



ASSEMBLY — 42ND SESSION

TECHNICAL COMMISSION

Agenda Item 24: Aviation Safety and Air Navigation Priority Initiatives

REFLECTIONS ON THE REGULATION AND INTEGRATION OF AIRSPACE BETWEEN CREWED AND UNCREWED AVIATION

(Presented by Argentina and supported by Belize, Bolivia (Plurinational State of), Colombia, Cuba, the Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Panama, Peru and Uruguay)

EXECUTIVE SUMMARY

The uncrewed aviation industry has grown exponentially in the last decade and a half; its technological advances, capabilities, autonomy and range of uses, increasingly suggest ever more diverse and complex operational scenarios.

In this context, the specialized international community must find regulatory frameworks that guarantee and strengthen overall safety without becoming bureaucratic obstacles hampering the development of this industry.

As always, standardization, the creation of inclusive global regulations, the availability of support material for implementation and capacity building, are of fundamental importance in the development of this industry, which is one that brings with it new technologies, new media, new operators and, above all, new operational concepts.

This working paper aims to summarize some of the concepts that are associated with States' present and future needs in addressing this issue.

Action: The Assembly is invited to:

- a) note the content of this working paper;
- b) recognize the need to prioritize updating the regulatory framework for UAS/RPAS/UAM/AAM, and any other concept comprised in uncrewed aviation, assigning appropriate resources and funding;
- c) instruct the Council to strengthen support for initiatives that will ensure safe operations in an integrated airspace, including by furthering related analyses within its panels and urging States, organizations and industry to provide all available information and expertise;
- d) instruct the Council to consider convening annual meetings on uncrewed aviation to focus on technological advances, operational specificities and needs;
- e) instruct the Council, working with the Secretariat, to plan and develop activities aimed at promoting civil-military coordination in the use of a limited resource such as airspace and raise awareness among States on the impact of jamming, spoofing and conflict zones on the safe development of international civil aviation; and
- f) promote the concept of uncrewed aviation as an enhanced and inclusive option, and note and take action on new training challenges in this regard.

¹ Spanish version provided by Argentina.

<i>Strategic Goals:</i>	This working paper relates to <i>Every Flight is Safe and Secure, Aviation Delivers Seamless, Accessible, and Reliable Mobility for All, the Economic Development of Air Transport Assures the Delivery of Economic Prosperity and Societal Well-Being for All and Aviation is Environmentally Sustainable.</i>
<i>Financial implications:</i>	No additional resources required.
<i>References:</i>	

1. INTRODUCTION

1.1 Experimental military uncrewed aviation dates back several decades but its rapid technological evolution and the diversification of its operational capabilities have revolutionized the aviation industry at an unprecedented pace. This poses a significant regulatory challenge that undoubtedly goes far beyond the initial concepts in Circular 328, *Unmanned Aircraft Systems (UAS)* or ICAO the *Manual on Remotely Piloted Aircraft Systems (RPAS)* (Doc 10019). ICAO's reaction was swift: its Council has approved proposed amendments to various Annexes to the Chicago Convention relating to the operation of uncrewed aircraft systems that had been developed by ICAO's expert groups and Air Navigation Commission following interaction with industry.

1.2 One aspect that requires ongoing analysis is the approach to air traffic management in relation to these systems, given the significant changes brought about by the concept of RPAS operations, especially with the advent of new autonomous flight technical-operational concepts, such as urban air mobility (UAM), advanced air mobility (AAM), electric vertical take-off and landing (eVTOL) and vertical take-off and landing (VTOL).

1.3 Lastly, with reference to the regulatory framework, a number of States and regional organizations have issued regulations that should be taken into account when analysing the industry's progress, along with best practices and tests by private organizations and aircraft manufacturers.

2. EVOLUTION, DEVELOPMENT AND NEED FOR STANDARDIZATION

2.1 For more than a decade, there has been an asymmetric approach to uncrewed aviation generally, based on the development of international doctrine and practice in the field, that mirrored the uneven growth of the different areas comprising the technical field of uncrewed aviation. Thus, for example, there have been detailed studies, designs and developments of various models of uncrewed aircraft capable of carrying persons and cargo. As a result, some States have developed type certificates for the manufacture of such aircraft.

2.2 However, airport infrastructure and effective airspace integration is hobbled for lack of sufficient standardization of concepts, names, consistent equipment classification, etc. Resolving these shortcomings would undoubtedly facilitate the work of regulators and the industry.

3. CHALLENGES AROUND AIRSPACE INTEGRATION (UTM) AND REGULATION

3.1 Uncrewed civil aviation operators are now controlled airspace users, thus overcoming the concept of “no drone” zones that will tend to become exceptionally restricted areas.

3.2 ICAO has proposed a dynamic, integrated, safe, cost-effective and efficient air traffic management (ATM) that includes air traffic services, airspace management and air traffic flow management through seamless provision of facilities and services. This definition is complex and each of its terms is important since services and concepts are derived from them and other services may in turn derive from those. It expresses the requirement for seamless airspace management that protects all phases of flight by providing associated forecasts and services.

3.3 For airspace to be truly integrated, integration must be part of the design of airspace (ASM) itself down to the development of the flight procedures (IFP), whether for crewed or uncrewed aviation. Airspace integration will in turn involve challenges relating to the scope, time and place of the proposed integration. In our view, regulations must therefore be flexible enough not to hinder the lawful, safe and orderly development of recreational and open-category drones intended for desirable uses, such as agriculture or mining.

3.4 This new integrated airspace should admit all users (service companies, aerial work and commercial aviation), as well as military aviation and higher airspace operations (HAO). It will therefore be necessary, in a complex context introducing new technologies that disrupt the “known and proven” in international civil aviation, to ensure the involvement of all sectors in the development of regulations, with civil-military integration being of particular importance. We should also prioritize the establishment of a strategy to comprehensively address the integration of uncrewed aviation into airspace, such as the complete air traffic system concept of operations (CATS CONOPS) developed by the Civil Air Navigation Services Organization (CANSO), which offers a comprehensive, innovative approach to ensure uninterrupted airspace in a fully integrated aviation environment.

3.5 The Argentine Republic shares this approach and concept of operations for an integrated airspace and believes that airspace must provide for the safe and cyber-secure integration of uncrewed aviation, as it will operate in a digital environment (FF-ICE and SWIM) that relies on sharing information. At the same time, this new integrated airspace should provide development opportunities for all users, service companies such as commercial aviation, delivery services, aerial work, military aviation and higher airspace operations (HAO).

3.6 Through the recent reform of its Aviation Code and implementing regulations, Argentina has moved away from the old paradigm towards integration of airspace for crewed and uncrewed aviation, with full cooperation for flexible use of airspace (FUA) and civil-military cooperation in the ATM system, as set out in ICAO Doc 10088.

3.7 Our State values the work of the Civil Air Navigation Services Organization (CANSO) and some of its members, including the Latin American Institute of Civil Aviation (ILAC) and the Argentine Air Navigation Company (EANA), which have independently collaborated and conducted studies on airspace integration.

4. CAPACITY BUILDING

4.1 Faced with the above described challenges, with innovative technologies coming into contact with new operators conducting novel operations that are added to conventional civil aviation operations, training and the development of support material are particularly important. In Argentina, the Latin American Institute of Civil Aviation (ILAC) – a private venture that has already been involved and continues to participate in various activities of the Organization and has a regional and international presence – has launched several capacity-building projects in this very special field.

4.2 ILAC's work and experience in training has brought to light the need to share that experience and best practices with the Organization's Member States, training centers, other specialized international organizations and, of course, the industry itself, in order to promote and facilitate its use at a global level and contribute to standardization. Given the characteristics of these operations (new industry entrants, new technologies, new concepts of operations, etc.), it is particularly important to avoid creating regulatory silos.

5. CONCLUSION

5.1 In view of the above, it is advisable that the various concepts and denominations of uncrewed equipment be standardized under the category of uncrewed aviation, while preserving their nominal individuality.

5.2 The uncrewed aviation industry, regulators and safety oversight agencies will face the major challenge of building capacity for users of this new mode of aviation in an inclusive environment, particularly in terms of airspace integration and use, while ensuring safety and the security of data exchange and digitalization links through cybersecurity protocols.

5.3 As to operations management, we believe it necessary to move towards airspace integration for both crewed and uncrewed aviation following integrated and systemic procedures, under the heading of civil-military cooperation and original planning by the State ASM.

5.4 It is imperative that States adapt their regulations to enable and facilitate the integration of uncrewed aviation into their airspace.

5.5 In addition, it is necessary to speed up development of a CONOPS that will enable and facilitate migration to an integrated airspace.

5.6 Similarly, it is essential to promote and facilitate capacity-building activities at the global, regional and national levels.

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