

Integration Readiness Levels - Speeding Technology Insertion to the Soldier's Hands: A Workshop

Committee

Paul G. Gaffney, II

Chair

VADM Paul Gaffney II, U.S. Navy (ret.) served as the seventh president of Monmouth University from 2003 to 2013; he is President Emeritus and a fellow in Monmouth's Urban Coast Institute. He is counselor to the Dean of Engineering at the University of South Carolina. He was president of the National Defense University from 2000 to 2003. Prior to that, he was the Chief of Naval Research. He was appointed to the statutory U.S. Ocean Policy Commission and served during its full tenure from 2001 to 2004. In his military career he headed the Navy's worldwide operational meteorology and oceanography program and he commanded the Naval Research Laboratory. He is a Member of the National Academy of Engineering and is a fellow of the American Meteorological Society. He was a member of the National Research Council's Ocean Studies Board and The National Academies Gulf Research Program Advisory Board. He chaired the Federal Ocean Research Advisory Panel and was the first chair of the Federal Ocean Exploitation Advisory Board. VADM Gaffney co-chaired the NOAA Decadal Ocean Exploration Study in 2013. He is a director of Diamond Offshore Drilling Inc. He is a graduate of the U.S. Naval Academy, holds an M.S. in Ocean Engineering from the Catholic University of America, is a graduate of the Naval War College with Highest Distinction, and has earned an M.B.A. from Jacksonville University.

Ted F. Bowlds

Member

Ted Bowlds (Lt. Gen. USAF Ret) is an independent consultant, most recently served as the Chief Executive Officer (CEO) and Chief Technology Officer for IAI North America. Responsible for the technology transfer strategy for the North America market. Prior to this, Chief Information Officer, and Chief Technology Officer for FlightSafety, International. During his 36-year career in the United States Air Force, led multiple large-scale, complex procurement activities. Multiple programs such as the F-117, B-2, C-17 involved innovative research and collaboration across industry and academia partners. As Commander of the Air Force Research Laboratory, responsible for the diverse research undertaken by AFRL ranged from microelectronics, human factors, medical, aeronautics, computers, satellites, and power generation. His last assignment on active duty was as the Commander of the Electronic Systems Center and Program Executive Officer (PEO) for Air Force information technology procurements, applications, and systems. Currently a member of the Mississippi State Research Technology Advisory Group, the DoD Systems Engineering Research Council, and previously served on the USAF Studies Board. Ted holds a Master of Science in electrical engineering, a Master of Science in engineering management and a Ph.D. in systems engineering. He is a graduate of the USAF Test Pilot School Flight Test Engineer course and has attend numerous leadership and management courses.

Nathan R. Brooks

Member

Dr. Nathan Brooks has over 20 years of experience in electromagnetics and numerical optimization. He conducted research at esteemed institutions such as the National High Magnetic Field Laboratory (NHMFL), the Center for Advanced Power Systems (CAPS), and CERN. He began his industry career with Argon ST, a Boeing subsidiary, and is currently a Boeing Senior Technical Fellow focused on electromagnetic and antenna system architectures. Dr. Brooks provides technical expertise and leadership for Boeing's Signal Intelligence capabilities, as well as leading and consulting on Electronic Warfare antenna system development. He has played a key role in securing and executing advanced capability program contracts from military, government, and commercial customers, including DARPA and IARPA. Dr. Brooks has led various 3D system performance modeling and simulation efforts and has been involved in site survey, system design, and installation teams worldwide. He currently leads a team addressing aviation interference issues from 5G and future telecommunication systems. Dr. Brooks holds a B.S. and Ph.D. in Electrical Engineering from Florida A&M University and has received multiple awards, including the 2019 NSBE Golden Torch Lifetime Achievement in Industry Award and the 2020 Boeing Defense Engineer of the Year. He actively contributes to elevating and diversifying the STEM workforce and participates in NASEM reviews.

Thomas R. Giallorenzi

Member

Dr. Tom Giallorenzi is an L3Harris Senior fellow with 30 years of experience, who is the founder, lead architect and champion of products that have produced over \$1B in sales. He is a prolific inventor and author, with over 150 proprietary technical reports, one classified textbook on covert communications, 15 IEEE publications, 91 US Patents granted, 24 International Patents granted, and more pending. He specializes in communication system design, multiple-access networks, anti-jam (AJ) and low-probability of detection (LPD) communications, and he is one of the nation's leading experts in AJ/LPD networks, detectors and jammers. Dr. Giallorenzi was a founder of the Discovery Common Data Link waveform, which was adopted as an industry-wide government standard for forming and maintaining mobile ad hoc military networks. He published a series of comprehensive reports and a classified textbook on covert communications and developed the Chameleon™ Technology Ecosystem. As the Chameleon™ founder, he has been the lead architect since its inception. He is an inventor on over 75% of the patents, and has been the lead spokesman and champion of the technology, which was successfully fielded operationally. Dr. Giallorenzi was elected into the NAE and the Utah Academy of Engineering and Science in 2020/2022.

Laura M. Haas

Member

Laura Haas joined the University of Massachusetts Amherst in August 2017 as Dean of the College of Information and Computer Sciences, after a long career at IBM, where she was accorded the title IBM Fellow in recognition of her impact. At the time of her retirement from IBM, she was Director of IBM Research's Accelerated Discovery Lab (2011-2017), after serving as Director of Computer Science at IBM's Almaden Research Center from 2005 to 2011. She had worldwide responsibility for IBM Research's exploratory science program from 2009 through 2013. From 2001-2005, she led the Information Integration Solutions architecture and development teams in IBM's Software Group. Previously, Dr. Haas was a research staff member and manager at Almaden. She is best known for her work on the Starburst query processor, from which DB2 LUW was developed, on Garlic, a system which allowed integration of heterogeneous data sources, and on Clio, the first semi-automatic tool for heterogeneous schema mapping. She has received several IBM awards for Outstanding Innovation and Technical Achievement, an IBM Corporate Award for information integration technology, the Anita Borg Institute Technical Leadership Award, the IEEE Computer Society Computer Pioneer Award, and the ACM SIGMOD Edgar F. Codd Innovation Award. Dr. Haas was Vice President of the VLDB Endowment Board of Trustees from 2004-2009 and served on the board of the Computing Research Association from 2007-2016 (vice chair 2009-2015); she currently serves as chair of the National Academies Computer Science and Telecommunications Board (2013-2020). She is an ACM Fellow, a member of the National Academy of Engineering, and a Fellow of the American Academy of Arts and Sciences.

John Luginsland

Member

John Luginsland is the program manager for High Energy Radiation Matter Systems, a research portfolio that combined high energy density physics and the science of Directed Energy systems for military applications. I have over 30 years of experience in Directed Energy high technology devices and allied fields of accelerator physics, plasma physics, electrical/nuclear engineering, and computational physics, as well as experience in R&D but also integration and deployment of high-technology devices on military platforms. I am a Fellow of the Institute of Electrical and Electronics Engineers as well as the Air Force Research Laboratory, and a recipient of the IEEE Nuclear and Plasma Sciences Early Career Award. I'm a member of the IEEE, the American Physical Society, and the Military Operational Research Society (MORS). I hold degrees in Nuclear Engineering from the University of Michigan, course credit in accelerator physics from the US Particle Accelerator School (a DOE program), and a certificate in Wargame Design from Virginia Tech as part of a program with MORS. I have previously supported the NASEM's study on "Powering the Army of the Future" and served on the NASEM Intelligence Community's ISTEAG (Intelligence Science and Technology Expert's Group).

Laura J. McGill

Member

Ms. Laura J. McGill (NAE) is Deputy Laboratories Director and Chief Technology Officer at Sandia National Laboratories, where she leads nuclear weapons modernization, stockpile programs and systems integration. She previously served as Deputy Vice President-Engineering at Raytheon Missiles & Defense, where she directed the work of 15,000 engineers and scientists. Prior, she was VP-Engineering for Raytheon Missile Systems, leading 7,800 engineers and scientists developing and producing weapons for the U.S. military and Department of Defense. Ms. McGill was responsible for systems performance, technical execution, test and flight operations, technology investment, engineering career development and capital investments. She was previously chief engineer of the \$2 billion Air Warfare Systems portfolio, including Tomahawk cruise missiles, air-to-air combat systems and precision strike weapons. She was also chief engineer for Tomahawk cruise missiles from 2004-2006. Ms. McGill was elected President of the American Institute of Aeronautics and Astronautics (AIAA) in 2022 and inducted into the National Academy of Engineering in 2019. She was named Raytheon Principal Fellow in 2010 and elected as Lifetime Fellow of the AIAA in 2007. Ms. McGill served as adjunct faculty member at John Hopkins University Whiting School of Engineering, where she taught graduate courses in systems engineering. Ms. McGill earned her B.S. in aeronautical and astronautical engineering from the University of Washington and her M.S. in aerospace systems from West Coast University.

William H. Osborne

Member

Mr. Osborne served as Senior Vice President of Total Quality and Operations for Boeing Defense, Space & Security, one of The Boeing Company's three business units from May 2020 until October 2022. He was part of Boeing's Executive Council and became the chair of Boeing's Manufacturing Operations Council. Boeing is the world's largest aerospace company and leading manufacturer of commercial jetliners and defense systems. In his role, Mr. Osborne maintained oversight for Environment, Health & Safety and was responsible for Boeing's factory operations. Previously, he was Boeing's Senior Vice President, Enterprise Operations from May 2018 until April 2020. Before joining Boeing, Mr. Osborne served as Senior Vice President of Global Manufacturing and Quality at Navistar International Corporation, a holding company whose subsidiaries and affiliates produce International® brand commercial and military trucks, from August 2013 to May 2018. He was also Senior Vice President of Custom Products at Navistar from May 2011 to August 2013. Before joining Navistar, he served as President and Chief Executive Officer of Federal Signal Corporation, a designer and manufacturer of a suite of products and integrated solutions for municipal, governmental, industrial and airport customers, from September 2008 to October 2010. Mr. Osborne began his career at Ford Motor Company. He currently serves on the board of directors of Quaker Houghton, a publicly traded global manufacturer of industrial process fluids where he Chairs the Compensation Committee, Invitae Corporation, a publicly traded firm specializing in genetic testing and Armstrong World Industries, a leader in Commercial Building Products and Solutions.

Yevgeniya Jane K. Pinelis

Member

Dr. Jane Pinelis currently serves as the Chief AI Engineer of the Applied Information Sciences Branch at Johns Hopkins University's Applied Physics Laboratory (JHU/APL). She leads a diverse group AI scientists and analysts in development, testing, and integration of AI capabilities. Her leadership extends to the formulation of cutting-edge Assurance-specific products and stringent standards designed to fortify testing of AI-driven systems across the multifaceted landscape of the U.S. Department of Defense (DoD). Dr. Pinelis holds a BS in statistics, economics, and mathematics, an MA in statistics, and a Ph.D. in statistics, all from the University of Michigan, Ann Arbor. With a background in defense and national security spanning over 15 years, Dr. Pinelis has held a variety of key positions of responsibility. Prior to her current role, she served as the inaugural Chief of AI Assurance at the Chief, Digital and AI Office (CDAO) and the Joint Artificial Intelligence Center (JAIC) at the Department of Defense, where she oversaw the Test and Evaluation, as well as Responsible AI directorates. Her career has largely focused on operational test and evaluation, both in support of the service operational testing commands and at the OSD level; her leadership roles included leading the AI Assurance directorate at the Chief Digital and AI Office, the Joint Artificial Intelligence Center, an inaugural T&E Director role on Project Maven, managing the Test Science team that supports the Director of Operational Test and Evaluation (DOT&E), and leading the design and analysis of the highly-publicized study on the effects of integrating women into combat roles in the Marine Corps during her assignment at the Marine Corps Operational Test and Evaluation Activity.

Gary Polansky

Member

Dr. Gary F. Polansky, Consultant, worked for more than 38 years at Sandia National Laboratories (Sandia) in national security programs. His broad-based technical capabilities made key contributions to hypersonics, nuclear deterrence, advanced conventional warheads, space nuclear power, and space nuclear propulsion. He provided technical leadership of advanced technology programs for the DOE, DoD and NASA resulting in multiple successful systems level demonstrations. Dr. Polansky was the program manager for the Advanced Hypersonic Weapon (AHW) Flight Test 1A in November 2008. This AHW test demonstrated a first-of-its-kind vehicle flying long range through the atmosphere at hypersonic speed and established the technical basis for hypersonic systems now being deployed by the Army and Navy. Dr. Polansky received national recognition for this test. Dr. Polansky retired from Sandia in December 2021 as a Senior Scientist. Since leaving full-time work, he has served as a consultant to Sandia National Laboratories. He is a member of the Defense Science Board and remains a trusted advisor to the organizations within the Office of the Secretary of Defense, the Intelligence Community, and the National Academy of Sciences. Dr. Polansky is a Fellow of both the American Society of Mechanical Engineers (ASME) and the American Institute of Aeronautics and Astronautics (AIAA). Dr. Polansky is a member of the Mechanical Engineering Academy of Distinguished Alumni (MEADA) at The University of Texas at Austin.

Peter D. Schwindt

Member

Dr. Peter Schwindt is a Distinguished Member of the Technical Staff at Sandia National Laboratories and has been engaged in optical and atomic physics research since 1997 with an emphasis in applying the principles of atomic physics to sensing and timing problems. One of his primary focus areas is optically pumped (atomic) magnetometers (OPMs), developing techniques to both miniaturize them and improve their sensitivity and bandwidth. Since 2007, he led a project to develop OPMs for application to magnetoencephalography. Dr. Schwindt has also worked on multiple atomic clock projects, developing trapped Yb ion microwave and optical clocks, focusing on techniques for miniaturization and low-power-consumption while maintaining excellent long-term frequency stability. Dr. Schwindt has also led a project to miniaturize and extend the dynamic range of an atom interferometer accelerometer while developing a photonic-integrated-circuit-based laser system. Prior to coming to Sandia National Laboratories in 2006, Dr. Schwindt worked as a National Research Council post-doctoral fellow at the National Institute of Standards and Technology. His research there focused on the development of chip-scale atomic clocks and magnetometers, and he received the Department of Commerce Silver Medal for meritorious federal service. He received his Ph.D. in 2003 from the University of Colorado at Boulder.

James E. Thomsen

Member

Mr. James Thomsen is president of Seaborne Defense, LLC. He is the the former principal deputy assistant secretary of the Navy, Research, Development, & Acquisition (ASN(RD&A)). As the principal deputy ASN(RD&A), Mr. Thomsen assisted in the oversight and policy for Navy and Marine Corps research, development, and acquisition programs for Shipbuilding, Aviation, Space, and Weapons Systems. Mr. Thomsen has spent more than 35 years supporting the Department of Defense community with engineering design, systems engineering, complex systems program management, enterprise and organizational leadership, and large-scale defense acquisitions. He received a B.S. in ocean engineering from Florida Atlantic University, and a M.S. in management from Florida State University.