



ASSEMBLY — 41ST SESSION

TECHNICAL COMMISSION

Agenda Item 31: Aviation Safety and Air Navigation Standardization

NORMATIVE STRUCTURE FOR UTM/ATM INTEGRATION

(Presented by Venezuela (Bolivarian Republic of) supported by Costa Rica, Dominican Republic and Panama)²

EXECUTIVE SUMMARY

This working paper presents an approach to the use of remotely manned aircraft and management of the concept of unmanned aircraft; a range of possible uses are being applied at world level and in some States they are being trialled.

It is sought to define and put into practice the interpretation of these concepts, and harmonized wording is also proposed in respect of implementation of the unmanned aircraft system traffic management (UTM) concept.

Action: The Assembly is invited to:

- a) take note of the information provided;
- b) in the world context, analyse the expansion of UTM operations and its impact on air traffic management (ATM);
- c) request States to share their experience in this area;
- d) request the Secretariat to disseminate this topic through symposiums, seminars and workshops, so as to arrive at an improved definition of national rules; and
- e) other measures that the Plenary may consider appropriate.

<i>Strategic Objectives:</i>	This working paper relates to the Strategic Objective of Air Navigation Capacity and Efficiency
<i>Financial implications:</i>	Not applicable
<i>References:</i>	AN-Conf/13-WP/5 AN-Conf/13-WP/41 AN-Conf/13-WP/88 Doc 10019, <i>Manual on Remotely Piloted Aircraft Systems (RPAS)</i> Doc 10007, <i>Report of the Twelfth Air Navigation Conference (AN-Conf/12)</i> Doc 10075, <i>Assembly Resolutions in Force (as of 6 October 2016)</i> Doc 7300, <i>Convention on International Civil Aviation Unmanned Aircraft Systems Traffic Management (UTM) – A Common Framework with Core Principles for Global Harmonization, Edition 3, ICAO</i> CONOPS UTM 1.0 – SAM/CAR

¹ Spanish version provided by Venezuela (Bolivarian Republic of).

² Member States of the Latin American Civil Aviation Commission (LACAC).

1. INTRODUCTION

1.1 The emergence of a range of aviation activities in very low altitude airspace, typically at 1 000 ft above ground level (AGL) and below, in urban or suburban environments. These activities include the operation of small unmanned aircraft (UA), commonly referred to as “drones”, as well as new developments referred to as “flying taxis”, operating alongside current airspace users, such as manned helicopters, paragliders and other users.

1.2 In the Bolivarian Republic of Venezuela, and at South American and world level, the necessary legislation pertaining to unmanned aircraft operations has been incorporated into aviation regulations, so that these operations can be conducted in non-segregated airspace. This has influenced the increase in applications for permits by the operators of these systems.

1.3 The market for unmanned aircraft systems (UAS) is driving the growth of very low level (VLL) drone operations within a limited space shared with other users, especially over urban areas, and this accentuates the need to discuss and decide on ways to ensure rational, organized and systematic UAS traffic management (UTM).

1.4 Drones are expected to promote the development of goods delivery business models, in particular online sales of products such as pharmaceuticals, food, electronics and clothing, as well as inspection, monitoring and recreational activities, aerial crop spraying and aerial filming.

1.5 Autonomous UTM operations could take place near an international airport, and this could affect airport operations in cases of emergency or unexpected UAS behaviour.

1.6 Unmanned aviation has developed rapidly, and the capacities of so-called drones are constantly improving in consequence, on the basis of technological advances. The promising market for this new aviation era has been shown to have a diversified potential, capable of being realized in respect of inspections and monitoring of critical infrastructures, topography and cartography, filming and photography, precision agriculture, search and rescue, disaster relief and public safety.

1.7 These rapid changes have led to an explosion in the use of these aircraft, whether for commercial, recreational or air work purposes.

1.8 If the fullest advantage is to be taken of this technology, visual line-of sight (VLOS) operations cannot be limited, as a mechanism must be established to facilitate flight beyond visual line-of-sight (BVLOS), thus enabling the sector to be used to its full potential.

1.9 Moreover, the air traffic management (ATM) system, as originally devised, does not viably satisfy the needs of this new segment to its full potential. Then there is the concept of the UTM.

1.10 According to ICAO, UTM is to be defined as an ATM subsystem, its objective being to ensure the safe, economical and efficient management of UAS operations, through the provision of facilities and a suite of collaborative services involving all stakeholders, including air and ground functions.

1.11 The system will provide for the management, through collaborative integration, of human beings, information, technology, facilities and services supported by air, ground and/or space communications, navigation, radar surveillance and automatic dependent surveillance – broadcast (ADS-B); the latter would entail the optimization of airspace, allowing for greater traffic flow and making it possible to improve the information received for decisions to be taken during those operations. It would also ensure efficiency in handling precise surveillance information with flight parameters for special

operations in case of contingencies or search and rescue, which would permit the rapid deployment of aid where necessary.

2. DISCUSSION

2.1 Special attention must be paid to various factors that need to be observed and addressed in relation to the multiple activities foreseen for possible implementation using this type of aircraft, which inherently cover various options ranging from “unmanned (UA)” to “remotely piloted aircraft systems (RPAS)”.

2.2 It should be noted that, according to AN-Conf/13-WP/88, under item 5 of the Thirteenth Air Navigation Conference (Doc 10019) restricts its own scope and excludes “autonomous aircraft and their operations...”. Lost link operations, by definition, operate without pilot intervention (that is, pilot out of the loop, section 2.1.3). Therefore, based on the descriptions contained in section 2.1 and the restriction addressed in this item, lost link operations are excluded from the RPAS Panel (RPASP) scope. This is noteworthy, inasmuch as UA is considered on this basis.

2.3 The same AN-Conf/13-WP/88, in its paragraph 1.3, states that: “The unmanned aircraft systems (UAS) market appeals to promote the increase of VLL (very low level) drone operations, in a limited space with other users and especially over cities.”

2.4 Another noteworthy point is that UTM services are probably in greatest demand in urban areas where most major airports are located, and it is inevitable that there should be demand for drone operations within the controlled airspace.

2.5 There are many aspects to be discussed under this item, which would result in Doc 10019 being updated or expanded, so as to cover all aspects of the concept of unmanned air traffic management (UTM).

2.6 AN-Conf/13-WP/41 of the above-mentioned Conference states that: “The UTM environment will be very different from the existing manned aviation environment. Although the concept is still being defined, the model will comprise a set of UTM services, provided by UTM service suppliers, supported by extensive automation on the drones themselves.”

2.7 It is also important to request the experts for a pronouncement and clear rules to prevent a new concept, like that of the UTM, from challenging or generating disharmony in the long-established basic ATM principles.

3. CONCLUSION

3.1 The UAS industry is growing larger every day, and we cannot let this fact pass us by. It is essential that it be integrated with the other components of airspace in order to permit the safe and reliable implementation of activities. Work must be continued on the search for alternative ways to define an air traffic network that makes any type of activity possible. It will thus be possible in the near future to implement complex operations that will not only pave the way for the development of the aerospace sector but will enhance the potential for giving impetus to new industries and improvements in our day-to-day lives.