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TECHNICAL COMMISSION

Agenda Item 24: Aviation Safety and Air Navigation Priority Initiatives

AAM OPERATIONS AT THE EXPO 2025 OSAKA, KANSAI, JAPAN

(Presented by Japan)

EXECUTIVE SUMMARY

Japan defines the period up to the Expo 2025 Osaka, Kansai, Japan as the "Phase from Test Flights to the Launch of Commercial Operations of Advanced Air Mobility (AAM)", the late 2020s as the "Phase for Expanding Commercial Operations", and the 2030s and beyond as the "Phase for Further Expansion of Service Areas, Routes and Number of Flights".

The aircraft of three companies are scheduled to fly at the ongoing Expo 2025 Osaka, Kansai, Japan, and a demonstration flight was already conducted in April.

In addition, regarding the traffic management for AAM at the Expo 2025 Osaka, Kansai, Japan, the relevant parties held repeated discussions with reference to the concept of operations (CONOPS), international situations, and research and development and reached an agreement in November 2024. Traffic management will involve the dissemination of airspace and route information, flight plan coordination, monitoring, and information provision and sharing.

Finally, to further promote the introduction of AAM in the future, we hope that internationally harmonized standards and systems will be developed under the leadership of ICAO, using the operations at the Expo 2025 Osaka, Kansai, Japan as a precedent.

Strategic Goals:	This working paper relates to *Every Flight is Safe and Secure*, *Aviation is Environmentally Sustainable*, *Aviation Delivers Seamless, Accessible, and Reliable Mobility for All* and *The Economic Development of Air Transport Assures the Delivery of Economic Prosperity and Societal Well-Being for All*.
Financial implications:	Not significant
References:	

1. INTRODUCTION

1.1 Currently, the global adoption of advanced air mobility (AAM) is anticipated, with various manufacturers around the world actively engaged in its development. These efforts aim to establish a strong position in this emerging market, which is expected to become a new mode of air transportation in the future.

1.2 Some AAM manufacturers have already conducted multiple flight tests and have begun type certification procedures with regulatory authorities in their respective States of Design. Furthermore, with future AAM operations in mind, some companies are exploring viable operational routes and working on the development and operation of vertiports.

1.3 In Japan, the public and private sectors have been working together to promote the introduction of AAM, with the aim of realizing AAM operations at the venue of the Expo 2025 Osaka, Kansai, Japan.

2. DISCUSSION

2.1 The Japan Civil Aviation Bureau (JCAB) established a Public-Private Committee for Advanced Air Mobility in 2018 to discuss the introduction of AAM ahead of the rest of the world. This committee developed a roadmap toward the launch of full-scale commercial AAM operations in Japan. The roadmap defines the period up to the Expo 2025 Osaka, Kansai, Japan in 2025 as the “Phase from Test Flights to the Launch of Commercial Operations of AAM”, the late 2020s as the “Phase for Expanding Commercial Operations”, and the 2030s and beyond as the “Phase for Further Expansion of Service Areas, Routes and Number of Flights”.

2.2 At the ongoing Expo 2025 Osaka, Kansai, Japan, AAM aircraft are scheduled to fly around the venue. To make this a reality, JCAB completed the development of regulatory frameworks and technical standards – including those related to aircraft, pilot licensing, operations, vertiports, and more - by the end of FY2023, and the establishment of a traffic management system by the end of FY2024. JCAB is currently proceeding with aircraft inspections and other necessary procedures. In addition, Japan is working to harmonize standards not only for AAM aircraft under development domestically, but also for those being developed in the United States or Europe. This is being done through communication with the respective aircraft manufacturers and the relevant authorities, with the aim of smoothly issuing type certifications for AAM aircraft expected to be operated in the near future.

2.3 Three AAM aircraft are scheduled to fly at the Expo 2025 Osaka, Kansai, Japan: SkyDrive’s “SD-05”, LIFT Aircraft’s “HEXA”, and Joby Aviation’s “Joby S4”. The SD-05 and HEXA have already conducted demonstration flights at the EXPO Vertiport in April. Future flight schedules are as follows: the SD-05 is scheduled to conduct demonstration flights from late July to late August, and the Joby S4 from late September until the closing day of the Expo on October 13. Please note that this information is current as of 9 July and is subject to change depending on the progress of aircraft development and other factors.

2.4 For flights during the Expo 2025 Osaka, Kansai, Japan, three vertiports have been prepared as take-off and landing sites: “EXPO Vertiport”, “Osaka Port Vertiport” and “Amagasaki Phoenix Vertiport”. The “EXPO Vertiport” is notable for being the first in Japan to feature two parking spots, enabling the operation of multiple AAM aircraft simultaneously. This vertiport was constructed in accordance with the “Vertiport Design Guidelines” published by the Japan Civil Aviation Bureau, and is

equipped with a hangar, aircraft charging facilities, power conversion systems, weather measurement equipment, a passenger lounge, and entry and exit gates. The total site area is approximately 7 944 m^2.

2.5 Regarding traffic management for AAM at the Expo 2025 Osaka, Kansai, Japan, the relevant parties held repeated discussions - with reference to the concept of operations (CONOPS), international situations, and research and development - and reached an agreement in November 2024.

2.6 The traffic management framework is applied as follows:

a) aircraft: eVTOL (tilt-rotor type and multi rotor type);

b) flight rules: VFR (visual flight rules);

c) take-off and landing locations: vertiports;

d) basic concept: based on existing rules applicable only during the Expo period;

2.7 An overview of the traffic management is provided below:

a) Notification of airspace and routes

1) As the airspace around the Expo venue is surrounded by four airports (controlled airspace), there is a considerable amount of VFR traffic. Accordingly, airspace and routes for AAM operations are published via an AIP Supplement (AIP-SUP).

b) Coordination of flight plans (Strategic deconfliction)

1) Flight plans are coordinated during the pre-departure planning phase based on a schedule coordination guideline agreed upon by stakeholders. This is intended to prevent congestion at vertiports and minimize airborne holding times.

c) Conformance monitoring

1) Flight is monitored to ensure they are operated in accordance with the coordinated flight plans. In cases where an aircraft approaches surrounding controlled airspace or deviates from the flight plan, the ANSP will alert the operator, support the handling of any irregularities, and, if necessary, take actions such as coordinating flight plans with other operators. As part of the demonstration, position information by automatic dependent surveillance - broadcast (ADS-B) is also utilized.

d) Provision of operational information

1) Necessary operational information is provided via VHF communication to AAM aircraft taking off from and landing at the Expo venue vertiport. Based on existing air traffic services (ATS) phraseology, example communication phrases have been developed.

e) Information exchange

1) Operational, aeronautical, meteorological, and other relevant information is exchanged among stakeholders to enhance situational awareness.

2.8 Regarding the status of ICAO's AAM – related activities, AAM2024 was held to share the development status of each country. The AAM Study Group (AAM SG) is currently working on formulating a vision for AAM and developing several related guidelines. Japan is actively participating in the AAM SG and contributing to its activities based on experience gained through the Expo 2025 Osaka, Kansai, Japan. Japan is also engaging with other authorities and making efforts to harmonize standards. To further promote the introduction of AAM, we hope that internationally harmonized standards and guidelines will be developed under the leadership of ICAO, using the experience at the Expo 2025 Osaka, Kansai, Japan as a precedent.

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