

Breakout Session 2C: Beyond Visual Line-of-Sight



- **Moderator: Earl Lawrence**, Director, FAA UAS Integration Office
- **Steve Bradford**, Chief Scientist, FAA NextGen Office
- **John Duncan**, Director, FAA Flight Standards Service
- **Maureen Keegan**, Program Manager for Domain Engineering & Requirements Team, Operational Concepts, Validation & Requirements Directorate, FAA Air Traffic Organization
- **Paul McDuffee**, Vice President of Government Relations, Insitu

Earl Lawrence, Director, FAA UAS Integration Office



Earl Lawrence is the Director of the Unmanned Aircraft Systems (UAS) Integration Office within the Federal Aviation Administration, which is responsible for the facilitation of all regulations, policies, and procedures required to support the FAA's UAS integration efforts. The office serves as a central point of contact for the international aviation community on UAS issues. Mr. Lawrence also represents the FAA on the Senior Steering Group of the UAS Executive Committee (ExCom) focusing on coordination and alignment of efforts among key federal government agencies.

Mr. Lawrence previously served as the Manager of the FAA's Small Airplane Directorate in Kansas City, Missouri, where he managed airworthiness standards, continued operational safety, policy, and guidance for small aircraft, gliders, light sport aircraft, airships, and balloons.

Prior to joining the FAA in 2010, Mr. Lawrence was the vice president of industry and regulatory affairs for the Experimental Aircraft Association (EAA) in Oshkosh, Wisconsin. Mr. Lawrence is a graduate of Northrop University in Los Angeles.

A pilot since 1987, Mr. Lawrence holds a commercial multi-engine pilot certificate as well as an airframe and power plant mechanic certificate with an Inspection Authorization. He currently owns and flies a Piper Twin Comanche.



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Steve Bradford, Chief Scientist, FAA NextGen Office



Steven W. Bradford is the Federal Aviation Administration's (FAA) Chief Scientific and Technical Advisor for Architecture and Next Generation Air Transportation System (NextGen) Development. He is the Chairman of the Technical Review Board, which monitors technical decisions; related investments; and the Enterprise Architecture. Mr. Bradford works with elements of the FAA to develop midterm plans and five-year budget requests to implement NextGen. He has a leading role in NextGen's International engagement activities with SESAR Joint Undertaking, and has led several co-operative international efforts with EUROCONTROL.



Prior to becoming Chief Scientist, Mr. Bradford managed the NAS Concept Development Branch in the Office of System Architecture and Investment Analysis at the FAA. Mr. Bradford served as the FAA Program Manager for Air Traffic Modeling, Model Development Division, Operations Research Service. In that position, he was responsible for the continued development of the FAA's Airport and Airspace Simulation Model and National Airspace System Performance Analysis Capability simulations.

Mr. Bradford holds a Bachelor and Master of Mathematics from Michigan State University with additional graduate work in mathematics at University of Maryland.

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John Duncan, Director, FAA Flight Standards Service



John S. Duncan is the Federal Aviation Administration's (FAA) Director of Flight Standards Service (AFS). He oversees the development, coordination, and execution of policies, standards, systems, and procedures; public rules, regulations, and standards; and program plans that govern the operations, maintenance, and airworthiness of all United States (U.S.) civil aircraft, including those of U.S. flag carriers and foreign carriers when operating in and over the U.S., its territories and possessions. His oversight responsibilities also include proficiency and certification of air agencies (flight schools/maintenance bases) and of qualified airmen (other than air traffic control personnel).



Prior to assuming his current position, Mr. Duncan served as the Deputy Director of Flight Standards Policy Oversight. Mr. Duncan joined the FAA in 1986 as an Aviation Safety Inspector in Cincinnati, Ohio. His recent FAA assignments include serving as Manager of the AFS Alaskan Region from 1998 to 2007, Manager of General Aviation and Commercial Division from 2007 to 2008, and Manager of Air Transportation Division from 2008 to 2012.

Mr. Duncan holds a bachelor's degree in biological science from Florida Technological University. He holds a Certificated Flight Instructor Certificate and an Airline Transport Pilot Certificate with commercial privileges in seaplanes and gliders. He has worked as a flight instructor, chief pilot, chief flight instructor, corporate pilot, and air carrier pilot during his 20 year industry career.

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Maureen Keegan, Program Manager for Domain Engineering & Requirements Team, FAA Air Traffic Control Operational Concepts, Validation & Requirements Directorate



Maureen Keegan is a manager with the Technical Analysis and Operational Requirements Group (AJV-73) of the ATO's Mission Support Services. As such, she oversees a number of National Airspace System (NAS) modernization initiatives – such as Unmanned Aircraft Systems (UAS) Concept Validation and Requirements Development, Flight Information Exchange Model (FIXM), Flight Object Exchange Services (FOXS), Traffic Flow Management Advanced Methods, and future Terminal System Work Packages. Ms. Keegan is responsible for managing the development of operational requirements, identification of shortfalls, prioritization of objectives, and cross-ATO validation of all operational initiatives under her purview.

Previously, Ms. Keegan served as the Integration Manager of the Joint Planning and Development Office (JPDO) for over six years, where she coordinated all interagency initiatives between the NextGen Institute and the JPDO Divisions. Prior to that role, Ms. Keegan participated in a number of acquisitions and program management of systems for the NAS. Her area of expertise covers all phases of development and implementation for en route, terminal, and flight service systems. Prior to joining the FAA, Ms. Keegan spent 10 years specializing in Independent Verification and Validation (IV&V) and systems engineering of real-time complex systems supporting the Air Force and the FAA.

She holds a bachelor's degree in information and systems science from Stockton State College.

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Paul McDuffee, Vice President of Commercial of Business Development, Insitu



Paul McDuffee is Insitu's vice president of government relations responsible for regulation shaping and development supporting Insitu's future in civilian and commercial use of unmanned aircraft. He serves as principal liaison with FAA in matters relating to regulatory matters for UAS operations and as advocate for UAS national airspace integration. He currently serves on the AUVSI Board of Directors. Mr. McDuffee was a charter member of the FAA's small Unmanned Aircraft System Aviation Rulemaking Committee and was a member of the FAA UAS Aviation Rulemaking Committee. He is currently serving as co-chair of RTCA Special Committee 228, serves as a member of the Drone Advisory Committee Sub Committee, and is a member of the Unmanned Aircraft Safety Team Steering Committee. He was also former chair of the Aeronautical Industries Association UAS Committee.

Mr. McDuffee is an active pilot holding Airline Transport Pilot and Flight Instructor Certificates, with jet type ratings, and has logged over 8000 flight hours. He holds both a bachelor's and master's degree in aeronautical science from Embry-Riddle Aeronautical University.



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