



WORKING PAPER

FOURTEENTH AIR NAVIGATION CONFERENCE

Montréal, Canada, 26 August to 6 September 2024

- Agenda Item 2: Timely and safe use of new technologies**
2.2: Addressing safety risks related to evolving aviation technologies

**PROPOSAL FOR ACCELERATION OF STANDARDIZATION AT THE ICAO FOR
ELECTRIC VERTICAL TAKE-OFF AND LANDING (EVTOL)**

(Presented by Japan)

EXECUTIVE SUMMARY

This paper introduces Japan's efforts to launch electric Vertical Take-Off and Landing (eVTOL) operation, planning to operate eVTOL at the Osaka- Kansai Expo starting in April 2025. The development of globally harmonized systems and standards for eVTOL in the areas of airworthiness, operation and so forth is essential in order to ensure the safe operation of eVTOL and to keep up with the rapid technological development, and we expect the ICAO needs to take a strong and continuous leadership regarding development of Standard and Recommended Practices (SARPs) and associated guidance of eVTOL.

Action: The Conference is invited to:

- a) note Japan's efforts to launch eVTOL operation at the Osaka-Kansai Expo in 2025;
- b) agree on the importance of the development of globally harmonized systems and standards relevant to eVTOL at an earlier stage, including airworthiness, pilot license, operation, vertiport, noise, traffic management and so forth; and
- c) agree that the ICAO needs to take a strong and continuous leadership regarding development of SARPs and associated guidance of eVTOL.

1. INTRODUCTION

1.1 Currently, electric Vertical Take-Off and Landing (eVTOL) is expected to become popular around the world and a lot of companies are developing eVTOL, seeking a chance to stake out an advantageous position in this emerging market.

1.2 Some eVTOL manufacturers have already conducted a number of flight tests and initiated Type Certification procedures with regulatory authorities in their respective States of Design. Furthermore, some companies are considering to play some roles in eVTOL operation and they are studying effective operational routes, and how to develop and operate vertiport.

1.3 In Japan, the public and private sectors are working together to promote the launch of eVTOL, with the aim of achieving eVTOL operation at the venue of the Osaka-Kansai Expo in 2025.

2. DISCUSSION

2.1 Japan Civil Aviation Bureau (JCAB) established a public-private committee in 2018 to discuss the introduction of eVTOL ahead of the rest of the world, and has been developing a roadmap toward the launch of full-scale commercial eVTOL operation in Japan. The roadmap defines the period until the Osaka-Kansai Expo in 2025 as the “Phase from test flights to the launch of commercial operation of eVTOL”, the period in the late 2020s as the “Phase for expanding commercial operation”, and the period after 2030s as the “Phase for further expansion of service areas, routes and number of flights”.

2.2 At the Osaka-Kansai Expo in 2025, eVTOL operation around the Expo venue in Yumeshima, and between the Expo venue and the vertiport outside Expo venue is planned. Toward the realization of this goal, systems and standards for safety of aircraft and operation, pilot licence, vertiport and so forth were established sequentially and completed by March 2024. The public and private sectors in Japan are working together and established traffic management rules for safe and smooth flights around the Expo venue in March 2024, as well as at the Expo 2025 Osaka, Kansai (AN-Conf/14-WP/95 refers). In addition, Japan is making efforts to harmonize Japanese standards for eVTOL with standards of the United States and Europe through communication with the respective aircraft manufacturers and the relevant authorities, toward smooth issuance of type certification of eVTOL aircraft which are expected to be operated in near future.

2.3 Currently, each State is mainly taking its own individual approach with respect to systems such as airworthiness standards for eVTOL and requirements for vertiport. The ICAO has set up Advanced Air Mobility Study Group (AAM SG) in May 2023, and started its discussion among stakeholders of each State, however the globally harmonized systems and standards for eVTOL have not been established yet since there is no eVTOL which obtains type certification at this moment.

2.4 The development of eVTOL is currently going on in several countries, smooth expansion of eVTOL may be hindered if airworthiness, operational standards, and requirements for take-off and landing sites are not globally harmonized since introduction of new technologies and technical innovation of eVTOL are remarkable. Therefore, it is essential to establish the globally harmonized systems and standards before full-scale development of eVTOL will get started in each State.

2.5 In addition, since eVTOL flies at low altitude airspace including over urban areas, separation from ground surfaces and buildings, and collision avoidance with other air mobilities such as drones and existing visual flight rules (VFR) aircrafts have to be considered. On the other hand, in the future, it is expected that eVTOL will be able to fly into congested airports and operate at high frequencies and densities. It will be necessary to establish standards for making separation between aircraft shorter, coordination of flight plans, conformance monitoring, and collision avoidance to realize such operations. Furthermore, it is also necessary to establish new flight rules suitable for remotely piloted and automatic autonomous flight. Therefore, it is desirable to develop the globally harmonized airspace, standards, and systems, including transition from the existing systems at an earlier stage.

2.6 In order to ensure the prompt and effective implementation of these discussion and the development of globally harmonized systems and standards, further collaboration among relevant sections of ICAO Secretariat, AAM SG, and various panels is required. In this regard, Japan expects ICAO's strong and continuous leadership on this subject.

3. CONCLUSION

3.1 The JCAB and industry are working together to commence eVTOL operation at the Osaka-Kansai Expo starting in April 2025.

3.2 The ICAO has set up AAM SG and started its discussion to develop the globally harmonized systems and standards for eVTOL in the areas of airworthiness, pilot license, operation, vertiport, noise, traffic management and so forth. However, in order to ensure the safety operation of eVTOL and to keep up with the rapid technological development, the development of globally harmonized systems that facilitates smooth regulatory transition from the existing systems at an earlier stage is desirable.

3.3 Japan appreciates the ICAO's strong and continuous leadership in the development of SARPs and associated guidance of eVTOL.

3.4 The Conference is invited to:

- a) note Japan's efforts to launch eVTOL operation at the Osaka-Kansai Expo in 2025;
- b) agree on the importance of the development of globally harmonized systems and standards relevant to eVTOL at an earlier stage, including airworthiness, pilot license, operation, vertiport, noise, traffic management and so forth; and
- c) agree that the ICAO needs to take a strong and continuous leadership regarding development of SARPs and associated guidance of eVTOL.

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