Verification and Validation Summit 2023

September 27–28, 2023

Speaker Biographies

Carleen Adams is National Airspace System (NAS) Chief Architect within the Federal Aviation Administration (FAA) Next Generation Air Transportation System's (NextGen) Systems Engineering and Integration Office. As NAS Chief Architect, she is responsible for the NAS Enterprise Architecture (EA). The EA contains a set of data and models that document the current and future states of the NAS as the FAA moves toward an Info-Centric NAS vision. Ms. Adams is also responsible for ensuring that the latest NAS EA is posted to the FAA's internal and external websites (https://www.faa.gov/nextgen/future).

Ms. Adams has more than 30 years of combined experience in the areas of Enterprise Architecture, Systems Engineering, Program Management, and Contracts. She has worked in private industry for companies such as Computer Sciences Corporation (CSC) and Lockheed Martin supporting the National Aeronautics and Space Administration (NASA) and the FAA. She began her federal career with the FAA in 2001 and has served in key roles such as Program Manager, Project Manager, Operations Manager, and Contracting Officer's Representative (COR) in several high-visibility programs such as En Route Automation Modernization (ERAM), En Route Information Display System (ERIDS), and Traffic Flow Management (TFM) System Wide Information Management (SWIM).

Ms. Adams holds a Bachelor of Science in Electrical Engineering from Howard University, a Master of Science in Telecommunications Management from the University of Maryland Global Campus. She is a certified Project Management Professional (PMP).

Scott (Scooter) Altman is Senior Vice President of Civil Operations for ASRC Federal's Engineering, Aerospace and Mission Systems (EAMS) operating group. Mr. Altman is responsible for the group's financial and technical performance, providing leadership in setting and executing operating plans and delivering on commitments to NASA, the National Oceanic and Atmospheric Administration (NOAA), and FAA customers.

Prior to joining ASRC Federal in 2010, Mr. Altman had a distinguished career with NASA and the Navy. The former astronaut and 2018 Astronaut Hall of Fame inductee is a veteran of four space flights, logging over 51 days in space and serving as commander of the final two servicing missions for the Hubble Space Telescope. Mr. Altman also logged more than 7,000 hours in over 40 types of aircraft, but still considers flying the F-14D over Iraq as his peak aviation experience.

In his personal time, Mr. Altman supports a variety of Science, Technology, Engineering, and Math (STEM) outreach events, from talks to schools and other organizations to serving on the Board of the Astronaut Scholarship Foundation. He is a retired Navy captain. He received his

Note: This document is a compilation of biographies received from the Summit speakers. Modifications to the biographies were intentionally kept to a minimum.
Biographies are in Alphabetical Order.

bachelor's degree from the University of Illinois and holds a master's degree in aeronautical engineering from the Naval Postgraduate School.

Annie Cheng is Deputy Principal Engineer of NASA's Urban Air Mobility (UAM) Airspace Subproject, focusing on research and development to advance integration of UAM into the NAS. She oversees a team of researchers who are working on the development of a collaborative airspace traffic management system for UAM.

Ms. Cheng brings a breadth of aviation experience from working in different domains. Prior to joining NASA in 2019, she worked as a contractor to support the FAA NextGen office with its efforts to modernize the air traffic control system. She participated in working groups to develop data standards for a global flight information sharing environment between the FAA and international Air Navigation Service Providers (ANSPs). Prior to that, she was a principal airport consultant for LeighFisher, an aviation management firm, where she specialized in airspace and procedure design for about a decade. Ms. Cheng led many airspace studies to support long-term master plans at airports in the U.S. and around the world. Connecting the aviation and ground transportation challenges, she led the development of an air-ground transportation model for the San Diego Regional Aviation Strategic Plan, a study to assess multi-modal alternatives to relieve airspace capacity constraints in the Southern California-Baja region.

Ms. Cheng holds a MS in Aeronautical Engineering from Purdue University, a MS in Information System Management from Carnegie Mellon University, and a BS in Computer Science from the University of British Columbia. She obtained her FAA private pilot license in 2010 and Part 107 remote pilot license in 2017. Before she caught the aviation bug, she worked as a software developer to create a proprietary electronic trading platform for a hedge fund and worked at Goldman Sachs as a trading system analyst.

Regardless of where she is, Ms. Cheng lives by the mantra that "the whole is greater than the sum of its parts" and is passionate about bringing different people and ideas into a collaborative environment where the community can benefit.

John Frederick is Manager of the Verification and Validation (V&V) Strategies and Practices Branch at the FAA's William J. Hughes Technical Center (WJHTC), where he is responsible for establishing quality V&V methods and standards in the FAA. He has more than 37 years of Test and Evaluation (T&E) experience with FAA systems. Since starting the annual Verification and Validation (V&V) Summit in 2006, Mr. Frederick has gathered speakers and participants from

across the FAA, other government organizations, industry, and academia to address innovative methods for complex problems and promote a quality V&V culture.

In the early part of his career, as both a support contractor and FAA employee, Mr. Frederick worked as a NAS programmer, test engineer, simulations developer, and Operational Test and Evaluation (OT&E) lead on Air Traffic Control automation systems. He has supported and led T&E efforts on more than 12 major FAA automation programs. A large portion of his career in the FAA was dedicated to working as an FAA Test Director and Test Program Manager on major FAA acquisitions of En Route Air Traffic Control (ATC) automation systems. As Chief Test Engineer and Subject Matter Expert (SME), Mr. Frederick has consulted with the Department of Defense (DOD) and international agencies on T&E and provided guidance on FAA investment programs. He has served as the Test Standards Board (TSB) Chairman to establish test standards in the FAA and provide quality T&E oversight for the agency. He is also the International Test and Evaluation Association (ITEA) South Jersey Chapter President and serves as the T&E representative for the FAA on the Acquisition System Advisory Group (ASAG) and Joint Resources Council (JRC).

Mr. Frederick is a graduate of Drexel University (Philadelphia) with a Bachelor of Science in Computer Systems Management. He is also a graduate of the Federal Executives Institute with a Certificate of Mastery in Leadership for a Democratic Society.

Dr. Carla Hackworth has been with the Federal Aviation Administration for more than 20 years and serves as the FAA Aerospace Human Factors Research Division Manager (AAM-500) where she is responsible for a program of applied human factors research of field and laboratory investigations within aviation work environments. The Aerospace Human Factors Research Division of the Civil Aerospace Medical Institute is known as a leader in aviation human factors research. It is a full-spectrum research facility that performs research related to every phase of flight from takeoff to landing for both air traffic and flight operations. Research outcomes empower science-based, data-driven decision-making for NAS expansion, efficiency, and safety.

Research includes, but is not limited to, assessments of human performance under various conditions of impairment, human error analysis and remediation, agency workforce optimization, assessing the impact of advanced automated systems on personnel requirements and performance, human factors evaluations of performance changes associated with advanced multifunction displays and controls in general aviation and air traffic control, and the psychophysiological effects of workload and shift work on job proficiency and safety in aviation-related human-machine systems.

The areas of research excellence managed by Dr. Hackworth include

- Information Processing and Displays
- Biophysiological Delimiters
- System Design and Automation
- Aviation Workforce Optimization
- Organizational Program Assessment

This research is accomplished within two research laboratories: the Safe Operations in Aerospace Research (SOAR) Labs and the NAS Human Factors Safety Research Laboratory (NAS-HFSR).

Dr. Hackworth has led assessments of organizational effectiveness, stakeholder satisfaction, general aviation testing issues, weather-related general aviation incidents, human factors in aviation maintenance, and risk-based decision-making. To date, she has authored and co-authored over 30 publications examining aviation human factors. In 2020, Dr. Hackworth received the Aerospace Human Factors Association Henry L. Taylor Award in recognition of her outstanding contributions in the field of Aerospace Human Factors. Recently, Dr. Hackworth has served on various work groups considering human factors in commercial space flight operations.

Dr. Kerianne Hobbs is the Safe Autonomy and Space Lead on the Autonomy Capability Team (ACT3) at the Air Force Research Laboratory where she investigates rigorous specification, analysis, bounding, and intervention techniques to enable safe, trusted, ethical, and certifiable autonomous and learning controllers for aircraft and spacecraft applications. Her previous experience includes work in automatic collision avoidance technologies for F-16s and autonomy V&V research. Dr. Hobbs's research has resulted in authorship of over 50 peer reviewed publications, conference papers, technical magazine articles (e.g., Institute of Electrical and Electronics Engineers [IEEE] Control Systems Magazine, American Institute of Aeronautics and Astronautics [AIAA] Aerospace America) and strategy documents, as well as over 60 invited or conference presentations.

Dr. Hobbs was selected for the 2020 Armed Forces Communications & Electronics Association (AFCEA) 40 Under 40 award and was a member of the team that won the 2018 Collier Trophy (Automatic Ground Collision Avoidance System Team). She serves on the AIAA Intelligent Systems Technical Committee, the NASA Formal Methods Program Committee, the IEEE Space Mission Challenges for Information Technology — IEEE Space Computing Conference Program Committee, and the IEEE Aerospace Conference Committee.

Dr. Hobbs has a BS in Aerospace Engineering from Embry-Riddle Aeronautical University, an MS in Astronautical Engineering from the Air Force Institute of Technology, and a PhD in Aerospace Engineering from the Georgia Institute of Technology.

Dr. Mark Kiemele is President and CEO of Air Academy Associates. He has more than 35 years of experience in applying continuous and breakthrough improvement methods. He is world-renowned for his Keep It Simple Statistically (i.e., KISS) approach to applying statistical methods to enhance critical thinking and better decision making.

Dr. Kiemele specializes in design of experiments and its use throughout the entire product life cycle. He taught and mentored the first Six Sigma Master Black Belts from Motorola and continues to train and coach in Lean Six Sigma and Design for Six Sigma. He has supported a host of global clients, including Sony, Apple, Microsoft, Abbott Labs, GlaxoSmithKline, Bose, BAS, John Deere, Xerox, and USAA Insurance.

Dr. Kiemele earned BS and MS degrees in Mathematics from North Dakota State University and a PhD in Computer Science from Texas A&M University. In addition to hundreds of articles, he has authored or co-authored seven books on process improvement, and he is the 2017 winner of the International Test & Evaluation Association's prestigious Richard G. Cross Award, which recognizes outstanding accomplishments in professional education.

Dr. Taylor Lochrane is an esteemed leader with two decades of experience in both the federal and private sectors. He is recognized nationally as an innovative entrepreneur in the fields of transportation safety, automation, and research. Dr. Lochrane currently serves as Deputy Director of Science and Technology and Chief Scientist for the Highly Automated Systems Safety (HASS), Center of Excellence (COE) in the U.S. Department of Transportation (DOT), Office of the Assistant Secretary for Research and Technology (OST-R). In this role, Dr. Lochrane is responsible for leading a team of national experts with the vision to be a national resource for expertise, research, and global leadership in advancing the safe deployment of automation in transportation. Dr. Lochrane's leadership skills have allowed him to successfully review, assess, and validate highly automated systems for safety on behalf of the DOT.

Prior to joining the HASS COE, Dr. Lochrane served as the Cooperative Driving Automation (CDA) Program Manager at the Federal Highway Administration (FHWA) where he was responsible for managing the development of CARMA, part of a DOT effort to accelerate the research and development of CDA. Dr. Lochrane is also known for his expertise in leveraging open-source software and using agile software development practices to accelerate innovative

concepts aimed to increase the safety and improve the overall infrastructure efficiency of the transportation system.

Dr. Lochrane is a strategic and technical leader with exceptional communication skills. He is renowned for consistently leading diverse teams to success by creating and fostering engaging and collaborative work environments. He is a strong advocate for the safety of highly automated systems and has contributed to advancements in this field through his expertise and leadership. Dr. Lochrane is also an accomplished coalition builder, effectively leveraging resources for optimal organizational benefits.

Dr. Lochrane holds a BS, MS, and PhD in Civil Engineering from the University of Central Florida.

Charles "Chas" McKee, President, and CEO of Taverene Analytics LLC, has 34 years of experience providing Program Management, Test and Evaluation, Systems Engineering, Human Factors Engineering, Strategic Planning, Capture Planning, and Proposal Development support to companies supporting the DOD, Department of Homeland Security (DHS), FAA, and the DOT. From 2013–2015, he served as President of the Board of Directors for ITEA.

Mr. McKee currently provides Acquisition Management, Systems Engineering, OT&E, Human Factors Engineering (HFE), test planning, design of experiments, data collection, data analysis, statistics, and evaluation reporting on Transportation Security Equipment (TSE) systems deployed to airports and intermodal facilities. He led the design and development of a Common Graphical User Interface (CGUI) for new Checkpoint Computed Tomography systems. The CGUI design maximized the probability of detection and minimized probability of false alarms while improving throughput time for screening accessible property by Transportation Security Officers (TSOs) at airports. Mr. McKee provides Human Systems Integration Assessments for TSA's OT&E Division for checkpoint and checked baggage systems.

Over his career, Mr. McKee has led program management and technical support for multiple clients such as the Director, Operational Test and Evaluation (DOT&E); Joint Test & Evaluation (JT&E); Test Resource Management Center (TRMC); OSD AT&L Systems Engineering; Defense Modeling and Simulation Office (DMSO); Army T&E Command (ATEC)/Army Evaluation Center (AEC); Air Force T&E (AF/TE); U.S. Joint Forces Command (USJFCOM) Joint Forces Integration and Interoperability Test (JFIIT); Air Combat Command (ACC) Red Flag Exercise Support; Army Program Executive Office (PEO) Simulation Training Instrumentation (STRI) STARSHIP program; and the Defense Information Systems Agency's (DISA) Joint

Interoperability Test Center (JITC) T&E Mission Support Services. He also provided subject matter expertise to all clients on program management, T&E, statistical analysis, modeling and simulation, training, human factors engineering/human systems integration, and design of experiments.

Dr. Stéphane Mondoloni leads the Aviation Future Concepts & Architecture Outcome at the MITRE Corporation. In this role, he works with FAA sponsors to define and execute research and analysis seeking to achieve the Info-Centric NAS. This includes research into the feasibility, benefits, and application of the Flight and Flow – Information for a Collaborative Environment (FF-ICE), Trajectory-Based Operations (TBO), and the Connected Aircraft. Previously, he led the MITRE team collaborating with the FAA to define this future Info-Centric NAS vision.

Dr. Mondoloni has conducted research in Air Traffic Management (ATM) for more than 20 years and authored over 50 technical publications and future concepts. Research interests include ATM simulation, optimization, and operational performance evaluation and improvement. For more than 15 years, he has participated on an International Civil Aviation Organization (ICAO) panel to develop visionary ATM concepts including the Connected Aircraft, TBO, and FF-ICE. Dr. Mondoloni has collaborated with international partners to mature these concepts with several on the path to implementation.

Dr. Mondoloni earned a PhD in Aeronautical Engineering from the Massachusetts Institute of Technology (MIT) and an MBA from the IESE Business School. He is a Fellow of the Royal Aeronautical Society and an Associate Fellow of the American Institute for Aeronautics and Astronautics.

Angela Moore is an internationally certified Lean/Six Sigma Master Black Belt (LSSMBB), a United States Government Auditor (CGAP), and a Configuration Management professional (CCMP) with more than 25 years of auditing, quality, and engineering experience supporting the FAA. Ms. Moore currently supports the V&V Summit's host organization in its mission to strategically promote and implement robust V&V practices. Her leadership was recognized in December 2022 by Southern New Jersey Professional Societies: Engineer of the Year Award in the Outstanding Technical Leadership category. Her work supports the sustainment of International Organization for Standardization (ISO) certificates at the WJHTC and includes cradle-to-grave analysis and reengineering of the processes and policies affecting the NAS.

Beginning her career supporting the FAA as a software-development contractor (En Route, Terminal, and Host), Ms. Moore has experience in acquisition systems development, supporting

disciplines such as Systems Engineering, Metrics, Security, Data/Information Management, Supply Chain, and Knowledge Management. A natural teacher, she shares her knowledge through adjunct teaching, authorship, mentorship, and has even trademarked her technical editing method. Ms. Moore collaborated on the feature article *Dynamic Innovation with Rigor*, INCOSE *INSIGHT*, https://doi.org/10.1002/inst.12423. Her prior trade article on Configuration Management was published in *CM Crossroads*.

She was integral to the team that conducted internal audits resulting in the FAA's removal from the Government Accountability Office (GAO) High Risk List and led subsequent Sarbanes-Oxley oversight audits for the FAA's Internal Controls Division. Her team was instrumental in updating the FAA's Performance and Accountability Report, resulting in the FAA receiving the Certificate of Excellence in Accountability Reporting (CEAR) award from the Association of Government Accountants and the U.S. Office of Management and Budget (OMB). Leveraging her knowledge in ISO and Capability Maturity Model™, she was matrixed to the team that standardized the FAA's Continuous Improvement process nationwide.

Her former career in entertainment as Angela Harris included cable television producer, writer, media personality, and news director for a middle-market radio station. As part of the Music Genome Project, she taught artificial intelligence to categorize music, leading to the Pandora music innovation. She enjoys world travel, language, the arts, puzzles, and civic volunteerism. Ms. Moore is a Duke University alumna (AB, English) and postgraduate of Villanova University. However, she is most proud of her rising senior twins, Alexander and Jacqueline.

Hector Morales is an active Certified Information Systems Security Professional (CISSP) with more than 15 years of federal service at the FAA where he currently serves as the acting Air Traffic Organization's (ATO) Cybersecurity Group (ACG) Manager. His position of record is ACG Enterprise Cyber Architecture and Design Solutions Team Manager responsible for developing strategic cybersecurity objectives and solutions for the mitigation of common vulnerabilities across the enterprise. Mr. Morales also leads this team in the development and deployment of zero trust methodologies to protect national critical infrastructure. He participates in several interagency and international working groups to include serving as a rapporteur in the ICAO International Aviation Trust Framework (IATF). Prior to his transition to cybersecurity, Mr. Morales led the agency in modernizing and transitioning legacy mainframe systems into an enterprise geographically dispersed monitoring and control system. He prides himself in providing enterprise designs and solutions that assure technology evolution while supporting the safety and security of the NAS.

Speaker Biographies

Paula Nouragas is Chief Scientist and Technical Advisor for the FAA WJHTC and manages the Center's Science and Technology Integration Office. She is responsible for advising, guiding, and integrating applied research, development, test, and evaluation activities across all organizations located at the WJHTC. Ms. Nouragas provides technical and strategic direction for a diverse portfolio of activities and collaborates with aviation stakeholders to identify and develop scientific and technology solutions for adoption across the aviation ecosystem.

Previously, Ms. Nouragas managed the Air Traffic Systems T&E Services Division, where she led a team of technical professionals and test practitioners responsible for delivering quality (ISO 9001:2015 certified) T&E products and services for the NAS.

She joined the FAA in 1985 as a student intern. Throughout her 38 years of federal service, Ms. Nouragas managed, led, and conducted numerous aviation research, development, and T&E activities and projects in the areas of surveillance, navigation, avionics, weather, emerging operations, and air traffic management.

She has a BS in Information Systems and Sciences from Stockton University and a MS in Aeronautical Science with a Human Factors specialization from Embry-Riddle Aeronautical University. She is a member of the Air Traffic Control Association (ATCA), ITEA, and the South Jersey Human Factors Society.

Christopher Smith received his PhD in Aerospace Engineering from Rutgers University in 1990. In his 14-year career with the FAA, Dr. Smith has performed and managed a range of research and development projects related to the airworthiness of fixed-wing aircraft and rotorcraft. His first assignments with the FAA were in the area of fatigue and fracture analysis, after which he was appointed manager of the FAA's Inspection Systems Research Project. Following the 1997 report of the White House Commission on Aviation Safety and Security, Dr. Smith was appointed manager of the newly formed Aging Systems Research Program. In 1999, the Aging Structures and Aging Systems Research programs were combined into a single Aging Aircraft Program under Dr. Smith's direction.

Dr. Smith managed the FAA's Airworthiness Assurance Research Branch from 2002 through February 2005. In July 2005, Dr. Smith joined the Transportation Security Laboratory (TSL) as the Conveyance Protection Product Lead, where he oversaw research, development, and test and evaluation projects on passenger aircraft vulnerability to explosives and mitigation approaches. Dr. Smith became the TSL's Chief Engineer in 2010, responsible for all developmental test and evaluation at the TSL and satellite supporting locations. In 2014, Dr. Smith served as the acting

Division Director of the Homeland Security Advanced Research Projects Agency (HSARPA) Explosives Division, where he facilitated relationship building with Science and Technology (S&T) customers and supported several of the Undersecretary's cross-cutting initiatives. Upon his return to the TSL in 2016, Dr. Smith resumed his role as Chief Engineer along with oversight on Laboratory Operations, including management of the TSL's explosives inventory, quality control procedures, safety procedures, and the technical knowledgebase. Dr. Smith became the Director of the TSL in November 2016.

Dr. Smith is a 2004 graduate of the Federal Executive Institute's Leadership for a Democratic Society Program, and a 2010 graduate of the Harvard Kennedy School's Senior Executive Fellows Program. Dr. Smith is a DHS Acquisition Professional with a Level III Certificate in Test and Evaluation Management.

Jeremy Smith is Verification, Validation, and Accreditation (VV&A) Lead for the Navy Modeling and Simulation Office (NMSO) under the Assistant Secretary for the Navy for Research, Development and Acquisition's Chief Engineer. In this capacity, Mr. Smith leads and coordinates VV&A policy, guidance, best practices, working groups, and training for the Navy Modeling and Simulation (M&S) Enterprise. He also serves as the VV&A Technical Director for the Naval Air Warfare Center Aircraft Division (NAWCAD) M&S VV&A Branch and has led the V&V effort for the Joint Simulation Environment (JSE) since its inception in 2015. Mr. Smith earned a BS in Business Management from Virginia Tech, a MS in Engineering Systems from the Naval Postgraduate School, and a professional graduate certificate in Modeling and Simulation from Georgia Tech. He has worked in the M&S arena for more than 15 years, with over a decade spent leading VV&A efforts for a variety of programs.

Allen Walker is a senior advisor in the U.S. National Science Foundation's newly established Directorate for Technology, Innovation and Partnerships (TIP). In this position, Mr. Walker focuses on potential partnerships though engagement with stakeholders across government, academia, industry, and nonprofits. He also advises directorate leadership on research and development strategy and policy and acts as the TIP Chief of Staff supporting the directorate leadership.

Prior to joining the NSF in 2023, Mr. Walker was Special Assistant to the Defense Advanced Research Projects Agency (DARPA) Director, advising on transitioning advanced technologies to the U.S. Army. In 2022, he retired from the U.S. Army after a 26-year distinguished military career, including 10 years in leadership and senior positions. He spent most of his career in special operations and deployed multiple times to Afghanistan and Iraq. Mr. Walker holds a bachelor's

degree in computer science from Drew University and a master's degree in operations from the U.S. Air Force's Air University.

Robin Yeman has expertise spanning more than 28 years in software engineering with a focus on Digital Engineering, DevSecOps, and Agile building large complex solutions across multiple domains from submarines to satellites. She advocates for continuous learning with multiple certifications including SAFe Fellow, SPCT, CEC, PMP, PMI-ACP, and CSEP. She is a Systems Engineering PhD candidate at Colorado State researching best practices to deliver complex safety critical solutions using Agile and DevSecOps.

Ms. Yeman provides mentoring, guidance, coaching support, and conducts training classes to enable digital transformation for customers and teams. Key areas of focus include Systems Thinking, Digital Engineering, DevSecOps, and Agile. She has also led several efforts in Agile program execution and continues to lend her expertise on the development of Safety Critical Systems using Digital Engineering, DevSecOps, and Agile techniques and processes on management, schedule, cost, and technical performance.