

## CURRICULUM VITA: Walt Scacchi, Ph.D.

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**Biography:** Walt Scacchi is emeritus senior research scientist and research faculty member emeritus in the [Institute for Software Research](#), and also past Director of Research at the [Institute for Virtual Environments and Computer Games](#), both at University of California, Irvine. He also serves as Principal Scientist, Investable Games Technology, Newport Beach, CA. He received a Ph.D. in Information and Computer Science at UC Irvine in 1981. From 1981-1998, he was a professor at the University of Southern California. Dr. Scacchi returned to UC Irvine in 1999. His research interests include open source software development, computer game culture and technology, virtual worlds for modeling and simulating complex socio-technical processes, software acquisition, and secure open architecture systems. Dr. Scacchi is an active researcher with more than 200 research publications, and has directed more than 70 externally funded research projects. He has given more than 200 invited presentations world-wide, including 17 keynote addresses and 7 tutorials. He also has had numerous consulting and visiting scientist positions with more than 40 firms or institutes, including five start-up ventures. He served as General Co-Chair for the 8<sup>th</sup>. *Intern. Conference on Open Source Systems* in 2012, Co-Chair of the 3<sup>rd</sup> *Games and Software Engineering Workshop* at the 2013 Intern. Conf. On Software Engineering, and ICS Distinguished Alumnus of 2012. His recent activities and research publications can be found at <http://www.ics.uci.edu/~wscacchi>

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### Academic Background

B.S. Computer Science, California State University Fullerton (1973)

B.A. Mathematics, California State University Fullerton (1973)

Ph.D. Information and Computer Science, University of California Irvine (1981)

### Professional Interests

Computer Games and Virtual Worlds

Open Source Software Development Communities, Processes and Practices

Augmented Reality and Mixed Reality Applications in Healthcare

Acquisition and Licensing of Software-Intensive Systems

Large-scale Software Engineering and Systems Integration

Process-driven Electronic Commerce and Enterprise Operations

## **Recent courses taught**

U.S. Computer Game and Virtual Worlds Industry (UCI Calit2, Korean telecourse, Winter 2009)

Technologies for E-Commerce and E-Business, (UCI GSM MBA Elective, Winter 2003)

Software Process (UCI ICS graduate research seminar, Spring 2002)

Database Management for Electronic Commerce (UCI GSM MBA Elective, Spring 2000, Spring 2001, Spring 2002)

Systems Analysis and Design for Electronic Commerce and Electronic Business (UCI GSM MBA Elective, Fall 2000, Fall 2001, Spring 2003)

Electronic Commerce (USC MBA elective)

Business Process Reengineering (USC MBA elective)

Network Information Systems (USC MBA elective)

Decision Support Systems (USC MBA elective)

Management of Information Technology and Business Processes (USC Executive Education Program)

## **Positions**

*2017-present*, Retired, but serving as advisor to startup ventures.

*2017-2018*, Principal Scientist, Investable Games Technologies Inc., Newport Beach, CA.

*2013-2017*, Research Director, Institute for Virtual Environments and Computer Games, School of Information and Computer Science, University of California, Irvine, Irvine, CA.

*2009-2013*, Research Director, Center for Computer Games and Virtual Worlds, School of Information and Computer Science, University of California, Irvine, Irvine, CA.

*2006-2009*, Research Director, Laboratory for Computer Game Culture and Technology, University of California, Irvine, Irvine, CA

*2005-2006*, Acting Director, Institute for Software Research, University of California, Irvine, Irvine, CA.

*2003-2006*, Associate Director for Research, Laboratory for Computer Game Culture and Technology, University of California, Irvine, Irvine, CA

*1999-present*, Senior Research Scientist and Research Faculty, Institute for Software Research, University of California, Irvine, Irvine, CA.

*2000-2003*, Senior Lecturer, Graduate School of Management, University of California, Irvine, CA.

2000, Vice President of Research and Senior Scientist, Bayfront Technologies Inc., Costa Mesa, CA.

1993-1999 Director, ATRIUM Laboratory, University of Southern California, Los Angeles, CA.

1991-1998 Associate Research Professor, Information and Operations Management Department, University of Southern California, Los Angeles, CA.

1988-1991, Assistant Research Professor of Computer Science, Computer Science Department, University of Southern California, Los Angeles, CA.

1981-1987, Assistant Professor of Computer Science and Communications, Computer Science Department and Annenberg School of Communications, University of Southern California, Los Angeles, CA.

1977-1980, Research Specialist, Public Policy Research Organization, University of California, Irvine.

1974-1977, Research Assistant, Public Policy Research Organization, University of California, Irvine.

1974, 1977, Teaching Assistant, Department of Information and Computer Science, University of California, Irvine.

1974, Lecturer, Quantitative Methods Department, California State University, Fullerton.

1974, Lecturer, Technological Studies Program, California State University, Fullerton.

1972-1973, Research Assistant (undergraduate), Civil Engineering Department, California State University, Fullerton.

### **Awards**

1. Outstanding Achievement in Electronics, 1966, 1969 (in prep school).
2. Outstanding Student in Mathematics, California State University, Fullerton, 1972.
3. Merit Award, Mathematics Department, School of Mathematics, Science and Engineering, 1974.
4. Earl C. Anthony Fellowship, 1974-1977.
5. ANBAR Management Intelligence, 1997 Citation for Research Excellence, in the category of Information Technology--Research Originality, for the article, "A Meta-Model for Formulating Knowledge-Based Models of Software Development" (with P. Mi), *Decision Support Systems*, Vol. 17(4), 313-330, (1996).
6. Faculty Research Innovation Award, Donald Bren School of Information and Computer Science, University of California, Irvine, 2009.
7. Emerald LiteratiNetwork, 2009 Highly Commended Award, for the paper, "Mobilization of

Software Developers: The Free Software Movement,” in the journal, *Information Technology & People*, 21(1), 2008.

8. University of California Irvine, Distinguished Alumnus Award, School of Information and Computer Science, May 2012.

### **Research Grants and Contracts**

1. California Innovation Development Grant (Co-principal Investigator), University of California, Irvine, 1979.
2. System Development Foundation (Principal Investigator) Grant SDF #PGO229 for research on interface between computer science and organizational behavior. University of Southern California, 1982.
3. Faculty Research and Innovation Grant (Principal Investigator) to initiate research in Understanding the Development, Use, and Evolution of Advanced Computing Technologies, University of Southern California, 1983.
4. AT&T Information Systems (Principal Investigator) to support research leading to development of a prototype "system factory", 1985.
5. TRW Defense Systems Group, (Co-principal Investigator with V. Li and Y. Arens) for research in Computer Science and Engineering, 1985.
6. Hughes Radar Systems Group, (Co-Principal Investigator with D. McLeod) for research in Expert Database Systems for Distributed Real-Time Systems, 1985-1986.
7. Hughes Radar Systems Group, (Principal Investigator) for research in techniques for specifying and documenting distributed, real-time multiprocessor systems, 1987-1988.
8. Eastman Kodak Company, (Principal Investigator) for research into applications of intelligent hypertext to large-scale software engineering, 1987-1988
9. Bell Communications Research, (Principal Investigator) for research into knowledge-based techniques for understanding software productivity, 1988
10. AT&T Bell Laboratories (Principal Investigator) for research into flexible software manufacturing systems (1988-1990)
11. Pacific Bell, (Principal Investigator) for research in the USC System Factory Project (1989)
12. Naval Ocean Systems Center (Principal Investigator) for research in the System Factory approach to large-scale software engineering environments (1989-1990)
13. Naval Ocean Systems Center (Principal Investigator) for research in the System Factory approach to large-scale software engineering environments (1990-1992)
14. Pacific Bell, (Principal Investigator) for research in the USC System Factory Project (1990)

15. Northrop Corporation (Principal Investigator) for research in problems and opportunities for very large scale software engineering and software process engineering (1990-1993)
16. AT&T Bell Laboratories (Principal Investigator) for research in software production processes (1991-1992)
17. Hewlett-Packard Corp. (Principal Investigator) for research to develop a computing environment for software production processes (1992-1993)
18. Hewlett-Packard Corp., (Principal Investigator) to develop a new methodology for teaching process engineering (1993)
19. Electronic Data Systems (Co-Principal Investigator) for research in knowledge-based reengineering of order fulfillment processes (1993-94)
20. Active Management Inc. (Principal Investigator) for research in business process engineering (1994)
21. IBM Canada Ltd. (Principal Investigator) for research in the development of a wide-area repository for reusable process models (1994)
22. McKesson Water Products (Principal Investigator) for research in reengineering corporate financial processes (1994-1995)
23. Sun Microsystems Computer Corporation (Principal Investigator) for equipment to support research in knowledge-based business process engineering (1994)
24. Pacific Bell and the California Research and Education Network (CALREN) for connection and Asynchronous Transmission Method (ATM) services as part of the ATM Research Consortium (ARC) (Investigator and Area Leader) (1994-1996).
25. Office of Naval Research (Principal Investigator) for research on engineering a procurement process architecture (1994-1995).
26. Rome Laboratories/US Air Force (Co-Principal Investigator) for research on simulation and modeling for software acquisition (1995-1996).
27. Office of Naval Research (Principal Investigator) for research on engineering a grants management process architecture (1996-1997).
28. Microelectronics and Computer Technology Corporation (MCC) (Principal Investigator) for a research study on the distributed development of scalable object-oriented software systems (1996).
29. GDE Systems Incorporated (Principal Investigator) for research in distributed collaboration technology and groupware (1997+)
30. Defense Acquisition University, (Co-Investigator) for research on the design of an infrastructure for virtual system acquisition (1999-2000)
31. National Science Foundation, #9960830 (Co-Principal Investigator) for small business

- innovation research (SBIR) in Enterprise Visualization (2000)
32. Defense Acquisition University, (Co-Investigator) for research on the software product line architectures for system acquisition (2000-2001)
  33. National Science Foundation, #0083075 ITR Program, (Principal Investigator) for research on understanding open source software communities, processes and practices (2000-2004).
  34. Defense Acquisition University, (Principal Investigator) for research on processes and practices for open software acquisition (2001-2002).
  35. Center for Research in Information Technology and Organizations (CRITO), CRITO Consortium, a National Science Foundation Industry/University Cooperative, University of California, Irvine for research conducting a case study of open source electronic commerce in an industrial organization (2001-2002).
  36. National Science Foundation, #0205679 ITR Program, (Principal Investigator) for collaborative research in the organizational dynamics of open source software problems, error, issues, failures and repairs (2002-2005). National Science Foundation, MKIDS Program, (Principal Investigator), Supplemental Award for research in process discovery and recovery (2003-2005).
  37. National Science Foundation, #0205724 ITR Program, (Project Coordinator) for research in inter-organizational development of distributed applications (2002-2006).
  38. National Science Foundation, #0350754 ITR Program, (Principal Investigator) for collaborative research and workshop on continuous (re)design of open source software (2003-2005)
  39. Discovery Science Center, (Co-Principal Investigator) for research and development of science learning games for dinosaurs and life science (2005-2006)
  40. University of California Humanities Research Institute, (Co-Principal Investigator) for research and development of a collaboration infrastructure to support virtual residencies at HRI (2005-2006)
  41. University of California Discovery Grant, (Principal Investigator). Support for MASSIVE: Research Summit on the Future of Networked Multiplayer Games conference. (2006).
  42. National Science Foundation, #0534771 IIS Program, (Principal Investigator) for research in processes, practices, and community dynamics associated with free/open source software development (2006-2008).
  43. Digital Industry Promotion Agency, Daegu Korea, (Principal Investigator) for research in heterogeneous game networks, open source tools and techniques for developing games, and advanced visualization techniques for games (2007-2009)
  44. Intel Laboratories, (Principal Investigator) for research into visualizing socio-technical

interaction networks in distributed engineering projects (2007-2008)

45. Intel Research Laboratories, (Principal Investigator) for research and development of concepts for virtual worlds in 2010-2012 (2007).
46. National Science Foundation, #0749353 IIS Program (Principal Investigator) for organizing a research workshop on establishing national and international free/open source software repositories and research infrastructures (2007-2008).
47. Naval Postgraduate School, (Principal Investigator) for research investigating the acquisition of open source software systems and open architectures (2007-2008).
48. Naval Postgraduate School, (Principal Investigator) for research investigating governance forms and mechanisms in free/open source software development projects (2007-2008).
49. Intel IT Research (Principal Investigator) for research and development of new computer game concepts and prototypes with application to advanced manufacturing and related business processes (2008-2009).
50. National Science Foundation, #0808783 IIS Program (Principal Investigator) for research investigating a socio-technical approach to the development and use of decentralized virtual activity systems (2008-2012).
51. Naval Postgraduate School, (Principal Investigator) for research investigating the acquisition of open source software system architectures with complex licensing schemes (2008-2009).
52. Panasonic Shikoku Electronics Co., (Co-Principal Investigator) for research investigating the development and application of computer games to therapeutic robotics (2009).
53. Naval Postgraduate School, (Principal Investigator) for research Investigating Advances in the Acquisition of Systems Based on Open Architecture and Open Source Software (2009-2010).
54. Computing Community Consortium, (Lead Investigator) for an international workshop on the future of free/open source software and computing research (2009-2010).
55. Northrop-Grumman Corporation, (Principal Investigator), for research investigating how computer games and virtual worlds technologies can be used to support advanced collaboration practices and applications (2009-2010).
56. Naval Postgraduate School, (Principal Investigator) for research investigating the use of computer games and virtual worlds for command and control systems (2010-2011).
57. Naval Postgraduate School, (Principal Investigator) for research investigating Advances in the Acquisition of Secure Systems Based on Open Architecture, Open Source Software, and Software Product Lines (2010-2011).
58. National Science Foundation, #1041918 IIS Program (Co-Principal Investigator) Workshop of Research Directions and Challenges in Computer Games and Virtual World

Environments (2010-2011).

59. San Francisco Symphony, (Principal Investigator) for research and development of a game-based informal music learning environment (2010-2013).
60. Naval Postgraduate School, (Principal Investigator) for research investigating Advances in the Acquisition of Secure Open Architecture Systems (2011-2012).
61. UCI CORCL (Co-Investigator) for Development of an Education Platform for Childhood Asthma (2011-2012)
62. UCI/HSSOE/Calit2, (Co-Investigator) for research investigating BREATHE: Better Resource Environment for AsThma Health (2011-2012)
63. National Science Foundation, #1256593 EAGER Program, (Principal Investigator). Developing a Framework for Prototyping Science Mission Games (2012-2013).
64. Naval Postgraduate School, (Principal Investigator) for research investigating the Streamlining the Process of Acquiring Secure Open Architecture Software Systems (2012-2013).
65. Naval Postgraduate School, (Principal Investigator) for research on Achieving Better Buying Power through Cost-Sensitive Acquisition of Open Architecture Software Systems (2014-2015).
66. National Institute for Neurological Disorders and Stroke (Key Personnel) for research investigating the efficacy of game-based telerehabilitation in the home versus in-clinic for patients with stroke through an assessor-blind, randomized, non-inferiority trail (2014-2018).
67. Naval Postgraduate School, (Principal Investigator) for research on Achieving Better Buying Power through Cost-Sensitive Acquisition of Open Architectures for Mobile and Web-Based Software Systems (2015-2016).
68. Naval Postgraduate School, (Principal Investigator) for research on Achieving Better Buying Power through Cost-Sensitive Acquisition of Open Architectures Software Systems for Diverse Acquisition Scenarios (2016-2017).
69. Naval Postgraduate School, (Principal Investigator) for research on Cybersecure Modular Open Architecture Software Systems for Stimulating Innovation (2016-2017).

### **Professional Affiliations**

Co-Editor in Chief, *Intern. J. Social and Humanistic Computing* (IJSHC), (2006-2010).

Editorial Board, *Encyclopedia of Software Engineering*, John Wiley and Sons (1990-1993, 1999-2001)

Editorial Board, (1996-current), *Journal of Software: Evolution and Processes*, formerly *Software Process--Practice and Experience*, John Wiley and Sons.

Editorial Board, (1993-2000), *Computer-Supported Cooperative Work*, An International Journal,



Kluwer Academic Publishers.

Associate Editor for Information Technology, *IEEE Technology and Society Magazine* (1982-1985)

*Active/Past Member in:*

AHA, American Heart Association;

ACM, Association for Computing Machinery;

IEEE, Institute for Electrical and Electronic Engineers;

IFIP Working Group 2.13, Open Source Systems

Serious Games Association

### **Doctoral Dissertations Supervised**

1. K. Narayanaswamy, *A Framework to Support Software System Evolution*, Computer Science Dept., USC (May 1985)
2. A. Jazzar, *Understanding the Production and Consumption of Software Documentation: An Empirical Analysis and Model*, Computer Science Dept., USC (January 1988)
3. S. Choi, *An Environment for Engineering and Reverse Engineering Large Software Systems*, Computer Science Dept., USC (January 1989)
4. P.K. Garg, *Intelligent Software Hypertext Systems*, Computer Science Dept., USC, (January 1989)
5. S. Bendifallah, *Understanding Software Specification Work: An Empirical Study and Model*, Computer Science Dept., USC (August 1989)
6. P. Mi, *Modeling and Analyzing the Software Process and Process Breakdowns*, Computer Science Dept., USC (August 1992)
7. A. Karrer, *Generating Graph Editors*, Computer Science Dept., USC (May 1993)
8. M. Nissen, *Knowledge-Based Organizational Process Redesign: Using Process Flow Measures to Transform Procurement*, Information and Operations Management Dept., USC (March 1996)
9. J. Noll, *Integrating Software Object Management Repositories Across Heterogeneous, Autonomous Environments: A Distributed Hypertext Approach*, Computer Science Dept., USC (October 1996).
10. C. Jensen, *Discovering and Modeling Open Source Software Processes*, Information and Computer Science, University of California, Irvine (December 2009).

## Publications

### Books and Edited Collections

1. W. Scacchi and R. Taylor (Eds.), *Proceedings California Software Symposium (CSS'96)*, University of California at Irvine and University of Southern California, Los Angeles, CA (April 1996).
2. E. Damiani, B. Fitzgerald, W. Scacchi, M. Scotto, and G. Succi, (Eds.), *Open Source Systems*, IFIP Conference on Open Source Software, Como, Italy, Springer, June 2006.
3. J. Feller, B. Fitzgerald, W. Scacchi, and A. Sillitti (Eds.), *Open Source Development, Adoption and Innovation*, IFIP Conference on Open Source Software, Limerick, Ireland, Springer, June 2007.
4. W. Scacchi, K. Ven, and J. Verelst (Eds.). *Proceedings of the OSS 2009 Doctoral Consortium*, 5<sup>th</sup> International Conf. Open Source Systems, Skovde, Sweden, 2009.
5. W. Scacchi, K. Ven, and J. Verelst (Eds.). *Proceedings of the OSS 2010 Doctoral Consortium*, 6<sup>th</sup> International Conf. Open Source Systems, Notre Dame, IN, 2010.
6. W. Scacchi, K. Crowston, C. Jensen, G. Madey, M. Squire, *et al.*, *Towards a Science of Free/Open Source Systems*, Computing Community Consortium, 2011.
7. W. Scacchi (Ed.), *The Future of Research in Computer Games and Virtual Worlds*, Workshop Report for the National Science Foundation, July 2012.
8. I. Hammouda, B. Lundell, T. Mikkonen, and W. Scacchi (Eds.), *Open Source Systems: Long-Term Sustainability*, Proc. 8th. IFIP WG 2.13 International Conference, OSS 2012, IFIP Advances in Information and Communications Technology, Vol. 378, Hammamet, Tunisia, September 2012.
9. K. Fluor-Scacchi, W. Scacchi and A. Szeto (2014). *SFSKids.org: An Informal Music Learning Environment, Walkthrough Guide for Teachers and Parents*, Summer 2014. <http://www.ics.uci.edu/~wscacchi/GameLab/SFSKids-Guidebook-Summer2014.pdf>
10. K. Cooper and W. Scacchi, (Eds.), *Computer Games and Software Engineering*, CRC Press, Taylor& Francis Inc., Boca Raton, FL (2015).
11. W. Scacchi and T.A. Alspaugh (TBD). *Understanding the Architecture of Intellectual Property: Open Architecture Software Systems Licensing and CyberSecurity* (in preparation).

### Journal articles

1. "Managing Software Engineering Projects: A Social Analysis," *IEEE Trans. Software Engineering*, 10(1), 49-59, (Jan. 1984).
2. "Development Environments for VLSI and Software Engineering", (with R. Katz and P. Subramanyam), *J. Systems and Software*, 4(1), 15-27, (1984).
3. "Developing a Knowledge-Based System Factory: Issues and Concepts," (with L. Eliot),

*IEEE Expert*, 1(4), 51-58, (Winter, 1986).

4. "Understanding Software Maintenance Work," (with S. Bendifallah) *IEEE Trans. Software Engineering*, 13(3), 311-323, (March, 1987).
  - Reprinted in *Tutorial on Software Maintenance and Computers*, D. Longstreet (ed.), IEEE Computer Society (1990).
5. "Maintaining the Configuration of Evolving Software Systems," (with K. Narayanaswamy), *IEEE Trans. Software Engineering*, 13(3), 324-334, (March, 1987).
6. "A Database Foundation for Supporting the Evolution of Large Software Systems," (with K. Narayanaswamy), *J. Systems and Software*, 7(1), 37-49, (1987).
7. "The Life Cycle Costs of Personal Computers in an Educational Institution," (with S. Nayle), *Education and Computing*, 3, 75-87, (1987).
8. "Difficulties in Realizing Large-Scale Educational Computing Projects," *Education and Computing*, 3, 89-99, (1987).
9. "On the Power of Domain-Specific Hypertext Environments", *Journal American Society Information Science*, 40(3), 183-191, (May 1989).
10. "The Design and Implementation of Intelligent Software Hypertext Systems," (with P.K. Garg), *IEEE Expert*, 4(3), 52-63, (Fall 1989).
11. "Extracting and Restructuring the Design of Large Software Systems," (with Song C. Choi), *IEEE Software*, 7(1), 66-73, (January 1990).
12. "A Hypertext Environment to Manage Software Life Cycle Descriptions," (with P.K. Garg), *IEEE Software*, 7(1), 90-99, (May 1990).
  - Reprinted in *Software Change Impact Analysis*, Shawn A. Bohner and Robert S. Arnold (eds.), IEEE Computer Society Press, (1996).
13. "A Knowledge-Based Environment for Modeling and Simulating Software Engineering Processes," (with P. Mi), *IEEE Trans. Data and Knowledge Engineering*, 2(3), 283-294, September 1990.
  - Reprinted in *Nikkei Artificial Intelligence*, 20(1), 176-191, (January 1991) (in Japanese);
  - Reprinted in *Process-Centered Software Engineering Environments*, P.K. Garg and M. Jazayeri (eds.), IEEE Computer Society, 119-130, (1996).
14. "Understanding Software Productivity: Towards a Knowledge-Based Approach," *Intern. J. Software Engineering and Knowledge Engineering*, Vol. 1(3), 293-321, (1991).
  - Reprinted in *Advances in Software Engineering and Knowledge Engineering*, D. Hurley (ed.), Volume 4, (1995).
15. "The Software Infrastructure for a Distributed System Factory" *Software Engineering*

- Journal*, 6(5), 355-369, (September 1991). IEE and British Computer Society,
16. "SOFTMAN: An Environment for Forward and Reverse Computer-Aided Software Engineering," (with S.C. Choi), *Information and Software Technology*, 33(9), 664-674, (November 1991).
  17. "Integrating Heterogeneous Information Repositories: A Distributed Hypertext Approach," (with J. Noll), *Computer*, 24(12), 38-45, (December 1991).
  18. "Process Integration in CASE Environments," (with P. Mi), *IEEE Software*, 9(2), 45-53, (March 1992).
    - Reprinted in *Computer-Aided Software Engineering (CASE)*, Second Edition, Eliot Chikofsky (ed.), IEEE Computer Society, (1993).
  19. "Meta-Environments for Software Production," (with A. Karrer), *Intern. J. Soft. Engr. and Know. Engr.*, 3(2), 139-162, (May 1993).
    - Reprinted in *Advances in Software Engineering and Knowledge Engineering*, D. Hurley (ed.), Volume 4, 37-70, (1995).
  20. "A Meta-Model for Formulating Knowledge-Based Models of Software Development" (with P. Mi), *Decision Support Systems*, 17(4), 313-330, (1996).
  21. "Process Life Cycle Engineering: Approach and Support Environment," (with P. Mi) *Intern. J. Intelligent Systems in. Accounting, Finance, and Management*, 6:83-107, (1997).
  22. "Process-Driven Intranets: Life Cycle Support for Process Reengineering" (with J. Noll), *IEEE Internet Computing*, 1(5), 42-49, (1997).
  23. "Supporting Software Development in Virtual Enterprises, (with J. Noll), *J. Digital Information*, 1(4), February 1999.
    - Reprinted in *Projects and Profits*, III(4), 17-29, (published by The Institute of Chartered Financial Analysts of India), April 2003.
  24. "Virtual System Acquisition: Approach and Transitions" (with B. Boehm), *Acquisition Review Quarterly*, 5(2), 185-216, Spring 1998.
  25. "Experiences in Software Process Simulation and Modeling," *Journal of Systems and Software*, 46(2/3) 183-192, 1999.
  26. "Reengineering Contracted Service Procurement for Internet-Based Electronic Commerce: A Case Study," *Journal Information Technology and Management*, 2(3), 313-334, 2001.
  27. "Understanding Software Process Redesign using Modeling, Analysis and Simulation," *Software Process--Improvement and Practice*, 5(2/3),183-195, 2000.
  28. "Special Issue on Software Process Simulation and Modeling (with D. Raffo), *Software Process: Improvement and Practice*, 5(2/3), 87-89, (2000).

29. "Specifying Process-Oriented Hypertext for Organizational Computing", (with J. Noll) *J. Network and Computer Applications*, 24(1), 39-61, 2001.
30. "Modeling and Simulating Software Acquisition Process Architectures", (with J. Choi), *J. Systems and Software*, 59(3), 343-354, 15 December 2001
31. "Understanding the Requirements of Open Source Software Development," *IEE Proceedings--Software*, 149(1), 24-39, 2002.
32. "Formal Analysis of the Structural Correctness of SLC Descriptions," (with S.J. Choi), *Intern. J. Computers & Applications*, 25(2), 91-97, 2003.
33. "Free/Open Source Software Development Practices in the Computer Game Community," *IEEE Software*, Special Issue on Open Source Software, 21(1), 59-67, January-February 2004.
34. "Special Issue on ProSim 2003, The 4<sup>th</sup> International Workshop on Software Process Simulation and Modeling," (with Paul Wernick), Portland, OR, May 2003, *Software Process—Improvement and Practice*, 9(2), 51-54, April-June 2004.
35. "Communicating and Mitigating Conflict in Open Source Software Development Projects," (with Margaret Elliott), *Projects & Profits*, IV(10), 25-41, October 2004.
36. "Process Modeling Across the Web Information Infrastructure," (with Chris Jensen), *Software Process—Improvement and Practice*, 10(3), 255-272, July-September, 2005.
37. "Understanding Free/Open Source Software Development Processes," (with Joseph Feller, Brian Fitzgerald, Scott Hissam, and Karim Lakhani), *Software Process--Improvement and Practice*, 11(2), 95-105, March/April 2006.
38. "Multi-Modal Modeling of Open Source Software Development Processes," (with C. Jensen, J. Noll, and M. Elliott), *Intern. J. Web Engineering and Technology*, Special Issue on Open Source Software, 1(3), 49-63, 2006.
  - Reprinted in G. Alkhatib and D. Rine, (Eds.), *Integrated Approaches in Information Technology and Web Engineering: Advancing Organizational Knowledge Sharing*, Information Science Reference, Hershey, PA, 51-65, 2009.
39. "Guest Editorial—Open Source Software for Engineering Education: Pedagogical Strategies that Leverage Open Source Tools, (with M. Lytras), *IEEE Transactions on Education*, 50(4), 290-291, November 2007.
40. "Mobilization of Software Developers: The Free Software Movement", (with Margaret Elliott), *Information, Technology and People*, 21(1), 4-33, 2008.
41. "Computer Game Mods, Modders, Modding, and the Mod Scene," *First Monday*, 15(5), May 2010.
42. "Software Licenses in Context: The Challenge of Heterogeneously Licensed Systems," (with T. Alspaugh and H. Asuncion), *Journal of the Association for Information Systems*,

11(11), 730-755, November 2010.

43. “Modding as an Open Source Approach to Extending Computer Game Systems,” *Intern. J. Open Source Software & Processes*, 3(3), 36-47, July-September 2011.
  - Reprinted in S. Koch (Ed.), *Open Source Software Dynamics, Processes, and Applications*, 177-188, Information Science Reference, IGI Global, 2013.
44. “Understanding the Role of Licenses and Evolution in Open Architecture Software Ecosystems,” (with T.A. Alspaugh), *Journal of Systems and Software*, 85(7), 1479-1494, July 2012.
45. “Advances in the Acquisition of Secure Systems Based on Open Architectures,” (with T. Alspaugh), in *Journal of Cybersecurity & Information Systems*, 1(2), 2-16, February 2013.
46. “Practices and Technologies for Computer Game Software Engineering,” *IEEE Software*, 35(1), 110-116, January-February 2017.
47. “How Best to Teach Global Software Engineering,” (with S. Beechman, T. Clear, D. Damian, J. Barr, and J. Noll), *IEEE Software*, 35(1), 16-19, January-February 2017.
48. “Predicting gains with visuospatial training after stroke using an EEG measure of frontoparietal circuit function.” Zhou, R.J., Hondori, H., Khademi, M., Cassidy, J.M., Wu, K.M., Yang, D.Z., Kathuria, N., Erani, F.R., Dodakian, L., McKenzie, A., Lopes, C.V., **Scacchi W**, Srinivasan, R., and Cramer, S.C.), *Frontiers in Neurology*, 9. DOI: 10.3389/fneur.2018.00597.
49. “Winning and Losing in Large-Scale Software Development: A Multi-Decade Perspective,” *Computer*, 51(10), 58-65, October 2018.
50. “Autonomous eMotorsports racing games: Emerging practices as speculative fictions,” *J. Gaming & Virtual Worlds*, 10(3), 261-286. October 2018.
51. “Challenges and Opportunities for Securing Software Ecosystem Architectures,” (with T.A. Alspaugh), *IEEE Software*. 36(3), 33-38, May-June 2019.
52. “Efficacy of Home-Based Telerehabilitation vs In-Clinic Therapy for Adults After Stroke: A Randomized Clinical Trial.” Cramer SC, Dodakian L, Le V, See J, Augsburger R, McKenzie A, Zhou RJ, Chiu NL, Heckhausen J, Cassidy JM, **Scacchi W**, Smith MT, Barrett AM, Knutson J, Edwards D, Putrino D, Agrawal K, Ngo K, Roth EJ, Tirschwell DL, Woodbury ML, Zafonte R, Zhao W, Spilker J, Wolf SL, Broderick JP, Janis S; National Institutes of Health StrokeNet Telerehab Investigators. *JAMA Neurology*, 76(9):1079–1087, 2019.
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34. “Opportunities and Challenges for Modeling and Simulating Free/Open Source Software Processes,” working paper, Institute for Software Research, October 2004, based on a [Keynote Address](#) presented at the *Proc. 5<sup>th</sup> Intern. Workshop on Software Process Simulation and Modeling*, Edinburgh, Scotland, May 2004.
35. “Modeling Recruitment and Role Migration Processes in OSSD Projects”, (with Chris Jensen), *Proc. 6<sup>th</sup> Intern. Workshop on Software Process Simulation and Modeling*, St. Louis, MO, May 2005.
36. “Open EC/B: Electronic Commerce and Free/Open Source Software Development”, *Proc. 5<sup>th</sup> Workshop on Open Source Software Engineering*, 57-61, St. Louis, MO, May 2005.
37. [Emerging Issues in the Acquisition of Open Source Software within the U.S. Department of Defense](#), *Proc. 5<sup>th</sup> Annual Acquisition Research Symposium*, Vol. 1, 230-244, NPS-AM-08-036, Naval Postgraduate School, Monterey, CA .
38. Software Licenses, Open Source Components, and Open Architectures, (with T. Alspaugh and H. Asuncion), in *Proc. 6<sup>th</sup> Annual Acquisition Research Symposium*, Monterey, CA, May 2009.
39. [Envisioning National and International Research on the Multidisciplinary Empirical Science of Free/Open Source Software](#), (with K. Crowston, G. Madey, and M. Squire), working paper for the [Computing Community Consortium](#), Spring 2009.
40. [The Role of Software Licenses in Open Architecture Ecosystems](#),(with T. Alspaugh and H. Asuncion), *Intern. Workshop on Software Ecosystems*, Intern. Conf. Software Reuse, Falls Church, VA, September 2009.
41. The Challenge of Heterogeneously Licensed System in Open Architecture Software Ecosystems, (with T. Alspaugh and H. Asuncion), *Proc. 7<sup>th</sup> Acquisition Research Symposium*, Monterey, CA 13-15 May 2010.
42. Advances in the Acquisition of Secure Systems Based on Open Architectures, (with T.A Alspaugh), *Proc. 8<sup>th</sup> Acquisition Research Symposium*, Monterey, CA 12-14 May 2011.
43. Modding as a Basis for Developing Game Systems, *Proc. 1<sup>st</sup> International Workshop on Games and Software Engineering*, Honolulu, HI, 25 May 2011.
44. [Addressing the Challenges in the Acquisition of Secure Systems with Open Architectures](#), (with T. Alspaugh), *Proc. 9<sup>th</sup> Annual Acquisition Research Symposium*, Monterey, CA May 2012.
45. [Security Licensing](#), (with T. Alspaugh), *Proc. Fifth Intern. Workshop on Requirements Engineering and Law*, 25-28, September 2012.
46. [Software Licenses, Coverage, and Subsumption](#), (with T. Alspaugh and R. Kawai), *Proc. Fifth Intern. Workshop on Requirements Engineering and Law*, 17-24, September 2012.
47. [Streamlining the Process of Acquiring Secure Open Architecture Software Systems](#), (with T. Alspaugh), *Proc. 10<sup>th</sup> Annual Acquisition Research Symposium*, Monterey, CA, 608-623, May 2013.
48. Achieving Better Buying Power through Cost-Sensitive Acquisition of Open Architecture

Software Systems. (with T. Alspaugh), *Proc. 11<sup>th</sup> Annual Acquisition Research Symposium*, Monterey, CA, USA, May 2014.

49. [Making Learning Fun: An Analysis of Game Design in Science Learning Games](#), (with R. Lim and M. Yampolsky), ISR Technical Report, UCI-ISR-14-3, October 2014.
50. Achieving Better Buying Power Through Acquisition of Open Architecture Software Systems for Web-Based and Mobile Devices, (with T. Alspaugh), *Proc. 12<sup>th</sup> Annual Acquisition Research Symposium*, Monterey, CA, May 2015.
51. Case Studies and Practices in Local Game Jam Software Development Organization: A Software Engineering Perspective. *Foundations of Digital Games 2015 Workshop on Game Jams, Hackathons and Game Creation Events*, Pacific Grove, CA, June 2015.
52. Cybersecure Modular Open Architecture Software Systems for Stimulating Innovation, *Proc. 14<sup>th</sup> Annual Acquisition Research Symposium*, Monterey, CA, April 2017.
53. An Augmented Reality Interface for Game-Based Stroke TeleRehabilitation, (with Arzand Kasiri), Technical Report, UCI-ISR-17-3, June 2017.
54. Just-In-Time AR-Based Learning in Advanced Manufacturing Context, (with Bryce Tham), Technical Report, UCI-ISR-17-2, June 2017.
55. History of Computer Game Culture and Technology at UCI, (with Peter Krapp, Bonnie Nardi, Andre van der Hoek), Working Paper, September 2017.

### **Invited Talks and Presentations**

"Computers and Society," Physics Department, California State University, Fullerton (April, 1974).

"The Social Dynamics of Instrumental Computer Use,"

-- Physics Department, University of California, Irvine, CA. (December, 1977)

-- Heuristic Programming Project, (SIGLUNCH Presentation), Stanford University, Stanford, CA. (December, 1977)

"Innovations in Organizational Computing Arrangements," *Irvine Workshop on the Social Issues and Impacts of Computing*, Lake Arrowhead, CA. (August, 1979)

"A Social Analysis of Innovation in Computing,"

-- Sloan School, Massachusetts Institute of Technology (March, 1980)

-- Jet Propulsion Laboratory, California Institute of Technology (May, 1980)

-- 1980 National Computer Conference, Anaheim, CA. (June, 1980)

"A Social Analysis of Computer Use: The Case of Office Information Systems," presented at the *19<sup>th</sup> Annual IEEE Lake Arrowhead Workshop on Office Information Systems*, September 3-5, 1980.

"The Impacts of Distributed Data Processing in the Courts," presented at the *National Seminar on Information Systems and Court Statistics*, National Judicial College, Reno, Nevada, September, 16-18, 1980. (August, 1980)

"The Process of Innovation in Computing," Pragmatica Systems Inc., San Francisco, CA (27 Nov 1981)

"A Language-Independent Software Engineering Environment," Xerox Palo Alto Research Center, Palo Alto, CA (30 Nov 1981)

"Computational Sociology and the Sociology of Computing," Rand Corporation, Santa Monica, CA (18 Dec 1981)

"Innovation and the Web of Computing,"

-- Graduate School of Management, University of California at Los Angeles, (18 Feb 1982)

-- Computer Science Department, University of Southern California, Los Angeles, CA (3 Mar 1982)

"A Social Analysis of Personal Workstations for the Automated Office," *1982 Office Automation Conference*, San Francisco, CA (7 April 1982)

"A Language-Independent Environment for Software Engineering," ACM Special Interest Group in Software Engineering (SIGSOFT), Aerospace Corp., El Segundo, CA (21 April 1982)

"Managing The Evolution of Large Software Systems," Hochschule Fur Verwaltungswissenschaften, Speyer, West Germany, (29 June 1982)

"A Language-Independent Environment for Software Engineering," Naval Material Command, Washington, DC (3 Aug 1982)

"Environments for Software in VLSI," Digital Equipment Corporation, Hudson, MA (6 Aug 1982)

"A Language-Independent Environment for Software Engineering," IBM Scientific Center, Los Angeles, CA (10 Aug 1982)

"Applying Social Science to the Development of New Information Technology," System Development Foundation, Palo Alto, CA (13 Sept 1982)

"Developing a System Factory,"

-- TRW Space and Defense Systems, Redondo Beach, CA (29 Sept 1982)

-- Computer Science Dept., Universidad de Los Andes, Bogota, Columbia (3 March 1983)

-- *III Salon LatinoAmericano De Informatica, (International Keynote Address)*, Bogota, Columbia (4 March 1983)

-- Industrial Associates Research Review, School of Engineering, University of Southern California, Los Angeles, CA (12 May 1983)

"Managing the Web of Computing," TIMS/ORSA annual conference, San Diego, CA (24 Oct 1982)

"Organizational Impacts of Personal Computing Workstations," Center for Futures Research, University of Southern California, Los Angeles, CA (24 February 1983)

"Computer Science into the 1990's", Update in Science Program, Los Angeles Unified School

District, Manual Arts High School, Los Angeles, CA (28 June 1983)

"Applying Social Analysis to the Problems of System Development," Public Policy Research Organization, University of California, Irvine, CA (14 November, 1983)

"Developing a System Factory: A Case Study in Innovation Engineering,"  
-- Computer Science Department, Brown University, Providence, RI (10 Feb 1983)  
-- Computer Science Dept., University of Southern California, Los Angeles, CA (7 Dec 1983)  
-- IEEE Computer Society, Orange County Section, Anaheim, CA (26 April 1984)

"A Software Engineering Approach to the Development of VLSI Systems,"  
-- Dept. of Computer Science and Engineering, Oregon Graduate Center, Beaverton, OR (16 December 1983)  
-- Dept. of Electrical Engineering and Computer Science, University of California, Berkeley, CA (8 Feb. 1984)

"Managing Software Engineering Projects: A Social Analysis," Graduate School of Management, University of California, Los Angeles, CA (9 Feb. 1984)

"Social Analysis of Software Engineering Projects: Current Studies and Emerging Findings,"  
*7th. International Conference on Software Engineering*, Orlando, FL (29 March 1984)

"Difficulties in Implementing Large-Scale Computerization Projects," *Information Technology Conference '84*, Carnegie-Mellon University, Pittsburgh, PA (23 May 1984)

"Software Productivity Measurement," ATT Bell Laboratories, Murray Hill, NJ (3 Jan 1985)

"The USC System Factory Project: Recent Developments and Future Opportunities," TRW Systems Engineering and Development Division, Carson, CA (24 April 1985)

"Software Specification Engineering: Experiences in the System Factory Project,"  
-- USC Information Sciences Institute, Marina Del Rey, CA (21 May 1985)  
-- University of Oregon, Computer and Information Science Dept, Eugene, OR (4 June 1985)

"The USC System Factory Project: Theory and Practice"  
-- Microelectronics and Computer Technology Corporation (MCC), Austin, TX, (28 Jan 86)  
-- Computer Science Dept., University of Texas, Austin, TX (29 Jan 86)  
-- AI Laboratory, Massachusetts Institute of Technology, Cambridge, MA (26 March 86)

"An Approach to the Specification of Distributed, Real-Time Software Systems," Hughes Radar Systems Group, El Segundo, CA (16 April 86)

"Developing a Knowledge-Based System Factory"  
-- Lockheed Software Technology Center, Austin, TX (3 July 86)  
-- AT&T Bell Laboratories, Software Technology Center, Liberty Corners, NJ and Murray Hill, NJ (23 July 86)  
-- Schlumberger, Austin Systems Center, Austin TX (28 August 86)  
-- TRW Software Productivity Center, Space Park, Rendon Beach, CA (15 Oct. 86)

"Problems and Strategies for Measuring Software Productivity," *1986 National Computer*

Conference, Las Vegas, NV (17 June 86)

"The System Factory as an Integrated Programming Environment", *1986 Fall Joint Computer Conference*, Dallas, TX (4 November 86)

"Collaboration as a Means to Achieving Integration in the System Factory", *MIT-MCC Workshop on Computer Support for Cooperative Work*, Austin, TX (4 Dec 86)

"Practical Experiences with Formal Specifications in the System Factory," *9th. Intern. Conf. Software Engineering*, Monterey, CA (2 April 87)

"Understanding Software Technology Transfer: A Knowledge-Based Approach," *2nd. IEEE Workshop on Software Technology Transfer*, Santa Fe, NM (11 June 1987)

"Developing, Managing, Visualizing, and Reverse Engineering Configured Software Descriptions," Tektronix Computer Research Laboratory, Beaverton, OR (31 August 1987)

"Recent Developments in the USC System Factory Project,"

-- Jet Propulsion Laboratory, Pasadena, CA (17 September 1987)

-- AT&T Bell Laboratories, Naperville, IL (12 November 1987)

-- Ford Aerospace and Communications Corp. Newport Beach, CA (25 November 1987)

-- Hughes Radar Systems Group, El Segundo, CA (24 March 1988)

-- AT&T Integrated Systems Laboratory, Lincroft, NJ (28 March 1988)

-- Advanced Computing Laboratory, Eastman Kodak Inc., Rochester, NY (11 April 1988)

-- Computer Science Dept., University of Nevada at Las Vegas (5 May 1988)

-- Digital Equipment Corporation, Nashua, NH (16 May 1988)

-- Software Research Associates, Tokyo, Japan (6 June 1988)

-- Fuji Xerox, Tokyo, Japan (7 June 1988)

-- MCC Software Technology Program, Austin, TX (16 September 1988)

-- General Electric Corporate Research and Development Center, Schenectady, NY (28 November 1988)

-- Software Development '89, San Francisco, CA (15, 17 February 1989)

-- Hewlett Packard Research Laboratories, Palo Alto, CA (1 March 1989)

-- Pacific Bell, Advanced Technologies, San Ramon, CA (2 March 1989)

-- Computer Science Dept., University of Maryland, College Park, MD (6 April 89)

-- Eureka Software Factory, Berlin, Germany (29 June 1989)

-- Computer Science Dept., Universitat Dortmund, Dortmund, Germany (30 June 1989)

-- Computer Science Dept., University of California at Los Angeles, Los Angeles, CA (21 November 1989)

-- IBM Canada Limited, Toronto, Canada (31 Jan 90)

-- Computer Science Dept., University of Arizona, Tucson, AZ (15 Feb 90)

"Understanding Software Productivity," Siemens ZTI Software, Munich, FRG (1 October 1987)

"Understanding Software Technology Transfer," (**Keynote Address**), SEI-SPC-MCC Workshop on Software Technology Transfer, Software Productivity Consortium, Reston VA (7 October 1987)

"Understanding Software Engineering Tool Transfer Experiences," (**Closing Keynote Address**),

*IEEE Intern. Workshop on Software Tool Transfer*, Santa Barbara, CA (16 November 1987)

"Environments and Tools for Engineering Large Software Systems," *Software '88*, San Francisco, CA (16 February 1988)

"The USC System Factory Project: Prospects for International Cooperation," (**Keynote Address**) *Software Symposium '88*, Japan Software Engineering Association, Tokyo, Japan (8 June 1988)

"Managing the Documentation of Large-Scale Software Engineering Projects," (**Keynote Address**), *Hypermedia '88*, Houston, TX (15 September 1988)

"Practical Experience with the USC System Factory Environment," *COMPSAC '88*, Chicago, IL (7 October 1988)

"Using Hypertext in a Programming Environment," TTI/Citicorp, Santa Monica, CA (2 November 1988)

"Engineering Large Scale Systems in Software Factories," ACM Professional Development Seminars, Washington, DC (7 April 1989)

"Software Factories: History and Future," (**Keynote Address**), *Symposium on Software Factories*, Bari, Italy (16 June 1989)

"Development and Application of Domain-Specific Hypertext Environments" ACM Professional Development Seminars, Los Angeles, CA (23 June 1989)

"An Environment for Modeling and Simulating Multi-Agent Software Engineering Processes",

□ Information and Computer Science Dept., University of California, Irvine, (17 Jan 1990)

□ Center for Integrated Systems, Stanford University, Stanford, CA (27 Feb 1990)

"Models of Software Evolution: Life Cycle and Process," *2nd. Intern. Workshop on Software Quality Improvement*, Kyoto, Japan (22 Jan 1990)

"Modeling and Simulating Complex Engineering Processes," Center for Integrated Systems, Stanford University, Stanford, CA (28 Feb 1990)

"Modeling and Simulating Complex Organizational Processes," School of Business Administration, University of Southern California, Los Angeles, CA (13 Sept 90)

"Understanding and Modeling Software Engineering Processes," *Software Process Symposium*, Washington, DC (17 Sept 90)

"Hypertext Environments for Large-Scale Software Engineering," Computer Science Dept., University of California, Santa Barbara, CA (30 Oct 90)

"A Software Infrastructure for the Distributed Engineering of Large Software Systems," AT&T Bell Laboratories, Naperville, IL (23 Jan 1991)

(approximately 15 talks during 1991-1992-- sorry, I lost the titles during an edit session without

*backup; ugh!*)

"The State of the Art in Process Definition," Irvine Research Unit in Software, University of California, Irvine, CA (26 March 1993).

"Modeling, Integrating, and Enacting Software Production Processes," *Proc. 3rd. Irvine Software Symposium*, University of California at Irvine, Costa Mesa, CA, (29 April 1993). Also presented at the 1993 USC Center for Software Engineering Research Review, USC, Los Angeles, CA (7 June 1993).

"Recent Advances in Process Integration for CASE Environments," (**Keynote Address**), *5th. Intern. Symp. Computer Aided Software Engineering*, Singapore, (22 July 1993)

"Knowledge-Based Software Process Engineering," (**Invited Tutorial**), *8th. Annual Knowledge-Based Software Engineering Conference*, Chicago, IL, (28 September 1993)

"Modeling, Integrating, and Enacting Complex Organizational Processes," (**Featured Presentation**), *5th. Intern. Symp. Intelligent Systems for Finance, Accounting, and Management*, Stanford University, (11 December 1993).

"The Articulator Meta-Model for the Computational Design of Organizational Processes," Computational Organizational Design Workshop, Stanford University, Stanford, CA, (21 March 1994).

"BPR and Beyond: Technology-Enabled Business Process Management," Southern California CASE Users Group, Torrance, CA (3 May 1994).

"Managing and Improving Complex Business Processes," USC Technology Managers' Workshop, USC Office of Executive Education, USC Davidson Conference Center, Los Angeles, CA (11 May 1994).

"Telesophics: Working Wisely at a Distance," Internet Multi-Media Broadcast, ATRIUM Laboratory, USC, Los Angeles, CA (3 June 1994).

"Process Engineering Research at the USC ATRIUM," Los Angeles Special Interest Group in Software Engineering, El Segundo, CA (14 June 1994).

"The Articulator Meta-Model," (**Keynote Address**), *3rd. Summer School in Method Engineering and Meta-Modeling*, Intern. Federation of Information Processing, WG 8.1/8.2, Banff, Canada (18 June 1994).

"Business Processes can be Software Too: Some Initial Lessons Learned," *3rd. International Symposium on Software Process*, Arlington, VA, (11 October 1994).

"Managing Change in Processes and Organizations," University of California at Irvine, (7 November 1994).

"The Emergence of Electronic Commerce on the Internet," ACM Orange County Section, Fullerton, CA (11 January 1995).

"(Re)Engineering the Architecture of Complex Processes," USC Center for Software

Engineering 1995 Research Review, Los Angeles, CA (7 March 1995).

"Inserting Measurement into the Software Process," USC Center for Software Engineering 1995 Executive Workshop, Los Angeles, CA (8 March 1995).

"Knowledge-Based Process (Re)Engineering: An Experience Report," Los Angeles Software Process Improvement Network (LA SPIN), Marina Del Rey, CA (29 March 1995).

"EDI-Mosaic: Electronic Commerce on the Internet," Spring Internet World '95, San Jose, CA (11 April 1995).

"Understanding Software Productivity" (**Invited Tutorial**), *17th. International Conference on Software Engineering*, Seattle, WA (23 April 1995). Also, *7th. International Conference on Computer-Aided Software Engineering (ICASE-95)*, Toronto, Canada (11 July 1995).

"The Life Cycle Engineering of Complex Processes and Capabilities," Computer Science Dept., McGill University, Montreal, Canada (1 Dec 1995). Also, Intern. Workshop on Software Process, Irvine, CA (20 February 1996). Also, National Science Foundation Workshop on Process and Workflow, Atlanta, GA (8 May 1996).

"Software Process Reengineering," Los Angeles Software Process Improvement Network (LA SPIN), Marina Del Rey, CA (29 January 1996). Also, USC Center for Software Engineering, (12 March 1996).

"Knowledge-Based Software Process (Re)Engineering: Approach and Experience USC Information Sciences Institute, Marina Del Rey, CA (16 May 1996).

"Understanding Software Productivity" (**Invited Tutorial**), *Quality Week '96*, San Francisco, CA (21 May 1996)

"Knowledge-Based Process Engineering", Los Angeles Special Interest Group in Artificial Intelligence (LA SigART), Loyola-Marymount University, Los Angeles, CA (10 October 1996)

"The Future of Client-Server Intranets", Southern California Software Council, Costa Mesa, CA (24 Feb 1997)

"The Future of Intranets and Internets using Information System Technologies", Southern California Software Council, Costa Mesa, CA (22 April 1997)

"SAMSA on the VISTA: New approaches to large-scale software system acquisition," Naval Postgraduate School, Monterey, CA (28 April 1997)

"Supporting Intelligent Multi-Agent Organizations and Business Processes," *INFORMS '97*, San Diego, CA (4 May 1997)

"A Future for Digital Commerce: Research and Educational Opportunities", Dept. of Computer and Information Systems, Georgia State University, Atlanta, GA (15 May 1998)

"Computational Business Process Components for Electronic Commerce", *Intern. Workshop on Component-Based Electronic Commerce*, Fisher Center for Information Technology, Berkeley, CA, <http://haas.berkeley.edu/~citm/CEC/program1.html>, (25 July 1998)



"Designing an Infrastructure for Research in Virtual System Acquisition," Naval Postgraduate School, Monterey, CA, (28 May 1999).

"Understanding Work Processes and Practices: A Computational Approach," Nasa Ames Research Center, Human-Centered Computing Seminar, Mountain View, CA (14 Oct 1999)

"Knowledge Management: Concepts and Opportunities," Society of Automotive Engineers Board of Directors Meeting, Vancouver, Canada (29 June 2000).

"Understanding, Communicating, and (Re)Designing Complex Organizational Processes," Communications Dept., University of California, San Diego, CA (23 Feb 2001).

"Understanding and (Re)Designing Software Production Processes, Jet Propulsion Laboratory, Pasadena, CA, (14 October 2001).

"Understanding and Visualizing Information Work," Graduate School of Library and Information Science, University of Illinois, Urbana-Champaign, Urbana, IL (25 October 2001).

"Understanding the Requirements for Open Source Software Development,"

- Fraunhofer Center for Experimental Software Engineering, University of Maryland, College Park, MD, June 2002.

- Aerospace Corporation, El Segundo, CA, (10 October 2002)

- Graduate School of Library and Information Science, University of Illinois, Urbana-Champaign, Urbana, IL, (25 October 2002).

- School of Information, University of Michigan, Ann Arbor, MI, (28 October 2002).

“The Research Program for the UCI Game Laboratory,”

- Intel Research Laboratories, Hillsboro, OR (11 February 2003)

- Microsoft Research, Redmond, WA (12 February 2003)

“Open Government: Open Source Processes for E-Government,” Center for Open Source & Government, George Washington University, Washington, DC, (19 March 2003)

“State of the Art in Software Process Simulation and Modeling,” (**Keynote address**), 2003 *Workshop on Software Process Simulation and Modeling (ProSim'03)*, 25th. Intern. Conf. Software Engineering, Portland, OR, (3 May 2003).

“Understanding the Potential for Open Government: Open Source Processes for E-Government,” Center for Research in Information Technology and Organization (CRITO), University of California, Irvine, (15 May 2003).

“Understanding the Requirements for Developing and Designing F/OSS,”

- ISR Workshop on Continuous Design in Open Source Software Communities, UC Irvine, Irvine, CA (23 Sept 03)

- ISRL Workshop on Continuous Design in Open Source Software Communities, University of Illinois, Urbana-Champaign (8 Oct 03)
- Human-Computer Interaction Seminar, Computer Science Dept., Stanford University, (7 May 2004)
- Oxford Internet Institute, Oxford University, Oxford, UK, (27 May 2004)

“Understanding Best Practices in Free/Open Source Software Development,” (**Opening Keynote address**), *1st Coast Open Source Software Technology Symposium*, IEEE Computer Society, Newport Beach, CA (18 Oct 03).

“Issues in Modeling Open Source Software Development Processes”, The 1<sup>st</sup> Workshop on Open Source in an Industrial Context (OSIC’03), *18th Annual ACM SIGPLAN Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA)*, Anaheim, CA (26 Oct 03)

“The Game Research Grid: Vision and Opportunities”, *Game Research Grid Symposium*, UC Irvine, Irvine, CA (10 Dec. 03).

“Strategies for Developing and Deploying Free/Open Source Software”,

- University of California Information Technology Leadership Council Meeting, Irvine CA (3 Feb 04)
- Securities Industry Middleware Council Meeting, New York, NY, (20 April 2004)
- Los Alamos Computer Science Institute, Santa Fe, NM, (12 October 2004.)

“Modeling and Simulating Open Source Software Development Processes,” (**Keynote address**), *5th Intern. Workshop on Software Process Simulation and Modeling (ProSim)*, Edinburgh, Scotland, (24 May 2004)

“Collaboration, Leadership, and Control in the NetBeans.org Community, *4th Workshop on Open Source Software Engineering*, Edinburgh, Scotland, (25 May 2004).

“Understanding Free/Open Source Software Development,” Brown Bag Lunch Seminar, Graduate School of Business and Policy, Naval Postgraduate School, Monterey, CA (15 September 2004).

“Multi-Modal Modeling, Analysis, and Validation of Open Source Software Development Processes”, *2004 MKIDS Workshop*, Ft. Meade, MD, 20 September 2004.

“Is Open Source the Silver Bullet for Developing Serious Games?”, *Serious Games Summit*, Washington, DC, (18 October 2004).

“Educational Experiences in Developing Open Source Software: Helping the Inmates Take Over the Asylum,” *Open Source Summit*, Scottsdale, AZ (2 December 2004).

“Understanding and Improving Software Productivity, Fujitsu Limited, Tokyo, Japan, (16 February 2005).

“When Worlds Collide: Emerging Patterns of Intersection and Segmentation when Computerization Movements Interact”, Social Informatics Workshop, Center for Research in Information Technology and Organizations, UC Irvine, Irvine, CA, (11 March 2005).

“Computer Games, Open Source Software Development, and other Socio-Technical Processes,” Graduate School of Library and Information Science, University of Illinois, Urbana-Champaign, (1 Dec 2005).

“Opportunities for Game Culture and Technology in Public Libraries,” *Symposium on Games, Learning, and Libraries*, Chicago, IL, (5 Dec 2005).

“Open Source, Computer Games, and other Socio-Technical Processes”, Orange County ACM SIGCHI, CalIT2, Irvine, CA (1 March 2006).

“Patterns of Sustained Collaborative Activity Across Open Computerization Movements”, FM10 Openness: Code, Science, and Content, *First Monday Conference*, Chicago, IL, 15-17 May 2006.

“Emerging Opportunities in Software Technology R&D: A Technology Forecast,” AeA Orange County Chapter Seminar, Irvine, CA, (26 June 2006).

“Innovations in Informal Science Education: DinoQuest and DinoQuest Online,” National Science Foundation, Arlington, VA, (6 September 2006).

“Identifying New Market Opportunities through Process Discovery”, Computer Market Analyst Group, Sunnyvale, CA (9 March 2007).

“Recent Advances in Science Learning Games,” Education Department, University of California, Irvine (25 April 2007).

“Enabling Exponential Innovation via Open Source Software Development,” Industry Advisory Board Meeting, Center for Research in Information Technology and Organization (CRITO), Beckman Science Center, Irvine, CA (3 May 2007).

“Research and Educational Innovations in Computer Games,” President's Science and Innovation Board Meeting, University of California Office of the President, Oakland, CA (10 May 2007).

“Enabling Exponential Innovation in Open Source Software Development,” Industrial Advisory Board Meeting, Center for Research on Information Technology and Organizations (CRITO), Beckman Center, Irvine, CA (22 May 2007).

“Web 3.0: Game Web Research at the UCI Game Lab,” California Institute for Telecommunications and Information Technology, UC Irvine, 21 June 2007.

“Recent Development in Science Learning Games for Informal Science Education,” *3.0 Games, Learning, and Society Symposium*, Full Session Presentation, Madison, WI, 12 July 2007.

“Free/Open Source Software Development: Recent Research Results and Emerging Opportunities, (**Invited State of the Art Seminar**), *European Software Engineering Conference and ACM SIGSOFT Symposium on the Foundations of Software Engineering*, Dubrovnik,

Croatia, 7 September 2007.

“The Role of Game Technologies in Learning,” (**Keynote Address**), *i3D Educator Symposium*, Florence, SC, 9 April 2008.

“The Process of Innovation in Computing: A Personal 30 Year Retrospective,” Beall Center for Innovation, Merage School of Business, UC Irvine, 24 April 2008.

“Science Games in a Regional Science Center: *DinoQuest* and *DinoQuest Online*,” Presented at the *2008 American Association of Museums Conference*, Denver, CO, 30 April 2008.

“Recent Developments in Free/Open Source Software,” (**Invited Tutorial**), 2008 Ground Systems Architecture Workshop (GSAW08), Redondo Beach, CA, May 2008.

“Recent Research Results in Free/Open Source Software Development: Best Practices for Libraries?” *American Library Association Annual Symposium*, Anaheim, CA, 30 June 2008.

“How virtual worlds and game technology can deliver a superior market-centric value,” *Interactive Digital Center World Symposium*, Irvine, CA, 15 August 2008.

“Open Source Software: Issues, Challenges, and Opportunities” The Aerospace Corporation, El Segundo, CA, 7 January 2010.

“Recent Advances in Virtual Worlds for Science and Technology Research and Development,” EON Reality, Irvine, CA, 28 January 2010.

“Recent Advances in Game-Based Virtual Worlds for Science and Technology Research and Education,” Blizzard Entertainment, Irvine, CA 5 February 2010.

“R&D Activities at UCI in Computer Games and Virtual Worlds,” Northrop-Grumman Corp. Carson, CA 22 March 2010.

“Recent Advances in Virtual Worlds for Science and Technology Research & Development,” Boeing-UCI Seminar Series, Irvine, CA 22 June 2010.

“The Web of Smart Grids: Modeling and Simulation Issues,” Monitor 360 Group, University of Maryland University Center, College Park, MD, 1 September 2010.

“Game-Based Virtual Worlds as Decentralized Virtual Activity Systems,”

– Computer Science Department, University of California at Riverside, 26 January 2011

– Fuji Xerox Palo Alto Laboratory (FXPAL), Palo Alto, CA, 4 March 2011.

“The Future of Research in Free/Open Source Software Development,”

– Computing Community Consortium, Seattle, WA, 12 February 2011.

– 7<sup>th</sup> International Conference on Global Software Engineering, (**Keynote Address**), Helsinki, Finland, 15 August 2011.

“Understanding the Potential of Computer Games and Virtual Worlds to Enable New Modalities

of Rehabilitation and Health Care,” Orange County Stroke Rehab Network, Chapman University, Orange, CA, 5 November 2011.

“Computer Games and Virtual Worlds for Decentralized Command and Control Systems,” Invited Seminar Series, Northrop Grumman Information Systems, El Segundo, CA, December 2011.

“Open Source Software for Ground Systems,” (**Invited Tutorial**), 2012 Ground Systems Architecture Workshop (GSAW 2012), Los Angeles, CA, 27 February 2012.

“Game Mods as an IT Resource for Getting Things Done,” GameIT Summit, 2012 Game Developers Conference, San Francisco, CA 5 March 2012.

“Modding as an Open Source Approach to Extending Computer Game Systems,” Computer Science Department, Brigham Young University, Provo, UT, 8 March 2012.

“The Future of Research and Challenges in Computer Games and Virtual Worlds,” Digital Industry Promotion Agency, Daegu, South Korea, 27 March 2012.

“Game Development Competitions: Software Engineering as a Team Sport,” (**Keynote Address**), 2012 Workshop on Games and Software Engineering, International Conference on Software Engineering, Zurich, Switzerland, 9 June 2012.

“Computer Games for Informal Science Education,” Program in Science, Technology and Society, University of Virginia, 6 November 2012.

“R&D Projects at the UCI Center for Computer Games and Virtual Worlds”, CalTech Enterprise Forum, California Institute of Technology, Pasadena, CA, 12 January 2013.

“Creating Opportunities for Computer Game R&D Projects,”

- Center for Computer Games and Virtual Worlds, University of California, Irvine, 16 January 2013.
- OculusVR, Irvine, CA, 9 July 2013.

“Bringing Game Research to the Real World,” Closing Address, 2<sup>nd</sup> Intern. JoinGame Conf., Oslo, Norway, 31 January 2013.

“Engineering Challenges in Developing an Informal Music Learning Game Environment,”

- IEEE Computer Society, Orange Count Chapter, Costa Mesa, CA. February 2013.
- San Francisco Arts Commission, City Hall, San Francisco, CA. May 2014.
- University of California, Irvine, School of Education, February 2015, 2016, 2017.

“How Virtual Reality is Transforming Scientific Research, Education and Knowledge Transfer,” EON Reality Annual Symposium, Irvine, CA. June 2014.

“Realizing a Multi-Disciplinary Center for Games Research at UCI,” Serious Play Conference,

University of Southern California, Los Angeles, CA. 22 July 2014.

“Computer Games and Virtual Environments for Medical Education and Research, Advanced Institute for Medical Education, UCI School of Medicine, 2 May 2015.

“Open Source Ecosystems: Challenges and Opportunities,” Microsoft Research, SE-MIX, Redmond, WA 7 July 2015.

“Building Virtual Worlds at UCI: Past, Present, Future,” SoCalVR Meetup, UCI Institute for Innovation, Irvine, CA 12 July 2015.

“Game-Based Virtual Worlds for an Internet of Things,” 4<sup>th</sup> Annual UCI/TAU Workshop, Tel Aviv University, Tel Aviv, Israel, 9 November 2015.

- Also presented at California Institute for Telecommunications and Information Technology (Calit2), University of California, Irvine, 23 November 2015.

“Beyond Open Architecture: Issues, Challenges, and Opportunities in Open Source Software Development (OSSD) for Aerospace and Defense Applications,” (**Invited Tutorial**), 2016 Ground Systems Architecture Workshop, Los Angeles, CA (29 Feb 2016).

“Game-Based Stroke Telerehabilitation,” US-UK Workshop on Serious Games for Health, Drexel University, Philadelphia, PA, (22 March 2016).

“Emerging Research Issues in the Defense Open Architecture Software Ecosystem,” The Aerospace Corporation, El Segundo, CA (7 April 2016).

“Emerging R&D Opportunities for Computer Games, VR/AR and the Internet of Things, IEEE Orange County Computer Society, Irvine, CA (23 May 2016).

“Issues, Challenges, and Opportunities in Open Source Software Development for Global Software Engineering,” (**Invited Tutorial**) *11<sup>th</sup> Intern. Global Software Engineering Conference*, Irvine, CA (2 August 2016).

“Securing Software Ecosystem Architectures: Challenges and Opportunities” (with T. Alspaugh), *2020 European Software Architecture Conference*, (**Invited Journals First presentation**), L'Aquila, Italy. 18 September 2020.

## **Other Professional Activities**

### **Conference/Program Chair**

2<sup>nd</sup> IFIP Intern. Conf. Open Source Software (2006, Program Co-Chair)

3<sup>rd</sup> IFIP Intern. Conf. Open Source Software (2007, General Chair).

5<sup>th</sup> IFIP Intern. Conf. Open Source Software (2009, Doctoral Consortium Chair).

6<sup>th</sup> IFIP Intern. Conf. Open Source Software (2010, Doctoral Consortium Co-Chair).

33<sup>th</sup> International Conference on Software Engineering (2011, Software Engineering in Practice Co-Chair)

8<sup>th</sup> IFIP Intern. Conf. Open Source Software (2012, General Co-Chair)

3<sup>rd</sup> Workshop on Games and Software Engineering, (2013, Co-Chair)

4<sup>th</sup> Workshop on Games and Software Engineering, (2015, Co-Chair)

**Program Committee member for** ACM Conf. Office Information Systems (1986, 1990) ACM Conf. Hypertext (1987, 1989, 2004), Intern. Workshop Software Configuration Management (1987, 1989), ACM Conf. Computer Supported Cooperative Work (1990). IEEE Intern. Conf. Distributed Computer Systems (1993, 1997), Intern. Conf. Software Engineering and Knowledge Engineering (1993, 1994, 2002-2007, 2016), IEEE/ACM International Conference on Software Engineering (1994, 1997, 1998, 2006), IEEE Knowledge-Based Software Engineering Conf. (1993-1995), Intern. Symp. Computer-Aided Software Engineering (1995), California Software Symposium (1994-1998, Conf. Chair, 1996), Workshop on Information Technology (WITS'96). ACM GROUP Conferences (1997, 2005), Asia-Pacific Web 98, CSCW'98 Workshop on Exceptions in Workflow Systems, Software Process Simulation and Modeling (ProSim) Workshop (1998, 1999, 2001, 2003-2007), Workshop on Global Software Development (2002, 2009), Workshop on Web Site Engineering (2002), 5<sup>th</sup> Workshop on Open Source Software Engineering (2005), 2005 Software Process Workshop, Intern. Conf. Open Source Systems (2005-2009, 2014, 2016, 2017), Intern. Conf. Software Engineering Workshop Committee (2006). ACM OOPSLA Onward! (2008), ICSE Workshop on Emerging Trends in Free, Libre, Open Source Software (2007, 2009, 2010), International Conference on Software and Systems Process (2006-2019), Foundation for Computer Games (2009, 2010, 2012), ICSE Workshop on Games and Software Engineering (2011-2016), Open Source for America (2009), Intern. Conf. Entertainment Computing (2015, 2018), Requirements Engineering and Law Workshop (RELAW 2015, 2016, 2017), Just-In-Time Requirements Engineering Workshop (2015), ICSE Workshop on Software Engineering & Industrial Practice (2016, 2017), ICSE Software Engineering Education and Training (SEET) Conf. (2019).

**Reviewer for** *ACM Computing Surveys, ACM Trans. Information Systems, ACM Transactions on Software Engineering and Methodology, ACM Computing Reviews, Communications of the ACM, Computer-Supported Cooperative Work, Decision Support Systems, Ecology and Society; Empirical Software Engineering, Human-Computer Interaction, IEEE Computer, IEEE Expert, IEEE Spectrum, IEEE Software, IEEE Trans. Engineering Management, IEEE Trans. Knowledge and Data Engineering, IEEE Transactions on Software Engineering, Information, Information Systems Research, Information Technology & People, Intelligent Systems for Finance, Accounting, and Management, Journal of the Association for Information Systems, Journal of Systems and Software, Management Science, MIS Quarterly, Organizational Studies; Requirements Engineering, Software - Practice and Experience, Software Process - Improvement and Practice, Sloan Management Review, Statistical Science, The Information Society, ACM Transaction on Human Computer Interaction, International Conferences on Software Engineering, International Conferences on Software Reuse, ACM National Conferences, ACM Conferences on (Office) Information Systems, ACM Conferences on Organizational Computing Systems, ACM Conferences on Group Systems, ACM Conferences on Computer Supported Cooperative Work, ACM Foundations of Software Engineering, Third*

ASE International Conference on Cyber Security, Hawaii Intern. Conferences on Systems Sciences, IBM Centre for Advanced Studies Conferences (CASCONs), ACM Computer Human Interaction Conf., and other conferences and workshops, as well as the National Science Foundation, University of California MICRO Program, Canadian National Research Council, IEEE Computer Society Press, Academic Press, Pitman Books Limited, Benjamin Cummings Publishing Co., John Wiley and Sons, Inc. Publishers, MIT Press, Cambridge University Press, Qatar National Research Foundation, Hong Kong Special Administrative Region.

**Consultant for:**

- Hughes Research Laboratories (Malibu, CA)
- National Center for State Courts
- Digital Equipment Corporation (Hudson, MA)
- IBM Los Angeles Scientific Center
- System Development Foundation
- Center for Futures Research at USC
- Churchill Films
- USC/Information Science Institute
- Jet Propulsion Laboratory/NASA
- AT&T Bell Laboratories, Murray Hill, NJ
- Microelectronic and Computer Technology Corporation (MCC) Software Technology Program
- O'Melveny and Myers, LLC
- Gibson, Dunn, and Crutcher, LLC
- CMU-Software Engineering Institute
- Bell Communications Research
- Technology Training Corp.
- SUN Microsystems Inc.
- Perceptronics Inc.
- Hewlett-Packard Corp.
- Computer Technology Associates
- Andersen Consulting



- Intelligent Systems Technology Inc.
- Reinhart, Boerner, Van Deuren, Norris & Rieselbach, S.C.,
- Laboratory for Software Engineering Research (University of Massachusetts at Amherst)
- Fox, Johns, Lazar, *et al.* LLC
- Hogan and Hartson, LLC
- Hennigan, Bennett & Dorman LLP
- Heller Erhman LLP
- Howrey & Simon
- United States District Court, Southern District of California
- Dickenson Wright, PLLC
- Morrison & Forrester
- Palo Alto Research Center (formerly Xerox PARC)
- WebReach Inc.
- King & Spalding, LLC
- Quinn Emanuel Urquhart Oliver & Hedges, LLP
- Robert Bosch GmbH
- Crowell & Moring, LLP
- Sterne, Kessler, Goldstein, & Fox, PLLC
- Renaissance IP Law Group LLP
- Susman & Godfrey LLP
- White & Case LLP
- EON Reality, Inc.
- Blast.com

**Other Affiliations:**

- Advisor, Stream-Engine.io (2020-present)
- Advisor, LiveStreaming Technologies Inc./Trubify.com (2020-present)
- Advisor, Ant Transaction Machines Inc./ATM.com (2019-present)

- Advisor, Blast.com (2019-present)
- Advisor, Investable Games Technologies Inc. (2017-2018)
- Advisory Board, EON Reality (2007-2013)
- Investment Advisor, Daegu Metropolitan City, South Korea (2011-2013).
- Advisory Board, Jumala Games (2011-2012)
- EC Council (Advisor, 2004-2007).
- School of Business, City University of Hong Kong, (External Examiner and External Assessor for Electronic Commerce, 2002-2005).