Optimizing the Acquisition Strategy of Secure and Reliable Electronic Components: A Workshop

Committee

Robert H. Latiff

Chair

ROBERT H. LATIFF retired from the U.S. Air Force as a Major General in 2006. He is a private consultant, providing advice on advanced technology matters to corporate and government clients and to universities. Dr. Latiff is an Adjunct Faculty Member with the John J. Reilly Center for Science, Technology, and Values at the University of Notre Dame. He is also a Research Professor and adjunct faculty member at George Mason University, where his interests are primarily in technologies to support the U.S. Intelligence Community. Immediately after his retirement from the Air Force, Dr. Latiff was Chief Technology Officer for Science Applications International Corporation's space and geospatial intelligence business. He is a member of the Air Force Studies Board of the National Academies. He has led and participated in numerous studies on such diverse topics as critical minerals, and intelligence and surveillance systems. Dr. Latiff is an active member of the Intelligence Committee of the Armed Forces Communications and Electronics Association (AFCEA). Major General Latiff's last active duty assignment was at the National Reconnaissance Office where he was Director, Advanced Systems and Technology and Deputy Director for Systems Engineering. He has also served as the Vice Commander, USAF Electronic Systems Center and Commander of the NORAD Cheyenne Mountain Operations Center. While in the U.S. Army, General Latiff served both in the infantry branch and the ordnance corps, where he commanded an Army tactical nuclear weapons unit. He received his commission from the Army ROTC program at the University of Notre Dame. He entered active service in the U.S. Army and later transferred to the U.S. Air Force. He received his Ph.D. and his M.S. in materials science and his B.S. in Physics from the University of Notre Dame and is a graduate of the National Security Fellows Program at Harvard's JFK School of Government. General Latiff is a recipient of the National Intelligence Distinguished Service Medal and the Air Force Distinguished Service Medal. Dr. Latiff is a member of the Air Force Studies Board.

Michael Ettenberg

Member

MICHAEL ETTENBERG (NAE) is a principal at Dolce Technologies. He was elected to the NAE “for contributions to the advances in optoelectronic components, including the evolution of practical and reliable semiconductor lasers.” His research career included the development of some of the first commercial and reliable semiconductor lasers and the first DVD. Michael was a Senior VP at Sarnoff Corporation/SRI in charge of the Solid State Division which included Integrated Circuit design and foundry, microwave device and systems design and manufacture and optoelectronics activities including Laser, LED, Detector and Silicon CCD design and manufacture. His honors and awards include the following: RCA David Sarnoff Award; IEEE Third Millennium Medal; Fellow of OSA and IEEE; Chairman of the Steering Committee, Optical Fiber Conference; past President IEEE Laser and Electro-Optics Society; past member of Defense Science Board; and Board of Overseers, New Jersey Institute of Technology. He holds a Ph.D. in materials science from New York University.

Craig L. Keast

Member

CRAIG L. KEAST is the Associate Head of the Advanced Technology Division at MIT Lincoln Laboratory (MIT-LL), the principal advanced electronics technology research and development division at the laboratory, since 2009. The 400-person division’s focus is on the invention of new device concepts, the practical realization of those devices, and their integration into systems of importance to national security. In support of its work, the division operates and maintains a complete set of specialized microelectronic and optoelectronic fabrication facilities for both silicon and compound semiconductor devices, as well as advanced electronic and optoelectronic packaging laboratories. Program work has included slit-fab fabrication activities in support of the IARPA Trusted Integrated Circuit Program, the DARPA Trusted Integrated Circuit Program Program, and DARPA’s Integrity and Reliability of Integrated Circuits Program. From 1994–2013, he served as the Director of the Microelectronics Laboratory (ML) where he managed operations of the laboratory's DoD-Trusted $200M silicon-based semiconductor research and advanced prototyping fabrication facility. Staffed by ~65 scientists, engineers, and technicians working in support of over 40 different technical programs at MIT-LL. ML activities included the fabrication of flight quality megapixel CCD imagers, photon-counting avalanche photodiode arrays, RF MEMS, Nb-based superconducting circuits, sub-0.90 nm low power FDSOI CMOS, and advanced packaging technologies. From 1996–2009, he was also the Leader of the Advanced Silicon Technology Group, a 45-person research group carrying out work in deep-submicron, low-power, high-performance fully depleted silicon-on-insulator (FDSOI) CMOS process development, CCD/CMOS imaging, RF MEMS, Microfluidics, and 3-dimensional circuit integration technologies. From 1992–1994, he was a technical Staff Member in the Submicrometer Technology Group developing device and circuit fabrication technologies utilizing 193-nm lithography. Dr. Keast received a Ph.D. in electrical engineering and computer science from MIT.

Randal W. Larson

Member

RANDAL W. LARSON is a systems engineer with the MITRE Corporation. He has served over 40 years in engineering development and new business startups in both commercial and government sectors spanning manufacturing engineering, electrical/electronic design engineering, and systems engineering. His accumulated engineering experience includes semiconductor fabrication, electro-optic prototype development in DoD weapon systems, and design of classified, large scale, mission-critical digital processing systems for U.S. government agencies. Additionally, he was selected as part of two technology transfer programs to launch business unit startups in enterprise-level mass storage and medical imaging systems. Mr. Larson's positions included test director, director of engineering, director of strategic planning, and general manager during these periods at Texas Instruments, Hughes Aircraft, E-Systems and Raytheon. In 2004, Mr. Larson joined MITRE/San Antonio, and was assigned to the AFLCMC/HNC "Cryptologic and Cybersecurity Systems Division (CCSD)" at Lackland AFB. During the last 12 years, roles and assignments included leading the Cryptologic Modernization Strategic Planning IPT for startup of DoD Acquisition ACAT III programs, team development of next generation of DoD Public Key Infrastructure, and Air Force research study into next generation network security protocols and implementation of Service Oriented Architectures. In 2009 -2010, Mr. Larson was a MITRE Lead in the DoD CNCI SCRM Pilot Program for a team representing the Air Force. Follow on work for SAF/AQXA included development of SCRM roadmap and implementation for general AF acquisition guidance. Additionally, processes and practices were developed for implementing SCRM within the CCSD crypto acquisition programs as models for the greater Air Force. Innovative approaches included methods for evaluating DIA TAC threat reports, identifying appropriate risk mitigations, and developing a tracking database of critical components as part of establishing a TSN/SCRM office. In 2015, he assisted the Director on Enterprise GPS III system (AF SMC/GPE) in establishing TSN/SCRM processes in threat/risk assessments and Program Protection planning. Mr. Larson holds a BSEE from Texas Tech.

Terry P. Lewis

Member

TERRY P. LEWIS is Senior Systems Engineer with the Raytheon Company, where his areas of expertise include command, control, communications, and information systems; digitized battlespace systems; communications and transmission security in military tactical systems; wireless network security; and network management authentication techniques for robust security architecture. In addition, Dr. Lewis has developed anti-tampering technologies to prevent or reduce the ability of potential aggressors to reverse-engineer critical U.S. communications technologies. He is a Raytheon Fellow and received the Most Promising Engineer of the Year award conferred at the 2002 Black Engineer of the Year Award Conference. Dr. Lewis was a member of the NRC Committee on Examination of the Air Force ISR Capability Planning and Analysis Process and is a current member of the Naval Studies Board. He holds a Ph.D. in electrical engineering from the University of Southern California.

Celia I. Merzbacher

Member

CELIA MERZBACHER is Vice President for Innovative Partnerships at the Semiconductor Research Corporation (SRC), a nonprofit industry consortium that manages a broad portfolio of basic research on behalf of its members. She is primarily responsible for developing new initiatives and partnerships with stakeholders in government and the private sector in support of SRC's research and education mission and goals. She led the establishment of a new $10 million research effort in partnership with the National Science Foundation on Secure, Trustworthy, Assured and Resilient Semiconductors and Systems. Prior to joining SRC, Dr. Merzbacher was Assistant Director for Technology R&D in the White House Office of Science and Technology Policy (OSTP), where she coordinated and advised on a range of issues, including nanotechnology, technology transfer, technical standards, and intellectual property. At OSTP, she oversaw the National Nanotechnology Initiative, the multiagency Federal program for nanotechnology research and development. She also served as Executive Director of the President's Council of Advisors on Science and Technology, and oversaw the Council's first two statutorily mandated assessments of the NNI. Previously, Dr. Merzbacher was on the staff of the Naval Research Laboratory in Washington D.C., where as a research scientist, she developed advanced materials, including nanomaterials, for which she received six patents and authored numerous publications. Dr. Merzbacher served on the Board of Directors of the American National Standards Institute in relation to her role in standards development for nanotechnology. She spearheaded the establishment of the Organization for Economic Cooperation and Development Working Party on Nanotechnology and was co-lead of the U.S. delegation. She currently serves on the Board of Directors of Digital Solid State Propulsion, a start-up company based in Nevada. Dr. Merzbacher has served on various review committees for Federal science and technology programs and advises a number of university research centers. Dr. Merzbacher holds a Ph.D. in chemistry and mineralogy from Pennsylvania State University.

Bernard S. Meyerson

Member

BERNARD S. MEYERSON (NAE) an IBM Fellow, serves as IBM’s Chief Innovation Officer, driving technical strategy and corporate initiatives within IBM’s Corporate Strategy Organization. In 1980, Dr. Meyerson joined IBM Research, leading the development of high performance silicon:germanium communications technology. He founded and led IBM’s highly successful Analog and Mixed Signal business, ultimately leading IBM’s global semiconductor development. In 2006, he assumed leadership of strategic alliances for the Systems and Technology Group. In 2010, he was appointed IBM Corporation’s Chief Innovation Officer, integrating his team into IBM’s Corporate Strategy function, now responsible for the definition and execution of corporate-wide technical and business initiatives. Dr. Meyerson is a Fellow of the American Physical Society, the Institute of Electrical and Electronics Engineers, and a member of the National Academy of Engineering. His technical and business awards include: the Materials Research Society Medal, the Electrochemical Society Electronics Division Award, the IEEE Ernst Weber Award, the Electron Devices Society J. J. Ebers Award, the 2007 Lifetime Achievement Award from SEMI, and the 2011 Pake Prize of the American Physical Society(recognizing his combined original scientific research and subsequent business leadership). In 2014, Dr. Meyerson was honored by selection to present the Turing Lectures at the Royal Institute in London, and Universities of Cardiff, Manchester, and Edinburgh. More recently, Singapore’s President honored Dr. Meyerson’s service to the nation with Singapore’s 2014 Public Service Medal. Most recently, in accepting a global pro-bono role, Dr. Meyerson was appointed as Chairman of the Meta-Council on Emerging Technologies for the World Economic Forum. In that role he leads a diverse global team of industry, government, and university experts, the mission being the vetting and consolidation of inputs from 20 Global Agenda Councils of all major emergent technologies for presentation at the Davos meeting of the Forum. He holds a Ph.D. in physics from the City University of New York.

Paul D. Nielsen

Member

PAUL D. NIELSEN (NAE) is the Director and CEO of Carnegie Mellon University's Software Engineering Institute. The Software Engineering Institute is a federally funded research and development center sponsored by the U.S. Department of Defense. SEI develops and transitions technologies in software architecture, integration and interoperability, cybersecurity, process improvement, real time systems, and systems engineering related to software. Prior to joining the Software Engineering Institute, Nielsen served in the U.S. Air Force, retiring as a major general. He served primarily in research and development assignments related to space and C3I. In his final assignment, Dr. Nielsen was the commander of the Air Force Research Laboratory and the Technology Executive Officer for the Air Force. He is a Fellow of both the American Institute of Aeronautics and Astronautics (AIAA) and the Institute for Electrical and Electronics Engineers. He is a past president of AIAA and currently serves on the board of the Armed Forces Communications and Electronics Association. He also serves on the Defense Science Board. Nielsen received a Ph.D. in applied science from the University of California, Davis and an M.B.A. from the University of New Mexico.

Starnes E. Walker

Member

STARNES E. WALKER is the Founding Director of the University of Delaware Cybersecurity Initiative at the University of Delaware, with a key focus on corporate cybersecurity addressing present and emerging cyber threats and a special emphasis on the banking/financial, energy, chemical, and electrical grid industrial sectors. Previously, Dr. Walker was an executive member of The University of Hawaii System and served via an Intergovernmental Personnel Act as the Chief Technology Officer and Technical Director for cyber to the U.S. Navy in a SES billet where he stood up the U.S. Fleet Cyber Command and the U.S. 10th Fleet. In this role, Dr. Walker had responsibility for all technical activities that spanned inter-governmental and international outreach of the command with a combined military and civilian workforce of 18,000 personnel. He served as a member of the Executive Steering Group to establish the Joint Technology Office-High Energy Laser Program under the auspices of the Under Secretary of Defense (Acquisition, Technology, Logistics). As a Senior Executive Service member in helping to stand up the Defense Threat Reduction Agency, Dr. Walker was the recipient of the distinguished Department of Defense Exceptional Civilian Service Medal. He is a recipient of the R&D 100 Award and a Presidential Citation from the White House. Dr. Walker has widely published in the fields of physics, chemistry, optics, and signal processing with numerous patents issued. Dr. Walker holds a Ph.D. in physics from the University of California and an Honorary Degree in Nuclear Engineering-University of Missouri-Rolla. Dr. Walker is a member of the Air Force Studies Board.