Department of the Air Force Science and Technology Roundtable

Committee

David M. Van Wie

Chair

Dr. David Van Wie (NAE) is the Director, Johns Hopkins Applied Physics Laboratory (APL). Previously, he served as the Head of the Air and Missile Defense Sector at APL, responsible for programs advancing the ability of the nation to defend itself and its allies against airborne and ballistic threats. Prior to that, Dr. Van Wie served as Mission Area Executive for Precision Strike focusing on advanced weapon development, electromagnetic spectrum dominance, and novel long-range detection and targeting systems. He has published extensively in the fields of hypersonics, high-temperature fluid dynamics, airbreathing propulsion, and plasma aerodynamics. Dr. Van Wie previously served on the Air Force Scientific Advisory Board and the Aeronautical and Space Engineering Board. He is currently a member of the Defense Science Board and holds a research faculty position in the Department of Mechanical Engineering at Johns Hopkins University. Dr. Van Wie is a fellow of the American Institute of Aeronautics and Astronautics (AIAA), and a recipient of the Air Force Award for Meritorious Civilian Service. In 2021, Dr. Van Wie presented the AIAA Theodore Von Karman Lecture in Astrodynamics.

Jason Bartolomei

Ex Officio Member

Brig Gen Jason E. Bartolomei is the Commander, Air Force Research Laboratory, Air Force Materiel Command, Wright-Patterson Air Force Base, Ohio, and the Technology Executive Officer supporting both the U.S. Air Force and U.S. Space Force. He leads an over $5 billion science, technology and innovation enterprise in accelerating the discovery and development of solutions for Airmen and Guardians. He is responsible for formulating a comprehensive technology portfolio that anticipates future warfighter needs while promoting risk-taking and problem-solving across a 6,000-member government workforce. He accelerates the delivery of multi-disciplinary solutions through partnerships with industry, academia and international allies, and executes an additional $1.4 billion in externally funded research and development. Brig Gen Bartolomei was commissioned in 1997 from Marquette University’s Air Force Reserve Officer Training Corps program. During his career, he has held a variety of senior acquisition positions. He served as Director of the Sentinel Systems Directorate, where he was responsible for the development, deployment and sustainment of the next-generation Intercontinental Ballistic Missile system. Additionally, he served in the Global Reach Programs Directorate as Assistant Secretary of the Air Force (Acquisition), where he supported the Air Force's tankers, airlift, special operations and trainer fleets. Furthermore, he served as an engineer in the F-22 System Program Office and as an assistant professor of engineering mechanics at the U.S. Air Force Academy. He was also a Service Chiefs Fellow at the Defense Advanced Research Projects Agency, a Military Legislative Fellow for Senator Orrin G. Hatch, and a Chief of Staff of the Air Force Fellow, while assigned to the Johns Hopkins University’s Applied Physics Laboratory. Prior to his current assignment, Brig Gen Bartolomei served as the Program Executive Officer for Weapons and Director of the Armament Directorate, where he was responsible for the planning and execution of all life cycle activities for air-delivered munitions. Brig Gen Bartolomei received a B.S. in mechanical engineering from Marquette University, a M.S. in systems engineering from the Air Force Institute of Technology, and a Ph.D. in engineering systems (Technology, Management and Policy) from the Massachusetts Institute of Technology (MIT).

Janet Wolfson

Ex Officio Member

Dr. Janet Wolfson is the Associate Deputy for Science, Technology, and Engineering, Office of the Assistant Secretary of the Air Force (Acquisition, Technology and Logistics) in the Department of the Air Force. Previously, she served as the Director of Science, Technology and Engineering in the Office of the Assistant Secretary of the Air Force for Space Acquisition and Integration (SAF/SQ), United States Space Force. She oversees and guides the execution of space related research at the Air Force Research Laboratory. Previously, Dr. Janet Wolfson served as the Director of Staff for SAF/SQ. In this position, she collaborated and coordinated across the Department of the Air Force, ensuring all opportunities and efficiencies while preserving the authority and autonomy of SAF/SQ. She was the Space Division Chief in the Office of the Assistant Secretary of the Air Force for Acquisition, Special Projects. She is a pioneer in fusing technology and developed the first major change to fusing since World War II. Before entering public service Dr. Wolfson worked as a structural engineer for Applied Research Associates and the Thornton-Tomasetti Group.

Andrew G. Alleyne

Member

Dr. Andrew Alleyne is the Dean of the College of Science and Engineering at the University of Minnesota, where he also holds the Russell and Elizabeth Bennett Chair. Prior to joining the faculty at the University of Minnesota, he was a faculty member in both the Mechanical and Electrical Engineering departments at the University of Illinois at Urbana Champaign where he led an interdisciplinary center. He is a Fellow of IEEE, ASME and AAAS and was a Fulbright Fellow to the Netherlands where he held a Visiting Professorship at TU Delft. His research background encompasses the modeling, simulation, and implementation of control systems for complex systems and nonlinear systems. His basic research efforts have been applied and commercialized with patents and two software tools licensed to industry and transitioned to the Department of Defense. He has been active in external advisory boards for universities, industry and government including the U.S. Air Force, Army, and the Department of Energy. Dr. Alleyne received his B.S. from Princeton University in 1989, and M.S. and Ph.D. degrees from the University of California at Berkeley in 1992 and 1994, respectively.

Lynda C. Brinson

Member

Dr. L. Cate Brinson is the Sharon C and Harold L Yoh III Professor of Engineering and the Donald M Alstadt Department Chair of the Mechanical Engineering and Materials Science Department at Duke University. She is an expert in the broad area of mechanics of materials, with emphasis on complex hierarchical materials and polymer based systems, and merging concepts of data science into materials. Experimental and computational work spans the range of molecular interactions, micromechanics and macroscale behavior. Current research foci include nanostructured polymers, interfacial behavior, structural metamaterials and data platforms for material query and design. Dr. Brinson has received a number of awards, including the Eringen Medal of SES, the Nadai Medal of the ASME, the Friedrich Wilhelm Bessel Prize of the Alexander von Humboldt Foundation, the ASME Tom JR Hughes Young Investigator Award, and an NSF CAREER Award. She has authored one book and over 170 refereed journal publications. She served 5 years on the Society of Engineering Science Board of Directors, one year as President, and is a founding member of the Materials Research Data Alliance (MaRDA). She received her BS from Virginia Tech, PhD from Caltech and did a postdoc at the DLR in Germany.

Michelle E. Ewy

Member

Dr. Michelle Ewy is currently the Director, Strategic Execution for Mined XAI, an explainable artificial intelligence (XAI) company. She is also a retired United States Air Force Colonel. Prior to her retirement she was the Deputy Director and Detachment 14 Commander of the Air Force Office of Scientific Research. Previous positions have included Military Assistant to the Air Force Chief Scientist, Commander of the Air Force Drug Testing Laboratory, and Air Force National Laboratory Fellow at Argonne National Laboratory. Dr. Ewy served two 120-day rotations as the Lab Chief of the deployed Aerospace Fuels Laboratory, Al Udeid AB in support of Operations Iraqi Freedom and Enduring Freedom. She also had several other research, acquisition, and academic assignments within the Air Force science and technology community. In 2004 she was awarded the Air Force Research Laboratory Commander's Cup award for outstanding research in biocontamination of aviation fuel. Dr. Ewy received her PhD in chemistry from the University of Virginia and a Masters of Science in Strategic Studies from the Air War College.

Jennie S. Hwang

Member

Dr. Jennie Hwang (NAE), is CEO of H-Technologies Group and Board Trustee and Invited Distinguished Adjunct Professor at Case Western Reserve University. Her career encompasses corporate and entrepreneurial businesses, innovative research, advanced manufacturing, intellectual property management, technology transfer, and corporate and university governance (have served as board director for Fortune 500 NYSE-traded, private companies, university and civic boards). Author of seven (7) internationally-used technology books and 700+ publications/editorials. Among her many honors/awards are Congressional Certificates of Achievement; induction into International Hall of Fame - Women in Technology; R&D-Stars-to-Watch; Distinguished Alumni Awards; Honorary Doctoral degree; and YWCA Achievement Award. Served as CEO of International Electronic Materials Corp. and held senior executive positions with Lockheed Martin Corp., SCM Corp. and Sherwin-Williams Co. and co-founded entrepreneurial businesses. Internationally recognized as a pioneer and long-standing leader in the interconnecting microelectronic/electronic materials, semiconductor packaging, electronics miniaturization and advanced manufacturing, she has contributed to the reliability of F-22 program and DoD ManTech program, among others, and has served as Global President of Surface Mount Technology Association & other global leadership positions. An international speaker, she has lectured to tens of thousands of executives/engineers/researchers on emerging technologies and advanced manufacturing via continuing education professional development courses. Her keynote speeches range from university commencement addresses to DoD Federal Women’s Program to the U.S. Patent and Trademark Office. She is also a prolific author and speaker on education, workforce, and business issues. Other services include International Advisory Board of Singapore Advanced Technology and Manufacturing Institute, Commerce Department’s Export Council, a number of industry boards. On serving the National Academies, she has Chaired Laboratory Assessment Board, Army Research Laboratory Technical Assessment Board; Board on Army RDT&E, Systems Acquisition, and Logistics; served as Chair of NAE Membership and Chair of Peer Committee (Materials Section). Also served on National Materials and Manufacturing Board, Army Science & Technology Board, NIST Technical Assessment Board, DoD R&D Globalization Board, Committee on Forecasting Future Disruptive Technologies, Diversity Forum, and NAE Award Committee, among others. Her formal education includes Harvard University Executive Program, Columbia University Business School Corporate Governance Program, and four academic degrees (Ph.D., M.A., M.S. and B.S.) in materials science & engineering, chemistry, and liquid crystal science. The Dr. Jennie S. Hwang Award for Faculty Excellence was established at her Alma Maters. The Dr. Jennie S. Hwang YWCA Award is established in her honor, now for 20 years running, to recognize outstanding college women students in STEM. The Dr. Jennie S. Hwang Endeavor Fund, an endowment at NAE, funds programs that support high school and college students to enhance exposure to broad-based international perspectives in engineering education, networking, and the profession. Further: www.JennieHwang.com.

Leon Johnson

Member

Brig Gen Leon Johnson retired from the United States Air Force after 33 years of service. During his career, Brig Gen Johnson commanded a fighter squadron, fighter group, was the Vice Commander of 10th Air Force and served as Mobilization Assistant to the Assistant Secretary of the Air Force for Manpower and Reserve Affairs. In 2009 Brig Gen Johnson was selected as a Trustee of the U.S. Air Force Academy Falcon Foundation. In 2011 he was awarded a Doctorate in Humane Letters by Tuskegee University. In 2013, Brig Gen Johnson concluded a six-year appointment as a member of the U.S. National Academies of Science and Engineering Naval Studies Board. In November 2017, he concluded his second three-year term as a Secretary of the Air Force appointee to the Civil Air Patrol (CAP) Board of Governors (BOG) and in April 2018, he was selected to be an Emeritus BOG Member. In 2019 he was selected to be a Trustee of the CAP Foundation. Brig Gen Johnson worked at the United Parcel Service (UPS) Airlines for 20 years. He was a chief pilot and also a human resources manager responsible for employee relations, work force development and employment for the UPS Airline.

Sean Kirkpatrick

Member

Dr. Sean Kirkpatrick is the Chief Executive Officer of Nonlinear Solutions, LLC, a strategic consulting company. He brings nearly three decades of national security experience and technical expertise in scientific and technical intelligence (S&TI), S&TI and space policy, research and development, acquisitions, and operations with a specialization in space/counterspace mission areas. Prior to his retirement from government service as a career federal employee in December of 2023, he served as the first Director of the Defense Department’s All-domain Anomaly Resolution Office (AARO) and reported to the Deputy Secretary of Defense and the Principal Deputy Director of National Intelligence. He has served in a variety of sensitive space and S&T roles across the Naval Research Lab, Air Force Research Lab, National Reconnaissance Office, CIA, DIA and OSD. He entered Senior Service in 2012 as the Defense Intelligence Officer for Scientific and Technical Intelligence, developing the first integrated Scientific and Technical Intelligence Strategy for the Department. Further, he served in a variety of high-profile and no-fail roles including special assignment to the Principal Deputy Director National Intelligence leading the Intelligence Community’s support to the Joint Interagency Combined Space Operations Center (now the National Space Defense Center, NSDC); Deputy Director of Intelligence, US Strategic Command; Director, National Security Strategy, National Security Council; Deputy Director of Intelligence and the DNI Representative for USSPACECOM. Dr. Kirkpatrick received his B.S. and Ph.D. in physics from the University of Georgia (UGA) and is currently an adjunct professor at UGA.

Frances S. Ligler

Member

Dr. Frances S. Ligler is the Eppright Chair and Professor of Biomedical Engineering at Texas A&M University. She came from a similar position at North Carolina State University and UNC Chapel Hill in 2022. Prior to 2013, she was at the U.S. Naval Research Laboratory for 28 years, during the last 18 of which she was the U.S. Navy Senior Scientist for Biosensors and Biomaterials. She earned a B.S. from Furman University and both a D.Phil. and a D.Sc. from Oxford University. She has over 450 full-length publications and patents, which have led to eleven commercial biosensors and an H=85 (Google Scholar). A member (2005) and former Councillor of the National Academy of Engineering, she is also a Fellow of SPIE, AIMBE, AAAS, and the National Academy of Inventors and winner of the American Chemical Society's Award for Analytical Chemistry. In 2003, she was awarded the Presidential Rank of Distinguished Senior Professional by President George W. Bush and in 2012, the Presidential Rank of Meritorious Senior Professional by President Barack Obama. She has also been awarded honorary doctorates from the Agricultural University of Athens, Greece and Furman University. She is a 2017 inductee of the U.S. National Inventors Hall of Fame, honored for her invention of portable optical biosensors. She won the NAE Ramo Founders Award in 2021, has participated in numerous National Academy panels and committees, and is currently serving on the National Academies' Standing Committee, "Based on Science," to counter misinformation in science, engineering, and medicine.

Paul D. Nielsen

Member

Dr. Paul D. Nielsen (NAE) is the director and CEO of Carnegie Mellon University's Software Engineering Institute. The Software Engineering Institute is federally funded research and development center (FFRDC) 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, systems engineering related to software and the engineering or AI systems. 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 from 2000-2004. He is a fellow of the American Institute of Aeronautics and Astronautics (AIAA), the Institute for Electrical and Electronics Engineers (IEEE) and the International Council of Systems Engineering (INCOSE). He is a past president of AIAA and has served on the Defense Science Board and the Air Force Scientific Advisory Board. Nielsen received a Ph.D. and M. S. in applied science from the University of California, Davis and an M.B.A. from the University of New Mexico.

Ronald M. Sega

Member

Dr. Ronald M. Sega is currently a Professor Emeritus at Colorado State University and at the University of Colorado. Previously, Sega served as the Chief Technology Officer of the U.S. Army Futures Command (2019-2022). He was the Woodward Professor, Founder and Director, Systems Engineering programs (2007-2019), and Special Assistant to the Chancellor for Strategic Initiatives at Colorado State University. Sega was also the Vice President and Enterprise Executive for Energy and the Environment at both Colorado State University and The Ohio State University (2010-2013). Previously, he was the Under Secretary of the Air Force from 2005 to 2007, serving as the Executive Agency for Space for the Department of Defense (DoD). Sega was the Director of Defense Research and Engineering (DDR&E), the Chief Technology Officer for the DoD, from 2001 to 2005. He retired from the Air Force Reserve in 2005 in the rank of Major General as the Reserve Assistant to the Chairman of the Joint Chiefs of Staff. Dr. Sega served as a Faculty Member in the College of Engineering and Applied Science, University of Colorado at Colorado Springs, and the Dean from 1996 to 2001. A former astronaut, he flew aboard Space Shuttles Discovery (1994) and Atlantis (1996). Sega has authored or co-authored 150 technical publications, and has served on numerous local, regional, national and corporate advisory and governance boards. Dr. Sega received a B.S. degree in Math and Physics from the U.S. Air Force Academy (1974), a M.S. in Physics from The Ohio State University (1975), and a Ph.D. in Electrical Engineering from the University of Colorado (1982). He is a Fellow of AIAA and Life Fellow of IEEE.

Richard S. Stapp

Member

Brig Gen Richard S. Stapp, USAF, is the Chief Technology Officer (CTO) and Chief Revenue Officer for DEFCON AI. He previously served as Sector Vice President, Capabilities and All-Domain Integration following his service as Corporate Vice President and CTO for Northrop Grumman and was responsible for the technology leadership and strategy for the company. He was with Northrop Grumman for more than eight years and served in the Space Sector as the vice president for resiliency and rapid prototyping, leading the development of new prototype systems and resiliency programs across critical space missions. Prior to that, he was vice president of applied research & technology development for Aeronautics Systems. Before joining Northrop Grumman, Brig Gen Stapp was the Director of Special Programs, Office of the Secretary of Defense. His core responsibilities included the governance, acquisition, and oversight of Department of Defense (DOD) Special Access Programs (SAP) where he was the primary DOD liaison to agencies of the executive branch and Congress regarding all SAP matters. Prior to that, Brig Gen Stapp was the Director of Requirements for the Joint Staff, responsible for assisting the Chairman of the Joint Chiefs of Staff in identifying, assessing, and approving joint military requirements to meet the national military strategy. He also served as the Director of Air Force Special Programs (SAF/AQL) and has commanded at the Wing, Group and Squadron levels. Early in his career, Brig Gen Stapp completed a 4-year exchange tour with the U.S. Marine Corps flight testing V-22 Osprey’s and serving as an instructor at the U.S. Naval Test Pilot School.

Linda M. Thomas

Member

Dr. Linda Thomas is a Senior Engineer in the Laser Technology Section, Code 8125, of the Naval Center for Space Technology, at the U.S. Naval Research Laboratory (NRL) in Washington, D.C. She has been working at NRL since 2004. Her current research interests are free-space optical communication systems, hybrid optical and RF communications networks, satellite laser ranging, and laser retroreflector arrays. She is particularly interested in application of free space optics in tactical environments - from ground to the aerial layer and space domains. Dr. Thomas has led the technology transition of free space optical communication systems to the first Department of Defense Program of Record. Dr. Thomas is the recipient of the Department of the Navy Meritorious Civilian Service Award in 2022, and the 2017 Department of the Navy Dr. Delores M. Etter Top Engineer Individual Award for her achievements in developing military-relevant free space optical communications technology. She has held multiple Conference Chair and Program Committee membership roles within the International Society for Optical Engineering (SPIE) and Optica (formerly Optical Society of America), and is currently an Associate Editor for Optical Engineering and previously an Associate Editor of IEEE Journal of Lightwave Technology. Dr. Thomas received her Bachelor’s degree in Electrical Engineering from Duke University, Durham, NC, and has a Master’s degree and Doctorate in the field of Electrical Engineering from the University of Maryland, College Park.