The Federal Aviation Administration and Industry's Work on Advanced Air Mobility

Shinichiro Tsuri, Research Fellow, Japan International Transport and Tourism Institute, USA

1. Background

The U.S. Federal Aviation Administration (FAA) defines Urban Air Mobility (UAM) as a safe and efficient air transportation system that uses highly automated aircraft to operate and transport passengers and cargo at low altitudes in urban areas and suburbs. It further defines Advanced Air Mobility (AAM) as a broader concept that includes intercity operations, operations for public services, operations for private and recreational purposes, and more.[1]

The Advanced Aviation Advisory Committee (AAAC) has been established as an organization to provide advice and recommendations to the U.S. Department of Transportation (DOT) and the FAA, and to respond to specific taskings received from the FAA. The advice, recommendations, and tasks relate to improving the efficiency and safety of integrating advanced aviation systems, including AAM in addition to Unmanned Aircraft Systems (UAS), into the National Airspace System (NAS). The AAAC was preceeded by the Drone Advisory Committee (DAC), which had a similar role with respect to UAS, and was reorganized to include AAM as a subject of consideration. The first meeting of the newly named AAAC was held in February 2022. At the time of the reorganization from DAC, the former 35 members were expanded by adding members connected to AAM and now the the AAAC contains 41 members, including airport communities, local governments, air traffic controllers, academia, traditional manned aviation operators, UAS manufacturers, operators, and those with a background in AAM.[2]

I was able to observe the 4th AAAC meeting, held on April 26, 2023, and in the next section I will explain the specific proceedings, with a particular focus on AAM.

2. Overview of Specific Discussions Regarding AAM at the AAAC

At the AAAC, task groups were established to address individual issues since the days of its predecessor, DAC. At the first AAAC meeting held in February 2022, the FAA assigned a new task to the AAAC to provide comments on the Strategic Framework for Advanced Air Mobility (AAM) Near-Term Operations (2024-2028) drafted by the FAA. In response to this, Task Group #13 was established at the AAAC, and the final draft of comments was reported by Task Group #13 at the third AAAC meeting held in October 2022. At the fourth AAAC meeting, the FAA provided responses to these comments. The comments and responses are organized into five areas: aircraft, airspace, operations, infrastructure, and community, and are directly quoted below.[3] (The fourth AAAC meeting also included a status report of the FAA's "Innovate 28" initiative which aims at realizing AAM operations by 2028).

2.1　Aircraft
○ AAAC Recommendation 1

Regarding Early Innovation Engagement (EIE) steps, the subgroup asks if AIR-700 should be engaged prior to project integration and if it would be appropriate/useful to have Center for Emerging Concepts and Innovation (CECI) engaged after? (Note: CECI is an organization established under the FAA Aircraft Certification Service's Policy and Innovation Division (AIR-600) to facilitate the safe introduction of aviation products using innovative

technology. EIE is one of those missions.[4]

○ FAA Response

Staff across FAA are collaborating on AAM efforts and working closely with NASA, U.S. Air Force AFWERX core program Agility Prime, and industry. (Note: The Air Force's collaborative initiative with industry to accelerate commercial eVTOL testing and development was launched in April 2020.[5])

○ AAAC Recommendation 2

The FAA has affirmed that the path for most AAM aircraft will be special class under 14 Code of Federal Regulations (CFR) 21.17(b). Will the FAA assign a small team of lawyers that understand performance-based rules to review all airworthiness criteria for standardization and efficiency?

○ FAA Response

FAA Certification teams work closely with legal counsel on special class projects.

2.2 Airspace

○ AAAC Recommendation 3

What role should the FAA take with respect to third party service providers (PSU)? Monitoring agency or active participant (e.g., air traffic management (ATM))?

○ FAA Response

The role of the FAA with respect to PSUs will be shaped by the airspace rules and the maturity of industry technologies necessary to ensure safety and efficiency within the NAS.

○ AAAC Recommendation 4

Should the FAA investigate safe integration over segregated airspace? (Note: While the AAAC understands the need to use specific airspace routes for near-term operations, it assumes that such segregation will disappear in the long term.)

○ FAA Response

FAA must consider all users of the NAS and their public right of transit through navigable airspace.

○ AAAC Recommendation 5

Are the present visual flight rules (VFRs) separation procedures (as mentioned in the document) sufficient for urban air mobility (UAM)/AAM operations or will they need to be adjusted?

○ FAA Response

VFR are established on the fundamental concept of pilot see-and-avoid, with additional policies and procedures applied when necessary to fulfil the FAA's mission.

2.3 Operations

○ AAAC Recommendation 6

The task group recommends the FAA solicit from AAM-related standards development organizations in laying the groundwork for standards development for future technologies.

○ FAA Response

FAA is working closely with the AVS's Air Certification Service organization, European UnionAviation Safety Agency (EASA), International Civil Aviation Organization (ICAO), industry organizations and AAM applicants for type certification to support their next steps of operational certification.

2.4 Infrastructure

○ AAAC Recommendation 7

It is recommended that the FAA conduct an internal review and then discuss anticipated bottlenecks in infrastructure reviews and approvals with the industry.

○ FAA Response

The FAA formed a cross-organizational team to identify policy gaps, process improvements, and a path forward for developing criteria and standards for vertiport documentation. The Team used real world and situation-based scenarios to analyze on and off-airport proposals. The Team then made numerous near and long-term recommendations for agency leadership consideration, many of which are in development today.

2.5 Community

○ AAAC Recommendation 8

As operations mature and flight volumes increase, the community subgroup suggests adding a review for these

later state operations around wildlife impacts, environmental justice, equity, and noise/visual/vibration impacts.

○ FAA Response

The National Environmental Policy Act of 1969 (NEPA), its implementing regulations, and FAA Order 1050.1F require federal agencies to consider the significant environmental consequences of their proposed actions and disclose those effects to the public before a decision is made or an action is implemented.

○ AAAC Recommendation 9

How can the FAA incorporate science, technology, engineering, and math (STEM) educational outreach into its AAM community engagement plans to ensure workforce supply meets operational demand?

○ FAA Response

The FAA's hosts several educational outreach events to share information about drones and AAM with stakeholders and the general public. Additionally, the FAA, through the ASSURE Center of Excellence, conducts numerous UAS/AAM focused STEM events across the country focused on students in under-served/underrepresented localities. (Note: The FAA's Center of Excellence for UAS or The Alliance for System Safety of UAS through Research Excellence is a coalition of UAS-related research institutions centered at Mississippi State University.[6]) The FAA's goal for these events is to highlight the societal, economic, and educational benefits for the general public, through a series of events focusing on different audiences including high schools, universities, and educators.

○ AAAC Recommendation 10

What are the funding implications and opportunities for public airports interested in incorporating AAM into their operations?

○ FAA Response

In order to be eligible for programs like Essential Air Service (EAS), AAM carriers would have to provide regular scheduled service to locations desirable to particular communities, and meet all certification and regulatory requirements applicable to the aircraft, the pilot, the operator, and any supported destination. (Note: EAS is a program run by the U.S. government to maintain scheduled air service in areas where otherwise it would not be profitable.[7])

○ AAAC Recommendation 11

What strategies can a community/local government use to influence the integration of AAM? Furthermore, what specific lines of business within the FAA are responsible for interfacing with local authorities and on which topics?

○ FAA Response

The FAA Regional Administrators (RAs) are the senior FAA officials in each of the geographic areas across the country. They are responsible for local, state, Tribal, and federal outreach initiatives.

3. Summary

These comments from the AAAC—and the FAA's responses to them— touch on the latest developments, such as changes in policy regarding AAM's type certification standards which were mentioned in previous reports[8], and how the FAA is trying to tackle these and other issues organizationally. In addition, there was a focus on how to collaborate with external organizations in the industry and local governments, and the FAA provided answers regarding its organizational structure to address various issues and the status of cooperation with related organizations. It will be interesting to see how the FAA finalizes the Strategic Framework for AAM Near-Term Operations based on these comments from the AAAC.

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