

Consulting Letters of Reference for Dr. David Bakken

The following deeply technical letters of reference in this collection are:

- **Dr. Aad van Moorsel, HP Labs.** Dr. van Moorsel is a recognized expert in fault-tolerant computing and serves on a number of prestigious conference program committees. He has been very well aware of me and my work since circa 1997 at BBN and is well aware of my work at WSU. I have visited HP Labs and given technical presentations on three separate occasions, and I have had numerous technical discussions with him at conferences.
- **Dr. Richard Schantz, BBN Technologies.** Dr. Schantz is considered one of the pioneers of distributed computing, having done one of the first PhD dissertations in distributed operating systems in 1974 and having conducted research on middleware for wide-area networks since 1979. He was the principal architect of Cronus, a middleware framework that was a predecessor to CORBA and has been deployed widely by the military. Cronus was given recognition by the Smithsonian in the late 1990s.
- **Mr. Gregg Tally and Ms. Terry Benzel, Network Associates Inc. Labs.** Mr. Tally is a DARPA PI who has 18 years of experience for NAI Labs and its predecessor, Trusted Information Systems. Ms. Benzel was VP of Advanced Security Research for Network Associates at the time of this letter; she is now at UC Berkeley. I knew Terry well from PI meetings for the Air Force and DARPA, and when she knew I had left BBN and was available for consulting she immediately pursued this. I consulted for her distributed security group, led by Mr. Tally, on research in the DARPA OASIS project. This research provided toleration of Byzantine failures (including malicious takeovers by hackers) to CORBA.
- **Mr. Dave Lounsbury**, VP of Advanced Research & Innovation and **Mr. Doug Wells**, Research Director; both of the **Open Group**. The Open Group, in Cambridge Mass., is a deeply technical organization that used to be called the “Open Software Foundation”. In the 1990s it has developed vendor-neutral version of Unix with support from HP, IBM, Sun, and others. It also does a lot of applied DARPA research and integration of others’ DARPA research, and in this context I interacted quite a bit with both signatories. They are very well familiar with my BBN work on QuO, and we teamed up with 3-43 other organizations on a proposal to DARPA in circa 2002.
- **Mr. Mark Riggins, Amazon.com.**
- **Dr. John C. Shovic**, Co-founder, President, and CEO of Blue Water Technologies Inc. Dr. Shovic has worked with me at WSU but also at TriGeo Network Security. He has a fairly unique perspective, because he has co-founded three companies.
- **Mr. Ronald Riter**, who was my mentor at Boeing (1985-1988) and with whom I have kept in touch and have interacted with many times since.

The following non-technical letter of reference is also included:

- **General Joseph P. Franklin, Commodant of Cadets, US Military Academy at West Point.**



Hewlett-Packard Company
HP Laboratories
1501 Page Mill Rd.
Palo Alto, CA 94304
www.hpl.hp.com

Aad van Moorsel
Department Manager
Internet Systems and Storage Laboratory
HP Labs

September 8, 2003

+1 650 857 5851
aad@hpl.hp.com

To Whom It May Concern:

It is my sincere pleasure to recommend Dr. David Bakken as a consultant in Internet and distributed computing. Prof. Bakken is universally recognized as a thought leader in this area, both as a researcher and practitioner.

I have known David for many years, first through his work at BBN on quality-of-service aware middleware, later through his work on voting schemes for reliable distributed software. He has visited HP Labs three times, gave seminars presenting different applied research systems he leads, and made very strong positive impressions on many of our staff. In the academic community, David is considered a world-wide leading expert in the area of distributed software. David is known to be a hands-on researcher with an inclination to building large systems, which provides him with unique practical insights.

In addition to his academic credentials, David has a rich variety of excellent contacts and interactions with industry partners, including his work with start-up TriGeo Network Security. David's broad interests and understanding in combination with a deep knowledge in his area of expertise make him an excellent consultant for any company with Internet or distributed computing products or infrastructure.

Sincerely,

Aad van Moorsel, Ph. D.
Department Manager
Internet Storage and Systems Laboratory
HP Laboratories
Palo Alto, CA

April 13, 2001

David E. Bakken, Assistant Professor, Computer Science
School of Elect. Eng. & Computer Science
PO Box 642752
Washington State University
Pullman, WA 99164-2752

To Whom It May Concern:

This is a letter of reference for Dr. David Bakken regarding his suitability for upcoming opportunities as a consultant to development activities in the general area of distributed systems and advanced middleware solutions.

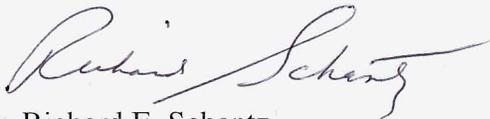
My name is Dr. Richard Schantz. I am a Principal Scientist at BBN Technologies, now a part of Verizon Communications Corporation. I have been at BBN Technologies (and its predecessors) for over 25 years, and have been instrumental in the emergence and evolution of formalizing distributed systems concepts starting from the limited, pre-Internet exploratory environments, through today's ubiquitous, world wide, emerging global connectivity envisioned for a communications infrastructure. In particular, my emphasis has been on leading the construction of working prototype systems demonstrating new, innovative concepts for developing distributed solutions, and technology transfer of these concepts into mainstream software engineering practice. As part of these activities we have been instrumental in developing middleware as a separate category of software from networking, and in developing the first operational system using distributed objects as an organizing paradigm. During my career I have worked with hundreds of talented system architects, developers, R&D proponents, academics and entrepreneurs.

Dr. Bakken joined my research group in 1994 fresh from completing his Ph.D. degree at the University of Arizona, and became a key contributor for his 5-year tenure at BBN. Dave joined us at a particularly volatile time: we were transitioning from emphasizing the technology of interconnection, which by that time was beginning to be successfully transitioned through commercial products and standards (such as DCE and CORBA), to emphasizing the properties of the results of the interconnection. These issues represented the next large leap forward. Along with a few other senior contributors, Dave helped formulate research plans for an integrated Quality of Service oriented approach to advanced middleware. Due to his previous background in fault tolerant behavior, Dave became the primary proponent of development activities in that area of focus. Over the next 5 years, Dave was introduced to the prevailing BBN R&D methodology, which combined elements of advanced concepts, rapid prototype development, and trial use by real users with real problems in the areas of concern. In his role as a senior organizer and contributor, Dave maintained interactions with leading academic researchers in his area of focus, established working and contractual relationships toward constructing prototype software, which embodied the new ideas, and helped guide the ensuing implementation.

Needless to say, in this environment, the need to transition advanced concepts into trial use leads to an emphasis on what can actually be built within limited time and resource constraints, and in working relationships with similarly focused collaborators.

The first half of Dave's tenure at BBN was largely focused on idea development and resource acquisition. The second half of Dave's tenure at BBN became largely focused on development, technical fine-tuning and idea dissemination through meetings and conference presentations. Dave excelled in the visionary aspects of the ideas which were being developed, and also in translating those ideas into effective working arrangements with other academic groups carefully chosen for compatible ideas and for their strong emphasis on working code to back up the emerging ideas. Although Dave left BBN for his current university position before his part of the development had sufficiently matured to the state of usefulness, he was instrumental in setting the direction which now is reaching the state of suitability for user trials. In addition, he has taken the research methodologies and research agendas, which he contributed to developing at BBN, with him to his current position at Washington State University. There, he continues to develop new ideas, new insights, and new concept implementation code, now as one of the academic collaborators with BBN. In addition, Dave is becoming one of the proponents of these research directions, while developing the particular branches most appropriate to his interests and point of view.

In summary, Dave has a background that is optimally rooted midway between the academic need to move into uncharted territory, and the commercial need for working systems right now. He has been part of a research laboratory style larger group pursuing these objectives, is currently organizing his own university style group, and is complementing that with consulting arrangements to enhance the transition opportunities. His background makes him well suited to recognize opportunities in this realm, and to understand the difficulties and the discipline needed to be successful in transition of new ideas and approaches.



Dr. Richard E. Schantz
Principal Scientist

May 2, 2001

To Whom It May Concern:

Dr. David Bakken consulted with NAI Labs at Network Associates, Inc. (formerly Trusted Information Systems, Inc.) from September 2000 through March 2001. We initially contacted Dr. Bakken as a result of his experience with the Quality Objects (QuO) project, for which he was a principal investigator.

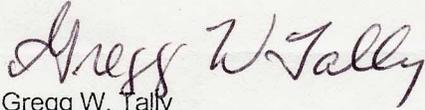
Dr. Bakken assisted NAI Labs with the design of an intrusion tolerant CORBA architecture for our Intrusion Tolerant Distributed Object Systems research project under DARPA's OASIS program. Dr. Bakken's knowledge and experience building fault tolerant distributed object systems was invaluable to us and greatly improved our architecture. He has a solid grounding in theoretical research and also provides a practical, system-builder point of view.

Dr. Bakken provided us with excellent technical advice and references to other related research. He has also provided us with contacts to other researchers and prototype systems that we may incorporate in our project.

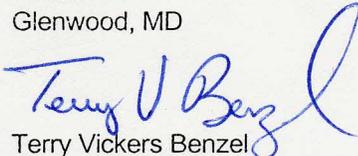
Dr. Bakken's many years of experience in fault tolerant distributed object systems were instrumental in the on-going success of our project and we hope to work with him again in the future.

Should you have any questions, please call me at 443-259-2329.

Sincerely,



Gregg W. Tally
Manager
Distributed Systems Security Group
NAILabs
Glenwood, MD



Terry Vickers Benzel
Vice-President
NAILabs
Los Angeles, CA

July 18, 2003

To Whom It May Concern:

We have worked with David Bakken for a number of years. The earliest interactions were a result of our having complementary projects within DARPA and the US Air Force Research Laboratories programs. We had numerous technical discussions about integrating aspects of our projects for generally hypothetical goals.

The Open Group was asked in 1998 to lead several organizations, including Dave's group at BBN, in integrating a set of DARPA Quorum Program projects as a demonstration of the capabilities of QoS technology. Although the time frame was tight and each organization had numerous other projects competing for resources, our team was able to complete the application and demonstrate it at a showplace event during the summer of 1998. In addition to successfully integrating components from his own project components, Dave was particularly helpful in assisting with the integration of other technology from Honeywell Laboratories and the academic community.

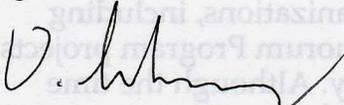
Although our two organizations were oriented towards different technology transfer targets through the remainder of the Quorum Program, we continued to interact with Dave as part of The Open Group's integration efforts. Several BBN components were included, but the AQuA provides a particularly relevant example of Dave's assistance. The AQuA component provides fault-tolerant access to CORBA distributed objects. Although the AQuA component was originally designed and implemented at the University of Illinois, we found that Dave was particularly helpful in our integration efforts. The most important aspects of this assistance was that Dave was able to view the component in an abstract manner: he could intellectually separate the capabilities of the existing component from the implementation details as well as from future possibilities. This allowed us to identify an appropriate role for AQuA within the overall integration application. In addition, Dave's experience in previously integrating AQuA into BBN's QuO system was particularly beneficial in overcoming the inevitable problems that arise from prototype implementations.

As a result of our positive impressions of Dave's capabilities, we invited him to join our team for participating in DARPA's ARMS Program on adaptive middleware. Dave brought a cohesive group of academic researchers to our team and then led that team during our proposal preparation process. Dave was again helpful in conceiving an integrated view of components, and in this case, he was particularly adept at working with us in formulating a highly integrated objective for the overall project that still allowed each sub-team to work in parallel toward the overall goal.

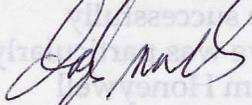
July 18, 2003

The Open Group is a computer industry consortium that provides certification on adherence to open standards for computer-based systems. Our interactions with Dave have occurred in the context of The Open Group's research group, which investigates emerging technologies for the purpose of identifying and fostering standards. We have always found that Dave was highly knowledgeable about technical aspects of his projects and capable of contemplating additional and innovative applications of the technology. In addition, he was always enthusiastic about learning other technologies as well as advocating the capabilities of his own projects. We would welcome working with Dave on other projects in the future.

Regards,



David M. Lounsbury
Vice President, Advanced Research & Innovation



Douglas Wells
Research Director



March 21, 2003

RE: Consulting Reference for Dr. David E. Bakken

TO WHOM IT MAY CONCERN:

This letter is a strong letter of reference for Dr. David E. Bakken, who consulted to our company this month.

Dr. Bakken is a very active university researcher who has a very broad knowledge of the state of the art in research involving distributed computing systems and fault tolerant computing. Indeed, we first found him via his participation in the ICDCS conference, the premiere international research conference for distributed computing systems. Dr. Bakken also has a lot of practical experience and intuition into these areas, based on his varied industry experience, that complements his research knowledge nicely. Further, he communicates particularly well and is able to tailor the level of his message to any audience from senior engineers to high-level managers.

Amazon.com has perhaps the most extreme scalability requirements for any distributed computing application suite in the world. Additionally, replica and cache consistency issues are key for us, because customers must not see "glitches" in our system and the logical views it offers them of their customer information, catalog databases, etc. Dr. Bakken helped us to understand fault tolerant multicast and related technologies; assess our application's potential tradeoffs of consistency, fault tolerance, and scalability; and to begin to flesh out future architectural directions to achieve appropriate balances between these aspects.

Please contact us if we can be of further assistance.

Sincerely,

A handwritten signature in cursive script that reads "Mark Riggins".

Mark Riggins
Principal Software Development Engineer
Customer Management Systems

RE: Reference Letter for Dr. David E. Bakken

To Whom It May Concern:

This purpose of this letter is to provide a strong technical reference for Dr. David E. Bakken.

I have known Dr. Bakken for four years. We have collaborated on academic research while I was an Associate Professor in his department at Washington State University, and we still collaborate on research topics on the intersection of his interests and mine (I remain an Adjunct Professor there). Dr. Bakken also served as Principal Distributed Systems Architect and a member of the Board of Directors for TriGeo Network Security, Inc., where I was co-founder, President, and CEO. (By way of context for this letter, I also co-founded Advanced Hardware Architectures in Pullman, WA, which is still operating and profitable after 13 years, and also BankCdA in Idaho.)

Dr. Bakken is a nationally recognized authority in the area of software for distributed computing, particularly middleware; in fault-tolerant computing; and in quality of service (QoS) architectures. He does very practical, applied research in these areas. This is very significant, because these are some of the key technical areas required on the software side to develop and deploy wide-scale network application programs, whether peer-to-peer, client-server, publish-subscribe, command and control, distributed situation awareness, or whatever. His fault-tolerance expertise includes replication, group communication, caching, consistency (of replicas or caches), etc.

Unlike many academics, Dr. Bakken can really make things work.

Dr. Bakken just along great with just about everyone and is a pleasure to work with. He communicates extremely well both orally and in writing, ranging from high-level overviews of technical capabilities for semi-technical managers or investors, to detailed technical documentation and critiques. From many personal experiences, I can affirm that Dr. Bakken is quite at ease in the all-important networking with board members, technical personnel at all levels, program managers from funding agencies, students, etc., and he is extremely good at it. When fielding questions or comments from such folks, he very keenly senses their technical depth, their primary concerns, etc. and addresses them at the right level. For example, we went on a research trip to Fort Monmouth to discuss possible research with civilian Army employees in the Land Warrior project. They were extremely impressed with his presentation and fielding of questions, and this led us much closer to funded research (which we would have very likely secured had the Army not later cancelled the program).

I can recommend Dr. Bakken unequivocally for any research or applied development involving any of his areas of technical expertise. Please contact me if I can provide further assistance.

Sincerely,



John C. Shovic

3 April 2001

To Whom It May Concern:

Dave Bakken worked with me at the Boeing Flight Simulation Center at Renton, Washington from 1985 through 1987. One of his major projects was to develop a tool called DataFlow. At the time the Simulation lab was upgrading the computing equipment from single processors to multi-processors. The multi-processors had some memory shared between the processors and processes, and memory assigned to individual processes. DataFlow was designed to analyze the data communication between user defined sets of modules, so that these specified modules could be placed in UNIX processes. The processes communicated to other processes through shared memory. The tool Dave designed and developed had far more capability than was expected by most of the Simulation Engineers. The tool is still maintained, even though the project it was developed for was completed several years ago. Dave was also a good source of both UNIX and C information.

Dave is very talented facilitator. He quickly understands the "big picture" and he has demonstrated to me his ability to suggest insights from computer research projects that initially didn't seem to offer any information for my project.

I have kept in close contact with Dave since he left Boeing. I have spent time a couple of weeks with him at Fault-Tolerant conferences and workshops, and I sponsored a couple of seminars at Boeing where he talked about CORBA and his work on Quality of Service.

I retired from Boeing 5/1/2000 where I was a Principle Software Engineer. Boeing's policy is to not allow current employees to provide reference letters.



Ron Riter
425-388-0203
bevriter@gte.net



HEADQUARTERS UNITED STATES MILITARY ACADEMY
OFFICE OF THE COMMANDANT OF CADETS
WEST POINT, NEW YORK 10996

22 December 1981

TO WHOM IT MAY CONCERN

I consider David E. Bakken to possess the traits of leadership we seek to develop at the Military Academy. Had he not suffered a chronic back injury, he would doubtless be a leader in the graduating class today.

Our observation of David at West Point established that he is a bright, logical thinker, able to grasp difficult concepts easily and to transfer that knowledge to unfamiliar situations. He is an aggressive, hard worker, who demonstrates a high degree of discipline in all aspects of his life. His excellent academic record attests to his thorough approach to every task and his constant effort to attain academic excellence.

David is a natural leader who makes friends easily and communicates particularly well. His integrity and sense of duty are above reproach. Persons considering his qualifications for academic programs or for employment should regard him as an exceptional candidate.

A handwritten signature in cursive script, reading "Joseph P. Franklin".

JOSEPH P. FRANKLIN
Brigadier General, USA
Commandant of Cadets