The Role of Experimentation Campaigns in the Air Force Innovation Life Cycle

Committee

Lester L. Lyles

Co-Chair

General Lester Lyles (USAF, retired) (NAE) is an independent consultant. He retired as Commander of the Air Force Materiel Command, Wright-Patterson Air Force Base, Ohio. General Lyles entered the Air Force in 1968 as a distinguished graduate of the Air Force ROTC program. He has served in various assignments, including program element monitor of the short-range attack missile at headquarters U.S. Air Force, special assistant and aide-de-camp to the commander of Air Force Systems Command, avionics division chief in the F-16 systems program office, director of Tactical Aircraft Systems at AFSC headquarters, and as director of the medium launch vehicles program and space-launch systems offices. General Lyles became AFSC headquarters' assistant deputy chief of staff for Requirements in 1989, and deputy chief of staff for Requirements in 1990. In 1992, he became vice commander of Ogden Air Logistics Center, Hill AFB, Utah. He served as commander of the center until 1994, then was assigned to command the Space and Missile Systems Center at Los Angeles AFB, California until 1996. General Lyles became the director of the Ballistic Missile Defense Organization in 1996. In May 1999, he was assigned as vice chief of staff at USAF/HQ. General Lyles received a B.S.M.E. from Howard University, and an M.S. in mechanical and nuclear engineering from New Mexico State University. He is nominated to the board because of his experience in program management, acquisition, logistics, and management of Air Force science and technology.

Alex Miller

Co-Chair

Dr. Alex Miller is The William B. Stokely Chair of Management in the University of Tennessee's College of Business Administration. He was the founding director of the Aerospace-Defense Executive MBA program and the former associate dean of Executive Education at the University of Tennessee. Alex has worked as a consultant for more than 100 firms, ranging from small service businesses to Fortune 500 global manufacturing firms. He has written three books, and numerous journal articles, and he has won six teaching awards as well as the Chancellor's Award for Outreach and Service. He has been the principal investigator on university research contracts with a cumulative value of more than $15 million dollars. The majority of this research was with the United States Air Force and was aimed at improving acquisition processes and logistical operations. Alex holds a Ph.D. from the University of Washington in Seattle, an M.B.A. from Dartmouth College, and a B.S. from Tennessee Technological University. He has also taken additional course work at Cal Tech, Dartmouth, Harvard, M.I.T, and Northwestern. Alex is a seventh generation East Tennessee farmer and a former Tennessee Cattleman of the Year. He is an IFR-rated pilot and enjoys farming, training border collies as cattle dogs, sailing, ultra-endurance cycling, adventure motorcycling, and time spent with his grandchildren.

Ted F. Bowlds

Member

LtGen Ted Bowlds (USAF, retired) is a consultant, CEO, board member, and retired U.S. Air Force General with over three decades of experience leading strategy, planning, organizational development and administration for high profile, complex, commercial and military organizations. Adept at cutting-edge information technology development, cyber research, . and engineering management. Recognized for the ability to establish multi-billion dollar projects and transform critical operations into cohesive, focused organizations that consistently surpass expectations. Expertise includes strategic planning, risk assessment, business sustainability, process improvement, organizational development, and succession planning. Dedicated to building effective relationships and providing assistance to investors, executive management teams and boards of directors. He holds M.S. in engineering management and electrical engineering.

Thomas J. Burns

Member

Dr. Thomas Burns is co-founder and managing partner of CXO Capital, a DC-based Angel investment group for businesses with R&D risks. Dr. Burns previously co-founded and served as CEO and chairman of SET Corporation, an R&D company specializing in the development and commercialization of “smart sensing” technologies. He also co-founded and served as COO of ObjectVideo Inc., a venture-backed leader in smart video solutions for commercial and military security applications. Dr. Burns joined ObjectVideo from DARPA, where he pioneered the development of model-based signal and image exploitation technologies, building on his experiences directing computer vision research as a United Stated Air Force Officer at AFRL. While assigned to AFRL, he led AFRL’s premiere Automatic Target Recognition program, receiving AFRL’s prestigious Peter R. Murray Program Manager of the Year award. Dr. Burns is co-inventor of patents on video and radar technology, and has published numerous refereed papers in areas as diverse as electro-optics and wavelet mathematics. He holds a Ph.D. in electrical engineering from the Air Force Institute of Technology.

Charles R. Davis

Member

LtGen Charles R. “CR” Davis (USAF, retired) is chief operating officer at Seabury Group. He joined Seabury Aerospace & Defense Consulting LLC in January 2015 as executive vice president to oversee major advisory assignments for aerospace and defense clients, providing strategic guidance, operational expertise, and aerospace systems acquisition insight. In addition, he will work on commercial aviation projects, contributing his unique perspective and expertise. General Davis has more than thirty years of experience leading large complex organizations, major defense programs, new system development, flight test, and production activities. He has managed aircraft, armament, command and control, and network systems, and the U.S. DoD’s F-35 Lightning II program. Prior to retiring from the U.S. Air Force (USAF), Lieutenant General Davis was military deputy, Office of the Assistant Secretary of the Air Force for Acquisition, the Pentagon, Washington, D.C. He oversaw R&D, test, production, and modernization of USAF programs worth more than $40 billion annually. He also led USAF Acquisition for more than a year, while the Assistant Secretary of the Air Force (Acquisition) position was vacant. General Davis also served as the commander of the Electronic Systems Center and the Air Force program executive officer for Command, Control and Communications Infrastructure and Networks at Hanscom Air Force Base, Massachusetts, where he managed more than $5 billion in programs. He also was the commander of the Air Armament Center and the Air Force program executive officer for weapons at Eglin AFB, Florida, where he managed development, acquisition, testing, deployment and sustainment of air-delivered weapons. Prior to Hanscom AFB and Eglin AFB, General Davis was deputy and later the F-35 joint strike fighter program executive officer, overseeing the development and acquisition of the F-35 aircraft and related training and logistics systems for 13 U.S. and allied services and nine partner nations. He directed more than 2,000 personnel and the $40 billion system design and development for three F-35 variants. He also was director of the F-15 and flight training system program offices and joint primary aircraft training (T-6A) system program director. General Davis holds a B.Sc. in chemistry from the U.S. Air Force Academy, a M.Sc. in mechanical engineering from California State University Fresno, and a M.Sc. in national resource management from the Industrial College of the Armed Forces. He is a test pilot with more than 3,400 flying hours in 53 types of aircraft (F-117A, F-16, F-15, T-38 & A-7). General Davis is an FAA-licensed commercial single and multi-engine pilot and is an associate fellow of the Society of Experimental Test Pilots.

Blaise J. Durante

Member

Mr. Blaise J. Durante is Director, Blaise J. Durante & Associates, Inc. Mr. Durante retired as a member of the Senior Executive Service, was the Deputy Assistant Secretary for Acquisition Integration, Office of the Assistant Secretary of the Air Force for Acquisition, Washington, D.C. Mr. Durante managed the acquisition staff organization charged with planning, managing, and analyzing the Air Force's research and development, and acquisition investment budget. Mr. Durante oversaw the integration of research, development, and acquisition budget formulation and execution, and directed streamlined management team activities, including Air Force acquisition reform and reduction in total ownership cost efforts. He directed the development of weapon system acquisition policy including program direction. Mr. Durante served as the chief financial officer for the modernization accounts. As director for Air Force Contracted Advisory and Assistance Services, Mr. Durante directed and was accountable for the Air Force's CAAS programs. He was responsible for acquisition professional development, including directing, coordinating, and reviewing actions mandated by the Defense Acquisition Workforce Improvement Act and Department of Defense directives. Mr. Durante also managed acquisition reporting systems and the Air Force's international RD&A programs. He was a member of the Air Force Board, Air Force Budget Review Group, Defense Acquisition History Team and Headquarters Resource Allocation Process Integrated Process Team. He served as chief of staff for the Office of the Secretary of the Air Force for Acquisition and the Program Executive Officer Organization, and was responsible for operations support for the Assistant Secretary of the Air Force for Acquisition. Mr. Durante retired from the Air Force as a colonel in May 1992 and entered the Senior Executive Service. He retired from the Senior Executive Service in October 2012.

Antonio L. Elias

Member

Dr. Antonio L. Elias (NAE) is executive vice president and chief technical officer of Orbital ATK. In 2012, Dr. Elias was named executive vice president and chief technical officer of Orbital Sciences. Previously, he was executive vice president and general manager of Orbital's advanced programs group, which he led since its inception in 1997. Earlier, he served as Orbital's chief technical officer from 1996 to 1997 and as corporate senior vice president from 1992 to 1996. In 1989, Dr. Elias was named Orbital's first vice president for engineering. From 1987 to 1991, he led the technical team that designed and built the Pegasus air-launched booster, flying as launch vehicle operator in the B-52 carrier aircraft for the rocket's first and fourth flights. He also led the design teams of Orbital's APEX and SeaStar satellites and the X-34 hypersonic research vehicle. Dr. Elias also held various teaching and research positions in the Department of Aeronautics and Astronautics at the Massachusetts Institute of Technology prior to his time with Orbital. During the 1970's, he worked on the design of the space shuttle's orbiter avionics system at Draper Laboratory, where he originated the Shuttle's Terminal Area Energy Management (TAEM) guidance concept. Dr. Elias holds B.S., M.S., E.A.A., and Ph.D. degrees from the Massachusetts Institute of Technology. He is a member of the National Academy of Engineering and fellow of the American Institute of Aeronautics and Astronautics, the American Astronautical Society and the International Academy of Astronautics. His awards include the 1991 AIAA Engineer of the Year, AIAA Aircraft Design Award and AAS Brouwer Award. He is a co-recipient of the 1991 National Medal of Technology and the 1990 National Air and Space Museum Trophy and holds FAA airline transport pilot and flight instructor certificates.

Ivy Estabrooke

Member

Dr. Ivy Estabrooke was appointed as the executive director of the Utah Science, Technology and Research Agency (USTAR) in May 2014. A cognitive neuroscientist by training, with technical expertise in psycholinguistics, pharmacological interventions, and statistical modeling, Ivy earned her doctorate in Neuroscience from Georgetown University, an M.S. in national security strategy and resource management from the Eisenhower School of the National Defense University, and a B.A. in biological sciences from Smith College. Prior to moving to Utah, Ivy served as a program officer for eight years at the Office of Naval Research (ONR). She managed a high-risk / high-payoff research portfolio, including innovative neuroscience programs and cutting-edge social and computational science programs, and developed and implemented a strategy for examining emerging technology areas. She also managed a multimillion-dollar yearly investment in the Sciences Addressing Asymmetric Explosive Threats basic research efforts. As a strong supporter of education, Ivy led Science Technology Engineering and Mathematics education (STEM) programs for her department.

David E. Hamilton, Jr.

Member

Mr. David Hamilton is CEO at Eagle Aerie, Inc. and is President, Guardtime Federal LLC, a firm specializing in system digital integrity for DoD and the IC. Mr. Hamilton served 29 years in uniform for the Air Force retiring in 2003 in the rank of Colonel. After a short stint in the private sector he then returned to the Department of Defense as a member of the Senior Executive Service as the director of the Rapid Capabilities Office serving for 11 years until retirement in August 2014. Throughout his career he was a leader in transitioning developing technologies into field-able national technical and strategic capabilities including large-scale prototyping and delivery of high technology weapons and support systems meeting critical mission assurance requirements. While most of his activities have been in the classified arena, notable acknowledged capabilities include the air defense system protecting the national capital and the X-37B orbital test vehicle.

William Johnson

Member

Mr. William Johnson graduated from Cornell University with a BS and MEE in electrical engineering. He is an independent consultant and sole proprietor of WMJ Associates LLC which he established in July 2007. In this capacity he has advised government and industry leaders on management and leadership matters involving the acquisition of complex systems.

Mr. Johnson has developed and successfully pioneered innovative methods for providing the U.S. Navy’s fleet with the best possible products in a timely and affordable manner. He has over 40 years of experience in this field. Both he and his programs had been the subject of a number of case studies by academic institutions including Harvard and the Naval Post Graduate School. He has been sought out by and testified before numerous high level groups involved with business process transformation.

Bernadette Johnson

Member

Dr. Bernadette Johnson is chief technology officer at MIT Lincoln Laboratory. Her responsibilities include the development of the laboratory's long-term technology strategy and the coordination of collaborative research with MIT campus. Prior to this position, Dr. Johnson was assistant head of the Homeland Protection and Tactical Systems Division. Her technical foci were in military and civilian chemical and biological defense and forensics sensing, and she led a study to develop a strategic plan for bioscience research at Lincoln Laboratory. She was and remains actively involved in technology innovation initiatives. Since joining Lincoln Laboratory in 1985, she has been involved in a number of programs related to laser-based propagation and sensing and, more recently, biodetection. Examples of past work include experiments in adaptive optics to facilitate high-energy-laser propagation through the atmosphere, the adaptation and installation of a declassified adaptive optics system on the 60" telescope at Mt. Wilson Observatory, and investigations into the use of photorefractive InP:Fe for applications including wide-field-of-view heterodyne receivers. From 1993 through 1996, she directed the Environmental Monitoring Project, which was established to adapt Lincoln Laboratory technologies to environmental-monitoring applications. Dr. Johnson subsequently became involved in experiments to investigate microlaser-induced breakdown spectroscopy for in situ elemental analysis. She then developed and managed a program to investigate the feasibility and utility of combining active illumination with hyperspectral imaging for a variety of military and civilian applications, including unexploded ordnance and land-mine sensing. In 1999, she became involved with Lincoln Laboratory’s growing biodetection program area. From 2001 until 2007, Dr. Johnson served as leader of the Biodefense Systems Group. Dr. Johnson is a 2007 recipient of the Lincoln Laboratory Technical Excellence Award for her system-level architecting, technical innovation, and prototype demonstration. She holds a B.S. in physics from Dickinson College, an M.S. in condensed matter theory from Georgetown University, and a Ph.D. in plasma physics from Dartmouth College.

Joseph Lawrence

Member

Dr. Joseph Lawrence is a distinguished research fellow at the National Defense University (NDU) Center for Technology and National Security Policy, and is a senior research associate in the Applied Research Lab at the Pennsylvania State University (PSU ARL). He has a focus primarily on science and technology (S&T) transition policy issues as they affect the Department of Navy (DoN) and more broadly the Department of Defense. Prior to his 2012 IPA appointment from PSU ARL to the NDU faculty, Dr. Lawrence from 2005 was the director of transition for the Office of Naval Research (ONR), responsible for policy, planning, resourcing and execution management for a substantial part of the DoN S&T budget including Future Naval Capabilities (FNC), DoN Small Business Innovative Research, and DoN Manufacturing Technology programs. Dr. Lawrence served as the associate technical director of ONR from 2004 through 2005. He had direct responsibility for all transitioning S&T in DoN. He engineered a major revision of DoN S&T, moving requirements definition and selection authority for over 30% of the DoN S&T programs from within ONR to a Technical Oversight Group (OPNAV N8, CG MCCDC, DC FFC, PDASN RDA, CNR). On behalf of CNR, he negotiated with ASN RDA for a major reorganization of ONR (current structure) in 2005. Dr. Lawrence was appointed to the Senior Executive Service (SES) in 2001, with initial assignment as ONR Director: Surveillance, Communications, and Electronic Combat Division. His duties included planning and execution management of all DoN S&T in the areas of radar, EO/IR sensing, communications, electronic warfare and navigation (including GPS). He also was the S&T manager for the Fleet/Force Protection FNC program responsible for the development and execution of a $100 million per year program intended to transition emerging technologies into the DoN acquisition community, or directly to the fleet/force, within a three to five year horizon. Dr. Lawrence attended the University of Maryland, College Park, graduating with a B.S. in electronic engineering. He holds a M.S. in engineering from Princeton University, and a Ph.D. in communications and control systems theory from the University of Maryland, College Park. Dr. Lawrence was awarded the Department of Defense Distinguished Civilian Service Award in 2011, the Department of the Navy Superior Civilian Service Medal in 2008, and was awarded the Presidential Rank of Meritorious Executive in September 2007.

Robert A. Mitchell

Member

Mr. Robert Andrew Kirk Mitchell (NAE) is a consultant. He served as vice president for Northrop Grumman Aerospace Systems from 1999-2009. Prior to its acquisition in 1999 by Northrop Grumman, Mitchell served as president of Teledyne Ryan Aeronautical. Under his leadership, Teledyne Ryan Aeronautical captured and developed the Global Hawk high altitude, long endurance, unmanned aircraft system (UAS). Upon the acquisition by Northrop Grumman, Mitchell served as vice president of Unmanned Systems, where he managed the continued development of the Global Hawk UAS while leading the team that captured and developed the Fire Scout vertical UAS. Mitchell previously served as sector vice president for Special Programs and was the successful capture lead for the U.S. Navy's Broad Area Maritime Surveillance UAS program. Mitchell began his career as an aircraft apprentice. He was later selected to attend the Royal Air Force College, Cranwell, was commissioned, became a pilot and earned a B.S. with honors in aeronautical engineering. In 1973, he attended the United States Air Force Institute of Technology, Wright-Patterson Air Force Base, where he earned a Master’s Degree with distinction in astronautical engineering. He has received numerous awards to his contributions in the field of aerospace including; AIAA Reed Award in 2012, Flightglobal Leaders of the Year award in 2009 and USAFIT Distinguished Alumnus in 2006 to list just a few.

Benjamin P. Riley III

Member

Mr. Ben Riley is senior research associate at Georgia Tech Research Institute. Mr. Riley previously served at the principal deputy, deputy assistant secretary of defense, emerging capability & prototyping in the office of the Assistant Secretary of Defense, Research and Engineering. Mr. Riley is responsible for policy and oversight of fielding capabilities that counter unconventional and time-sensitive threats. He facilitates rapid technology transition within the Department through discovery and demonstration of advanced technology concepts and works with interagency and coalition partners, industry, and academia to facilitate the timely satisfaction of validated priority operational needs. Prior to assuming his position in September 2009, Mr. Riley served as the director of the USD(AT&L) sponsored Rapid Reaction Technology Office (RRTO) and Chairman Combating Terrorism Technology Task Force (CTTTF). In this position he interacted and coordinated with both Department of Defense commands and organizations and other government departments on identifying technologies and technological trends to address combating and countering terrorism operations. Previously, Mr. Riley was Senior Research Associate in the Georgia Tech Research Institute of the Georgia Institute of Technology. He was assigned to the Office of Naval Research in Washington, D.C. Military assignments as a Captain in the United States Navy included serving as Military Deputy to the Deputy Under Secretary of Defense (Advanced Technology) in the Office of the Secretary of Defense. He participated in the initiation of the Advanced Concept Technology Demonstration (ACTD) program.

Joel C. Sercel

Member

Dr. Joel Sercel is president, chief engineer, and founder of both ICS Associates Inc., and Trans Astronautica Corporation (TransAstra) with over 30 years of technical experience. ICS is a small business that provides training, consulting, and contract engineering focusing on developing solutions to complex aerospace problems, primarily related to advanced technology and innovation. TransAstra is devoted to using asteroid resources to open the solar system to industrialization. Joel spent 14 years at JPL and two years as a senior program manager for the Air Force where he ran a team over 120 systems engineers architecting a $20 billion-class classified satellite network. While at JPL Sercel led the conception, proposal, and definition of NSTAR, the first deep space application of ion propulsion technology. Sercel taught graduate level courses in space propulsion and mission design at Caltech for 12 years. Partially concurrent with his work at JPL and the private sector, and for five years full time, Sercel was a visiting member of the faculty at Caltech and Director of Caltech's Laboratory for Spacecraft and Mission Design (LSMD). Software and processes designed by Sercel have been used extensively at JPL, Boeing, Raytheon, United Technologies and Northrop Grumman (formerly TRW), and are credited with increasing team productivity by a factor of four for complex systems engineering tasks such as satellite design and requirements development. Robotic systems conceived of by Dr. Sercel are in use by the department of defense in diverse environments. Dr. Sercel received his Ph.D. in mechanical engineering from Caltech in 1992 and a B.S. in engineering physics from the University of Arizona in 1984.

Daniel B. Ward

Member

Mr. Daniel Ward is consultant with Dan Ward Consulting, LLC. Mr. Ward is the author of The Simplicity Cycle: A Field Guide To Making Things Better Without Making Them Worse (HarperBusiness, 2015) and F.I.R.E.: How Fast, Inexpensive, Restrained and Elegant Methods Ignite Innovation (HarperBusiness, 2014). Prior to launching Dan Ward Consulting, he served for more than 20 years as an acquisition officer in the U.S. Air Force, where he specialized in leading high-speed, low-cost technology development programs and retired at the rank of Lieutenant Colonel. While on active duty, he helped establish the Air Force Research Laboratory's rapid innovation process. Dan's expertise on defense acquisition reform has been featured in publications from the White House, the U.S. Senate and the British Parliament. His writings have also appeared in outlets including Fast Company, Forbes, The Boston Globe, Armed Forces Journal, Small Wars Journal, Time Magazine's Battleland blog, the Pakistani Army's magazine Hilal and the British Army Yearbook. Dan holds three engineering degrees and received the Bronze Star Medal for his service at NATO Headquarters in Afghanistan leading an international team of officers from five different countries. He is a senior associate fellow with the British Institute for Statecraft and a non-resident cybesecurity fellow with the New America Foundation.