



**Fourth GREPECAS–RASG-PA Joint Meeting and
 Twenty-second Meeting of the CAR/SAM Regional Planning and Implementation Group
 (GREPECAS/22)**

Virtual Phase (Asynchronous, 16 September to 11 October 2024)

In-Person Phase (Lima, Peru, 20 to 22 November 2024)

Agenda Item 4: Air Navigation - Global and Regional Developments

**REGIONAL DEVELOPMENT OF ADVANCED AIR MOBILITY (AAM):
 INTEGRATION OF eVTOL AIRCRAFT INTO THE AIRSPACE**

(Presented by Brazi)

EXECUTIVE SUMMARY	
<p>The AAM concept comprises the integration of new entrants into the airspace. On one hand, UTM is in charge of UAS implementation; on the other hand, UAM concept addresses the eVTOL implementation. Taking under consideration the disruptive technology and new services related to eVTOL aircraft, it is challenging to prepare the entire aviation ecosystem to integrate this new entrant, including new aerodrome infrastructure, operational changes, licenses, tailored flight rules, changes in airspace design and airspace management, demanding a robust regulatory framework to ensure safety and security. Therefore, this WP encourages participating States to work together gathering efforts aimed at achieving regional harmonized development.</p>	
Action:	<ul style="list-style-type: none"> a) Share information keeping the other regional States of CAR-SAM region aware of AAM development; b) Agree on the importance of developing a regionally harmonised regulatory framework for AAM; c) Create a regional expert group (GREPECAS States) to work together; and d) Encourage Member States to develop regional best practices fostering the implementation of eVTOL operations.
<i>Strategic Objectives:</i>	<ul style="list-style-type: none"> • Safety • Air Navigation Capacity and Efficiency • Economic Development of Air Transport • Environmental Protection
<i>References:</i>	<ul style="list-style-type: none"> • State letter AN 13/75-IND/22/14 • No Country Left Behind (NCLB) ICAO initiative

1. Introduction

1.1 By interconnecting individuals and facilitating global-scale commercial transactions, Aviation plays a crucial role in society. It acts as a significant driver of sustainable economic development and enhances people's quality of life through increasingly safe and reliable operations.

1.2 Tied to technological changes in automation, telecommunications, information technology, and navigation sectors, including onboard equipment and satellite capabilities, this advancement drives remarkable progress in the safety and efficiency of Air Traffic Management (ATM) and promotes the use of airspace by new entrants. Thereby, the AAM, in the ICAO context, means a developing form of aviation ultimately operating within a highly automated and collaborative environment. AAM operations will be enabled by a range of innovative technologies including automated traffic management, digital ecosystems and sustainable solutions, as well as new aircraft designs, means of communication and types of infrastructure. AAM services will include the transport of passengers, cargo, parcels and mail as well as other aerial services benefiting society, and will occur in urban, regional and interregional areas and international areas.

1.3 AAM offers substantial benefits: it reduces fossil fuel use, cuts costs, boosts urban productivity, and supports smart city infrastructure. Moreover, it contributes to economic growth by creating high-tech jobs.

1.4 Recognizing its potential, AAM has been selected by ICAO to become part of Priority Focused Areas (PFA) in implementing the 2023-2025 ICAO Business Plan to ensure effective activity prioritization and efficient resource management.

2. Discussion

2.1 A significant challenge for ATM remains the integration of new entrants, such as Electric Vertical Take-Off and Landing aircraft (eVTOL), to non-segregated airspace structure. It also presents a series of changes that need to be developed, such as new vertiport infrastructure, operational changes, licenses, tailored flight rules, changes in airspace design and airspace management, demanding a robust regulatory framework to ensure safety and security.

2.2 In the absence of specific legislation issued by ICAO, countries and industry have been introducing their own regulatory concepts for Urban Air Mobility (UAM) development. The Federal Aviation Administration (FAA) and the European Union Aviation Safety Agency (EASA), for example, are developing regulations for eVTOL aircraft, and similarly, DECEA is continuing to conduct studies to prepare the Brazilian Airspace Control System for this new phase of global aviation.

2.3 The 41st ICAO Assembly in 2022 established an AAM study group to ensure global aviation standards align with these emerging technologies.

2.4 The AAM SG supports the ICAO Secretariat to develop a holistic vision and framework related to AAM, (State letter AN 13/75-IND/22/14) and attains to these main objectives:

- a) Serve as a focal point for ICAO AAM-related work with the aim of ensuring global interoperability and harmonization;
- b) Perform an assessment of the AAM ecosystem, including subsets, as deemed necessary, such as, urban air mobility (UAM) and enablers, comprising unmanned aircraft system (UAS) traffic management (UTM), automation and autonomy, artificial intelligence (AI), and information and data management;
- c) Based on the outcomes of the previous step, perform a gap analysis between existing practices, ICAO provisions and what might be required from ICAO;
- d) Develop initial guidance material and the outline of a global framework, as deemed necessary; and
- e) Develop recommendations for an ICAO AAM strategy and on future work.

2.5 Currently, eVTOL is expected to become popular around the world and a lot of companies are developing different models, seeking a chance to stake out an advantageous position in this emerging market.

2.6 Brazil is one of the most expected markets to conduct eVTOL flights as soon as the certification procedures with regulatory authorities are finished. In addition, traditional airline companies are considering playing some roles in the operation of eVTOL, studying effective operational routes and how to develop and operate the vertiport operations.

2.7 Because of that, DECEA is conducting a specific project aiming to implement the Urban Air Mobility (UAM) concept by applying eVTOL operations. In this sense, there is an interaction with equipment manufacturer, airlines, industry, academia and other related stakeholders. As part of this effort to prepare the future of aviation, Brazil has joined the AAM-SG with participants. Based on the knowledge acquired and discussions held at AAM-SG, Brazil is about to publish a Concept of Operations addressing Urban Air Mobility and eVTOL integration.

2.8 Currently, eVTOL aircraft are being developed, and some companies have initiated the certification process with regulatory bodies. It is desirable to advance preparatory actions and make modifications to the airspace structure before the commencement of eVTOL operations. In this regard, the scenario most closely resembling the reality of eVTOLs is helicopter operations. That's why DECEA is studying helicopter operations to progressively introduce changes preparing for the arrival of eVTOL.

2.9 Another important fact is that many States are not fully aware of these changes. That reinforces the objective of working collaboratively at a regional level for this new future, keeping the same standard of aviation safety. This is aligned with the ICAO's initiative "No Country Left Behind" (NCLB).

3. Conclusion

3.1 Brazil endorses the selection of Priority Focus Areas (PFA) in the implementation of the ICAO Business Plan 2023-2025 to ensure effective prioritization of activities and efficient management of resources and invites Member States to discuss the need and benefits of developing AAM in the region in a collaborative approach.

4. Suggested actions

4.1 The Meeting is invited to:

- a) Collaborate on sharing information keeping the other regional States of CAR-SAM region aware of AAM development;
- b) establish a regionally harmonised regulatory framework for AAM; and
- c) encourage States to develop regional best practices fostering the implementation of eVTOL operations.

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