Background

The FAA’s info-centric National Airspace System (NAS) vision outlines a move toward an agile infrastructure that safely and seamlessly integrates and supports diverse operations. Increased congestion and environmental stress in urban areas is driving exploration of innovative solutions to transportation related problems, including manned and unmanned aerial cargo and passenger vehicles. Safely incorporating these types of operations into the NAS requires the development of air traffic requirements, policies, and procedures. In collaboration with NASA and the aviation industry, the FAA has developed and is maturing an Urban Air Mobility (UAM) concept to address those requirements.

The FAA’s info-centric vision for the NAS builds on the Next Generation Air Transportation System foundation in three key areas, or pillars: diverse operations, supporting infrastructure, and integrated safety management. UAM Concept of Operations supports these pillars through an integrated information regime through public-private partnership leveraging third party services and applications called Provider of Services for UAM (PSU) for coordination, execution, and management of UAM operations.

Project Description

The initial UAM concept, developed in 2020, included over-arching airspace management principles and assumptions, the expected evolution of UAM operations, airspace characteristics, and the operational environment. The operational environment and needs from industry are expected to include a transitional period where manned UAM aircraft will operate with the current Visual and Instrument Flight Rules — like traditional helicopters — with a future need for more tailored flight rules to safely provide the necessary flexibility to meet business objectives. To address that need, the UAM project will coordinate and facilitate concept development for future manned and unmanned aircraft operations, with passengers and cargo traveling within urban and metropolitan environments at lower altitudes. UAM also will examine procedures, airspace design, rules, and policies, and explore how to safely accommodate the inclusion of UAM traffic in urban airspaces. Concept development will consider current aircraft operations and the introduction of new aircraft types, such as electric Vertical Takeoff and Landing vehicles (eVTOL), with an increasing level of autonomy. UAM will address interactions with existing air traffic control and the role of cooperative traffic management concepts explored in Unmanned Aircraft System Traffic Management (UTM). Engineering research will analyze unique traffic management requirements, develop initial conceptual architecture, and identify information exchanges needed to enable collaborative, safe, and efficient incorporation of UAM in urban airspaces.
Outcomes

- UAM ConOps v1.0
- Evolving UAM Conceptual Architecture that identifies the high-level relationships between UAM, Air Traffic Management, and UTM
- Evolving information exchange architecture that enables the information exchange between stakeholders
- Input for developing requirements, standards, policies, and procedures

Drivers

- Introduction of emerging technologies that enable a new class of vehicles and novel approaches to air traffic management, providing an alternative intermodal transportation method