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FOURTEENTH AIR NAVIGATION CONFERENCE

Montréal, Canada, 26 August to 6 September 2024

Agenda Item 2: Timely and safe use of new technologies
2.1: Evolving aircraft technologies contributing to LTAG

FUTURE AVIATION ECOSYSTEM

(Presented by the International Air Transport Association (IATA)
International Business Aviation Council (IBAC))

EXECUTIVE SUMMARY

Airlines are investing in new aircraft technologies, from electric vertical take-off and landing (eVTOL) to supersonic and remotely piloted aircraft (RPA). Additionally, new and emerging airspace users are expanding their operations at different levels and near/at airports, from low level unmanned aircraft to commercial space operations. This is shifting the passenger journey from being from airport A to airport B, to being a door-to-door air transportation service which requires a complete transformation in the overall aviation system. To prepare for the future ecosystem and initiate a dialogue on required actions, the International Air Transport Association (IATA) has established a group with representatives from across the industry to map out the key challenges and opportunities relating to the integration of new technology across the aviation system. This paper shares details about the developed roadmap and proposes a holistic look at the future aviation ecosystem when developing new provisions.

1. INTRODUCTION

1.1 In the next 20 years, there will be an increased use of automation, robotics, unmanned aircraft (UA) and artificial intelligence (AI) in aviation. New entrants including all sizes of UA, high altitude balloons, supersonic and hypersonic aircraft, and advanced air mobility (AAM) are being pursued by companies with significant investments. At the same time, future manned aircraft designs are expected to include higher levels of automation. Automation is also likely to expand beyond a single flight into systems enabling optimization of large fleets and fleet management with multitudes of interdependencies and constraints.

1.2 Future aircraft technologies will require new infrastructure and new procedures. What needs to be identified is what infrastructure and standards will be required and when they will be needed.

1.3 The ICAO Advanced Air Mobility Study Group (AAM SG) was established with the intent of supporting ICAO in developing a holistic vision and framework related to AAM. The main deliverable of the AAM-SG is the delivery of a global AAM concept of operations (CONOPS), which should drive the gap analysis and the basis for recommendations on an AAM strategy and future ICAO work on AAM.

1.4 The Complete Air Traffic System initiative provides a vision and roadmap for future airspace requirements and needs by 2045 and is addressing some of the requirements for future air traffic management requirements.

1.5 While the current efforts and initiatives are commendable and fully supported by IATA, but there is a need to consider the overall aviation system that captures the needs and requirements across air transportation. Such holistic consideration is not limited to airport infrastructure or airspace.

2. DISCUSSION

2.1 To prepare for the future ecosystem and initiate the dialogue on required industry actions, IATA has established a task force with representatives from the industry to map out key challenges and opportunities. This roadmap developed with inputs of the task force, is intended to guide different industry activities to ensure seamless operation in the future operational environment.

2.2 The roadmap includes five main streams that align with the future evolution of aircraft technologies:

a) standards, regulations and certification;

b) airspace structure and airport infrastructure;

c) ground and airport operations;

d) customer experience; and

e) workforce.

2.3 Safety, cyber security and data have been identified as key drivers across the different streams within the roadmap.

2.4 The detailed roadmap is available on the IATA website: https://www.iata.org/contentassets/c3f5994d248e45cb877774b41e7b3103/new_aviation_ecosystem_roadmap.pdf.

3. CONCLUSION

3.1 IATA will continue working with existing groups, such as ICAO's AAM SG and the concerned ICAO working bodies.

3.2 While there is work under way focusing on future airspace and future air traffic management systems, work on the future aviation ecosystem is not progressing at a pace that can support the evolution of technology.

3.3 At the same time, with the current aviation cycle for developing any new standard or proposal, identification of new provisions that may be needed to support future operations should commence.

3.4 While the direct submission process may be used to provide input to ICAO, the active participation of the new players in the aviation supply chain in ICAO can accelerate the progress of some critical work that is needed for the safe and efficient integration of the new and emerging airspace users.

4. ACTION BY THE MEETING:

4.1 The Conference is invited to note that ICAO:

a) considers the whole aviation system in developing future work programme and provisions; and

b) considers ways to increase participation from the new stakeholders to ensure relevance of the provisions to be developed.

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