

David E. Bakken CV (Summary page)

Education Summary

Ph.D., Computer Science (minor: Arabic), The University of Arizona, 1994.

BSs, Computer Science and Math (minor: EE): Washington State University, 1985.

Overview of Professional Experience

Assistant Professor & Associate Professor & Professor (now Emeritus), School of EECS, WSU, June 1999 to present.

Visiting Professor, University of Oslo & Simula Research Lab, Norway, AY2004-2005

Scientist Distributed Systems Department, BBN Technologies, July 1994 to June, 1999.

Software Engineer, Boeing, Seattle, WA, June 1985 to July 1988. *Data_Flow* invention still in use as of 2018.

Areas of Expertise

Power grid wide-area data delivery mechanisms, middleware implementations, dependable distributed computing.

Consulted to Amazon.com, Intel, Harris Corp, Real-Time Innovations, Pacific Northwest National Lab, Siemens, ...

Recent Professional Recognition

1. [Towards Enhanced Power Grid Management via More Dynamic and Flexible Edge Communications](#), invited paper for (First) [Fog World Congress](#), IEEE and OpenFog, Santa Clara, CA, Oct 30 –Nov 1, 2017.
2. Founding organizer, DSN-2014 Workshop on “Trustworthiness of the Smart Grid” ([ToSG](#)). **IEEE PES Pres. Miroslav Begovic** was keynoter and panelist and said this was crucial to carry on, next one at ISGT in Feb, and arranged for this.
3. Participant, kickoff meeting: influential NSF-DOE “Next Generation Grid Data Architecture”, Dec 2013. Participated in 3 followups in 2014.
4. Chair, Panel on Cloud Computing. IEEE Innovative Smart Grid Technologies (ISGT) conference, Feb. 2014.
5. Chair, *Workshop on Closed-Loop, Wide Area Applications, Communications, and Security* at IEEE SmartGridComm 2013.
6. Chair, IEEE SmartGridComm Symposium on Wide-Area Monitoring, Control, and Protection (WAMPAC). Tainan City, Taiwan, November 2012. Also program committee member of networking symposium.
7. Co-Editor of book *Vision for Smart Grid Communications: 2030 and Beyond Roadmap*. IEEE ComSoc, 2013.
8. Lead editor of book *Smart Grids: Clouds, Communications, Open Source, and Automation*. CRC Press, 2014.
9. Panel on high-profile US. Dept. of Energy panel on “Data Management and Analytics”, Feb 5, 2013, as well as panelist on the 3 followup workshops.
10. National PSERC webinar, October 4, 2011
11. Invited to testify to the US General Accounting Office (GAO) on power grid cyber-security, June 2010.
12. Lead author on Best Paper Award for the “Connectivity” Track of Grid-Interop 2009, the communications conference of the pseudo-official “Smart Grid” community in DoE and NIST, November 2009.

Invited Keynote Presentations

2011.09.29	Plenary speech, Smart Grid World Forum, Beijing, China. In same session as GE CEO Jeff Immelts .
2010.05.18	International cooperation meeting with EC industry ; only non-EC researcher; U. of Naples "Parthenope", Italy
2009.01.20	European Commission ICT- Energy Research Information Day , Brussels Belgium
2005.05.30	Workshop on Next-Generation Power Grid Communications for Better Control and Protection, Rome, Italy
2005.02.04	European Commission Workshop on Power Grid Communications , Brussels, Belgium

Doctoral Committees (Voting Member)

Georgia Tech (2x), Carnegie Mellon, Technical University of Darmstadt, Chalmers University (“Opponent”); Examiner at TU Munich (2x), Grenoble INP.

Other items of note

The last few pages of this CV have a long list of over 200 *invited presentations*, highlighted to denote **power**(75) versus **computer science**(83) versus **both**(38) audiences. Note the number of power audiences; it does *not* include *many* other power meetings attended. I have given 6 research seminar presentations at Georgia Tech over the years ...

Lead PI on grants with subcontractors: UIUC+Cornell(DARPA,DOE), Cornell (ARPA-E), Georgia Tech(ARFL), ...

My collaboration with Fellows of the US National Academy of Engineers or an IEEE Millenium Awardee are distinguished by **this**. Note that there are many! And even more **IEEE or ACM Fellows**.

David E. Bakken

School of Electrical Engineering and Computer Science,
Washington State University, Pullman, WA USA

bakken@eeecs.wsu.edu

Professional Experience (Details)

Assistant Professor & Associate Professor & Professor, School of EECS, WSU, June 1999 to January 2021.

Visiting Professor, University of Oslo & Simula Research Lab, Norway, AY2004-5

Scientist Distributed Systems Department, BBN Technologies, July 1994 to June, 1999.

- PI for AQuA Project in DARPA ITO Quorum program, adding replication mechanisms and policies to the QuO framework. 8/96 through 8/99.
- Co-Lead architect for the Quality Objects (QuO) framework, adding quality of service mechanisms and policies to distributed object frameworks. 7/94 to 6/99.

QuO has been cited over 2000 times (just the 5 main papers), has **flown in Boeing experimental military aircraft**, has been an integrating technology in a number of DARPA programs, and has been evaluated for use in other military programs. It had 50-60 person-years of BBN labor, and 3X that of collaborators, put into it.

- Lead technical consultant to BBN Planet (now Genuity) ISP services on how to add replication and caching support to their new global fiber network, 7/98 to 6/99.

Instructor, Boston University Metropolitan College, Fall 1995.

Software Engineer, Boeing, Seattle, WA, June 1985 to July 1988.

- Initiated, designed, lobbied, and developed the *Data_Flow* suite of tools to help parallelize legacy FORTRAN flight simulation programs. Called a “major tool” by Boeing in 2021, still in use as of 2023 (!!).
- Worked on debugging monitor for real-time executive for 7J7 airplane program until cancelled (not my fault!).
- Taught Ada, Unix, and C courses to Boeing employees.

Consulting and Board Membership

Principal Distributed Systems Architect, TriGeo Network Security Inc., January 2001 to June 2003. Now SolarWinds.

Member, Board of Directors, TriGeo Network Security, 2001-2002.

Principal, [Bakken Middleware Associates](#) (now AKA *SmartGridComms.guru Consulting Services*), Sep. 2000 to present. Consulted to

- **Amazon.com**, on fault tolerance and scalability
- **Network Associates Inc. Labs** (formerly Trusted Information Systems), on DARPA/ISO survivability research on replicated CORBA middleware that will tolerate intrusions and other “Byzantine” behavior (such as security breaches). See our paper in the DSN-2002 conference paper (McDonnell et al) below.
- [Real Time Innovations](#), on power grid IT realities.
- **Intel**, on power grid security and interoperability issues and players
- [Harris Corp.](#) (who runs the FAA’s Air Traffic Control real-time network) on power grid data delivery issues.
- [Pacific Northwest National Lab](#) (PNNL), on wide-area data delivery and integration issues.
- **Siemens Corporate Technology**, Munich, on decentralization of grids, and communications/coordination.

See [here](#) for deeply-technical letters of recommendation on my system-building skills.

Summary of Collaboration with Fellows

I have collaborated with many Fellows: National Academy of Engineering, IEEE, and ACM. Here is a tabulation of the instances (one per fellow, not publication/grant) of such collaboration highlighted below by category:

Fellow Category	US National Academy	IEEE or ACM
Grant and Donation Proposals	10	5
Refereed Journal Papers	6	9
Magazine Articles	2	2
Invited Conference Papers	0	2
Refereed Conf/WS papers	7	17
Other Papers	1	3
Book Chapters	3	5
Other Publications	9	6

Grants and Donations

KEY; IEEE or ACM Fellow US National Academy of Engineering Fellow

Academic Research

(probably a few I forgot, being too busy doing the actual work.)

D. Bakken and A. Srivastava, “Infrastructure to Enable Edge-Computing Based Power Apps and Services using Fog”, Cisco, \$115K, 6/29/17 to 7/1/18. Budget control: 60%.

D. Bakken and A. Srivastava, “Advanced Cyber-Physical Analysis for Smart Grid Distributed ICT and IED Resources at RTE France”, RTE France (via PSERC S-63G), 12/20/14 to 12/31/17, \$311.5K. Budget control: 50%.

K. Birman, R. van Renesse, D. Bakken, C. Hauser, and A. Bose. “GridControl: A Software Platform to Support the Smart Grid”, US Dept. of Energy ARPA-E program, 2/2012 to 2/2015, \$1.4M. Subcontract to Cornell, Budget control ~20%. Developing the GridCloud architecture on this grant.

A. Bose, L. Perez, D. Bakken, C. Hauser, and Mani V. “Training Program in Clean Energy Smart Grid Engineering”, (also with PNNL and U. Washington), Dept. of Energy, \$2.5M, 8/2010-7/2013. Budget control (very) roughly 10%.

A. Bose, D. Bakken, C. Hauser, and Mani V. “Power Grid Reliability and Security” (AKA GridSim), Dept. of Energy, \$2.0M, 10/2009-9/2012, budget control 25%,

C. Hauser, D. Bakken, and A. Bose. “Trustworthy Cyber Infrastructure for the Power Grid (TCIPG)”, \$2,206,250. August 2010 thru July 2015. Budget control: 33%.

D. Bakken and C. Hauser. “Regional Deployment of GridStat”, Dept. of Energy (via PNNL), \$200K, August 2007 to August 2008. Budget control: 50%..

C. Hauser, D. Bakken, and A. Bose. “Trustworthy Cyber Infrastructure for the Power Grid (TCIP)”, National Science Foundation (Center Scale Award), \$985,000, August 2005 – August 2010. Budget control: Hauser 33%, Bakken 33%, Bose 33%.

D. Bakken, travel grant for working on EU proposals, Faculty of Mathematical and Natural Science, University of Oslo, 2005, \$2050 (13,000 Kroner), Budget control: Bakken 100%.

C. Hauser, D. Bakken, and A. Bose. “International Collaboration on Critical Infrastructure Protection”, National Science Foundation (Supplement to \$211K grant), June 2004 to July 2005, \$30,000. Budget control Bakken: 100%.

C. Hauser, D. Bakken, and A. Bose. “Transatlantic Critical Infrastructure Protection (CIP): Surveying EU Investments in SCADA-related topics”, National Science Foundation (Supplement to \$211K grant), April 2005 to August 2006, \$21,057. Budget control: Bakken: 100%.

T. Plagemann, V. Goebel, C. Griwodz, P. Halvorsen, D. Bakken. “Ad-Hoc InfoWare: Middleware: Extension for Sabbatical Support for Professor D. Bakken” Norwegian Research Council, 2003, \$41,100 (approx.; 280,000 Kroner) in AY04-05, \$14,700 (approx.; 100,000 Kroner) in followup year. Budget control: Bakken 100%.

C. Hauser, D. Bakken, and A. Bose. “Secure and Robust IT Architectures to Improve the Survivability of the Power Grid”, National Science Foundation, August 2003 to August 2005, \$211,822. Collaboration with Carnegie Mellon University. Budget control Hauser: 60%, Bakken: 40% , Bose: 0%.

D. Bakken and D. Blough: “The Obfuscation Virtual Machine: An Embeddable, Programmable, and Managed Software Module Providing Computation Precision Security”, Air Force Research Laboratory, September 2002 to September 2004, \$438,189, subcontract to Georgia Institute of Technology (Prof. Douglas Blough, PI). Budget control (salary, RAs, equipment, etc.): Bakken 72%, Blough 28%. (Only \$360,000 was authorized of the \$438,189 originally awarded due to budget cuts at AFRL.)

D. Bakken and A. Bose. “Industrial Applications of Information Security to Protect the Electric Power Infrastructure”, subcontract from Schweitzer Engineering Labs (co-PI Anjan Bose), in NIST Critical Infrastructure Protection program, \$248,000, October 2001 to May 2003. Budget control (salary, RAs, equipment, etc.): Bakken 91%, Bose 9% (from the proposal budget; Bose gave Bakken 100% control after the fact; he did not need salary from this).

D. Bakken. “Floating Point Voting Middleware Technology Transfer”, \$14,500, DARPA, subcontract from Network Associates Inc. on the ITDOS project (Byzantine-fault-tolerant CORBA), August 2001.

D. Bakken. “Voting Virtual Machine Extensions and Enhancements”, \$52,184, DARPA, subcontract from Network Associates Inc. on the ITDOS project (Byzantine-fault-tolerant CORBA), February 2002.

D. Bakken and K. Sivalingam. “Configurable and Composable Systems Mechanisms Supporting Multi-Property Quality of Service for Memory and Power Constrained Embedded Systems”, \$100,000, NSF, subcontract to co-PI, Krishna Sivalingam for power awareness aspect of project. Budget Control (salary, RAs, equipment, etc.): Bakken 82%, Sivalingam 18%.

Industry Donations

D. Bakken, Power Grid Middleware Support, Real-Time Innovations Inc, \$5000, 2012.

D. Bakken, Power Grid Middleware Support, Real-Time Innovations Inc., \$5000, 2010.

D. Bakken, Power Grid Middleware Support, Real-Time Innovations Inc., \$5000, 2009.

D. Bakken and C. Hauser. Cisco research donation, \$80,000; July 2003, for MicroQoS CORBA middleware research and development. (Co-PI: Prof. Hauser. Bakken budget control: \$67,500).

D. Bakken. Cisco research donation, \$69,000; June 2002, for MicroQoS CORBA middleware research and development.

D. Bakken. Microsoft, software donation for advanced distributed systems research and instruction, \$777; Feb 2002.

Intel equipment grant, \$18,593; Dec. 2001. For advanced distributed systems research and instruction.

D. Bakken. HP Labs distributed systems research donation, Fall 2000, \$12,000.

D. Bakken. Microsoft curriculum development grant, \$4200, June 2000. For advanced distributed systems instruction.

D. Bakken and K. Sivalingam. HP Equipment grant, June 2000, \$236,000, for distributed systems and networking courses. Budget control: Bakken 50%, Sivalingam 50%.

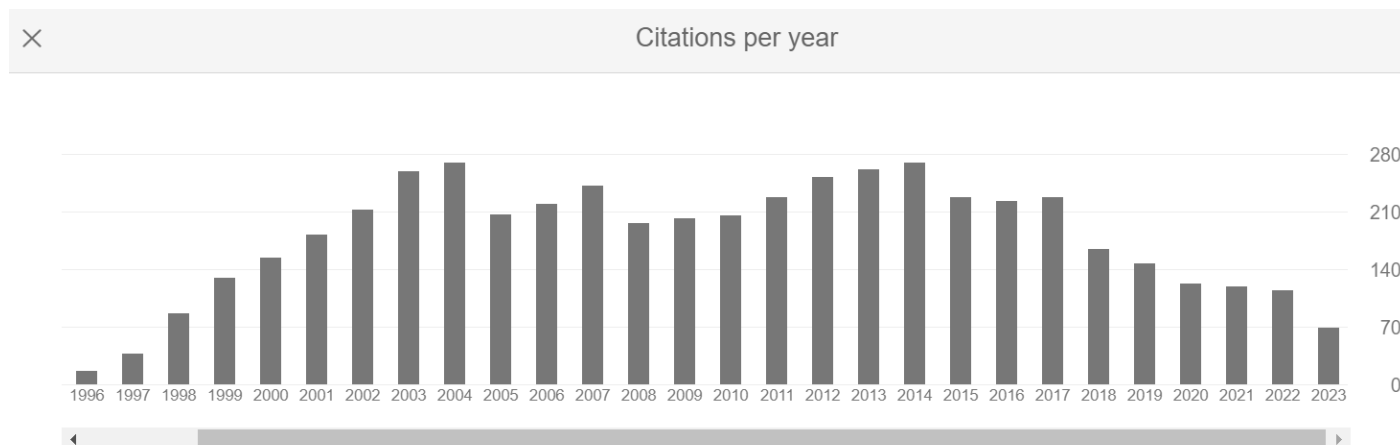
K. Sivalingam and D. Bakken. Intel equipment grant, \$22,598, 2000, for networking and distributed computing instruction. Budget control: Sivalingam 50% Bakken 50%.

Research Grants while in Industry

D. Bakken, R. Schantz, W. Sanders, and **K. Birman**. “Adaptive Quality of Service for Availability” (AQuA), 8/96 to 8/99 (at BBN), sponsored by DARPA/ITO, \$2,665,856 (originally \$1,968,712; augmented in 1998). CO-PIs Schantz (BBN); Bill Sanders (U. Illinois at Urbana-Champaign, circa 30%); Ken Birman (Cornell U, circa 10%).

D. Bakken and **D. Frincke**. “Adaptive and Hierarchical Manager Modules for Managed Security Administration”, 7/01-9/01 (at TriGeo Network Security Inc.), sponsored by Spokane Intercollegiate Research & Technology Institute (SIRTI), \$100,000. Budget control: Bakken 50%, Frincke 50%.

Publications



Summary Data ([From Google Scholar](#); Updated October 2023)

Total Publications: 126 (including patents)

Cited >400: 2

Cited >200: 8

Cited >100: 16

Total Citations: 5186

Invited Presentations: 201

Google Scholar h-index: 30

Book Editorships

1. S. Goel, S. Bush, and D. Bakken (ed). *Vision for Smart Grid Communications: 2030 and Beyond Roadmap*. IEEE Communications Society, 2013, ISBN 9780738186467.
2. D. Bakken and K. Iniewski (ed). [*Smart Grids: Clouds, Communications, Open Source, and Automation*](#), CRC Press, 2014, ISBN 9781482206111.

Refereed Journal Papers

1. Hyojong Lee, **Anurag K. Srivastava**, Vignesh V G Krishnan, Shwetha Niddodi, David Bakken. "Decentralized Voltage Stability Monitoring and Control with Distributed Coordination", *IEEE Systems Journal*, 10:2 2251–2260, June 2022, doi:10.1109/JSYST.2021.3057614.
2. Hou, Hongfei, Deng, Zhiquan, Martinez, Jayson J., Fu, Tao, Lu, Jun, Tan, Li, Miller, John, and Bakken, David E. A Cloud-Based Decision Support System Framework for Hydropower Biological Evaluation. Switzerland: N. p., 2018. Web. doi:10.1007/978-3-030-02686-8_39.
3. V. Krishnan, S. Gopal, R. Liu, **A. Srivastava**, and D. Bakken. "Resilient Cyber Infrastructure for the Minimum Wind Curtailment Remedial Control Scheme", *IEEE Transactions on Industry Applications*, 55(1), January/February 2018, 943-953.
4. Ren Liu, **Anurag Srivastava**, Alexander Askerman, David Bakken and Patrick Panciatici, "Decentralized State Estimation and Remedial Control Action for Minimum Wind Curtailment Using Distributed Computing Platform", *IEEE Transactions on Industry Applications*, 23(6), 2017.
5. **A. Srivastava**, A. Hahn, O. Adesope, C. Hauser, D. Bakken, "Experience with a Multi-Disciplinary, Team-Taught Smart Grid Cyber Infrastructure Course", *IEEE Transactions on Power Systems*, 32(3), 2017, 2267–2275.
6. D. Bakken, **A. Bose**, C. Hauser, D. Whitehead, and G. Zweigle. "[Smart Generation and Transmission with Coherent, Real-Time Data](#)". *Proceedings of the IEEE*, 99(6), June 2011, 928–951. Note: Bakken was directly invited to submit this paper, an extremely high honor (this is the most prestigious journal of the IEEE, which is the largest professional organization in the world). **Cited 247 times as of 2023** (per google scholar)
7. Ioanna Dionysiou, Harald Gjermundrod, and David Bakken, "GUTS: A Framework for Adaptive and Configurable Grid User Trust Service", *Lecture Notes in Computer Science 6510*, Springer, 2011, Springer-Verlag, Heidelberg.
8. Wendy Maiden, Ioanna Dionysiou, **Deborah Frincke**, Glenn Finck, and David Bakken. "DualTrust: A Distributed Trust Model for Swarm-Based Autonomic Computing Systems". *Lecture Notes in Computer Science 6514*, Springer, 2011.
9. I. Dionysiou, K. Harald Gjermundrod, D. Bakken. "A Conceptual Framework for Adaptive and Configurable Activity-Aware Trust in Collaborative Environments." *International Journal of Dependable and Trustworthy Information Systems (IJDTIS)*, IGI Global, 2010.
10. R. Chakravarthy, C. H. Hauser, and D. E. Bakken. "Long-lived Authentication Protocols for Critical Infrastructure Process Control Systems", *International Journal of Critical Infrastructure Protection*, Elsevier, 3: 3, 174–181.
11. K. Harald Gjermundrød, David E. Bakken, Carl H. Hauser, and **Anjan Bose**. "GridStat: A Flexible QoS-Managed Data Dissemination Framework for the Power Grid", *IEEE Transactions on Power Delivery*, 4(1), 2009, 136–143.
12. Hauser, Carl H., Bakken, David E., Dionysiou, Ioanna, Gjermundrød, K. Harald, Irava, Venkata, Helkey, Joel and **Bose, Anjan**. "Security, Trust and QoS in next-generation control and communication for large power systems," *International Journal of Critical Infrastructures*, Inderscience, 4(1-2), 2008, 3–16.
13. Ioanna Dionysiou, **Deborah Frincke**, Carl Hauser, and Dave Bakken, "An Approach to Trust Management Challenges for Critical Infrastructures", *Proceedings of the 2nd International Workshop on Critical Information*

Infrastructures Security (CRITIS07), *Lecture Notes in Computer Science Series volume 5141*, pp. 173–184, Malaga, Spain, October 2–5, 2007, Springer Berlin

14. Drugan, O., Dionysiou, I., Bakken, D., Plagemann, T., Hauser, C., and Frincke, D. “On the Importance of Composability of Ad Hoc Mobile Middleware and Trust Management”, *Lecture Notes in Computer Science 3694*, Springer, 2005.
15. K. Tomsovic, D. Bakken, M. Venkatasubramanian, A. Bose. “[Designing the Next Generation of Real-Time Control, Communication and Computations for Large Power Systems](#)”, *Proceedings of the IEEE (Special Issue on Energy Infrastructure Systems)*, 93(5), May, 2005. **Cited 431 times as of 2023** (per google scholar)
16. A. David McKinnon, David E. Bakken, and John C. Shovic. “A Configurable Cryptography Subsystem in a Middleware Framework for Embedded Systems”, *Computer Networks*, Elsevier, 46:6, 20 December 2004, 771–195.
17. David E. Bakken, Rupa Parameswaran, Douglas M. Blough, Ty J. Palmer, and Andy A. Franz. “Data Obfuscation: Anonymity and Desensitization of Useable Data Sets”, *IEEE Security and Privacy*, 2:6, November/December 2004, 34–41.
18. Ren, Y., Bakken, D., Courtney, T., Cukier, M., Karr, D., Rubel, P. and Sabnis, C., Sanders, W. and Schantz, R. and Seri, M., “AQuA: An Adaptive Architecture that Provides Dependable Distributed Objects”, *IEEE Transactions on Computers*, 52:1, January 2003, 31–50.
19. Schantz, R., and Zinky, J. and Megquier, J. and Loyall, J. and Karr, D. and Bakken, D. “An Object-Level Gateway Supporting Quality of Service”. *International Journal of Computer Systems Science & Engineering*, 16:2, March 2001, 145–155.
20. Zinky, John A. and Bakken, David E. and Schantz, Richard E., “Architectural Support for Quality of Service for CORBA Objects”, *Theory and Practice of Object Systems* (Special Issue on CORBA and the OMG), 3:1, April 1997, 55–73. **Cited 703 times as of 2023** (per google scholar).
21. Bakken, David E. and Schlichting, Richard D., “Supporting Fault-Tolerant Parallel Programming in Linda,” *IEEE Transactions on Parallel and Distributed Systems*, 6 (3), March 1995, 287–302. **Cited 217 times as of 2023** (per google scholar)

Magazine Articles

22. Anurag Srivastava, Carl Hauser, and David Bakken. “[Study Buddies: Computer Geeks and Power Freaks are learning Smart Systems Together at Washington State](#)”, *IEEE Power & Energy Magazine*, 11(1), January/February 2013, 39-43.
23. David Anderson, Chuanlin Zhao, Carl Hauser, Vaithianathan Venkatasubramanian, David Bakken, Anjan Bose. “[A Virtual Smart Grid: Real-Time Simulation for Smart Grid Control and Communications Design](#)”. *IEEE Power and Energy*, 10(1), January/February 2012, 49-57.
24. Carl Hauser, David Bakken, and Anjan Bose. “[A Failure to Communicate: Next-Generation Communication Requirements, Technologies, and Architecture for the Electric Power Grid](#)”, *IEEE Power and Energy*, 3(2), March/April, 2005, 47–55. **Cited 373 times as of 2023** (per google scholar)

Invited Conference Papers

25. D. Bakken, A. Askerman, A. Srivastava, P. Panciatici, M. Seewald, F. Columbus, and S. Jiang. “[Towards Enhanced Power Grid Management via More Dynamic and Flexible Edge Communications](#)”, in *Proceedings of the Fog World Congress*, IEEE and OpenFog, Santa Clara, CA, Oct. 30, 2017.
26. Bakken, O. Drugan, I. Dionysiou, T. Plagemann, D. Frincke, and C. Hauser. “Composability of Ad Hoc Mobile Middleware and Trust Management for Critical Infrastructures”, in *Proceedings of the International Service Availability Symposium*, Service Availability Forum, Berlin, Germany, April 25-26, 2005.
27. Schantz, R., Zinky, J., Karr, D., Bakken, D., Megquier, J. “An Object Gateway Supporting Integrated Property Distributed Quality of Service”, (Invited Paper), *Proceedings of the Second IEEE International Symposium on Object-Oriented Real-Time Distributed Computing (ISORC 99)*, May 2-5, 1999, Saint-Malo, France. **Cited 52 times as of 2016** (per google scholar)

Refereed, Competitive Conference and Workshop Papers

28. V. Krishnan, S. Gopal, R. C. A. Srivastava, and D. Bakken. “Resilient Information Architecture Platform for Distributed Linear State Estimation”, in *Proceedings of the 2018 IEEE PES General Meeting*.

29. V. Krishnan, R. Liu, A. Askerman, A. Srivastava, D. Bakken, and P. Panciatici, "Resilient Cyber Infrastructure for the Minimum Wind Curtailment Remedial Control Scheme", in *Proceedings of the 2017 IEEE Industry Applications Society Annual Meeting*, Cincinnati, Ohio, USA, October 1-5, 2017.
30. V. Krishnan, R. Liu, A. Askerman, A. Srivastava, D. Bakken, and P. Panciatici. "Fault-Tolerant Distributed Computing for Remedial Control Action with Wind Energy", in Eighth ACM International Conference on Future Energy Systems (ACM e-Energy), Hong Kong, May 17-19, 2017.
31. Hyojong Lee, Shwetha Niddodi, Anurag Srivastava, and David Bakken. "Decentralized Voltage Stability Control in the Smart Grid using Distributed Computing Architecture", in *Proceedings of the 2016 IEEE Industry Applications Society Annual Meeting (IAS)*, Portland, OR 2-6 October, 2016.
32. Banerjee, P., S. Niddodi, H. Lee, A. Srivastava, and D. Bakken, 2015: On the need for robust decentralized coordination to support emerging decentralized monitoring and control applications in electric power grid. *Proceedings of the Fourth Grid of the Future Symposium*, CIGRE, Chicago, October 14-15, 2016, USA, 1–9.
33. Ren Liu, Anurag Srivastava, Alexander Askerman, David Bakken and Patrick Panciatici, "Decentralized State Estimation and Remedial Control Action for Minimum Wind Curtailment Using Distributed Computing Platform", in *Proceedings of the IEEE Industrial Application Society Annual Meeting*, Portland, October 2016.
34. Alex Askerman, Adam Hahn, Ali Hajbabie, David Bakken, and Anurag Srivastava, "DCBlocks for Secure Consensus within Autonomous Vehicle Formations", in *Proceedings of the 2016 Cybersecurity Symposium*, Coeur d'Alene, Idaho, April 18-20, 2016.
35. Y. Wu, L. Nordström, and D. Bakken. "Effects of Bursty Event Traffic on Synchrophasor Delays in IEEE C27.118, IEC61850, and IEC60870", in *Proceedings of the Sixth IEEE International Conference on Smart Grid Communications (SmartGridComm 2015)*, Miami, Florida, November 2–5, 2015.
36. L. Oleas Chávez, D. Bakken, A. Bose, and P. Panciatici. "Erkios: End-to-end Field-Based RAS Testing", in *Proceedings of the IEEE PES Conference on Innovative Smart Grid Technologies (ISGT 2015 North America)*, Washington, DC, February 18–20, 2015.
37. C. Hauser, T. Manivannan, D. Bakken. "Evaluating Multicast Message Authentication Protocols for Use in Wide Area Power Grid Data Delivery Services", in *Proceedings of the 45th Hawaii International Conference on System Sciences (HICSS)*, IEEE, Maui, Hawaii, January 4-7, 2012, 2151-2158.
38. D. Bakken, A. Bose, K. M. Chandy, P. P. Khargonekar, A. Kuh, S. Low, A. von Meier, K. Poolla, P. P. Varaiya, F. Wu. "GRIP – Grids with Intelligent Periphery: Control Architectures for Grid2050", in *Proceedings of the Second IEEE International Conference on Smart Grid Communications (SmartGridComm 2011)*, Brussels, Belgium, October 17-20, 2011.
39. Harald Gjermundrød, Carl Hauser, and David Bakken. "Scalable Wide-Area Multicast with Temporal Rate Filtering Distribution Framework". In *Proceedings of the 11th IEEE International Conference on Scalable Computing and Communications (SCALCOM'2011)*, Paphos, Cyprus, August 31-September 2, 2011.
40. Daniel Germanus, Ioanna Dionysiou, Harald Gjermundrød, Abdelmajid Khelil, Neeraj Suri, David E. Bakken, and Carl Hauser, "Leveraging the Next-Generation Power Grid: Data Sharing and Associated Partnerships", *IEEE PES Conference on Innovative Smart Grid Technologies Europe*, October 10-13, 2010 Chalmers Lindholmen, Gothenburg, Sweden.
41. Ioanna Dionysiou, Harald Gjermundrød, and Dave Bakken, "GUTS: A Framework for Adaptive and Configurable Grid User Trust Service", *6th International Workshop on Security and Trust Management (STM)*, September 23–24, 2010, Athens, Greece.
42. David E. Bakken and Carl H. Hauser and Harald Gjermundrød, "Delivery Requirements and Implementation Guidelines for the NASPInet Data Bus", in *Proceedings of the First IEEE International Conference on Smart Grid Communications (SmartGridComm 2010)*, IEEE, Gaithersburg, MD, Oct 4–6, 2010, 37–42.
43. Erlend S. Viddal and David E. Bakken and Harald Gjermundrød and Carl H. Hauser, "Wide-Area Actuator RPC over GridStat with Timeliness, Redundancy, and Safety". In *Proceedings of the International Conference on Complex, Intelligent and Software Intensive Systems (CISIS'2010)*, Krakow, Poland, Feb 15-18, 2010, 17–24.

44. Stian F. Abelsen and Harald Gjermundrød and David E. Bakken and Carl H. Hauser, “Adaptive Data Stream Mechanism for Control and Monitoring Applications”, in *Proceedings of 1st International Conference on Adaptive and Self-Adaptive Systems and Applications (ADAPTIVE'09)*, IEEE, Athens, Greece, November 2009, 86–91.
45. Harald Gjermundrød and David E. Bakken and Carl H. Hauser, Integrating an Event Pattern Mechanism in a Status Dissemination Middleware, in *Proceedings of 1st International Conferences on Pervasive Patterns and Applications (PATTERN'09)*, IEEE, Athens, Greece, November 2009, 259–264.
46. Ioanna Dionysiou, Dave Bakken, Carl Hauser, and Deborah Frincke “Formalizing End- to-End Context-Aware Trust Relationships in Collaborative Activities”, International Conference on Security and Cryptography (SECRYPT 2008), Special Session on Trust, Porto, Portugal, pp. 546 – 553, July 26–29, 2008. **Acceptance Rate: 39% of 440 submissions.**
47. E. Næss, D.A. Frincke, A.D. McKinnon, and D.E. Bakken. "Configurable Middleware-Level Intrusion Detection for Embedded Systems". 2nd International Workshop on Security in Distributed Computing Systems (SDCS-2005), in *Proceedings of the 25th International Conference on Distributed Computing Systems (ICDCS) Workshops*, IEEE, June 6–10, 2005, Columbus, Ohio, 144–151. **Acceptance Rate: 29% of 42 submissions.**
48. A. David McKinnon, Kevin E. Dorow, Tarana R. Damania, Olav Haugan, Wesley E. Lawrence, David E. Bakken, John C. Shovic. “A Configurable Middleware Framework with Multiple Quality of Service Properties for Small Embedded Systems”, 2nd IEEE International Symposium on Network Computing and Applications, Cambridge, MA April 16-18, 2003, 197–204. **Acceptance Rate: 26% of 155 submissions.**
49. McDonnell, D and Neibuhr, B. and Matt, B. and Sames, D. and Tally, Gregg and Wang, S. and Whitmore, B and Bakken, D. “Developing a Heterogenous Intrusion-Tolerant CORBA System” (regular full-length research paper), in *Proceedings of the International Conference on Dependable Systems and Networks (DSN-2002)*, IEEE/IFIP, Washington, DC, June 2002, 239–248. **Acceptance Rate: 31% of 156 submissions.**
50. Franz, A. and Mista, R. and Bakken, D. and Dyreson, C. and Medidi, M. “Mr. Fusion: A Programmable Data Fusion Middleware Subsystem with a Tunable Statistical Profiling Service” (Software Demonstration paper), in *Proceedings of the International Conference on Dependable Systems and Networks (DSN-2002)*, IEEE/IFIP, Washington, DC, June 2002, 273–278. **Acceptance Rate: 31% of 156 submissions.**
51. Bakken, D. and Zhan, Z. and Jones, C. and Karr, D. “Middleware Support for Voting and Data Fusion”, in *Proceedings of the International Conference on Dependable Systems and Networks (DSN-2001)*, IEEE/IFIP, Göteborg, Sweden, July 1-4, 2001, 453-462. **Acceptance Rate: 35% of 153 submissions.**
52. Krishnaswamy, V. and Ahamad, M. and Raynal, M. and Bakken, D. “Shared State Consistency for Time-Sensitive Distributed Applications”, in *Proceedings of the Twenty First International Conference on Distributed Computing Systems (ICDCS-21)*, IEEE, Tempe, Arizona, April, 2001. Also reprinted as sole article in *Newsletter of the Technical Committee on Distributed Processing*, IEEE Computer Society, Fall 2001. **Acceptance Rate: 32% of 217 submissions (from 19 countries).** **HONOR: Best Paper Award. Note: this is the most prestigious general conference in distributed computing.**
53. Ren, J. and Cukier, M. and Rubel, P. and Sanders, W.H. and Bakken, D.E. and Karr, D.A., Building Dependable Distributed Applications Using AQUA, In *Proceedings of the 4th IEEE Symposium on High Assurance Systems Engineering (HASE'99)*, Washington DC, November 17-19, 1999, 189-196. **Acceptance Rate: 61% of 44 submissions. Cited >250 times as of 2016 (per google scholar)**
54. Zinky, J. and O'Brien, L. and Bakken, D. and Krishnaswamy, V. and Ahamad, M. “PASS: A Service for Efficient Large Scale Dissemination of Time Varying Data Using CORBA”, in *Proceedings of the Nineteenth International Conference on Distributed Computing Systems (ICDCS-1999)*, IEEE, Austin, TX, May 31 – June 5, 1999, 496-506. **Acceptance Rate: not published (very likely similar to other ICDCSs, in 15%-35% range).**
55. Sabnis, Chetan and Cukier, Michel and Ren, Jennifer and Rubel, Paul and Sanders, William H. and Bakken, David E. and Karr, David A. “Proteus: A Flexible Infrastructure to Implement Adaptive Fault Tolerance in AQUA,” in *Preprints of the Seventh IFIP International Working Conference on Dependable Computing for*

Critical Applications (DCCA-7), IFIP, San Jose, CA, Jan. 6-8, 1999, 137-156. **Acceptance Rate: 32% of 62 submissions from 16 countries.**

56. Vanegas, Rodrigo and Zinky, John A. and Karr, David A. and Loyall, Joseph P. and Schantz, Richard E. and Bakken, David E. "QuO's Runtime Support for Quality of Service in Distributed Objects", in *Proceedings of the IFIP International Conference on Distributed Systems Platforms and Open Distributed Processing (Middleware '98)*, IFIP, England, September 1998, 207-223. **Acceptance Rate: 19% of 150 submissions. Cited 200 times as of 2019** (per google scholar)
57. Cukier, Michel and Ren, Jennifer and Sabnis, Chetan and Henke, David and Pistole, Jessica, and Sanders, William, and Bakken, David and Berman, Mark and Karr, David and Schantz, Richard, "AQuA: An Adaptive Architecture That Provides Dependable Distributed Objects", in *Proceedings of the Seventeenth Symposium on Reliable Distributed Systems (SRDS-17)*, IEEE, October 1998, 245-253. **Acceptance Rate: 34% of 110 submission.**
58. Loyall, Joseph P. and Schantz, Richard E. and Zinky, John A. and Bakken, David E. "Specifying and Measuring Quality of Service in Distributed Object Systems," in *Proceedings of the First IEEE International Symposium on Object-Oriented Real-Time Distributed Computing (ISORC 98)*, April 1998, Kyoto Japan, 223-243. **Acceptance Rate: 50% of submissions. Cited 199 times as of 2019** (per google scholar)
59. Bakken, David E. and Schlichting, Richard D., "Tolerating Failures in the Bag-of-Tasks Programming Paradigm," *Proceedings of the Twenty-First International Symposium on Fault-Tolerant Computing (FTCS-21)*, IEEE, Montreal, Quebec, June 25-27, 1991, pp. 248-255. **Acceptance Rate: 28% of 218 submissions.**

Other Workshop and Conference Papers (lightly refereed, acceptance rates over 50%)

60. A. Mallikeswaran, T. Ashwarya, S. Niddodi, A. Srivastava, D. Bakken and P. Panciatici, "Cyber Physical Simulation and Remote Testing of Remedial Action Schemes", IEEE PES Transmission & Distribution Conference & Exposition, Dallas, USA, May 2-5, 2016.
61. H. L. P. Banerjee, S. Noddodi, A. Srivastava, and D. Bakken, "[On the need for robust decentralized coordination to support emerging decentralized monitoring and control applications in electric power grid](#)," in *Proceedings of the Fourth Grid of the Future Symposium*, CIGRE, Chicago, Oct 2015.
62. Gamage, T.T., Zweigle, G., Venkatasubramanian, V., Hauser, C.H., & Bakken, D.E. . "Towards Grid Resilience: A Proposal for a Progressive Control Strategy." IEEE Greentech 2015, New Orleans, LA. www.ieeegreentech.org.
63. Ryan Goodfellow, Robert Braden, Terry Benzel, and David Bakken. "First Steps Toward Scientific Cyber-Security Experimentation in Wide-Area Cyber-Physical Systems", in *Proceedings of the Eighth Annual Cyber Security and Information Intelligence Research Workshop*, ACM, oak Ridge, TN, January 2013.
64. Ioanna Dionysiou, Harald Gjermundrød, and Dave Bakken, "GUTS: A Framework for Adaptive and Configureable Grid User Trust Service," in *Proceedings of the 6th International Workshop on Security and Trust Management (STM)*, September 23-24, 2010, Athens, Greece
65. David E. Bakken, Richard E. Schantz, and Richard D. Tucker. "[Smart Grid Communications: QoS Stovepipes or QoS Interoperability](#)", in *Proceedings of Grid-Interop 2009*, GridWise Architecture Council, Denver, Colorado, November 17-19, 2009. Available <http://gridstat.net/publications/TR-GS-013.pdf>.
 - **Best Paper Award for "Connectivity" track.** This is the official communications/interoperability meeting for the pseudo-official "smart grid" community in the USA, namely DoE/GridWise and NIST/SmartGrid.
66. Ioanna Dionysiou, Harald Gjermundrød, and David Bakken. "An Initial Approach for Adaptive Trust in Grid Environments", in *Proceedings of 1st Workshop on Computational Trust for Self-Adaptive Systems (SELFTRUST 2009)*, Athens, Greece, November 2009, IARIA, 719-722. Part of the First International Conference on Adaptive and Self-adaptive Systems and Applications (ADAPTIVE 2009).
 - **Best Paper Award**
67. Ioanna Dionysiou, Dehorah Frincke, Carl Hauser, and Dave Bakken, "An Approach to Trust Management Challenges for Critical Infrastructures", in *Proceedings of the 2nd International Workshop on Critical Information Infrastructures Security (CRITIS07)*, Malaga, Spain, October 2-5, 2007.

68. Carl H. Hauser, David E. Bakken, Ioanna Dionysiou, K. Harald Gjermundrød, Venkata S. Irava and Anjan Bose, Security, trust, and QoS in next-generation control and communication for large power systems, in *Proceedings of the Workshop on Complex Network and Infrastructure Protection (CNIP06)*, Rome 28-29 March, 2006.
69. Johnston, Ryan A., Hauser, Carl H., Gjermundrød, K. Harald, and Bakken, David E., “Distributing Time-synchronous Phasor Measurement Data Using the GridStat Communication Infrastructure,” in *Proceedings of 39th Annual Hawaii International Conference on System Sciences (CD-ROM)*, January 4-7, Computer Society Press, 2006. 8 pages.
70. Kevin Dorow and David Bakken, “Flexible Fault Tolerance In Configurable Middleware For Embedded Systems”, in *Proceedings of the Workshop on Architectures for Complex Application Integration (WACAI2003)*, part of the 27th Annual International Computer Science Software and Applications Conference (COMPSAC 2003), IEEE, Dallas, Texas, November 3–6, 2003.
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74. Schantz, Richard E. and Bakken, David E. “Distributed Objects with Quality of Service: An Organizing Architecture for Integrated System Properties,” *Proceedings of the Third International Workshop on Object-Oriented, Real-Time, Dependable Systems (WORDS 97)*, IEEE, February, 1997.

Books Edited

75. David Bakken (ed). *Smart Grids: Clouds, Communications, Open Source, and Automation*. CRC Press, 2014
76. Sanjay Goel, Stephen Bush, and David Bakken (eds). *Smart Grid Communications Vision*. IEEE Communications Society, 2013.

Book Chapters

77. Anurag Srivastava, Vignesh Krishnan, Shyam Gopal, Shikhar Pandey, and David Bakken. “Impact of Data Quality on Synchrophasor-based Control to Minimize Wind Curtailment”, in *Monitoring and Control using Synchrophasors in Power Systems with Renewables*, IET, 2020, 259–284.
78. A. Srivastava, V.V.G Krishnan, S. Gopal, R. Liu, Z. Nie, and D. Bakken, “Distributed and Resilient Control with Distributed Energy Resources”, in N.R. Karki, B.P. Bhattarai, A.K Verma, and R. Karki (ed), *Intelligent Power Grid of Tomorrow: Modeling, Planning, Control, and Operation*, Springer, 2019.
79. David Bakken, Harald Gjermundrød, Ioanna Dionysiou. “GridStat: High Availability, Low Latency and Adaptive Sensor Data Delivery for Smart Generation and Transmission”, in *Smart Grids: Clouds, Communications, Open Source, and Automation*. David Bakken and Kris Iniewski, editors CRC Press, 2014.
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83. Sabnis, Chetan and Cukier, Michel and Ren, Jennifer and Sanders, William W. and Bakken, David E. and Karr, David A. “Proteus: A Flexible Infrastructure to Implement Adaptive Fault Tolerance in Aqua,” *Dependable Computing for Critical Applications 7*, IEEE Computer Society Press, 1999, C. Weinstock and J. Rushby (eds.), 149-168.

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86. Bakken, David E. "On Specification, Metadata, and Binding of Multi-Property Quality of Service," *Dependable Computing for Critical Applications 6*, IEEE Computer Society Press, 1998, Mario Dal Cin, Catherine Meadows, and William H. Sanders (eds.), 149-152.
87. Schlichting, Richard D. and Bakken, David E. and Thomas, Vicraj T., "Language Support for Fault-Tolerant Parallel and Distributed Programming," in *Foundations of Ultradependable Computing: Paradigms for Dependable Applications*, (G. Koob, C. Lau, Eds.) Kluwer Academic Publishers, 1994, 55-78.

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89. Ioanna Dionysiou, Deborah Frincke, David E. Bakken and Carl Hauser. "Actor-Oriented Trust", Technical Report EECS-GS-006, Washington State University, 2006.
90. Carl A. Gunter, William H. Sanders, David E. Bakken, Anjan Bose, Roy Campbell, George Gross, Carl H. Hauser, Himanshu Khurana, Ravishankar K. Iyer, Zbigniew T. Kalbarczyk, Klara Nahrstedt, David M. Nicol, Thomas J. Overbye, Peter W. Sauer, Sean W. Smith, Robert J. Thomas, Von Welch, and Marianne Winslett, "Trustworthy Cyber-Infrastructure for Power (TCIP)," Proceedings of the Workshop on Research Directions for Security and Networking in Critical Real-time and Embedded Systems, San Jose, CA, April 2006. Proceedings online at <http://moss.csc.ncsu.edu/~mueller/crtes06/>.
91. E. Næss, D.A. Frincke, A.D. McKinnon, and D.E. Bakken. "Configurable Middleware-Level Intrusion Detection for Embedded Systems". Technical Report MQC-2005-01, School of Electrical Engineering and Computer Science, Washington State University, January 2005.
92. Andy Franz, David Bakken, and Murali Medidi. "Multidimensional Fusion in Middleware", *Supplement of the International Conference on Dependable Systems and Networks (DSN-2002)*, IEEE/IFIP, San Francisco, CA, June 2003, B-58–B-59.
93. K. Harald Gjermundrød, Ioanna Dionysiou, David Bakken, Carl Hauser, and Anjan Bose. "Flexible and Robust Status Dissemination for the Electric Power Grid". *Technical Report EECS-GS-003*, Washington State University, September 2003.
94. Harald Gjermundrød, Ioanna Dionysiou, David Bakken, and Carl Hauser. "Fault Tolerance Mechanisms in Status Dissemination Middleware", *Supplement of the International Conference on Dependable Systems and Networks (DSN-2002)*, IEEE/IFIP, San Francisco, CA, June 2003, B-56–B-57.
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96. Bakken, D. "Middleware: What it is, and How it Enables Adaptivity and Dependability", in *Proceedings of the IFIP 10.4 Working Group on Dependable Computing, 43rd Meeting*, International Federation for Information Processing (IFIP), Santa Maria, Cape Verde, January 4–7, 2003, 13–40.
97. Bakken, D. "GridStat: Middleware for More Extensible and Resilient Status Dissemination for the Electric Power Grid" (Research Report), in *Proceedings of the IFIP 10.4 Working Group on Dependable Computing, 43rd Meeting*, International Federation for Information Processing (IFIP), Santa Maria, Cape Verde, January 4–7, 2003, 345–356.
98. Bakken, D, Bose, A., Hauser, C., Dionysiou, I., Gjermundrød, H., Xu, L, and Bhowmik, S. "Towards More Extensible and Resilient Real-Time Information Dissemination for the Electric Power Grid", in *Proceedings of*

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101. Dionysiou, I., Gjermundrød, H., and Bakken, D. "Fault Tolerance Issues in Publish-Subscribe Status Dissemination Middleware for the Electric Power Grid", *Supplement of the International Conference on Dependable Systems and Networks (DSN-2002)*, IEEE/IFIP, Washington, DC, June 23-26, 2002, B-62-63..
102. Bakken, D., Ding, J., Gu, L. and Sivalingam, K. "Towards Bandwidth Reservation for Reliable Multicast", in *Proceedings of the IFIP 10.4 Working Group on Dependable Computing, 40th Meeting*, International Federation for Information Processing (IFIP), Stenungsund, Sweden, July 4-8, 2001, 241-248.
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104. Bakken, D.. "[Middleware](#)", *Unpublished manuscript*, 2001. Prepared for Encyclopedia of Distributed Computing (was later cancelled), but as of 2016 **has been cited 192 times** per google scholar (um, just from my web page).
105. Bakken, D., Gu, L. Sivalingam, K., and Karr, D. "Improving Group Communication Performance with Bandwidth Reservation", in *Digest of FastAbstracts presented at the International Conference on Dependable Systems and Networks (DSN-2000)*, IEEE/IFIP, New York, June, 2000.
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108. Bakken, D and Berman, M, and Cukier, M. and Karr, D. and Megquier, J, and Ren, J. and Ruebel, P. and Sabnis, C. [Sanders, W.](#) and Schantz, R. *AQuA Dependability Management User's and Programmer's Guide Release 2.1*, University of Illinois and BBN Technologies, October 1999.
109. Bakken, David E. and Karr, David A and Jones, Christopher C. and Hale, John C, "The Voting Virtual Machine: A Flexible Mechanism for Collating Replicated Client Requests and Server Replies", *Digest of FastAbstracts presented at the 29th Annual International Symposium on Fault-Tolerant Computing (FTCS-29)*, FTCS-29, IEEE, June 15-18, 1999, Madison, WI.
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111. Schantz, Richard and Bakken, David and Karr, David and Loyall, Joseph and Zinky, John. "Distributed Objects with Quality of Service: An Organizing Architecture for Integrated System Properties", Workshop on Compositional Software Architectures, DARPA/OMG/MCC, January 6-8, 1998.
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119. Bakken, David. E. and Schlichting, Richard D., "Using FT-Linda for Constructing Fault-Tolerant Parallel Programs" (extended abstract), in *Proceedings of the Conference on Parallel and Distributed Computing*, Kuwait, March 13-15, 1995, 29-31.
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123. Bakken, David E. and Schlichting, Richard E., *Supporting Fault-Tolerant Parallel Programming in Linda*. Technical Report TR93-18, The University of Arizona, 1993.
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Patents

1. B. Johnson, T. Gamage, D. Bakken, "Rate-Based Failure Detection", US Patent No. 9,857,825, January 2, 2018.
2. D. Bakken. "Systematic Adaptation of Data Delivery", US Patent Number 9,252,915, February 2, 2016.
3. J. Zinky, R. Schantz, D. Bakken, and J. Loyall. "Framework for Providing Quality of Service Requirements in a Distributed Object-Oriented Computer System", U.S. Patent Number 6,691,148, February 10, 2004. **Cited 126 times as of 2016** (per google scholar)
4. J. Zinky, R. Schantz, D. Bakken, and J. Loyall. "Framework for Providing Quality of Service Requirements in a Distributed Object-Oriented Computer System", U.S. Patent Number 6,629,126, September 30, 2003.
5. J. Zinky, R. Schantz, D. Bakken, J. Loyall, and R. Vanegas. "Framework for Providing Quality of Service Requirements in a Distributed Object-Oriented Computer System", U.S. Patent Number 6,480,879. November 1, 2002.

Former Graduate Student Advisees

1. Poorva Sharma, MS(CS), April, 2021. “Model-based Data Access and Exchange Interface for Advanced Distribution and Management Applications”, now working at [Pacific Northwest National Laboratory \(PNNL\)](#).
2. Shyam Gopal, MS(CS), December 2018
3. Tanvi Ashwarya, MS(CS) December 2015
4. Shwetha Nidodi, MS (CE) December 2015, now working at [Pacific Northwest National Laboratory \(PNNL\)](#)..
5. Tara Gibson, MS (CS), August 2015, now working at [Pacific Northwest National Laboratory \(PNNL\)](#)..
6. Luis Oleas Chavez, MS (CS), August 2014
7. Brett Johnson, MS (CS), 2014.
8. Wendy Maiden, MS (CS), “DualTrust: a trust management model for swarm-based autonomic computing systems”, 2010, now working at [Pacific Northwest National Laboratory \(PNNL\)](#)..
9. Kim Swenson, MS (CS) Exploiting network processors for low latency, high throughput, rate-based sensor update delivery, Wendy 2009.
10. Rick Grandy, MS (CS) 2007, Application of Reliable Host-Based Multicast to Large Scale Simulations. Working at Lockheed Martin, Richland Washington.
11. Erlend Viddal, MS (CS), 2007, Ratatoskr: Wide-Area Actuator RPC over GridStat with Timeliness, Redundancy and Safety. Now working for Eltek Valere, Drammen Norway.
12. Stian Abelsen, MS (CS) 2007, Adaptive GridStat Information Flow Mechanisms and Management for Power Grid Contingencies. Now working for Simula Innovation, Oslo Norway.
13. Ioanna Dionysiou PhD (CS) 2006, Dynamic and Composable Trust Management for Publish-Subscribe systems. Associate Professor (with tenure) at University of Nicosia, Cyprus.
14. Kjell “Harald” Gjermundrød PhD (CS) 2006 , GridStat status dissemination middleware mechanisms. Associate Professor at University of Nicosia, Cyprus.
15. Thor Egil Skaug, MicroQoSCORBA MS (CS) 2004, wireless middleware adaptation mechanisms in Bluetooth. Working in industry
16. Eivind Næss, MicroQoSCORBA MS (CS) 2004, configurable middleware-layer embedded intrusion detection subsystem.
17. Wesley Lawrence, MicroQoSCORBA realtime profiling toolkit, MS (CS) October 2003. Now working at [Pacific Northwest National Laboratory \(PNNL\)](#).
18. [A. David McKinnon](#) (PhD in CS), 2003, MicroQoSCORBA architecture & security mechanisms, now working at [Pacific Northwest National Laboratory \(PNNL\)](#).
19. Kevin Dorow, MS (CS), 2002, MicroQoSCORBA fault tolerance, now working at [Pacific Northwest National Laboratory \(PNNL\)](#).
20. [Tarana Damania](#) MS (EE), MicroQoSCORBA, 2002. Completed an MBA at WSU in 2004, now working for Ernst & Young in the Los Angeles area.
21. Radek Mista MS(CS), Mr. Fusion (Fusion Status Service), 2002, then worked for [Silicon Defense](#).
22. Sripriya Vasudevan MS (CS), 2001, ad hoc mobile protocols, now at [Microsoft](#) (co-advisor Prof. Sivalingam)
23. Solve Stokkan, MS (CS), 2001, adaptive attribute-based security for CORBA, now back in Norway.
24. Zhiyuan (“Troy”) Zhan, MS (CS), 2001, Voting Virtual Machine, now at Microsoft.
25. [Olav Haugan](#), MS (CS) 2001, MicroQoSCORBA Toolkit, now working for [Hynomics](#).
26. Marius Sundbakken, MS (CS) 2001, C++ Maintainability (co-advisor Jack Hagermeister)
27. Limin Gu, MS (CS), 2000, group communication and bandwidth reservation, now at [Silicon Graphics](#)
28. [Chris Jones](#), MS (CS), 2000, voting in middleware, first at [BBN](#), then at [TriGeo Network Security](#).

Postdoc and Research Assistant Professor Supervision

None presently.

Past Postocs

1. Thoshitha Gamage, 2012-2014
2. Jinok Hwang, 2010-2011
3. Sivakumar Kulasekaran, 2011-2011

Professional Activities

Current External Doctoral Committee Members

None presently.

Past External Doctoral Committees

1. Thanh Quynh Ngyuen, Grenoble INP, December 16, 2019. Committee member with voting rights.
2. Shuping Ji, “Efficient Content-Based Publish/Subscribe Routing and Boolean Expression Matching Algorithms”, Department of Informatics, Technical University of Munich, October 2018. Examiner with voting rights.
3. Pooya Salehi, “Dependable Publish/Subscribe Systems for Distributed Application Development”, Department of Informatics, Technical University of Munich, October 2018. Examiner with voting rights.
4. Zhiyuan Zhan, “Meeting Data Sharing Needs of Heterogeneous Distributed Users”, College of Computer Science, Georgia Institute of Technology, December, 2006. Voting member of committee.
5. Kristina Forsberg, “Design Principles of Fly-By-Wire Architectures”, Department of Computer Engineering, Chalmers University of Technology, Göteborg, Sweden, June, 2003. “Opponent” in the dissertation defense (formal inquisitor and voting member of committee).
6. Vijaykumar Krishnaswamy, “Shared State Management for Time Sensitive Distributed Applications” College of Computer Science, Georgia Institute of Technology, February 2001. Voting member of committee.
7. Peter A. Dinda, “Resource Signal Prediction and its Application to Real-Time Scheduling Advisors”, School of Computer Science, Carnegie Mellon University, February, 2000. Voting member of committee.

Symposium Leadership

Founder, [Workshop on Trustworthiness of Smart Grids](#). First one held at the IEEE International Symposium on Dependable Systems and Networks (DSN), Atlanta, GA, June 23, 2014. Second one held at IEEE PES Innovative Smart Grid Technologies (ISGT) conference, Washington, DC, February 18, 2015.

Chair, IEEE SmartGridComm Symposium on Wide-Area Monitoring, Control, and Protection (WAMPAC). Tainan City, Taiwan, November 2012.

Panel Participation

Co-chair, panel “Computational Infrastructure for Distributed Control in the Power Grid”, [IEEE Power & Energy Society General Meeting 2018](#), Portland, Oregon, August 8, 2018.

Panelist for panel “Computational Infrastructure for Distributed Control in the Power Grid”, [IEEE Power & Energy Society General Meeting 2018](#), Portland, Oregon, August 8, 2018. Topic: Resilient Distributed Control using Fog Computing

Chair, panel “Edge Computing for a More Adaptive and Manageable Grid”, [IEEE Innovative Smart Grid Technologies](#), February 19-22, 2018, Washington, DC.

Moderator of panel “Cyber-Physical ICT and Power: Issues and Opportunities”, [2nd International Workshop on Trustworthiness of Smart Grids \(ToSG\)](#), Washington, DC, February 18, 2015.

Moderator of panel “Cloud Computing and the Smart Grid: Threat, Menace, or Salvation?”, IEEE Innovative Smart Grid Technologies (ISGT) North America (ISGT-2014), Washington, DC, February 22, 2014.

Panelist for “Data Management and Analytics”, Advanced Grid Modeling Workshop, US. Dept of Energy, Knoxville, TN, Feb 5-6, 2013.

Panelist for “Communications Interoperability” panel, Grid-Interop 2009 (main “smart grid” community in US), Denver, CO November 17-19, 2009. Topic: “Smart Grid Communications: QoS Stovepipes or QoS Interoperability?”

Panelist for panel “Critical Computing Systems: Challenges and Directions”, Fourth International Conference on Configurable Distributed Systems (CDS '98), Annapolis, MD, May 4-6, 1998.

Moderator of panel “Extending QoS to include Performance, Dependability, and Security”, Sixth International Working

Conference on Dependable Computing for Critical Applications (DCCA-6), Grainau, Germany, March 5-7, 1997.

Panelist for panel “Major Research Issues in Object-Oriented Reliable Distributed Systems”, Second International Workshop on Object-Oriented Real-Time Dependable Systems (WORDS ‘96), IEEE, February 1996.

Session Chairs

Chair of Session “S1-4: Traffic Monitoring and Analysis”, IEEE ComSoc International Conference on Smart Grid Communications (SmartGridComm 2015), November 4, 2015, Miami, Florida.

Chair of Session “S1-5: Traffic Monitoring and Analysis”, IEEE ComSoc International Conference on Smart Grid Communications (SmartGridComm 2015), November 4, 2015, Miami, Florida.

Chair of Session “CyberSecurity I” at the IEEE PES Conference on Innovative Smart Grid Technologies, Washington, DC, February 19, 2015.

Chair of session “Invited Paper Session”, [2nd International Workshop on Trustworthiness of Smart Grids \(ToSG\), Washington, DC, February 18, 2015.](#)

Chair of Panel “Cyber-Dependability and the Power Grid”, [1st International Workshop on Trustworthiness of Smart Grids \(ToSG\)](#), Atlanta, GA June 23, 2014.

Chair of panel “Industry Panel, Case Studies of Cybersecurity in Smart Grid Deployment”, TCIPG Industry Day, November 12, 2014, Champaign, IL.

Chair of Session at North American Power Symposium, Pullman, WA, September 2014

Chair of Session 2B (Practical Experience Reports), International Conference on Dependable Systems and Networks (DSN-2008), IEEE/IFIP, Anchorage, Alaska, June 2008.

Chair of the Session 6B “Fast Abstracts III” at the International Conference on Dependable Systems and Networks (DSN-2002), IEEE/IFIP, San Francisco, CA, June 2003.

Chair of the session “Fast Abstracts I” at the International Conference on Dependable Systems and Networks (DSN-2002), IEEE/IFIP, Washington, DC, June 2002.

Chair of the session “Object Oriented Systems” at the Twenty First International Conference on Distributed Computing Systems (ICDCS-21), IEEE, Mesa, Arizona, April 2001.

Chair of one of the FastAbstracts sessions at the [International Conference on Dependable Systems and Networks](#), (DSN-2000), IEEE/IFIP, New York, June 2000.

Chair of the “Broadcast and Multicast” session at the Nineteenth International Conference on Distributed Computing Systems (ICDCS ’99), IEEE, Austin, Texas, May 31-June 4, 1999.

Program and Organizing Committees

[there are probably 5 or so missing from 2009 and on because I’ve been too busy to track them. Dave Dec. 2013]

Program Committee for IEEE ComSoc [GlobeCom 2020](#) SAC SGCPLC, Taipei, Taiwan

Program Committee for IEEE ComSoc GlobeCom 2019 SAC SGC, XXX

Program Committee for [IEEE ComSoc SmartGridComm 2022](#), Singapore, 25-28 October 2022.

Program Committee for IEEE ComSoc SmartGridComm 2019, Program Committee for IEEE ComSoc [SmartGridComm 2019](#), Beijing, China, 21-24 October, 2019.

Program Committee for IEEE ComSoc SmartGridComm 2018, Aalborg, Denmark, October 29 to November 2, 2018.

Program Committee for the World Fog Congress (IEEE/OpenFog), Santa Clara, CA, October 30 to November 1, 2017.

Program Committee for [IEEE ComSoc SmartGridComm 2017](#), Dresden, Germany, October 23-26, 2017.

Program Committee for [32nd ACM SIGAPP Symposium on Applied Computing](#), IoT Track, Marrakech, Morocco, April 4-6, 2017.

Program Committee for [19th Power Systems Computation Conference](#), Genova, Italy, June 20-24, 2016.

Program Committee for IEEE ComSoc SmartGridComm Symposium on Cyber-Physical Wide-Area Monitoring, Protection, and Control, Vancouver, Canada, November 2013.

Program Committee for IEEE ComSoc SmartGridComm Symposium on Smart Grid Communication Networks., Tainan City, Taiwan, November 2012.

Organizing Committee for the ISCE 2012 International Workshop on Software Engineering Challenges for the Smart Grid (SE4SG12), part of the 34th International Conference on Software Engineering (ISCE), IEEE/ACM, Zurich, Switzerland, June 3, 2012.

Program Committee for 1st International Workshop on High Performance Computing, Networking and Analytics for the Power Grid, Seattle, November 13, 2011.

Program Committee Program Committee for IEEE SmartGridComm 2011, Track- Architectures and Models, Brussels, Belgium, October 17-20, 2011.

Program Committee for IEEE SmartGridComm 2011, Track- Communication Networks for Smart Grid, Brussels, Belgium, October 17-20, 2011.

Program Committee, 8th International Conference on Autonomic and Trusted Computing, Banff, Canada, September 2-4, 2011.

Program Committee for 2nd IEEE Workshop on Smart Grid Networking Infrastructure (SGNI), Bonn, Germany, October 4–7, 2011. Part of LCN 2011.

Program Committee for Program Committee on International Conference on Distributed Applications and Interoperable Systems (DAIS 2010), Amsterdam, June 2010. Part of DisCoTec 2010, IFIP.

Program Committee Member for First International Workshop on Smart Grid Communications (IEEE COMSOC), Cape Town, South Africa, May 2010.

Program Committee Member for Seventh IFIP International Conference on Distributed Applications and Interoperable Systems (DAIS 2007), Paphos, Cyprus, June 6-8, 2007.

Program Committee Member for the [4th International Service Availability Symposium \(ISAS 2007\)](#), Durham, New Hampshire, May 21–22, 2007.

Program Committee Member for 2nd Workshop on Hot Topics in Dependability ([HotDep 06](#)), part of the 7th Symposium on Operating Systems Design and Implemental ([OSDI 06](#)), USENIX, November 8, 2006, Seattle.

Program Committee Member for 6th IFIP WG 6.1 International Conference on Distributed Applications and Interoperable Systems (DAIS 2006), Bologna, Italy, June 13-16, 2006

Program Committee Member for [High Assurance Systems Engineering \(HASE 2005\)](#), Heidelberg, Germany, October 12-14, 2005.

Program committee for the FastAbstracts sessions of [International Conference on Dependable Systems and Networks \(DSN-2005\)](#), Yokohama, Japan, June 28-July 1, 2005.

Program Committee Member for [International Workshop on Critical Information Infrastructures \(CIIW'05\)](#), International Institute for Critical Infrastructures, Linköping, Sweden, May 17-18, 2005.

Program Committee Member for [2nd International Service Availability Symposium](#), Berlin, Germany, April 25-26, 2005.

Program Committee Member for 3rd IEEE International Symposium on Network Computing and Applications, Cambridge, MA, August 30-September 1, 2004.

Program Committee Member for the [International Workshop on Middleware Performance \(MP 2004\)](#), satellite workshop for the [IEEE International Performance, Computing, and Communications Conference](#), Phoenix, Arizona US April 2004.

Program Committee Member for the [2004 Pacific Rim International Symposium on Dependable Computing \(PRDC 2004\)](#), IEEE, French Polynesian Islands (Tahiti), March 3–5, 2004.

Program Committee Member for [Workshop on Reliable and Secure Middleware](#), part of [Fifth International Symposium on Distributed Objects and Applications \(DOA'03\)](#), Sicily, Italy, Nov. 3–7, 2003.

Program Committee Member for the Workshop on Architectures for Complex Application Integration (WACAI 2003), part of the [27th Annual International Computer Software and Applications Conference \(COMPSAC 2003\)](#), Hong Kong, Sept. 30 – Oct. 3, 2003.

Program Committee Member for Tutorials Committee, [International Conference on Dependable Systems and Networks \(DSN-2003\)](#), San Francisco, CA, June 2003.

Program Committee member, [2002 International Symposium on Distributed Computing \(DISC-2002\)](#), Toulouse, France, October 28-30, 2002.

[Program committee member for Fourth International Symposium on Distributed Objects & Applications \(DOA'02\)](#), Irvine, California, October 28-November 1, 2002.

Program committee member for Twenty Second International Conference on Distributed Computing Systems (ICDCS-22), Vienna, Austria, July 2-5 2002.

Member of Organizing Committee for International Conference on Dependable Systems and Networks (DSN-2002), Washington, DC, June 2002.

FastAbstracts chair for International Conference on Dependable Systems and Networks (DSN-2002), Washington, DC, June 2002.

Program committee member for Workshop on Dependable Middleware-Based Systems (WDMS-2002), Washington, DC, June 2002.

Program committee member for the Sixth Annual Workshop on Distributed Objects and Components Security (DOCSEC2002), Object Management Group, March 18-21 2002, Baltimore, Maryland.

Program committee member for Third International Symposium on Distributed Objects & Applications, Rome, September 2001.

Program committee for the [FastAbstracts](#) sessions of [International Conference on Dependable Systems and Networks](#) (DSN-2001), Göteborg, Sweden, July 2001.

Program committee member for Twenty First International Conference on Distributed Computing Systems (ICDCS-21), IEEE, Mesa, Arizona, April 2001.

Program committee member for the FastAbstracts sessions of [International Conference on Dependable Systems and Networks](#), (DSN-2000), IEEE/IFIP, New York, June 2000.

Program committee member for Nineteenth International Conference on Distributed Computing Systems (ICDCS '99), IEEE, Austin, Texas, May 31-June 4, 1999.

Program committee member for Fourth Workshop on Languages, Compilers, and Run-time Systems for Scalable Computers (LCR '98), ACM SIGPLAN, Pittsburgh, PA, May 28-30, 1998.

Other Professional Activities

Secretary, IEEE PES Intelligent Grid and Emerging Technology Coordinating Committee (IGETCC), 2017-present.

Chair, Data Bus Subcommittee, RFP Task force of the North American Synchrophasor Initiative ([NASPI](#)), 2007-8.

Invited reviewer for *Building Secure and Reliable Network Applications* by **Kenneth P. Birman**, Manning Publications (Greenwich, CT) and Prentice Hall, 1997.

Referee for many conferences and journals each year.

Senior Member, IEEE

Tutorial Participation

(PENDING) "Distributed Computing for Decentralized Grids and the IoT", ISGT Europe 2025, Malta.

Invited Technical Presentations (*future in parentheses*)

Audience Legend: **EE/Power**, **Computer Science**, **Both**. (pending/future *in italics*.) Note: it is unheard of for a computer scientist (at least an applied “infrastructure software” one) to be invited to present to anywhere close to this number of **power audiences**. Also, for every invited presentation, I typically have 3-4 other power meetings I attend.

1. 7/23/2025 Schweitzer Engineering Labs, Pullman, WA
2. 4/15/2025 NASPI Work Group Meeting, Minneapolis, MN
3. 12/12/19 Grenoble INP, France
4. 12/16/19 Grenoble INP, France
5. 11/29/19 KU Leuven, Belgium
6. 11/28/19 Technische Universität München (EE), Germany
7. 11/27/19 Siemens Corporate Technology, Munich
8. 11/25/19 European Commission (ENER), Brussels, Belgium
9. 11/25/19 RWTH Aachen University, Germany (yes, same day --- only 1 hour train ride from Brussels)
10. 8/23/19 (Keynote) International Summer School on Smart Cities for a Sustainable Energy Future, Berlin, Germany.
11. 8/5/19 iGETCC DER QoS panel (added at last minute), IEEE PESGM2019, Atlanta, Georgia
12. 7/5/19 Siemens, Munich, Germany (Dr. Max Fleischer & Dr. Michael Metzger)
13. 4/22/19 Pacific Northwest National Lab, Richland WA
14. 3/21/19 BBN Technologies, Cambridge, Mass.
15. 11/30/18 Wichita State University, Kansas.
16. 10/4/18 Siemens, Munich, Germany (Dr. Max Fleischer & Dr. Michael Metzger)
17. 9/27/18 “Middleware Systems Research Symposium”, Gran Canaria, Spain. Keynote presentation
18. 3/22/18 Technische Universität Dresden, Germany
19. 3/16/18 Technische Universität München, Germany
20. 3/14/18 TZE Energy Lab, Ruhstorf, Germany
21. 6/14/17 Landshut University of Applied Science, Germany
22. 5/3/17 Schweitzer Engineering Labs, Pullman, WA
23. 4/12/16 Hong Kong Polytechnic University.
24. 9/18/15 Cisco (utilities sector), Munich, Germany
25. 9/16/15 RTE France, Versailles, France
26. 9/11/15 Rutgers University, New Brunswick, NJ
27. 7/1/15 General Electric, Atlanta (**Host: John McDonald**)
28. 6/19/15 TCIPG Summer School, St. Charles, IL
29. 6/18/15 TCIPG Summer School, St. Charles, IL
30. 6/17/15 TCIPG Summer School, St. Charles, IL
31. 6/16/15 TCIPG Summer School, St. Charles, IL
32. 3/24/15 NASPI Working Group Meeting, San Mateo, CA
33. 2/20/15 IEEE Innovative Smart Grid Technologies (ISGT) Conference
34. 2/4/15 ERCOT Grid, Austin, TX
35. 12/12/14 USC Information Sciences Institute, Marina del Rey, CA
36. 12/3/14 ERCOT Phasor Measurement Unit Task Force (webinar to Austin, TX)
37. 9/26/14 ABB HDVC Lab, Västerås, Sweden
38. 9/25/14 Swedish Defense Research Agency (Sweden’s DARPA), Linköping, Sweden
39. 9/24/14 KTH-Royal Institute of Technology, Stockholm, Sweden
40. 9/22/14 Technische Universität Darmstadt, Germany
41. 9/19/14 Siemens, Munich
42. 9/18/14 RTE France, Versailles
43. 9/17/14 RTE France, Versailles
44. 7/24/14 Bonneville Power Administration, Vancouver WA
45. 7/17/14 PNNL Data Analytics Panel, Richland, WA
46. 7/10/14 Next-Gen Grid Data Architecture Meeting, Valley Forge, PA
47. 6/24/14 Department of Electrical and Computer Engineering, Georgia Tech.
48. 2/28/14 Department of Electrical and Computer Engineering, University of Alaska Fairbanks
49. 12/10/13 Next Generation Grid Data Architecture (high-profile NSF-DOE planning meeting), Knoxville TN
50. 11/4/13 Electrical and Computer Engineering Department, Iowa State University, Ames Iowa.
51. 10/24/13 North American Synchrophasor Initiative (NASPI), Chicago IL
52. 10/23/13 Data & Network Management Task Team, North American Synchrophasor Initiative, Chicago IL
53. 8/16/13 Isilon Corp, Seattle, WA
54. 8/1/13 Southern California Edison, Westminster, CA
55. 7/11/13 PSERC Summer Meeting, Pearl River, NY
56. 2/26/13 National Security Agency, Laurel Maryland
57. 2/5/13 Advanced Grid Modeling Workshop (DOE), Knoxville, TN

58. 1/11/13 Southern California Edison, Westminster, CA
59. 10/29/12 Midwest ISO, Carmel, IN
60. 10/16/12 Department of Electrical and Computer Engineering, Georgia Tech, Atlanta GA
61. 3/16/12 Southern California Edison, Westminster, CA
62. 3/15/12 University of Southern California, Institute for Information Sciences (USC/ISI)
63. 3/14/12 California Institute of Technology (Caltech), Pasadena, CA
64. 1/26/12 Real-Time Innovations, Sunnyvale CA
65. 1/25/12 Intel Labs, Santa Clara CA
66. 11/10/11 ISO New England, Holyoke, MA
67. 10/04/11 National PSERC Seminar
68. 09/29/11 Smart Grid World Forum (plenary presentation), Beijing, China. GE CEO Jeff Immelts in same session.
69. 09/28/11 State Grid of China Corporation (Electric Power Research Institute), Beijing, China
70. 07/05/11 Time Triggered Technologies, Vienna, Austria
71. 6/10/11 BBN Technologies, Cambridge, MA
72. 6/7/11 NASPI Data & Network Management Task Team, Toronto, Ontario, Canada
73. 11/22/10 ISO NY (with ISO New England, PJM, MISO), Rensselaer, NY
74. 8/27/10 Puget Sound Energy (control room and support), Redmond, WA
75. 5/18/10 University of Naples "Parthenope", Italy (International cooperation meeting with EC industry)
76. 2/24/10 NASPI Data & Network Task Team Working Group, Austin, TX
77. 2/22/10 Department of Electrical & Computer Engineering, Texas A&M, College Station, TX
78. 11/18/09 Grid Interop 2009 (Denver, CO)
79. 11/06/09 Department of Electrical Engineering, Arizona State University, Tempe AZ
80. 11/05/09 Salt River Project (a utility), Scottsdale, AZ
81. 8/7/09 Pacific Gas & Electric (planning), Oakland, CA
82. 8/7/09 Pacific Gas & Electric (operations), San Francisco, CA
83. 8/6/09 Southern California Edison (IT), Irwindale, CA
84. 7/10/09 Bonneville Power Administration, Vancouver WA
85. 4/22/09 College of Computing, Georgia Tech, Atlanta GA
86. 4/21/09 Department of Electrical and Computer Engineering, Georgia Tech, Atlanta GA
87. 2/6/09 Cisco Systems (Smart Grid Architecture Group), San Jose, CA
88. 1/21/09 Cisco Electric Utility Consultants Group, Munich, Germany
89. 1/20/09 European Commission ICT- Energy Research Information Day, Brussels Belgium (keynote)
90. 1/24/09 North American Synchrophasor Initiative (NASPI) meeting, Phoenix AZ
91. 1/5/09 Electrical Engineering Department, Northeastern University, Boston MA
92. 10/17/08 North American Synchrophasor Initiative (NASPI) meeting, Charlotte, NC
93. 9/12/08 Pacific Northwest National Lab, Richland WA
94. 8/29/08 Tacoma Power, Tacoma WA
95. 4/30/08 Puget Sound Energy, Bellevue WA
96. 4/30/08 Areva, Redmond, WA
97. 3/27/08 Western Electricity Coordinating Council (Data Exchange Work Group), San Diego, CA
98. 2/5/08 Bonneville Power Administration, Vancouver WA
99. 11/7/07 Tennessee Valley Authority, Chattanooga, TN
100. 11/6/07 Oak Ridge National Lab, Oak Ridge, TN
101. 11/6/07 PSERC National Seminar (via telephone)
102. 11/2/07 Idaho National Lab, Idaho Falls, ID
103. 9/18/07 Workshop on Phasors & Phasor Applications, Entergy utility, New Orleans, Louisiana
104. 9/13/07 Pacific Northwest National Lab, Richland WA
105. 3/15/07 Electric League of the Pacific Northwest, Bellevue Washington
106. 2/26/07 Intercollege, Nicosia, Cyprus
107. 2/22/07 Oslo College, Norway
108. 2/21/07 Buskerud College, Kongsberg Norway
109. 2/19/07 Sintef Energy Research, Trondheim Norway.
110. 1/12/07 IFIP 10.4 Working Group on Dependable Computing, Gosier, France
111. 1/14/07 IFIP 10.4 Working Group on Dependable Computing, Gosier, France
112. 11/28/06 National Institute of Standards and Technology, Washington DC
113. 11/27/06 Department of Energy, Washington DC
114. 11/14/06 Idaho National Lab, Idaho Falls, ID
115. 10/11/06 Avista Utilities, Spokane, Washington
116. 10/5/06 Visualization & Analytics Centers (VAC) Consortium meeting, PNNL, Richland, WA
117. 6/8/06 Technische Universität Darmstadt, Germany
118. 6/5/06 Workshop on Complex Networks and Infrastructure Protection, Italian National Energy Lab (ENEA), Rome, Italy
119. 3/17/06 US-EU Critical Infrastructure Protection workshop, Washington, DC

120. 3/16/06 Department of Homeland Security, Washington, DC
121. 10/13/05 Eastern Interconnect Phasor Project (EIPP) meeting, Washington, DC. Note: EIPP later was expanded to what is now known as the North American Synchrophasor Initiative (NASPI), www.naspi.org.
122. 5/30/05 Workshop on Next-Generation Power Grid Communications for Better Control and Protection, Rome, Italy (keynote speaker)
123. 4/26/05 2nd International Service Availability Symposium (ISAS05), Berlin, Germany.
124. 4/25/05 Lancaster University, UK
125. 4/22/05 Lancaster University, UK
126. 3/7/05 Department of Energy, Washington, DC (briefing staff of Office of Electricity & others in DHS, NIST, NSF)
127. 2/4/05 EC Workshop on power grid communications, Brussels, Belgium (keynote speaker)
128. 11/18/04 Linköping University, Sweden
129. 10/21/04 Norsk EnergiRevisjon AS (NERAS), Lier, Norway
130. 10/11/04 Technische Universität Wien, Vienna, Austria
131. 10/8/04 Technische Universität Darmstadt, Germany
132. 10/6/04 ABB Research, Baden, Switzerland (ABB's corporate research headquarters)
133. 9/27/04 European Commission, Brussels Belgium
134. 9/20/04 Department of Homeland Security, Washington DC
135. 5/6/04 Pacific Northwest National Lab, Richland WA
136. 4/7/04 Boeing Commercial Airplanes, Seattle, WA
137. 3/24/04 Inland Northwest Homeland Defense Research Symposium, Moscow, ID
138. 3/2/04 Department of Energy, Washington, DC
139. 3/2/04 Department of Homeland Security, Washington, DC
140. 2/10/04 Simula Research Laboratory, Olso, Norway
141. 12/15/03 Pacific Northwest National Lab, Richland WA
142. 11/12/03 Software Protection Initiative Workshop, Washington DC
143. 10/27/03 Agilent Technologies, Liberty Lake, Washington
144. 9/26/03 Oregon Graduate Institute, Portland, OR
145. 6/12/03 Technische Universität Berlin, Germany
146. 6/11/03 Chalmers University, Göteborg Sweden
147. 6/5/03 University of Oslo, Oslo Norway
148. 4/18/03 BBN Systems and Technologies, Cambridge, MA
149. 4/14/03 Georgia Institute of Technology, Atlanta, GA
150. 4/4/03 Cisco, San Jose, CA
151. 4/4/03 HP Labs, Palo Alto, CA
152. 2/12/03 Amazon.com, Seattle, WA
153. 2/11/03 INTEC Security Forum, Spokane, WA
154. 1/10/03 RED ELÉCTRICA DE ESPAÑA, Madrid, Spain. (main electric utility in Spain)
155. 1/7/03 43rd IFIP Working Group 10.4 on Dependable Computing (research report on GridStat), Sal, Cape Verde.
156. 1/4/03 43rd IFIP Working Group 10.4 on Dependable Computing (opening presentation on middleware for adaptability and dependability), Sal, Cape Verde.
157. 12/5/02 Pacific Northwest National Lab (PNNL), Richland, Washington.
158. 9/4/02 Northwest Public Power Association (NWPPA), Spokane, Washington.
159. 6/25/02 International Conference on Dependable Systems and Networks (DSN-02), Washington, DC.
160. 6/18/02 The Boeing Company, Seattle, Washington.
161. 4/25/02 University of Tromsø, Tromsø, Norway
162. 4/23/02 University of Oslo, Oslo, Norway
163. 4/22/02 Simula Research Laboratory, Olso, Norway
164. 3/13/02 DARPA OASIS PI Meeting, Hilton Head, SC.
165. 3/5/02 HP Labs, Palo Alto, CA.
166. 12/6/01 World Wide Packets, Spokane WA.
167. 8/3/01 CERT Coordination Center, Software Engineering Institute, Carnegie Mellon University, Pittsburgh, PA.
168. 7/08/01 IFIP 10.4 Working Group on Dependable Computing and Formal Methods (Research Reports briefing), Stenungsund, Sweden.
169. 7/04/01 International Conference on Dependable Systems and Networks (DSN-01), Göteborg, Sweden. (2 presentations: full paper and also Fast Abstract)
170. 6/27/01 University of Oslo, Oslo Norway
171. 6/21/01 Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland
172. 5/27/01 Middleware Summit, Washington University, St. Louis, MO.
173. 2/20/01 Georgia Institute of Technology, Atlanta GA
174. 1/31/01 Oregon State University, Corvallis OR
175. 10/24/00 Third Information Survivability Workshop (ISW-2000), Boston, MA (My first power-related talk: 2000 ☺)
176. 10/12/00 Arizona State University, Tempe, AZ

177.10/11/00 University of Arizona, Tucson, AZ
 178.7/24/00 DARPA Realtime Java VM Workshop, Arlington, VA
 179.11/16/99 Washington University, St. Louis, MO
 180.11/15/99 University of Illinois at Urbana-Champaign
 181.4/21/99 Hewlett Packard Laboratories, Palo Alto, CA
 182.12/2/97 USAF Rome Lab/C3AB 20th Technology Exchange Meeting, Utica, NY
 183.11/21/97 Carnegie Mellon University, Pittsburgh PA
 184.11/5/97 Northeastern University, Boston MA
 185.10/29/97 Oregon Graduate Institute, Beaverton, OR
 186.10/28/97 University of Oregon, Eugene, OR
 187.10/27/97 Boeing Defense and Space Group, Kent, WA
 188.10/24/97 Washington State University, Pullman, WA
 189.10/23/97 Boeing Commercial Airplane Company, Everett WA
 190.10/10/97 Georgia Institute of Technology, Atlanta, GA
 191.6/25/97 FTCS-27 (Work In Progress Report), Seattle, WA
 192.6/17/97 OOPSLA Mid-Year Applied Object Technology Telecommunications Workshop, Port Jefferson NY
 193.12/11/96 DARPA QoSA Meeting (at 37th IETF Meeting), San Jose, CA
 194.12/5/96 Rome Lab/C3AB 19th Technology Exchange Meeting, Utica, NY
 195.3/14/95 Conference on Parallel and Distributed Systems, Kuwait University
 196.2/8/95 University of Massachusetts, Lowell
 197.7/12/94 Boeing Commercial Airplane Company, Everett, WA
 198.5/1994 University of Texas, El Paso (date approx.)
 199.4/1994 University of Wyoming (date approx.)
 200.4/1994 BBN Systems and Technologies, Cambridge, Mass. (date approx.)
 201.7/1992 GTE Labs, Waltham, MA
 202.6/26/91 FTCS-21, Montreal, Canada
 203.10/18/88 Digital Avionics Systems Conference, San Jose, CA. (hey, my first paper!)