Force on Focused Excellence, 2002-2004  
Chair, Commission on Communications, and Information Services, 1995-1996  
Member, BPA New Building Committee, 1987-1991.  
Member, University President's Kitchen Cabinet, 1977-1979.

#### Promotion and Tenure

Member, College of BPA Promotion and Tenure Committee, 1978 - 1980, 1993 - 1994, 1996-present  
Chair, University Promotion and Tenure Committee, 1984-1985  
Member, University Promotion and Tenure Committee, 1981-1984

#### Department Service

MIS P&T Committee, 2010-present  
Doctoral Committee, 2023-present  
College Research and Doctoral Studies Committee, 2019-present

Member Graduate Committee, 1996-1997  
Chair, Program on MIS, 1974-1977  
Department Head, 1977-1992

#### Search Committees

Member, Search Committee for Dean of BPA, 1994-1996.  
Member, Provost Search Committee, 1989.  
Chair, Search Committee for Dean of BPA, 1978 - 1979.  
Chair, Search Committee, Head of Computer Science Department, 1976 - 1977.

#### Computing on Campus

Member, Telecommunications Task Force, College of Engineering, 1990 - 1992.  
Member, Search Committee for Associate Vice President for Computing, 1987 - 1988.  
Chair, University Administrative Data Processing Advisory Committee, 1985 - 1987.  
Member, Computing Advising Committee, University Level, 1985 - 1987.  
Member, Search Committee, Director of Computing Center, 1978 - 1979.  
Member, Advisory Committee on Academic Computing, 1977 - 1987.

#### Review Committees

Review Team, School of Library Science, and Information Resources, 2003.  
Member, University Task Force to review the College of Education, 1982 -1983.  
Member, University Task Force for Excellence in Instruction, 1982 -1983.  
Chair, Review Committee of Applied Math Program.

#### Publications

##### Refereed Journals

190. Ebrahimi, Mohammadreza, Zhang, Nin, Hu, Lee, James, Nunamaker, Jay, F., and Chen, Hsinchun, "Adversarial Attacks and Defense Against Deep Learning-Based Malware Detectors: A Language Modeling Approach," *Journal of Management Information Systems*, Revise & Resubmit 2023.

189. Ullman, Steven, Samtani, Sagar, Zhu, Hongyi, Lazarine, Ben, Chen, Hsinchun, and Nunamaker, Jay, F., "Detecting and Grouping Vulnerable Virtual Machines in Cloud Computing: A Multi-View Representation Learning Approach," *Journal of Management Information Systems*, Revise & Resubmit 2024.

188. Wang, Xinran, Wang, Zisu, Dolta, Mateusz, and Nunamaker, Jay, F., "How Credibility Assessment Technologies Affect Decision Fairness in Evidence-Based Investigations: A Bayesian Perspective," Submitted to *Decision Support Systems*, In Process 2023.

187. Wang, Xinran, Chen, Xunyu, Nunamaker, Jay, F., and Burgoon, Judee, "Using Behavioral Features to Detect Malicious Insiders with Goal-Congruence Stimuli," *Journal of Management Information Systems*, Revised & Resubmit 2023.

186. Ampel, Benjamin, Samtani, Sagar, Zhu, Hongyi, Chen, Hsinchun, and Nunamaker, Jay, F., "Linking Hacker Exploits to a Cybersecurity Risk Management Framework: A Knowledge Distillation Approach," *Journal of Management Information Systems*, Accepted 2024.

185. de Vereede, Gert-Jan, and Nunamaker, Jay, F., "Special Issue: Information Systems, Artificial Intelligence, and Analytics to Support Value Creation in Communities and Organizations," *Journal of Management Information Systems*, Vol. 40 No. 1 2023, Issues 158, pp. 3-6.
184. Samtanai, Sagar, Padmanabhan, Balaji, Chai, Yidong, Chen, Hsinchun, and Nunamaker, Jay F., "Deep Learning for Information Systems Research," *Journal of Management Information Systems*, Vol. 40, No. 1 2023, Issues 158, pp. 271-301.
183. Chen, Xunyu, Wang, Xinran, Spitzley, Lee, and Nunamaker, Jay, "Trust and Deception with High Stakes: Evidence from the Friend or Foe Dataset," *Decision Support Systems*, volume 173, Accepted 2023.
182. Dunbar, Norah, E., Burgoon, Judee, K., Chen, Xunyu, Wang, Xinran, Huang, Qing, and Nunamaker, Jay, "Detecting Ulterior Motives from Verbal Cues in Group Deliberations," *Frontiers in Psychology*, pp. 1, 15, May 24, 2023.
181. Yu, Shuo, Chai, Yidong, Chen, Hsinchun, Brown, Randall A, Sherman, Scott J, and Nunamaker, Jay F., "Fall Detection with Wearable Sensors: A Hierarchical Attention-based Convolutional Neural Network Approach," *Journal of Management Information Systems*, Vol. 38 No. 4 2021 pp. 1095-1121.
180. Ebrahimi, Mohammadreza, Nunamaker, Jay F, and Chen, Hsinchun, "Semi-Supervised Cyber Threat Identification in Dark Net Markets: A Transductive and Deep Learning Approach," *Journal of Management Information Systems*, Vol. 37 No. 3 2020, pp. 694-722.
179. Zhu, Hongyi, Samtani, Sagar, Chen, Hsinchun, and Nunamaker, Jay F., "Human Identification for Activities of Daily Living: A Deep Transfer Learning Approach," *Journal of Management Information Systems*, Vol. 37 No. 2 2020 pp. 457-483.
178. Briggs, Robert O and Nunamaker, Jay F., "Special Section: The Growing Complexity of Enterprise Software," *Journal of Management Information Systems*, Vol. 37 No. 2 2020, pp. 313-315.
177. Ebrahimi, Mohammadreza, Nunamaker, Jay, F., Jr., Chen, Hsinchun, "Semi-Supervised Labeling for Cyber Threat Identification in Dark Net Markets: A Transductive and Deep Learning Approach," To appear, *Journal of Management Information Systems*, 2019.
176. Reinig, Bruce, A., Elkins, Aaron, C., Nunamaker, Jay, F., Jr., "Applying the Game-Theoretical Concept of Dominance for Sensor-based Credibility Assessment in a Multi-Question Interview," To appear, *Journal of Management Information Systems*, 2019.
175. Proudfoot, J. Jenkins, J. Valacich, J. and Nunamaker, J., "Sleight of Hand: Identifying Concealed Information by Monitoring Mouse Cursor Movement," To appear, *Journal of the Association for Information Systems*.
174. Samtani, Sagar, Chinn, Ryan, Chen, Hsinchun, Nunamaker, Jay (2017), "Exploring Emerging Hacker Assets and Key Hackers for Proactive Cyber Threat Intelligence," *Journal of Management Information Systems*, pp. 1023-1053, Vol. 34. No. 4, Oct. 2, 2017.



173. Pentland, Steven J; Twyman, Nathan W; Burgoon, Judee K; Nunamaker, Jay F; Diller, Christopher, B.R. "A Video-Based Screening System for Automated Risk Assessment Using Nuanced Facial Features," *Journal of Management Information Systems*, Pages 970-993, Volume 34, Issue 4, Oct. 2017.
172. Giboney, Justin S., Briggs, Robert O., Nunamaker, J. F., "Creating Social Value with Information," *Journal of Management Information Systems*, Pages 935-938, Vol. 34. No. 4, 2017.
171. Nunamaker, J.F., Twyman, N.W., Giboney, J. and Briggs, R.O. "Creating High-value Real-world Impact through Systematic Programs of Research," *MIS Quarterly*, (41: 2) pp. 335-351.
170. Li, Weifeng; Chen, Hsinchun; Nunamaker, Jay F., "Identifying and Profiling Key Sellers in Cyber Carding Community: AZSecure Text Mining System," *JMIS*, 33(4): pp. 1059-1086 (2016).
169. Benjamin, Victor; Zhang, Bin; Nunamaker, Jay F., "Examining Hacker Participation Length in Cybercriminal Internet-Relay-Chat Communities," *JMIS* 33(2): 482-510 (2016).
168. Giboney, Justin Scott, Briggs, Robert O, and Nunamaker, Jay F., "Special Issue: Designing Tools to Answer Great Information Systems Research Questions," *Journal of Management Information Systems*, Vol. 33 No. 4 2016 pp. 938-941.
167. Proudfoot, Jeffrey G.; Jenkins, Jeffrey L.; Burgoon, Judee K.; Nunamaker, Jay F., Jr., "More than Meets the Eye: How Oculometric Behaviors Evolve Over the Course of Automated Deception Detection Interactions," *JMIS* 33(2): 332-360 (2016).
166. Nunamaker, Jay F, Burgoon, Judee K, and Giboney, Justin Scott, "Special Issue: Information Systems for Deception Detection," *Journal of Management Information Systems*, Vol. 33 No. 2 2016 pp. 327-331.
165. Nunamaker, J.F.; Briggs, R. O.; Derrick, D. C.; Schwabe G., "The Last Research Mile: Achieving Both Rigor and Relevance in Information Systems Research," *JMIS*, 32 (3): 10-47 (7/2015).
164. Briggs, R., O; Nunamaker, J. F; Giboney, Justin S., Special Issue: "Introduction: On the Contributions of Applied Science/Engineering Research to Information Systems," *JMIS*, 32 (3) (07/2015).
163. Giboney, Justin Scott, Brown, S.A., Lowry, P. B., Nunamaker, J. F., Jr., "User Acceptance of Knowledge-based System Recommendations: Explanations, Arguments, and Fit." *Decision Support Systems*, Vol. 72, Pgs. 1-10, (April 2015).
162. Abbasi, A.; Zahedi, F. M.; Zeng, D.; Chen, Y.; Chen, H.; Nunamaker, J. F., Jr., "Enhancing Predictive Analytics for Anti-Phishing by Exploiting Website Genre Information." *JMIS* 31(4): 109-157 (2015).
161. Twyman, N.; Lowry, P. B.; Burgoon, J. K.; Nunamaker J. F., Jr., "Autonomous Scientifically Controlled Screening Systems for Detecting Information Purposely Concealed by Individuals." *JMIS*, 31(3): 106-137 (1/2015)
160. Chen, Fang; Nunamaker, Jay F.; Briggs, Robert O.; Corbitt, Gail; Sagor, James, "An Application of Focus Theory to Project Management Processes," *Group Decision and Negotiation*; Dordrecht 23.5, pp. 961-978, (9/2014)
159. Twyman, N., Elkins, A. C., Burgoon, J. K., and Nunamaker, J.F. "A Rigidity Detection System for Automated Credibility Assessment." *JMIS*, Vol. 31, No 1, pp. 173-202 (Summer 2014).
158. Jiang, S. Chen, H., Nunamaker, J. F., Zimbra, D., Analyzing Firm-specific Social Media and Market: A Stakeholder-based Event Analysis Framework. *Decision Support Systems* 67: 30-39 (2014).

157. Derrick, D. C., Meservy, T. O., Jenkins, L. J., Burgoon, J. K., Nunamaker, J. F., "Detecting Deceptive Chat-Based Communication Using Typing Behavior and Message Cues," *ACM Transactions on Management Information Systems*, Vol. 4, No. 2, Article 9, Publication date: August 2013, pp. 9:2-9:21.
156. Luna-Reyes, L. F., Derrick, D. C., Langhals, B., Nunamaker, J. F., "Collaborative Cross-Border Security Infrastructure and Systems: Identifying Policy, Managerial and Technological Challenges." *Electronic Markets, The International Journal of E-Politics*, 4(2): 21-38 (2013).
155. Elkins, A., Dunbar, N., Adame, B. and Nunamaker, J. F., Jr. "Are Users Threatened by Credibility Assessment Systems?" *JMIS*, 29, 4, Spring 2013.
154. Burgoon, J. K., Nunamaker, J. F., Jr., 2013. Preface: "Detecting Deception in Collaboration and Negotiation." *Group Decision and Negotiation*, 22, 85-88, 2013.
153. Langhals, B.T., Burgoon, J. K., Nunamaker, Jr., J. F. "Using Eye-based Psychophysiological Cues to Enhance Screener Vigilance," *Journal of Cognitive Engineering and Decision Making*, March 2013, 7: pp.83-95.
152. Twitchell, D. P., Jensen, M. L., Derrick, D. C., Burgoon, J. K., Nunamaker, J. F., "Negotiation Outcome Classification Using Language Features," *Group Decision and Negotiation*, 22:135-151, 2013.
151. Fuller, C. M., Biros, D. P., Burgoon, J. K., Nunamaker, J. F. "An Examination and Validation of Linguistic Constructs for Studying High-stakes Deception," *Group Decision and Negotiation*, 22, pp.117-134, 2012.
150. Elkins, A. C., Burgoon, J. K., Nunamaker, J. F., Jr. "Vocal Analysis Software for Security Screening: Validity and Deception Detection Potential," *Homeland Security Affairs; The Journal of Naval Postgraduate School*, Article 1, April 2012.
149. Nunamaker, J. F., Jr., Briggs, R. O., Special Issue: Multiple Dimensions of Value in Information Systems. *JMIS* 29 (4): 97-102 (2013)
148. Robert Briggs and J. F. Nunamaker, Jr. "Creating Value with Information," *JMIS*, Spring 2012, Vol. 28, No. 4, pp 7-10.
147. Dang, Y., Zhang, Y., Chen, H., Brown, S., Hu, P. J. H., Nunamaker, J. F., "Theory-informed Design and Evaluation of an Advanced Search and Knowledge Mapping System in Nanotechnology," *JMIS*, Vol. 28, No. 4, Spring 2012, pp. 99-127.
146. Derrick, D. C., Jenkins, J. L., Nunamaker, J. F., "Design Principles for Special Purpose, Embodied, Conversational Intelligence with Environmental Sensors (SPECIES) Agents." *Transactions on Human-Computer Interaction (THCI)*, Vol. 3, No. 2, 2011, pp. 62-81.
145. Nunamaker, J. F., Briggs, R. O., "Toward a Broader Vision for Information Systems," *ACM Transactions on Management Information Systems*, Vol. 2, No. 4, Article 20, December 2011, pp.20-20:12.
144. Briggs, Robert O.; Nunamaker, J. F., Sprague, R., "Applied Science Research in Information Systems: The Last Research Mile," *JMIS*, Vol. 28, No. 1, pp. 13-16, Summer 2011.
143. Wilkerson, J., Nunamaker, J., Mercer, R., "Comparing the Defect Reduction Benefits of Code Inspection and Test-Driven Development," *IEEE Transactions on Software Engineering*, April 2011, pp. 43-50.

142. Nunamaker, J. F., Derrick, D. C., Elkins, A.C., Burgoon, J. K., Patton, M., “Embodied Conversational Agent (ECA) Based Kiosk for Automated Interviewing,” *JMIS*, Vol. 28. 1, Summer 2011, pp. 17-48.
141. Davis, G. B., Gray, P., Madnick, S., Nunamaker, J. F., Jr., Sprague, R., Whinston, A., “Ideas for the Future of the IS Field,” *ACM Transactions on Mgmt., Info., Sys.*, Vol. 1, Number 1, Article 2, Dec. 2010, pp. 2.1-2.15.
140. Abbasi, A., Zhang, Z., Zimbra, D., Chen, H., Nunamaker, J. F., Jr., “Detecting Fake Websites: The Contribution of Statistical Learning Theory,” *MIS Quarterly*, Vol. 34 No. 3, pp. 435-461/September 2010.
139. Topi, H., Valacich, J., Wright, R., Kaiser, K., Nunamaker, J. F., Jr., Sipior, J. C., deVreede, G. J., “IS 2010: Curriculum Guidelines for Undergraduate Degree Programs in Information Systems,” Vol. 26, 2010, Article 18, [http://aisel.aisnet.org/cais/vol\\_26/iss1/18](http://aisel.aisnet.org/cais/vol_26/iss1/18).
138. Burgoon, Judee K.; Nunamaker Jr, Jay F., Jr., “Toward Computer Aided Support for the Detection of Deception,” *Vol. 3, Group Decision & Negotiation*, Jul 2010, Vol. 19 Issue 4, pp. 323-325, 3p; DOI: 10.1007/s10726-009-9170-1; (AN 51242273)
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## Research Grants

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92. PI J. Burgoon, Co-PI, J.F. Nunamaker, “CITeR Memberships,” NSF, \$273,921, April 01, 2007-03/31/12.

91. PI J. Burgoon, J.F. Nunamaker, Co-PI, “Research Experiences for Undergraduates” NSF, \$16,000, April 1, 2007-03/31/12.

90. PI J.F. Nunamaker, “Multi-Model Biometrics Applied Research,” DHS, \$299,348, September 16, 2011-09/15/13.

89. PI J. F. Nunamaker, “Immigration Statistics,” DHS, \$496,928, Sept. 30, 2011-9/29/12.

88. PI J. F. Nunamaker and Co-PI Elyse Golob, “CIMES Project Intelesense Technologies,” \$100,000—Jan 01, 2011-12/31/2011.

87. PI J. F. Nunamaker and Co-PI Elyse Golob, “Combating Criminal Narcotics Activity on the Southern Border of the U.S. New Mexico Institute of Mining and Technology,” \$30,000, July 01, 2011-6/30/11.

86. PI J. F. Nunamaker and Co-PI Elyse Golob, Center of Excellence in Border Security and Immigration, Supplement, U. S. Dept. of Homeland Security, \$29,420, July 01, 2010-6/30/2011.

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84. PI J. F. Nunamaker and Co-PI E. Golob, “Checkpoints,” Center of Excellence in Border Security and Immigration: COE Supplement, DHS-Science and Technology, \$500,000, July 01, 2010-6/30/11.

83. PI Jay Nunamaker, Center of Excellence in Border Security and Immigration, U.S. Department of Homeland Security, \$990,000, July 1, 2011-December 31, 2011.

82. PI Jay Nunamaker and Co-PI Elyse Golob, “Border Crossing and Terrorist Attacks,” CoE-BSI, Supported by DHS and Univ. of Maryland, Department of Homeland Security, \$231,538, 3/01/10-8/31/12

81. PI Jay Nunamaker, Co-PI Elyse Golob, “Center of Excellence, Border Security and Immigration,” Department of Homeland Security, \$16,500,000, July 1, 2008—June 30, 2014.

80. Co-PIs Judee Burgoon and Jay Nunamaker, “Credibility Assessment Research Initiative,” Counterintelligence Field Activity Agency, \$2,200,000, 9/07-9/09.

79. Co-PIs Judee Burgoon and Jay Nunamaker, “Biometric Identification and Deception Detection.” Supported by the National Science Foundation, \$350,000, memberships of \$40,000 each in addition to NSF funding: from FAA, Raytheon and 3 others).  
10/1/2007-10/13/12
78. Co-PIs Judee Burgoon and Jay Nunamaker, “Deception Detection.” Supported by Defense Academy for Creditability Assessment, \$823,000, 2007-2012.
77. Co-PIs Jay Nunamaker and Mark Adkins, “Virtual Collaboration System for Vendors and Customers.” Supported by Raytheon Missile Systems, \$390,000, 1/2/2006-9/30/2006.
76. Co-PIs Jay Nunamaker and Mark Adkins, “Network Centric Warfare.” Supported by the National Science Foundation, PCom-Hawaii, Department of Navy., \$100,000, 1/15/06-9/30/06.
75. Co-PIs Jay Nunamaker and Judee Burgoon, “Supplemental funding. “Detecting Deception in the Military Infosphere: Improving and Integrating Human Detection Capabilities with Automated Tools.” Supported by the Air force Office of Scientific Research., \$107,000, 3/15/2005-4/30/2006
74. PI Jay Nunamaker, “Border-Safe Digital Object Registry System.” Supported by the Department of Homeland Security, \$100,000, 3/9/05-3/9/06.
73. Co-PIs Jay Nunamaker and Judee Burgoon, “Detection of Intent.” Supported by the Department of Homeland Security, \$1,250,000, 10/1/03-9/30/08.
72. Co-PIs Mark Adkins and Jay Nunamaker, “Memorandum of Understanding.” Supported by the US Army Intel Command, Ft. Huachuca, \$7,115,995, 9/29/03-9/29/06.
71. PI Jay Nunamaker, “Industry Cooperative Research Center.” Supported by the National Science Foundation, \$350,000, 8/1/02-7/31/07.
70. Co-PIs Judee Burgoon and Jay Nunamaker, “Detecting Deception in the Military Infosphere: Improving and Integrating Human Detection Capabilities with Automated Tools.” Supported by the Air Force Office of Scientific Research, \$4,000,000, 5-1-01 to 4-30-06.
69. Co-PIs Mark Adkins and Jay Nunamaker, “Command Net.” Supported by the U.S. Navy and SPAWAR, San Diego, California, Funding \$210,000, 3/1/02-9/30/03.
68. Co-PIs Mark Adkins and Jay Nunamaker, “Network Centric Warfare.” Supported by the Department of defense—Force transformation, SPAWAR, San Diego, \$250,000 Phase 1, \$100,000. 4/15/03-4/14, 2004.
67. Co-PIs Judee Burgoon, Jay Nunamaker, “Detecting Deception in the Military Infosphere: Improving and Integrating Human Detection Capabilities with Automated Tools.” Supported by Air Force Office of Scientific Research, Arlington, VA, \$3,930,220, 5/01/01-04/30/06.
66. Co-PIs Queen Esther Booker, Jay Nunamaker, “Community Development: Collaboration Systems and Technology.” Supported by the Ford Foundation, \$40,000.

65. Co-PIs Queen Esther Booker, Jay Nunamaker, “Developing a Community Development Thesaurus.” Supported by the Ford Foundation, \$99,990.
64. Co-PIs Jay F. Nunamaker, Queen Esther Booker, Michael McQuaid, “Reducing Information Overload,” Supported by the Ford Foundation, \$396,000, 1/1/00-6/30/01.
63. Co-PIs Jay F. Nunamaker, Queen Esther Booker, Michael, “Learning by Asking,” Ford Foundation, \$250,000, 7/1/00-6/30/01
62. Co-PIs Jay F. Nunamaker, “Globally Distributed Collaboration and Knowledge Management System for the Warfighter.” Supported by Spawar System Center, US Navy, San Diego, CA, \$9,782,843, 6/00-9/05 (in contracting).
61. Co-PIs Jay F. Nunamaker, “Collaborative Software Development,” DESIM/DOD, \$250,000, 1/1/00-6/30/00.
60. Co-PIs Jay F. Nunamaker, “Integration of Collaboration and Knowledge Management.” ARL. \$1,500,000, 10/1/99-9/30/04.
59. Co-PIs Jay F. Nunamaker, NSF Membership in IUCRC, \$350,000, 7/1/99-9/30/00. (AFOTEC, \$150,000. Navy/Carderock, \$50,000, Navy/ACE, \$150,000).
58. Co-PIs Jay F. Nunamaker, “Warfare Command Research,” DARPA/DOD, \$899,138, 4/15/99-4/14/01
57. Co-PIs Jay F. Nunamaker, “Project Management Research,” DESCIM/DOD \$775,774, 10/1/98-12/31/99
56. Co-PIs PI Jay F. Nunamaker, “Development Process Assessment Research,” IBM, Large Scale Development Process Simplification Assessment, \$75,000, 12/4/98-9/3/99
55. Co-PIs Jay F. Nunamaker, “Industry Cooperative Research Center,” NSF \$336,850, 8/15/97-7/31/00.
54. PI Jay F. Nunamaker and James Lee, “Functional Process Improvement-IPA Agreement.” Supported by USAE WES/DOD, \$213,491, 8/18/97-9/30/99.
53. Co-PIs Jay F. Nunamaker and Douglas Dean, “Configuration Management Task/Business Process,” Supported by DESCIM/DOD, \$128,601, 5/1/99-11/30/99.
52. PI Jay F. Nunamaker, “Center of Excellence in Collaboration Technology, National Science Foundation, \$500,000, Oct. 1, 1997-Sept. 30, 2002.
51. Co-PIs Jay F. Nunamaker and Robert Briggs, “Sea Based Battle Lab,” Navy—3<sup>rd</sup> Fleet, \$99,900, May 97-Sept. 1997.
50. Co-PIs Jay F. Nunamaker and Robert Briggs, “Stress Testing the Collaborative Warfighter,” Computer Science (DARPA), San Diego, \$630,436, Feb. 97-Oct. 98.

49. PI Jay F. Nunamaker, "Collaboration Support for Supply Chain Integration," Hughes Missile Systems, Tucson, \$10,000, Jan. 97-March 97.
48. PI Jay F. Nunamaker, "IUCRC Research Centers," National Science Foundation, \$4,000, Dec. 96-Nov. 97.
47. Co-PIs Jay F. Nunamaker, Douglas Dean and Richard Orwig, "Interagency Personnel Agreements for Douglas Dean and Richard Orwig," WES—Waterways Experiment Station—U.S. Army Corp. of Engineers, \$174,390, Oct. 1996-Sept. 1997.
46. Co-PIs Jay F. Nunamaker and Robert Briggs, "Quality Navy Processes," BBN, San Diego, \$42,500, Oct. 1, 1996-Feb. 28, 1997.
45. PI Jay F. Nunamaker, "CIMR Pilot Centers," National Science Foundation, \$57,526, April 96-March 97.
44. Co-PIs Jay F. Nunamaker and Robert Briggs "Command and Control for Multiuser Environments," SAIC (DARPA), NRAD—3<sup>rd</sup> Fleet, \$261,772, Mar. 96-Mar. 1997.
43. Co-PIs Jay F. Nunamaker and Robert Briggs, "Interface Development for Collaboration," US Navy—NRAD, \$44,941, March 96-Sept. 1996.
42. Co-PIs Jay F. Nunamaker and Douglas Vogel, "Analysis of the Effectiveness of a Wide Area EMS in Support of Louisiana Maneuver Activities," Vector Research, \$51,000, October 1, 1995—Sept 30, 1996.
41. Co-PIs Jay F. Nunamaker and Douglas Vogel, "Collaborative Research," Edge Systems, Inc., Chicago and Washington DC, \$196,000, Oct. 95-Sept. 97.
40. Co-PIs, Jay F. Nunamaker and Douglas Vogel, "Client/Server for Collaboration," Army Research Laboratory, Atlanta, Georgia, \$263,214, Sept. 1995-March 1997.
39. Co-PIs Jay F. Nunamaker and Douglas Vogel, "Collaboration Support," WES—Waterways Experiment Station—U.S. Army Corp. of Engineers, \$991,475, Oct. 1994-Sept. 1996.
38. Co-PIs Jay F. Nunamaker, Douglas Dean and Richard Orwig, "Interagency Personnel Agreements for Douglas Dean and Richard Orwig," WES—Waterways Experiment Station—U.S. Army Corp. of Engineers, \$335,555, Feb. 1994-Sept. 1996.
37. Co-PIs Jay F. Nunamaker and Douglas Vogel, "Towards an Integrated Electronic Support Environment for Functional Process Improvement," (Phase 3), US Army CORP of Engineers, \$996,351, Oct. 1, 1994-Sept. 30, 1996.
36. Co-PIs J.F. Nunamaker, R. Nidumolu, D. Vogel, B.P. Ziegler, "Integrated Group-Based Object-Oriented Workflow Modelling and Simulation Environment," United States Airforce Agency, \$4,025,000, September 1995 - September 1996.



35. Co-PIs J.F. Nunamaker, D. Vogel, "Automated Systems Analysis and Design," U.S. Army Corp of Engineers, \$993,675, October 1993-September 1995.
34. J. F. Nunamaker, equipment for research in "Computer Supported Collaboration," INTEL Corporation, \$418,000, December 1992-December 1993.
33. Co-PIs J. F. Nunamaker, D. Vogel, "Collaborative Modelling Tools," U.S. Army Corp of Engineers, \$991,018, October 1992-September 1994.
32. Co-PIs J. F. Nunamaker, and D. Vogel, "Enterprise Analyzer," U.S. Army, \$97,000, January 1992-December 1992.
31. Co-PIs J. F. Nunamaker, R. O. Briggs, "Electronic Meeting Support Using Pen-based Interface," IBM Corporation, Bethesda, Maryland, \$160,000, December 1991 - December 1992.
30. Co-PIs J. F. Nunamaker, Ben Martz and Douglas Vogel on "GroupSystems Research". Funded by IBM Systems Integration Division - Bethesda, Maryland, \$1,000,000, September 1989 - September 1993.
29. J. F. Nunamaker, "Notepad Computing and Handwriting Technology Project," NCR Corporation, Augsburg, Germany, \$105,000, September 1990 - August 1991.
28. Co-PI Doug Vogel and J. F. Nunamaker, "Electronic Meeting Systems Equipment." Funded by Hewlett-Packard, \$250,000, June 1990.
27. Co-PI J. F. Nunamaker and Ben Martz, "Investigation of Feasibility of GroupSystems Architecture for Training Air Traffic Controllers." Funded by Federal Aviation Administration, \$134,000, May 1990 - April 1991.
26. Co-PIs J. F. Nunamaker and Olivia Sheng, "An Integrated Office Information System." Funded by U.S. Army AIRMICS, \$225,000, June 1989 - December 1990.
25. PI J.F. Nunamaker on "Local Area Networks and Graphical User Interface," Equipment Grant. Funded by AT&T, \$2,363,889, September 1988.
24. PI J.F. Nunamaker on "Knowledge Base Acquisition Using Group Support, Software and Facilities." Funded by NASA/DARPA, \$450,000, June 1, 1988 - May 31, 1990.
23. PI J.F. Nunamaker on "Information Center Research." Funded by IBM Federal Systems Division - Gaithersberg, \$98,980, April 1988 - April 1989.
22. Co-PIs J.F. Nunamaker and Douglas Vogel on "Automated Tools for Integrated Planning." Funded by IBM Federal Systems Division - Owego, \$249,600, April 1988 - April, 1989.
21. Co-PIs J.F. Nunamaker and Olivia Sheng on "An Integrated Office Information System with Automated Group Planning Support." Funded by U.S. Army AIRMICS, \$151,098, May 1988 - June 1989.

20. Co-PIs J.F. Nunamaker and Michael McCracken, Georgia Institute of Technology, on "Center for Information Management Research, (CIMR)" joint project with Georgia Institute of Technology. Funded by National Science Foundation Center of Excellence program and U.S. Army AIRMICS, \$1,000,000 for five years, August 1988 - August 1993. The total budget from corporate sponsors is \$480,000 per year. Special U.S. Army Project on "Measuring Organizational Readiness for Software Maintenance." Funded through NSF Center for \$500,000, August 1989 - September 1990.
19. Co-PIs J.F. Nunamaker and Doug Vogel on "GDSS Tools in Manufacturing Facility." Funded by IBM Federal Systems Division - Owego, \$100,000, May 1987 - April 1988.
18. Co-PIs Benn Konsynski and J.F. Nunamaker on "Interoperable Global Information Systems." Funded by U.S. Army Information Systems Command, \$500,000, May 1986 - May 1988.
17. Co-PIs J.F. Nunamaker, Garrett Wolf, David Tansik and Kenneth Smith on "Center for Management of Information Grant." University of Arizona, one of 13 universities to receive \$2,000,000 from IBM's Management of Information Systems Program, July 1985 - June 1989. In addition to \$2,000,000 in cash and equipment, \$1,000,000 in software was provided. Received Planning Grant from IBM of \$12,000, September 1984.
16. Co-PIs J.F. Nunamaker and Benn Konsynski on "Application Development Support Tools." Funded by NCR PC Division, \$112,000, January 1985 - December 1985.
15. Co-PIs Benn Konsynski and J.F. Nunamaker on "Consultation Expert System for Information Centers." Funded by IBM Endicott, New York, \$55,000, January 1985 - December 1985.
14. Co-PIs L. Bootman, W. McGhan, J.F. Nunamaker, and Hurd, on "Computer Literacy Training for U.S. Colleges of Pharmacy." Funded by American Association of Colleges of Pharmacy, \$42,000, June 1984 - June 1985.
13. Co-PIs J.F. Nunamaker and Benn Konsynski on "Micro-computers in Education and Research." Funded by NCR Corporation, combined cash and equipment support of \$2,200,000, December 1983.
12. Co-PIs J.F. Nunamaker and Benn Konsynski on "Partners in Advances in Computer Education (PACE) program." Funded by DEC (Digital Equipment Corporation), equipment support of \$1,000,000, Dec. 1983.
11. Co-PIs J.F. Nunamaker and Benn Konsynski on "Office Automation" research to recommend extensions and to evaluate the DEC All-In-One software package. Funded by DEC External Research Grants Program, \$39,000. A number of features incorporating artificial intelligence routines were developed, August 1983 - May 1985.
10. PI J.F. Nunamaker on "The Redesign of the EPRI Data Base for Use by USGS." Funded by the U. S. Geological Survey, Washington, D. C., \$97,978, July 1982 - September 1983.
9. Co-PIs J.F. Nunamaker and David Pingry on research on the "Development of a Water Supply Data Base for Evaluation of Research and Development Projects." Funded by Electrical Power Research Institute, Palo Alto, California, \$830,000, 1976 - 1982.

8. Co-PIs J.F. Nunamaker and Benn Konsynski on grant funded by Digital Equipment Corporation toward the purchase of DEC VAX 11/780, GIGI Color Graphic system and DEC 11/44 Disk, \$230,000, January 1981 - 1983. In addition, as a result of MIS efforts, the University of Arizona received over \$750,000 in equipment support.
7. Co-PIs J.F. Nunamaker, Frank Allan, Mary Loomis and Benn Konsynski on grant of \$133,809 funded by National Science Foundation toward the acquisition of a DEC VAX 11/780, April 1980.
6. Co-PIs J.F. Nunamaker and Benn Konsynski on grant for research on the "Development of a Data Base of Army Computer and Communication Facilities." Funded by U. S. Army Communications Systems Command, Fort Huachuca, Arizona, \$220,000. The Data Base is used to model proposed configurations of computer and communication equipment, 1978 - 1980.
5. PI J.F. Nunamaker. Grant of \$121,000 funded by IBM for departmental support and minority fellowships in MIS, 1976 - 1981.
4. PI J.F. Nunamaker on "Development of an Information System for Planning." Funded by the Office of Vice President of Planning and Budgeting, University of Arizona, \$150,000, 1975 - 1977.
3. Co-PIs J.F. Nunamaker and Andrew Whinston on "The Design of a Generalized Data Base Planning System." Two-year grant (GJ37755) of \$100,000 funded by NSF (Office of Computing Activities), 1973 - 1975.
2. Co-PIs M. Halstead, R. Bayer, J.F. Nunamaker and V. Shen on "Inverse Compilation Studies." Two-year grant (GJ31572) of \$325,000 with two-year renewal, funded by NSF (Office of Computing Activities) 1971 - 1975.
1. PI J.F. Nunamaker on "Extensions to the Problem Statement Language and Analyzer, Computer-aided Software Generator." Contract from Professor Daniel Teichroew, University of Michigan, 1972 - 1977.

### **Doctoral Dissertations Supervised**

Janna Crews received the "Best Dissertation" award from the University of Arizona in 2004.

One hundred-two students have completed their dissertations under my supervision over the past fifty years. Fifteen have taken positions in government and industry and eighty-seven in universities. The students have been placed at Harvard University, University of Michigan, University of Washington, Indiana University, Texas A & M, and Georgia Tech, University of Hawaii, University of Florida and elsewhere. I have also served as a member but not chair for 52 doctoral students in MIS.

### **Doctoral Dissertations Advisor for:**

104. Saiying Ge  
Major Professor: Jay Nunamaker  
Minor Area: Statistics  
Status: All but dissertation, Oral prelim, written prelim  
Expected completion date: May 2024

103. Xinran Wang  
Major Professor: Jay Nunamaker  
Minor Area: Statistics and Data Science  
Status: Completed  
Completion date: August 2023
102. Xunyu Chen  
Major Professor: Jay Nunamaker  
Minor Area: Linguistics  
Status: Completed  
Completion date: May 2023
101. Bradley Dorn  
Major Professor: Jay Nunamaker  
Minor Area: Statistics  
Status: Completed  
Expected completion date; Spring 2018
100. Lee Spitzley  
Major Professor: Jay Nunamaker  
Committee Members: Jay Nunamaker, Judee Burgoon (?), Bill Mayew (Duke University)  
Minor Area: Statistics  
Status: Oral prelim  
Expected completion date: Spring 2018
99. Steve Pentland  
Major Professor: Jay Nunamaker  
Committee Members: Jay Nunamaker, Judee Burgoon, Bin Zhang  
Minor Area: Statistics  
Status: Written prelim complete; Oral prelim pending  
Expected completion date: Spring 2018
98. Bradley Walls  
Major Professor: Jay Nunamaker  
Committee Members: TBD  
Minor Area: TBD  
Status: Core Exam  
Expected completion date: Spring 2020
97. Marquardson, James, 2015  
Dissertation Title: Achieving Alignment: System Design and Attitudinal Considerations to Increase the Persuasive Power of Technology  
Assistant Professor, Northern Michigan University
96. Grimes, George Mark, 2015

Dissertation Title: Analysis of Human Computer Interaction Behavior for Assessment of Affect, Cognitive Load, and Credibility  
Assistant Professor, University of Huston

95. Wilson, David, 2015  
Dissertation Title: Overcoming Information Privacy Concerns: Learning from Three Disclosure Contexts  
Assistant Professor, University of Oklahoma
94. Schuetzler, Ryan, 2015  
Dissertation Title: Dynamic Interviewing Agents: Effects on Deception, Nonverbal Behavior and Social Desirability.  
Assistant Professor, University of Nebraska, Omaha, August 2015
93. Giboney, Justin, University of Arizona, 2014  
Dissertation Title: Development and Application of an Online Tool for Meta-Analyses Using Design Science Principles  
Position: Assistant Professor, University at Albany, State University of New York
92. Diller, Christopher, University of Arizona, 2013  
Dissertation Title: An Exploration of Distributed Parallel Sorting in GSS  
Position: Research Associate, University of Nebraska at Omaha
91. Jeffrey, Proudfoot, University of Arizona, 2013  
Dissertation Title: Identifying Deception using Novel Technology-Based Approaches to Uncover Concealed Information  
Position: Assistant Professor, Bentley, College, Waltham, MA
90. Jenkins, Jeffrey, University of Arizona, 2013  
Dissertation Title: Alleviating Insider Threats: Mitigation Strategies and Detection Techniques  
Position: Assistant Professor, Brigham Young University, Provo, Utah
89. Pickard, Mathew, University of Arizona, 2012  
Dissertation Title: Persuasive Embodied Agents: Using Embodied Agents to Change People's Behavior, Beliefs and Assessments  
Position: Assistant Professor, University of New Mexico
88. Burns, Mary, University of Arizona, 2012  
Dissertation Title: Examining Multiple Stages of IS Security Behavior by End-Users  
Assistant Professor, Augusta State University
87. Fan, Shaokun, University of Arizona, 2012  
Dissertation Title: A Process Driven Approach to Collaboration Management  
Position: Senior Research Assistant, City University of Hong Kong, Hong Kong, China
86. Twyman, Nathan, University of Arizona, 2012  
Title: Automated Human Screening for Detecting Concealed Knowledge

Position: Assistant Professor, Missouri University of Science and Technology, Rolla, MO

85. Elkins, Aaron, University of Arizona, 2011  
Title: Vocalic Markers of Deception and Cognitive dissonance for Automated Emotion Detection Systems  
Position: Post-Doctoral Research Associate, University of Arizona  
Position: Post Doctoral Research Associate, Imperial College, London
84. Moffitt, Kevin, University of Arizona, 2011  
Title: Toward Enhancing Automated Credibility Assessment: A Model for Question Type Classification and a Tool for Linguistic Analysis  
Position: Assistant Professor, Rutgers University
83. Derrick, Douglas, University of Arizona, 2011  
Title: Special-Purpose, Embodied Conversational Intelligence with Environmental Sensors (SPECIES) Agents: Implemented in an Automated Interviewing Kiosk  
Position: Assistant Professor, University of Nebraska, Omaha
82. Langhals, Brent, University of Arizona, 2011  
Title: Using Eye and Head Based Psychophysiological Cues to Enhance Screener Vigilance  
Position: Assistant Professor, LT COL, Air Force Institute of Technology
81. Humpherys, Sean, University of Arizona, 2010  
Title: A System of Deception and Fraud Detection Using Reliable Linguistic Cues Including Hedging, Disfluencies, and Repeated Phrases  
Position: Assistant Professor, West Texas A&M
80. Patton, Mark, University of Arizona, August 2009  
Decision Support for Rapid Assessment of Truth and Deception Using Automated Assessment Technologies and Kiosk-based Embodied Conversational Agents.  
Position: University of Arizona
79. Yuan, Ming, University of Arizona, 2008  
An Automatic Classification Approach to Idea Organization in Group Support Systems.
78. Wilkerson, Jerod W., University of Arizona, 2008  
Title: Closing the Defect Reduction Gap Between Software Inspection and Test-driven Development: Applying Mutation Analysis to Iterative Test First Programming.  
Position: Penn State University
77. Qin, Tiantian, University of Arizona, 2007  
Title: Identification of Reliable Cues or an Automatic Deception Detection System  
Position: Purdue University
76. Jensen, Matthew, University of Arizona, 2007  
Title: The Effects of an Expert System on Novice and Professional Decision Making with Application in deception Detection.

Position: University of Oklahoma

75. Meservy, Thomas, University of Arizona, 2007  
Title: Augmenting Human Intellect: Automatic Recognition of Nonverbal Behavior with Application in Deception Detection  
Position: Assistant Professor, University of Memphis
74. Helquist, Joel, University of Arizona, 2007  
Participant-Driven Group Support Systems: An Approach to Distributed, Asynchronous Collaborative Systems.  
Position: Utah Valley State College
73. Deokar, Amit, University of Arizona, 2006  
Title: A Computational Framework for Designing Interleaved Workflow and Groupware Tasks in Organizational Processes  
Position: Assistant Professor of Information Systems, Dakota State University
72. Lin, Ming, University of Arizona, 2006  
Title: Video Segmentation and Organization: Supporting Knowledge Management and Learning  
Position: Google, New York
71. Cao, Jinwei, University of Arizona, 2005  
Title: Learning with Virtual Mentors: How to make E-Learning Interactive and Effective.  
Position: Assistant Professor, University of Delaware
70. Twitchell, Douglas P., 2005  
Title: Automated Analysis techniques for Online Conversations with Application in Deception Detection  
Position: Assistant Professor, Illinois State University
69. Broneck, Katherine, University of Arizona, 2005  
Title: Distributed Work Environment: Task Structure and Leadership Roles in Group Outcomes  
Position: Faculty, Pima College
68. Chen, Fang, University of Arizona, 2004  
Title: Using Collaboration Technology to Facilitate Face to Face and Distributed Project Process Tracking Sessions.  
Position: Assistant Professor, University of Manitoba
67. Crews, Janna, University of Arizona, 2004  
Title: Principles and Methodology for Computer Assisted Instruction (CAI) Design.  
Position: Assistant Professor, University of Nevada, Reno
66. McQuaid, Michael, University of Arizona, 2003  
Title: The Impact of Time-Based Text Visualization on Situation Awareness  
Position: Assistant Professor, University of Michigan

65. Zhang, Dongsong, University of Arizona, 2002  
 Title: Virtual Mentor and Media Structuration Theory Towards an Integrated Approach to Interactive Multimedia-based e-learning.  
 Position: Assistant Professor, University of Maryland, Baltimore County
  
64. Lowry, Paul, University of Arizona, 2002  
 Title: Improving Distributed Collaborative Writing Over the Internet Using Enhanced Processes, Proximity Choices, and a Java-based Collaborative Writing Tool.  
 Position: Professor, City University of Hong Kong, Hong Kong, China
  
63. Santanen, Eric, University of Arizona, 2001  
 Title: Directed Brainstorming and the Cognitive Network Model of Creativity: An Empirical Investigation of Cognitive Factors Related to the Formation of Creative Solutions Using an Electronic Brainstorming Environment.  
 Position: Assistant Professor, Bucknell University
  
62. Kruse, John, University of Arizona, 2001  
 Title: Utilizing Collaborative Technologies to Create Sustainable Competitive Advantage: Improving Situation Awareness to Impact the Decision-Action Cycle in the U.S. Navy  
 Position: Research Fellow, University of Arizona
  
61. Conan Albrecht, University of Arizona, 2000  
 Title: Collaborative Methodology and Tools for Code Review  
 Position: Assistant Professor, Brigham Young University, Provo, Utah
  
60. Tom Rodgers, University of Arizona, 1999  
 Title: Software Inspections—Collaboration and Feedback  
 Current Position: Assistant Professor, Texas A&M University
  
59. Ann Hickey, University of Arizona 1999  
 Title: Integrated Scenario and Process Modeling Support for Collaborative Requirements Elicitation  
 Position: Assistant Professor, University of Colorado, Colorado Springs
  
58. Romano, Nicholas – University of Arizona, 1997  
 Title: A Web Based System for Collaboration  
 Position: Assistant Professor, University of Tulsa
  
57. Walsh, Kenneth - University of Arizona, 1996  
 Title: Generating Insight for Reengineering  
 Current Position: Professor, University of New Orleans  
 Previous Position: Assistant Professor, Louisiana State University
  
56. Reinig, Bruce - University of Arizona, 1996  
 Title: An Empirical Examination of the Use of Group Support Systems in the Classroom  
 Position: Professor, San Diego State University
  
55. Brandt, Sheila - University of Arizona, 1995



Re-engineering the Classroom: A Field Study of Computer Supported Collaborative Learning  
Current: CIO, Director of MIS at Ugly Duckling Corporation  
Previous Position: Research Scientist, MIS Dept., University of Arizona

54. Shepherd, Morgan - University of Arizona, 1995  
Title: An Empirical Assessment of the Factors Affecting the Diffusion of Group Support Systems in Organizations  
Current Position: Assistant Professor, University of Colorado, Colorado, Springs
53. Mittleman, Daniel - University of Arizona, 1995  
Title: An Architectural Programming Toolbox: Using Group Support Systems Technology to Increase the Affectiveness of User Participation in Architectural Programming  
Previous Position: Research Scientist, University of Arizona  
Current Position: Assistant Professor, DePaul University, Chicago
52. Briggs, Robert O. - University of Arizona, 1994  
Title: The Focus Theory of Group Productivity and its Application to Development and Testing of Electronic Group Support Systems  
Current Position: Visiting Professor, University of Alaska, Fairbanks  
Previous Position: Director of Innovation, GroupSystems, Inc.
51. Wee, Liang Chee - University of Arizona, 1992  
Co-Chair with Dr. Bernard J. Jaworski  
Title: Antecedents and Consequences of Competitive Intelligence: Conceptual Framework and Empirical Evidence.  
Position: Registrar and Associate Dean, Luther College, Decorah, Iowa
50. Liu, K. C. - University of Arizona, 1991  
Title: Information System Development and the Use of Electronic Meeting Systems  
Current Position: Senior Researcher, Bell Labs, Holmdel, NJ
49. Dennis, Alan - University of Arizona, 1991  
Title: Parallelism, Anonymity, Structure, and Group Size in Electronic Meeting  
Current Position: Professor, University of Georgia, Athens, GA
48. Herniter, Bruce - University of Arizona, 1991  
Title: Design and Implementation of a Negotiation Support System"  
Current Position: Assistant Professor, University of Connecticut, Hartford, CT
47. Phan, Dien - University of Arizona, 1990  
Co-Chair with Doug Vogel  
Title: Information Systems Project Management: An Integrated Resource Planning Perspective Model  
Current Position: Associate Professor, St. Cloud State University, Minnesota
46. Smith, Cap - University of Arizona, 1990

Title: Decision Making Under Time Pressure: The Effects of Time Pressure on Information Search Strategy, Decision Strategy, Consistency, and Outcome Quality  
Current Position: Associate Professor, University of Montana, Missoula, MT

45. Valacich, Joe - University of Arizona, 1989  
Title: Group Size and Proximity Effects on Computer-Mediated Idea Generation: A Laboratory Investigation  
Current Position: Chaired Professor, Washington State University  
Previous Position: Associate Professor, Indiana University, Bloomington, IN
44. Pendergast, Mark - University of Arizona, 1989  
Title: Interprogram Communication of PC/Lan-Based Collaborative Applications Plexnet: A Session Level Communications System  
Current Position: Associate Professor, Washington State University  
Previous Position: Assistant Professor, University of Florida
43. Motiwalla, Luvai - University of Arizona, 1989  
Title: A Knowledge-Based Electronic Messaging System: Framework, Design, Prototype Development and Validation  
Current Position: Assistant Professor, University of Hartford, Hartford, CT
42. Martz, Wm. Benjamin - University of Arizona, 1989  
Title: Information Systems Infrastructure for Manufacturing Planning Systems  
Current Position: Professor, University of Colorado, Colorado Springs  
Previous Position: Associate Professor, California State University, Chico
41. Liou, Yihwa Irene - University of Arizona, 1989  
Title: The Use of a Group Decision Support System Environment for Knowledge Acquisition  
Current Position: Assistant Professor, University of Baltimore, Baltimore, MD
40. Hong, Ilyoo - University of Arizona, 1989  
Title: Computerized Group Decision Support for Managerial Choice/Judgment Tasks Through Facilitated Preference Formulation and Utilization  
Current Position: Assistant Professor, Western Kentucky University
39. Heminger, Alan - University of Arizona, 1989  
Title: Assessment of a Group Decision Support System in a Field Setting  
Current Position: Assistant Professor, Indiana University, Bloomington, IN
38. Griggs, Kenneth - University of Arizona, 1989  
Title: GDS: (Goal Directed Interface): An Intelligent, Iconic, Object-Oriented Interface for Office System  
Current Position:  
Previous Position: Research Scientist, Mitre Corporation
37. Elofson, Gregg - University of Arizona, 1989

Title: Facilitating Knowledge Sharing in Organizations: Semi-Autonomous Agents that Learn to Gather, Classify, and Distribute Environmental Scanning Knowledge  
Current Position: Professor, University of New Orleans  
Previous Position: Assistant Professor, Emory University

36. Sheffield, James - University of Arizona, 1989  
Co-Chair with Doug Vogel  
Title: The Effects of Bargaining Orientation and Communication Medium on Negotiations in the Bilateral Monopoly Task  
Position: Associate Professor, Auckland University, New Zealand
35. Higa, Kuni - University of Arizona, 1988  
Co-Chair with Olivia Sheng  
Title: End-User Logical Database Design: The Structured Entity Model Approach  
Current Position: Associate Professor, Tokyo Institute of Technology  
Previous Position: Assistant Professor, Hong Kong University of Science and Technology;  
Assistant Professor, Georgia Institute of Technology, Atlanta, GA
34. Chen, Minder - University of Arizona, 1988  
Title: The Integration of Organization and Information System Modeling: A Metasystem Approach to the Generation of Group Decision Support Systems and Computer-Aided Software Engineering  
Position: Professor, George Mason University, VA
33. Cass, Kim - University of Arizona, 1988  
Title: Assessing the Usefulness of Domain and Methodological Tutorials on Novice Users Employing an Expert System  
Current Position: Assistant Professor, Marquette University - Milwaukee, WI  
Previous Position: University of Wisconsin, Whitewater, WI
32. Vincent, Steven - University of Arizona, August, 1988  
Title: Metamodels for Describing the Structure and Interaction of Layered Software Systems  
Position: Assistant Professor, University of Wisconsin - Milwaukee
31. Easton, George - University of Arizona, 1988  
Co-Chair with Joey George  
Title: GDSS vs. Face-to-Face Communication for Collaborative Group Work: An Experimental Investigation  
Current Position: Associate Professor, San Diego State University, San Diego, CA
30. Easton, Annette - University of Arizona, 1988  
Co-Chair with Doug Vogel  
Title: An Experimental Investigation of Automated vs. Manual Support for Stakeholder I.D. and Assumption Surfacing for Small Groups  
Current Position: Associate Professor, San Diego State University
29. Chen, Tsung-Teng - University of Arizona, 1988  
Title: Information Management in Integrated Information System Development Environment

Current Position: Assistant Professor, National Central University, Taiwan

28. Vinze, Ajay - University of Arizona, 1988  
Title: Knowledge--Based Support Software Selection in Information Centers: Design Criteria, Development Issues, and Empirical Evaluation  
Current Position: Associate Professor, Texas A & M University, College Station, TX
27. Heltne, Mari - University of Arizona, 1988  
Title: Knowledge-Based Support for Management and End User Computing Resources: Issues in Knowledge Elicitation and Flexible Design  
Current Position: Univ. of Saint Thomas, Dept. of Quantitative Methods & Computer Science, Chair  
Previous Position: Assistant Dean, University of Arizona, Honors College
26. Smith, Timothy - University of Arizona, January 1988  
Title: Experimental Evaluation of User Interfaces  
Current Position: Previous Position: Assistant Professor, DePaul University, Chicago, IL
25. Hoeke, Carol -- University of Arizona, 1987  
Title: A Computer Instructional Support Environment for Information Literacy: An Experimental Analysis  
Position: Assistant Professor, North Texas State University
24. Yellen, Rick - University of Arizona, August 1987  
Title: Paperless Documentation  
Position: Associate Professor, North Texas State University
23. Norman, Ronald - University of Arizona, August 1987  
Title: Integrated Development Environments in Support of Information Systems Design Methodologies & Systems Analysts' Productivity  
Position: Professor, San Diego State University, San Diego, CA
22. Athey, Susan - University of Arizona, 1987  
Title: A Consultant System Using Expertise to Guide and Teach Statistics  
Current Position: Associate Professor, Colorado State University, Ft. Collins, CO  
Previous Position: Assistant Professor, Oregon State University, Corvallis, OR
21. Applegate, Lynda - University of Arizona, 1986  
Title: Idea Management in Organization Planning  
Position: Professor, Harvard University. Cambridge, MA
20. Park, Seung Yil - University of Arizona, 1986  
Title: A Generalized Intelligent Problem-Solving System Based on a Relational Model for Knowledge Representation  
Current Position: Lt. Col. in Korean Army
19. McIntyre, Scott - University of Arizona, 1986

Title: Plexplan: An Integrated Intelligent Environment for Information Systems Planning  
Current Position: Vice President, MCI, Colorado Springs  
Previous Position: Associate Professor, University of Colorado at Colorado Springs

18. Choobineh, Joobin - University of Arizona, 1985  
Title: Form-driven Conceptual Database Modeling  
Position: Associate Professor, Texas A & M University, College Station, TX
17. Zeldin, Paul - University of Arizona, 1984  
Title: An Expert Model Based on User/Process Profiles for Computer Systems Evaluation  
Current Position: Bell Laboratories, Holmdale, NJ
16. Stott, Jack - University of Arizona, 1984  
Title: Principles for Computer-Aided Information Systems Development  
Current Position: Visiting Professor, York College of Pennsylvania  
Previous Position: Assistant Professor, University of Hawaii; Assistant Professor, University of Maryland - Baltimore, Park, MD
15. Schacht, John - University of Arizona, 1983  
Title: Better Sales Calls Using a Decision Support System  
Position: Consultant
14. Esquerra, Ronald - University of Arizona, 1982  
Title: The Opinions of Residents of Arizona Regarding Privacy Issue Relative to Computer Based Personal Data Systems  
Current Position: Tribal Council on Energy Management, Denver, CO  
Previous Position: Assistant Professor, Arizona State University
13. Dunn, Stanley Thurman - University of Arizona, 1982  
Title: Methodology for the Optimization of Resources in the Detection of Computer Fraud  
Current Position: U. S. Air Force, Denver, CO
12. Sears, Jay Allen - University of Arizona, 1982  
Title: Business Modeling Systems: Comparing Learning Performance & Identifying Learning Complexities  
Current Position: Corporation for National Research Initiatives  
Previous Position: Director of Software Engineering, MITRE Corporation; Director of Research, UNISYS Corporation; U. S. Navy, Pentagon, Washington, DC (AI program officer, DARPA)
11. Lieberman, Arthur - University of Arizona, 1977  
Title: Methodology for the Automation of the Audit Process Involving the Evaluation of the Plan of Internal Control  
Current Position: Consultant  
Previous Position: CINCOM Systems, Cincinnati, OH; Bell Labs, Princeton, NJ
10. Konsynski, Benn R., Jr. - Purdue University (Computer Science), 1976  
Title: A Model of Computer-Aided Definition & Analysis of Information System Requirements

Current Position: Department Head, Emory University

Previous Position: Professor, Harvard University; Professor, University of Arizona, Tucson, AZ

9. Singer, Carl Allen - Purdue University (Industrial Administration), 1976  
Title: A Methodology for the Determination & Communication of Requirements for an Information Processing System  
Current Position: IBM  
Previous Position: Bell Communications Research; General Electric Corp., Philadelphia, PA
8. Blosser, Patrick Allen - Purdue University (Computer Science), 1976  
Title: An Automatic System for Application Software Generation & Portability  
Current Position: Bell Laboratories, Holmdale, NJ
7. Haseman\*, William David - Purdue University (Industrial Administration), 1975  
Title: Framework for a Planning Information System  
Current Position: Professor & Head Department of MIS, University of Wisconsin - Milwaukee  
Previous Position: Assistant Professor, Carnegie Mellon University, Pittsburgh, PA  
  
\* Completed dissertation under the direction of Professor Andy Whinston at Purdue University when Jay Nunamaker joined faculty at University of Arizona in 1974.
6. Verbrugge, William G. - Purdue University (Computer Science), 1974  
Title: Implementation of NCHEMS (National Centre of Higher Education & Management Systems) and Other Planning & Management - Small College Level  
Previous Position: Vice President, St. Joseph's College, Rensselaer, IN  
Current Position: Professor, California State Polytechnic University, Pomona
5. Dahl, William John - Purdue University (Computer Science), 1974  
Title: An Interactive System Design & Optimization Algorithm  
Position: McDonald Automation, St. Louis, MO
4. Ho, Thomas Inn Min - Purdue University (Computer Science), 1974  
Title: Toward a Formal Theory for the Requirements Statement, Analysis & Design of Information Systems  
Current Position: Program Director, Telecommunications, Carnegie-Mellon University, Pittsburgh, PA  
Previous Position: Department Head, Computer Technology, Purdue University, West Lafayette, IN
3. Swenson, Donald Eugene - Purdue University (Computer Science), 1973  
Title: Performance Measures for a Data-Base Management System  
Position: Tektronics, Portland, OR
2. Arsenault, James Ray - Purdue University (Computer Science), 1973  
Title: GPLAN-WPC: A Generalized Data-base Planning System for Water Pollution Control  
Previous Position: Bell Laboratories, Holmdale, NJ
1. Iverson, James Alf, Jr. - Purdue University (Computer Science), 1973

Title: Magnetic Tape Portability  
Position: Xerox Corporation, Rochester, NY

## **Personal**

Married, three children, U.S. Citizen, Served in U.S. Army, Active Duty, 1960.

## **Technology Transfer:**

### **Corporations formed:**

- 1969 University of Michigan  
ISDOS Inc, Ann Arbor, Michigan, (now a London based firm)  
Commercialization of PSL/PSA
- 1970 Purdue University  
Combinatorics, West Lafayette, Indiana  
Commercialization of Optimization Algorithms for scheduling
- 1978 University of Arizona  
PLEX Inc.  
Training materials based upon PSL/PSA
- 1989 University of Arizona  
Ventana Corporation  
Commercialization of GroupSystems

## **ISDOS INC.**

Jay Nunamaker's research has led to several major breakthroughs in automated systems and decision support. With colleagues at Case Institute of Technology and later at the University of Michigan, Nunamaker was a member of the team that in 1965 outlined and clarified the concepts of PSL/PSA (a software system for checking for completeness, correctness, and consistency) on which CASE (Computer Assisted Software Engineering) tools are designed. This work was monumental in shaping the thinking that led to the design and implementation of GroupSystems.

The PSL/PSA system from his dissertation in 1968 was commercialized through a company named ISDOS Inc. by his PhD advisor at the University of Michigan, Professor Daniel Techroew, in 1969. PSL/PSA received the Warnier Prize from the French Government as the first instance of CASE tools in 1986.

## **COMBINATORICS INC.**

While at Purdue University, he co-founded Combinatorics, Inc. in 1970 with faculty colleagues at Purdue who commercialized and marketed a computer supported vehicle dispatching, scheduling and routing system which was acquired by Mathematica, Princeton, NJ in 1972. Mathematica, subsequently, was acquired by Martin-Marietta Corporation in 1979.

### **PLEX CORP.**

He also co-founded PLEX Corporation in 1979 with colleagues at the University of Arizona, which specialized in training tele-communications executives for a career in the computer industry. The training programs and courseware based on PSL/PSA were sold to AT&T in 1981.

### **VENTANA CORP. AND GROUPOSYSTEMS, INC.**

In 1989, Ventana Corporation was co-founded by Dr. Jay F. Nunamaker, Dr. Wm. Ben Martz, Dr. Douglas Vogel and William Saints to commercialize GroupSystems software. Ventana was an official University of Arizona start-up company with initial funding from IBM. Nunamaker is known for his research, technology transfer and innovation in collaboration systems and knowledge management. He specializes in group decision-making and deliberation, automation of system development, databases, expert systems and systems analysis and design. As a result of his research, the spin-off software, GroupSystems, is now being used on a daily basis at over 2500 sites around the world, for idea generation, issue identification, issue analysis, communication, consensus building and collaboration. These users include Fortune 500 companies such as IBM, Price Waterhouse Coopers and American Express; U.S. government agencies including the US Army; The US Navy and the US Air Force; the ministry of foreign affairs in Helsinki, the World Bank and the government of Slovenia. GroupSystems can be found on Navy ships, in third world countries, in corporate businesses throughout the world and in the White House. His research is shaping the way we will work in the 21<sup>st</sup> Century.