

# “From RFID to Smart Dust: The Expanding Market for Wireless Sensor Technologies”

U.S. Department of Commerce

April 1, 2004

## Panelist Bios

---

### Opening Remarks:

**MARIO CARDULLO** serves as the Counselor, Technology and Entrepreneurism, to the Under Secretary of Commerce for the International Trade Administration. In 2003, Mr. Cardullo was nominated for the Presidential National medal of Technology for his invention of the RFID Tag and conceiving the mobile communication satellite concept. Mr. Cardullo was the first Planning Officer of the Communications Satellite Corporation (COMSAT), where one of his achievements was the conception of the Maritime and Mobile Communications Satellite Program (IMARSAT) and the highly successful Rescue Satellite System. The eight years prior to joining COMSAT, Mr. Cardullo was involved in liquid rocket propulsion R&D including the development of the variable thrust concept used by the Lunar Lander (LEM) and the variable thrust plug engine for the Lance missile system. Mr. Cardullo also served in the Apollo Program as the Senior Propulsion System Engineer for all aspects of liquid rocket propulsion from R&D to program management.

Mr. Cardullo has served as Senior Research Associate and Adjunct Professor of the Virginia Polytechnic Institute and State University in the Department of Industrial and Systems Engineering at the Northern Virginia Center and in the Pamplin College of Business for 15 years. He is a Registered Professional Engineer. He is also an Associate Fellow of the AIAA, senior member of the IEEE and holds patents in electronics and mechanical devices and systems. During his career he has published over 130 articles and papers in professional and technical journals. Mr. Cardullo holds a BME, MME and MEA degrees and has done considerable doctoral studies at Polytechnic University, Steven's Institute of Technology, and MIT.

### Panel 1: The Market and Uses for Sensor Technologies

**JON BRENDEL** is the Director, EPC Network Services, at Verisign. Jon Brendel is responsible for launching the new RFID Network Services business at VeriSign, Inc. Under Brendel's leadership, VeriSign has been widely recognized as a thought leader in the field of EPC Network services. Also during his tenure, EPCglobal awarded VeriSign the contract to manage the root of the Object Naming Service, a critical component of the EPC Network. Prior to joining VeriSign, Brendel held numerous senior technical, marketing, and product development positions at AOL Time Warner, where he led the Communications Product Group for email products. During his tenure, he brought several new services to market, including the widely acclaimed hosted address book service and Webmail for the AOL, Netscape and CompuServe brands which all experienced adoption rates unprecedented in AOL history. And, as the Director of Marketing for the Internet and Online Media group at AOL, Brendel focused on technology-driven customer acquisition programs, contributing more than 200,000 new customers annually. Brendel graduated Beta Gamma Sigma with a Masters of Management from Northwestern University and holds a Bachelors of Science in Electrical Engineering from California Institute of Technology.

**LYLE GINSBURG** is the Managing Partner for Technology Innovation in Accenture's Global Products Group. With more than 20 years experience identifying new technology trends and bringing them to the market, Lyle is now focused on finding the value of Auto-id and EPC technologies for Accenture clients in retail, consumer goods, transportation, hospitality, pharmaceuticals, life sciences, automotive and industrial equipment. He has a computer science degree from Northern Illinois University.

**RALPH M. KLING** is currently the principal investigator of the "Intel® Mote" strategic research project in Intel's Corporate Technology Group. In this endeavor, he is leading a small team to create the next generation of self-organizing wireless sensor network nodes (also called "motes"). This research is done in close cooperation with the Intel Research Laboratory at Berkeley which has done pioneering work in the area. Ralph has over 12 years of Intel experience, primarily in computer architecture research and development groups. Previous assignments include managing the Itanium® Processor Family microarchitecture/performance group and the Microprocessor Research Lab (MRL) microarchitecture/performance research group. Major contributions in these roles involved the development and evaluation of microarchitecture components for the Itanium® 2 processor. In addition, the team created Intel's first modular and cycle accurate execution driven performance and power simulation environment which has now been proliferated in the company. Ralph obtained his Master's and Ph.D. degrees from the University of Illinois at Urbana-Champaign. His thesis research focused on simulated evolution, a new global optimization method for integrated circuit designs. Prior to coming to the US on a Fulbright scholarship, Ralph studied electrical engineering in his hometown of Hannover in Germany.

**THOMAS M. MCAULIFFE** is VP of Strategy and Business Development for Secure Asset Solutions (SAS), a startup business within Motorola. SAS was formed last year to address the need to improve productivity and security in the global supply network. SAS will provide solutions that give increased visibility into asset location and status, and use that information to reduce costs, increase sales, and reduce the risk of supply chain disruptions. Tom has been at Motorola since 1989, and has held a number of other positions at both corporate and business unit levels in strategy, business development and operations. Prior to Motorola, Tom held product management positions at AT&T in the area of data communications and data networking. He began his career in Bell Laboratories as a software developer for electronic switching systems.

**RON MOSER** is responsible for Strategic Applications for RFID at Wal-Mart Stores, Inc. His current responsibility is for the implementation of RFID within Wal-Mart's distribution centers and stores. He is a member of several Industry Standards groups, including: The Physical Technical Requirements Group (PTRG) with GSMP and EPCglobal's Business Action (BAG) and Software Action Groups (SAG) for establishing RFID specifications and standards. Ron Moser has been with Wal-Mart Stores, Inc. for 29 years, and has served in a variety of roles in their logistics division.

**ROBERT POOR** is the Chief Technology Officer at Ember. Prior to founding Ember, Robert Poor was a doctoral student at the MIT Media Lab, where he developed Embedded Networking, a new class of wireless network that enables inexpensive, scalable, easily-deployed connections for common manufactured goods. Mr. Poor has accrued over twenty-five years of technical and management-level experience from Silicon Valley including LucasFilm's precursor to Pixar, Stanford Artificial Intelligence, Lucid, NeXT, and pcode. He has repeatedly built strong technical teams and developed efficient organizational structures that maximize revenues. He is a technical editor for the IEEE 802.15.4 standards specification. He received a patent for self-organizing networks in 2000 and was awarded his Ph.D. from MIT in 2001.

**PIYUSH SODHA** as President and CEO of Matrics, Inc., has led several highly successful companies, having served as CEO of LCC International and President and CEO of NextLinx. He sold his most recent wireless technology venture, Wireless Home, to Western Multiplex Corporation.

**C. STEWART VERDERY, JR.** was confirmed by the U.S. Senate on June 19, 2003 as the first Assistant Secretary for Border and Transportation Security Policy and Planning at the Department of Homeland Security. In this capacity, Verdery is the principal advisor to Border and Transportation Security Under Secretary Asa Hutchinson for policy development in the substantive areas within the BTS Directorate, including immigration and customs inspections and investigations, cargo and trade policy, transportation security, counternarcotics, and federal law enforcement training. Verdery frequently represents the Department of Homeland Security before Congress and private sector bodies, and on official government policy review boards and working groups. Verdery was General Counsel to United States Senate Assistant Republican Leader Don Nickles (R-OK) from October

1998 until March of 2002. As a member of the Republican leadership staff team, Verdery played a major role in the Congress on a wide range of policy issues including crime and law enforcement, commerce, judicial nominations, constitutional law, campaign finance, and telecommunications. As part of his leadership duties, Verdery handled lead staff duties for the Senate Republican High Tech Task Force, the Republican leadership's outreach arm to the technology community. Prior to joining Senator Nickles's leadership staff, Verdery served as counsel to two Senate committees and to Senator John Warner (R-VA). While working for Chairman Orrin Hatch (R-UT) on the Judiciary Committee in 1998. In addition to his government service, Verdery was the Senior Legislative Counsel for the government affairs and public policy office representing Universal entertainment in Washington, D.C from 2002 to 2003.

## **Panel 2: Policy Issues Related to Sensor Technologies**

**PAULA BRUENING** is Staff Counsel for the Center for Democracy and Technology, where she specializes in privacy and free expression issues. Before joining CDT, Ms. Bruening served as Senior Attorney-Advisor for the Office of Chief Counsel, National Telecommunications and Information Administration, US Department of Commerce and worked closely with the White House on Administration's e-commerce policy. Ms. Bruening began her career in information policy at the US Congress Office of Technology Assessment, where she participated in studies on encryption, computer security, intellectual property and privacy. She has spoken extensively in the United States and in Europe on information policy issues, and served as an onsite consultant to the Organization for International Cooperation and Development in Paris, France. She earned her law degree from Case Western Reserve University School of Law.

**SANDRA R. (SANDY) HUGHES** serves as the Global Privacy Executive (CPO) at the Procter & Gamble Company, headquartered in Cincinnati, Ohio, USA. Procter & Gamble's privacy program has been designed and implemented to promote trust among consumers, employees and other constituencies by protecting individual's rights to privacy as their own, while at the same time providing superior products and services to meet their needs. In this role, Sandy reports to the Vice-Chairman of the Board and the CIO.

**ARI JUELS** is principal research scientist at RSA Laboratories, where he oversees the various data-security projects of the applied research program. While RFID security and privacy have been a recent emphasis of his research, Dr. Juels has also published papers in the last several years on topics including denial-of-service countermeasures, Internet privacy protection, electronic voting, biometric security, and user authentication. Dr. Juels has participated on the program committees of a number of technical conferences, and recently served as program chair for Financial Cryptography 2004. He is presently serving as a member of the editorial board of the Handbook of Information Security, co-organizer of the DIMACS Workshop on Electronic Voting, and president of the International Financial Cryptography Association. Dr. Juels received his Ph.D. in Computer Science at U.C. Berkeley.

**ELLIOT MAXWELL** is a corporate strategist and attorney who consults and writes on the intersection of business, technology and public policy in telecommunications and electronic commerce. Maxwell has split his career between the private and public sectors, providing corporate strategy advice in the office of the Chairman of Pacific Telesis Group, advising two different chairmen of the Federal Communications Commission and serving as the principle advisor on the Internet and electronic commerce to U.S. Secretaries of Commerce Daley and Mineta. He is a Distinguished Research Fellow at the e-business research Center at Penn State University, and a Fellow of the Center for the Study of the American Government at Johns Hopkins University. He chairs the International Policy Advisory Council to MIT's Auto ID Center and EPCglobal, the entity implementing RFID technology as a successor to bar codes. Mr. Maxwell is a graduate of Brown University and the Yale Law School.

**PAUL MOSKOWITZ** is a Research Staff Member at the IBM Watson Research Center in Hawthorne, NY. He holds a Ph.D. in physics and is a registered professional engineer. Paul has 54 United States patents. During his career, Paul has worked on a variety of projects including wireless applications, radio frequency identification (RFID), and automotive telematics. Thirty of Paul's patents are in the area of RFID or wireless technology. He has represented IBM on the Bluetooth Automotive standards committee. He is now working with a group developing an IBM implementation of RFID for the supply chain.

**RAVI RAJAPAKSE** is the Chief Technology Officer at Savi Technology. Ravi was a Co-Founder and Vice President of Engineering at U.S. Wireless. While there, he managed the development of a pioneering technology for pinpointing the location of cellular phones. He also developed the nationwide infrastructure for the deployment of this technology. Prior to this, he was at Ventritex, Inc., a successful start-up, where he managed the development of advanced medical electronic products. Ventritex was ranked by Forbes Magazine as the most successful medical device IPO at the time. Earlier in his career, Ravi was Manager of engineering design and development at Buxco Electronics, Inc. He received a B.S. in electrical engineering from Cambridge University and an M.S. in computer engineering from Rensselaer Polytechnic Institute.

**STEVEN J. WINTER** is Senior Vice President, Global Services & Intellectual Property at Intermec and is a Corporate Vice President of Intermec's parent company, Unova. In the Global Services role Mr. Winter is responsible for Intermec's profitable service business managing all aspects of global product support and maintenance. Mr. Winter is also responsible for managing Intermec's vast intellectual property portfolio, which includes patent prosecution, licensing, marketing and litigation. Since joining the company in 1977, Mr. Winter has held numerous senior management positions including, Senior Vice President of Strategy and Business Development, Vice President and General Manager of Intermec's Local Area Systems Division, Vice President of Intermec's Government Systems Division and Vice President of European Operations located in Duesseldorf, Germany. Winter holds a Master's degree in Business Administration from the University of Washington, and a Bachelor of Science degree in Electronic Engineering Technology from DeVry Institute of Technology.

**BADRI A. YOUNES** is the Department of Defense (DoD) Director for Spectrum Management and the Director for the DoD Defense Spectrum Office, with responsibility for spectrum policy and strategic planning and implementation for the Department of Defense. Mr. Younes' experience spans over twenty years of microwave and RF systems engineering and technology. Prior to joining the Department of Defense, Mr. Younes managed the RF systems engineering and spectrum management for NASA's Goddard Space Flight Center (GSFC) Space and Ground Networks. While at GSFC, he successfully managed the development and implementation of the hardware systems for NASA's Second TDRSS Ground Terminal. Mr. Younes' career includes five years of hands on work in state-of-the-art technology at the Naval Surface Warfare Center. Mr. Younes is a member of Tau Beta Pi and holds a Masters in Electronics Engineering from Catholic University of America. He completed all his PhD requirements except for the dissertation. His primary focus included coding and modulation theory, analog and digital communications, quantum electronics, signal processing, non-linear mathematics and neural networks.