

# **Digital Strategy for the Department of the Air Force: A Workshop Series**

## **Committee**

### **Michael A. Hamel**

#### **Co-Chair**

LtGen (Ret) Michael Hamel is an independent consultant in military and national security space, with a career in government and industry spanning over 40 years involving space policy, planning, development, and operations. Most recently Gen Hamel served in Lockheed Martin as Vice President of Commercial Space. Prior to that he was Senior Vice President of Corporate Strategy and Relations for Orbital Sciences Corporation leading strategic planning, product and business development and government relations. Gen Hamel served in the U.S. Air Force for more than 30 years in a broad range of space operations, development, acquisition, policy, and command positions, concluding his military career in 2008 as Commander of the Air Force Space and Missile Systems Center and Air Force Program Executive Officer for Space. Prior to that he was Commander of the 14th Air Force and served in senior command and staff positions at U.S. Air Force Headquarters and AF Space Command and was Military Advisor to the Vice President. Gen Hamel holds a bachelor's degree in aeronautical engineering from the U.S. Air Force Academy and a master's degree in business administration from California State University. He is a graduate of the Industrial College of the Armed Forces and the program in national and international security at Harvard University. He is a member of the Council on Foreign Relations and a fellow of the American Institute of Aeronautics and Astronautics. He also serves on the boards of several corporate and advisory groups.

### **Deborah Westphal**

#### **Co-Chair**

Deborah L. Westphal is Chairman of the Board of the strategy advisory firm, Toffler Associates. Recognized globally for her expertise in strategy, innovation and organizational transformation, Ms. Westphal helps organizations understand the forces that drive change in their industries and the world, and identifies the best courses of action to create enduring success. Ms. Westphal came to Toffler Associates in 1999 after 13 years as a senior government official in the U.S. Air Force. Her work in the area of technology and advanced concepts for air vehicles, missiles and space systems have been recognized with numerous awards from the California Air Force Association, a USAF Meritorious Civilian Award, an AFA Los Angeles Chapter Civilian of the Year award, and an Air Force Association Medal of Merit. Ms Westphal has also served on the US Army Science Board, the National Defense Industrial Association Greater Los Angeles Chapter Board of Directors, and the Air Force Association, Schriever Chapter 147 Board of Directors.

# **Ted F. Bowlds**

## **Member**

Ted F. Bowlds is currently the President and Chief Executive Officer (CEO) for IAI North America. In this capacity, he is responsible for Business development, program management, engineering, and technology transfer. Prior to this job, Ted served as the chief information officer (CIO) for FlightSafety, International. As CIO, Ted was responsible for the planning and execution of a \$30 million annual budget and maintained a steady 99.9% system reliability. He also served as the chief technology officer responsible for innovation and the introduction of market-leading capabilities. During his 36-year career in the United States Air Force and subsequent experience in industry, Ted led multiple large-scale, complex procurement activities, each dependent upon strong ethics and solid research foundation. The programs include the F- 117 stealth fighter, B-2 bomber, and C-17 transport. As Commander of the Air Force Research Laboratory (AFRL), he was responsible for the diverse research undertaken by AFRL ranging 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. The portfolio of programs being executed included command and control, surveillance, and information technology. General Bowlds is the Chairman of the board member of the Air Force Retired Officers Community (a continuing care retirement community). He is also a member of the Mississippi State Research Technology Advisory Group and the DoD Systems Engineering Research Council. 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 attended numerous leadership and management courses.

# Charles Brooks

## Member

Chuck Brooks a globally recognized thought leader and evangelist for Cybersecurity. LinkedIn named Chuck as one of “The Top 5 Tech People to Follow on LinkedIn.” He was named by Thompson Reuters as a “Top 50 Global Influencer in Risk, Compliance,” and by IFSEC as the “#2 Global Cybersecurity Influencer.” He is also a Cybersecurity Expert for “The Network” at the Washington Post, Visiting Editor at Homeland Security Today, and a Contributor to FORBES. He has also been featured author in technology and cybersecurity blogs by IBM, AT&T, Cylance, and many others. In government, Chuck has received two senior Presidential appointments. Under President George W. Bush Chuck was appointed to The Department of Homeland Security (DHS) as the first Legislative Director of The Science & Technology Directorate at the Department of Homeland Security. He also was appointed as Special Assistant to the Director of Voice of America under President Reagan. He served as a top Advisor to the late Senator Arlen Specter on Capitol Hill covering security and technology issues on Capitol Hill. In local government he also worked as an Auxiliary Police officer for Arlington, Virginia. In industry, Chuck has served in senior executive roles for General Dynamics as the Principal Market Growth Strategist for Cyber Systems, at Xerox as Vice President & Client Executive for Homeland Security, for Rapisan and Vice President of R & D, for SRA as Vice President of Government Relations, and for Sutherland as Vice President of Marketing and Government Relations. In academia, Chuck is Adjunct Faculty at Georgetown University’s Applied Intelligence Program and graduate Cybersecurity Programs where he teaches courses on risk management, homeland security, and cybersecurity. He was an Adjunct Faculty Member at Johns Hopkins University where he taught a graduate course on homeland security for two years. He has an MA in International relations from the University of Chicago, a BA in Political Science from DePauw University, and a Certificate in International Law from The Hague Academy of International Law. In media, Chuck is the featured Homeland Security contributor for Federal Times, featured cybersecurity contributor for High Performance Counsel on cybersecurity, and an advisor and contributor to Cognitive World, a leading publication on artificial intelligence. He has also appeared in Forbes and Huffington Post and has published more than 180 articles and blogs on cybersecurity, homeland security and technology issues. He has 59,000 followers on LinkedIn and runs a dozen LI groups, including the two largest in homeland security. Chuck’s professional industry affiliations include being a member of the August USA Chapter of EC-Council Global Advisory Board for TVM (Threat and Vulnerability Management), EC-Council is the world's largest body in cybersecurity training and certifications. He is on the MIT Technology Review Advisory Global Panel, a member of The AFCEA Cybersecurity Committee, and as member of the Electrical and Electronics Engineers IEEE Standards Association (IEEE-SA) Virtual Reality and Augmented Reality Working Group. Some of Chuck’s other activities include being a Subject Matter Expert to The Homeland Defense and Security Information Analysis Center (HDIAC), a Department of Defense (DoD) sponsored organization through the Defense Technical Information Center (DTIC), as a featured presenter at USTRANSCOM on cybersecurity threats to transportation, as a featured presenter to the FBI

and the National Academy of Sciences on Life Sciences Cybersecurity. He is an Advisory Board Member for The Center for Advancing Innovation, the Quantum Security Alliance, and a member of the CyberAvengers, a group that promotes safe Cyber-hygiene. Chuck was also appointed as a Technology Partner Advisor to the Bill and Melinda Gates Foundation.

# Rama Chellappa

## Member

Rama Chellappa is a Bloomberg Distinguished Professor of electrical and computer engineering and biomedical engineering with Johns Hopkins University (JHU), Baltimore. He holds a secondary appointment in the computer science department. He received the B.E. (Hons.) degree from the University of Madras, Madras, India, in 1975, the M.E. (Distinction) degree from the Indian Institute of Science, Bangalore, India, in 1977, and the M.S.E.E. and Ph.D. degrees in electrical engineering from Purdue University in 1978 and 1981, respectively. He is also affiliated with the Center for Imaging Science, the Center for Language and Speech Processing, The Malone Center for Engineering Health, and the Mathematical Institute for Data Sciences at JHU. Before moving to JHU in August 2020, Dr. Chellappa was a Distinguished University Professor and a Minta Martin professor of engineering with the University of Maryland (UMD). He was a Professor in the department of electrical and computer engineering and the University of Maryland Institute for Advanced Computer Studies. Currently, he holds the position of a College Park Professor in the electrical and computer engineering department at UMD. Prior to joining the University of Maryland, he was an assistant (1981–1986) and associate professor (1986–1991) and director of the Signal and Image Processing Institute (1988–1990) with the University of Southern California, Los Angeles. Over the last 40 years, he has published numerous book chapters, peer-reviewed journal, and conference papers. He has coauthored and coedited books on Markov random fields, face, and gait recognition, and collected works on image processing and analysis. He has served as a co-editor-in-chief of graphical models and image processing. His current research interests are computer vision, artificial intelligence, machine learning, image processing and pattern recognition with applications in face and gait analysis, markerless motion capture; 3-D modeling from video, image and video-based recognition and exploitation, compressive sensing, and hyper spectral processing. Professor Chellappa has received several awards, including a National Science Foundation Presidential Young Investigator Award, four IBM Faculty Development Awards, an Excellence in Teaching Award from the School of Engineering at University of Southern California-Los Angeles, and several paper awards from the International Conference on Pattern Recognition and Biometrics conferences. He received the Society, Technical Achievement and Meritorious Service Awards from the IEEE Signal Processing Society. He also received the Technical Achievement and Meritorious Service Awards from the IEEE Computer Society. At the University of Maryland, he was elected as a distinguished faculty research fellow, as a distinguished scholar-teacher, received the outstanding Faculty Research Award and the Poole and Kent Teaching Award for the Senior Faculty from the College of Engineering, an Outstanding Innovator Award from the Office of Technology Commercialization and an Outstanding GEMSTONE Mentor Award. In 2010, he was recognized as an Outstanding ECE by Purdue University. He is a fellow of the IEEE, ACM, AAAI, AAAS, the International Association for Pattern Recognition, the Optical Society of America and the National Academy of Inventors. He has served as an associate editor for four IEEE publications and as the editor-in-chief of the IEEE Transactions on Pattern Analysis and Machine Intelligence. He served as a

member of the IEEE Signal Processing Society Board of Governors and as its vice president of awards and membership. He served as a general and technical program chair for several IEEE international and national conferences and workshops. He is a golden core member of the IEEE Computer Society and served a two-year term as a distinguished lecturer of the IEEE Signal Processing Society. Recently, he completed a two-year term as president of IEEE Biometrics Council. His Google Scholar h-index is 129.

## **Douglas DeMaio**

### **Member**

Colonel Douglas D. DeMaio is the Commander of the 187th Fighter Wing, Dannelly Field, Ala. As commander, he oversees the operations of over 1,000 personnel and 22 permanently assigned F-16C+ Fighting Falcons in support of the State of Alabama and the federal government. The wing also provides support to four geographically separated units. Colonel DeMaio earned his commission from the United States Air Force Academy in 1991. Upon completion of Under Graduate Pilot Training at Sheppard Air Force Base, Texas, he was assigned to Luke Air Force Base, Ariz., as the 56th Transportation Squadron Vehicle Maintenance and Vehicle Operations flight commander. Upon completion of F-16 training at Luke AFB, he went on to serve in a variety of roles at the squadron, group and wing-level. The colonel has served as a squadron commander, the director of staff and as the Director of the Deployable Air Operations Center. DeMaio attended the Eisenhower School for National Security at the National Defense University, Fort McNair, Washington D.C., where he earned his master's in Long Term Strategy Development. Prior to this assignment, he served as the Vice Commander and Director of Doctrine Development at the Curtis E. LeMay Center, Maxwell AFB, Ala. He is a command pilot with over 2,800 flight hours in the F-16 and a veteran of five combat deployments to Southwest Asia.

# **Pamela A. Drew**

## **Member**

Pamela A. Drew has recently completed her service as Executive Vice President and President of Information Systems at Exelis. This organization provided full life cycle support of critical networks. These services were currently provided across government agencies including the Federal Aviation Administration (FAA), U.S. Air Force, U.S. Navy, U.S. Army, Defense Threat Reduction Agency (DTRA), and the intelligence community. Before joining Exelis, Dr. Drew was the senior vice president of Strategic Capabilities and Technology at TASC, leading an enterprise-wide team that provided systems engineering and integration, cyber security, financial and business analytics, and test and evaluation solutions to intelligence, defense and federal and civil customers. In a prior role at TASC, she led the Enterprise Systems business unit that served defense and federal civil agencies including DTRA, DHS, and the FAA. Prior to that, Dr. Drew was sector vice president of business development for Northrop Grumman's Mission Systems sector. Before joining Northrop Grumman in 2008, Dr. Drew was vice president and general manager for Boeing's Integrated Defense and Security Solutions organization heading strategy and business generation in homeland and global security markets. While at Boeing, Dr. Drew also served as vice president and general manager of Boeing's C3ISR business unit serving the U.S. Air Force, U.S. Navy, and several international customers including the United Kingdom, NATO, Australia, and Turkey. In a prior role, she led a significant portion of Boeing Phantom Works developing and transitioning technology across the commercial airplane and military businesses. Dr. Drew has held several leadership roles with National Research Council boards and committees, including as the vice chair of the Air Force Studies Board and on the "NextGen" Air Traffic Management committee for the Transportation Research Board. She also serves on the Board of Directors for University of Washington's Applied Physics Lab. Dr. Drew has been named an Associate Fellow of the American Institute of Aeronautics and Astronautics. She also serves on the Strategic Advisory Councils to the Chancellor and Dean of Engineering at the University of Colorado, Boulder, where she earned her Ph.D. in computer science.

# Annie Green

## Member

Annie Green is a Digital Thought Leader and Knowledge Strategist/Architect. She has a Doctor of Science (D.Sc.) from George Washington University and a Masters in Information Systems (M.S.I.S) from George Mason University. Annie is currently working as a data governance specialist for George Mason University and adjunct faculty at several universities. As a Strategist/Architect, she helps organizations see the 'big picture' to provide a more holistic solution to building a cognitive enterprise. Her many years of expertise have resulted in a harmonious blend of theory, practice and continuous learning focused on optimizing business/IT alignment, knowledge management, digital transformation strategies, change management, and governance, in commercial, public, and government sectors. She is an advisor, professor, lecturer, speaker, journal reviewer and author.

# James M. Holmes

## Member

General Mike Holmes retired from the Air Force in October 2020 after nearly 40 years of service. He is a member of the Council on Foreign Relations, an adjunct fellow at the Center for a New American Security, a senior advisor at The Roosevelt Group, the Chairman of the Board at Red 6, and advises several defense and tech companies. He completed his Air Force service leading the transformation of Air Combat Command (ACC), a global organization operating and sustaining over 1,000 aircraft and 11 Air Force Bases with an annual operating budget of \$7.4B. As the Air Force's Deputy Chief of Staff for Strategic Plans and Programs, he led a team that shifted Air Force strategy to respond to a new national security environment and built and defended the USAF's input to three \$600B Five Year Defense Plans with the Department of Defense and U.S. Congress. As the Deputy Commander of Air Education and Training Command, he directed all aspects of USAF education and training, from basic and technical training to advanced degree programs. As the Air Force's Assistance Deputy Chief of Staff for Operations and Requirements, he coordinated global Air Force operations and requirements with the Joint Chiefs of Staff and regional military commanders. As Principal Director for Mid-East Policy in the Office of the Secretary of Defense, he formulated regional defense policy with the National Security Council and Department of State and coordinated US defense relationships and activities with international partners. Before assuming his strategic role, he commanded Air Force teams in positions of increasing complexity, responsibility, and accountability at the squadron, group, and wing level, including a year in command of Air Force forces in Afghanistan. Mike graduated from the U.S. Naval War College National Security Strategy program with highest honors and completed both the U.S. Air Force's School for Advanced Air and Space Power Studies program and the Fighter Weapons Instructor Course. He was the Graduate of the Year in the University of Alabama's MA in History program at Maxwell AFB and received a BS in Electrical Engineering from the University of Tennessee. He is a fighter pilot with over 4000 hours in the F-15 and T-38, including over 500 combat hours, and continues to fly general aviation aircraft.

# Marv Langston

## Member

Marv Langston is an independent consultant, focusing on new technology adoption, enterprise architecture and engineering, organizational strategy, and acquisition leadership. He has been serving the Department of Defense and U.S. Navy community, for the majority of his 50-year career, where he has focused primarily on Navy Command and Control. During his last public service SES positions, Marv served as Department of Defense Deputy Chief Information Officer; Deputy Assistant Secretary of Navy for C4I; first Navy Chief Information Officer; and, as Director of the Defense Advanced Research Projects Agency (DARPA) Information Systems Office. During his 22-year Navy military career, Marv served as an enlisted nuclear power electronics technician and retired as a Commander, Engineering Duty Officer, where he served as an AEGIS Combat System Assistant Program Manager, a Special Assistant to RADM Wayne Meyer helping to establish Battle Force Engineering, and as a plank owner of the Space and Naval Warfare Systems Command. Following his public service career, Marv was the Chief Operating Officer of a small high-tech start-up company, Chief Technology Officer of a large business practice, and was a Senior Staff Engineer at the Johns Hopkins University, Applied Physics Laboratory, where he helped establish today's AEGIS Ballistic Missile Defense capability. During his career, Dr. Langston earned a master's and Doctorate of Public Administration from the University of Southern California, a Master of Science in electronic engineering from the Naval Post Graduate School, and under the Naval Enlisted Science & Engineering Program, a Bachelor of Science in electronic engineering from Purdue University.

## **Alden Munson, Jr.**

### **Member**

Alden V. Munson, Jr., is an advisor to government and industry in defense and intelligence. He is a Senior Fellow and Member, Board of Regents at Potomac Institute for Policy Studies, and serves on the Defense Science Board. He was the Deputy Director of National Intelligence for Acquisition from May 2007 until July 2009. Previously, he was a consultant in defense, space, and intelligence and was associated with the investment banking firm Windsor Group. He was the Senior Vice President and Group Executive of the Litton Information Systems Group, leading information technology, command and control, and intelligence businesses for defense, intelligence, civil, commercial, and international customers. Mr. Munson was Vice President at TRW, in the System Integration Group, the Space and Electronics Group, and the Information Systems Group (the former TRW Credit Business). In these assignments, he led numerous space, intelligence, and information technology organizations and activities. He began his career at the Aerospace Corporation, where he provided system engineering support to many space and intelligence programs. Mr. Munson received a bachelor's degree in mechanical engineering with distinction and departmental honors from San Jose State University (SJSU) and a master's degree in mechanical engineering from the University of California, Berkeley. He later completed extensive coursework in computer science at University of California, Los Angeles and attended executive programs at Harvard (Competition and Strategy; National and International Security) and Stanford (Management of High Technology Enterprises). In 1997, he was named a Distinguished Graduate of the SJSU College of Engineering, and in 2000, the National Reconnaissance Office named Mr. Munson in the first group of Pioneers of National Reconnaissance. He received the National Intelligence Distinguished Service Medal in 2009. Mr.

Munson serves on the board of DigitalGlobe, a commercial imagery company. He was a founding director of Paracel Inc. (now part of Aplera) and has held board positions with bd Systems, the Armed Forces Communications Electronics Association (AFCEA), and the Manhattan Beach Education Foundation, and is an active member of the Intelligence and National Security Alliance (INSA).

## **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 has served 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.

## **Julie J. Ryan**

### **Member**

Julie J.C.H. Ryan is the CEO of Wyndrose Technical Group, having retired from academia in 2017. Her last position in academia was professor of cybersecurity and information assurance at the U.S. National Defense University. Prior to that, she was tenured faculty at the George Washington University and a visiting scholar at the National Institute for Standards and Technology (NIST). Dr. Ryan came to academia from a career in an industry that began when she left government service. Upon graduating from the U.S. Air Force Academy, Dr. Ryan served as a signals intelligence officer in the Air Force, and then as a military intelligence officer with the Defense Intelligence Agency. After moving to industry, she worked in a variety of positions, including systems engineer, consultant, and senior staff scientist with companies including Sterling Software, Booz Allen & Hamilton, Welkin Associates, and TRW/ESL. She is the author of several books, including *Defending Your Digital Assets Against Hackers, Crackers, Spies, and Thieves* (McGraw Hill 2000), and is a fellow of the American Academy of Forensic Sciences (AAFS). At Wyndrose Technical Group, she focuses on futures forecasting and strategic planning with an eye on technology surprise and disruption. She holds the degree of D.Sc. in engineering management from The George Washington University.

## Jay G. Santee

### Member

Jay G. Santee is vice president, Strategic Space Operations, Defense Systems Group. In this role, he oversees the company's support of the U.S. Air Force's Space Warfighting Construct, which combines transformational and warfighting-focused command initiatives to maintain space superiority in the 21st century. He also leads the corporation's support to the Space Security and Defense Program and U.S. Strategic Command. Prior to joining Aerospace, Santee was outcome leader for Resilient Affordable Space at MITRE, where he was responsible for directing and shaping MITRE's contributions to the national security space enterprise's fielding of a resilient, affordable space force. Santee served 33 years in the United States Air Force, retiring as a major general in 2014. Santee's last assignment was as deputy director of the Defense Threat Reduction Agency. In this capacity, he played a key leadership role in the removal and destruction of declared Syrian chemical weapons materials aboard the MV Cape Ray. Santee's other assignments in the Air Force included, among others: acting deputy assistant Secretary of Defense for Space Policy, vice commander of the 14th Air Force, Director of the Space Operations Center (now the Joint Space Operations Center), commander of the 21st Space Wing, and as an operations division chief at U.S. Space Command. Santee earned a bachelor's degree in geography from the U.S. Air Force Academy, an MBA from Golden Gate University, and a master's degree in national security strategy from the National War College. Santee also completed the Program for Senior Executives in National and International Security at the John F. Kennedy School of Government, Harvard University. Santee was awarded the 2014 Ellis Island Medal of Honor, and was invested as a Chevalier de la Légion d'Honneur (Knight of the Legion of Honor), France's highest honor, in 2012. Santee serves on the U.S. Strategic Command's Strategic Advisory Group and on the Advisory Committee for the Secure World Foundation.

## James D. Syring

### Member

Jim Syring leads the auto and property insurance lines of business for USAA that includes over 8 million members, 14.6 million vehicles in force and over 5.9 million homeowner's and renter's policies in force. The USAA P&C Insurance Group continually sets the standard for exceptional service in personal lines insurance. Prior to this role, Jim served as USAA's Chief Administrative Officer (CAO). As USAA's CAO, Jim oversaw Corporate Real Estate and Workplace Services, Enterprise Security Group, Global Sourcing and Procurement, and Information Technology. These functions are foundational in serving, supporting and protecting USAA's employees and members. Jim joined USAA in July 2017 after a 32-year career in the United States Navy. Reaching the rank of Vice Admiral, Jim served in numerous engineering duty officer assignments culminating with his selection as the 9th director of the Missile Defense Agency (MDA). In this capacity, he oversaw the MDA's worldwide mission to develop a capability to defend deployed forces, the United States, allies, and friends against ballistic missile attacks. A 1985 graduate of the United States Naval Academy, Jim earned his Bachelor of Science degree in Marine Engineering. In 1992, he graduated from the Naval Post Graduate School with his Master of Science degree in Mechanical Engineering. Jim joined USAA to continue serving the military that protects our country.