

## Joshua Bers — Curriculum Vitae

jbers@bbn.com  
BBN Technologies  
10 Moulton St.  
Cambridge, MA 02138

Joshua Bers is a Senior Software Engineer in the Advanced Networking Systems business unit at BBN Technologies. Mr. Bers is Principal Investigator (PI) of CitySense, a National Science Foundation (NSF) funded project to build a large scale outdoor wireless sensor testbed in the Boston area. Currently, with over 30 nodes deployed on streetlights and rooftops, CitySense provides data collected by its meteorological and pollution sensors to public health researchers who study the impact of major roadways on the health of local residents [1]. Since 2006, this hands-on engineering project has engaged and employed student interns from area schools including Harvard and Tufts Universities as well as Cambridge Rindge and Latin High-school.

Mr. Bers is also developing a network management system for DARPA's Wireless Network after Next (WNaN) program. Previously, Mr. Bers was software architect for the Network Management System of the Army's Future Combat Systems program (FCS-NMS) where he designed a hardware independent management framework to future-proof the system against changes to the networking hardware. He was also a key contributor on DARPA's Software for Distributed Robotics (SDR) project where he built demonstrated a system that enables an operator of a team of robots to monitor and control them across an ad hoc wireless network using a speech-based interface on a handheld computer [6].

Mr. Bers brings over 15 years of experience developing and deploying distributed software systems for technologically demanding customers. They include: a commercial voice over IP router for NEC, a handheld multimodal, speech and pen, user interface for DARPA [8], a spoken topic call routing system for Verizon [9]. He is the author of two U.S. patents, holds an M.S. from MIT and is a Senior Member of the IEEE.

### Professional Preparation

Institution	Major	Degree	Year
Dartmouth College	Computer Science	A.B.	1993
Massachusetts Institute of Technology	Media Arts & Sciences	M.S.	1995

### Professional Experience

**2002 - Present** Senior Software Engineer, Advanced Networking Systems, BBN Technologies, Cambridge, MA.

**1999 - 2002** Software Architect / Engineering Manager, Commercial Speech Solution Group, BBN Technologies.

**1997 - 1999** Research Software Engineer, Speech and Language Processing Department, BBN Technologies.

**1995 - 1997** Software Developer, Network Products Group, BBN Systems and Technologies.

### Recent Activities

Sensor Networks: NSF CitySense

Mr. Bers is currently co-PI on a Computing Research Infrastructure grant from the National Science Foundation (NSF), CNS-0551535, "Large-Scale Open Sensor Network Testbed for Urban Monitoring", September 2006 through August 2010. This collaboration with Harvard University aims to deploy 50 outdoor wireless sensors nodes in the City of Cambridge to benefit public health and wireless network researchers. See <http://citysense.net> for more details.

Network Management: DARPA's Wireless Network after Next

As part of DARPA's Wireless Network after Next (WNaN) program, Mr. Bers is developing a network management system for an embedded, handheld, radio device. The system

provides both real-time and off-line network performance measurements that enable operators to understand and manage the state of a mobile wireless mesh network.

### **Publications and Patents**

1. *CitySense: An Urban-Scale Sensor Network* M. Welsh and J. Bers. In *Ecological Urbanism* M. Mostafavi and G. Doherty Eds. - Harvard Graduate School of Design, pp. 164-165 (2010).
2. *Urban Sensing Revisited - Common Scents: Towards Standardized Geo-sensor Networks for Public Health Monitoring in the City*. B. Resch, M. Mittlboeck, S. Lipson, M Welsh, J. Bers, R. Britter, and C. Ratti. IN: *Proceedings of the 11th International Conference on Computers in Urban Planning and Urban Management - CUPUM2009*, 16-18 June, Hong Kong, pp. pending (2009).
3. *CitySense: A Vision for an Urban-Scale Wireless Networking Testbed*. R. Murty, G. Mainland, I. Rose, A. R. Chowdhury, A. Gosain, J. Bers, and M. Welsh. In *Proceedings of the 2008 IEEE International Conference on Technologies for Homeland Security*, Waltham MA, May (2008).
4. *Systems and methods for providing audio information to service agents*. J. Bers et. al. US Patent 7,092,506 (2006).
5. *System and Method for Maximum Benefit Routing*. J. Bers, P. Peterson and J. Golden, US Patent 6,895,083 (2005).
6. *Supporting Robot Teams with CougarME over Wireless Ad-hoc Networks*, J. Bers and J. Redi, in *Proceedings of the 1st Open Cougar Conference*, July 20th, New York, NY (2004).
7. *Exploiting the Interactions between Robotic Autonomy and Networks*, J. Redi and J. Bers, in *Multi-Robot Systems Vol II*, A.C. Schultz, L.E. Parker and F.E. Schneider (eds), Kluwer Academic, pp. 279-289 (2003).
8. *Designing the User Interface for Multimodal Speech and Pen-Based Gesture Applications: State-of-the-Art Systems and Future Directions*. S. Oviatt, P. Cohen, L. Wu, J. Vergo, L. Duncan, B. Suhm, J. Bers, T. Holzman, T. Winograd, J. Landay, J. Larson and D. Ferro, In J.M. Carroll (Ed.), *Human-Computer Interaction in the New Millennium*, pp. 419-456. New York: ACM Press (2002).
9. *A Comparative Study of Speech in the Call Center: Natural Language Call Routing vs. Touch-Tone Menus*. B. Suhm, J. Bers, D. McCarthy, B. Freeman, D. Getty, K. Godfrey and P. Peterson, in *Proceedings of the CHI'02 Conference on Human Factors in Computing Systems*, pp. 283-290. ACM Press (2002).
10. *Designing Conversational Interfaces for Mobile Networked Computing*. J. Bers, S. Miller and J. Makhoul, in *Proceedings of the Workshop on Perceptual User Interfaces*, pp. 61-64. Banff, Canada, October 19-21 (1997).
11. *A Body Model Server for Human Motion Capture and Representation*. J. Bers, in *Presence: Teleoperators and Virtual Environments*, 5(4), pp. 381-392 (1996).

### **Other Experience and Qualifications**

Mr. Bers has the following additional qualifications:

- Manages a technical staff of seven employees.
- Has served on a review panel for the National Science Foundation's directorate for Computer and Information Sciences and Engineering (NSF CISE).
- Holds a Secret level security clearance.
- Speaks both Spanish and French fluently.
- Senior member of the IEEE.