



## DIRECTORS GENERAL OF CIVIL AVIATION-MIDDLE EAST REGION

### Fourth Meeting (DGCA-MID/4) (Muscat, Oman 17-19 October 2017)

#### Agenda Item 4: Air Navigation

#### COLLABORATIVE AIR TRAFFIC FLOW MANAGEMENT

*(Presented by the United States)*

#### SUMMARY

*The United States (U.S.) Federal Aviation Administration (FAA) recognizes the benefits of, and is supportive of the International Civil Aviation Organization's (ICAO) concepts of Collaborative Air Traffic Flow Management and Collaborative Decision-Making.*

*The FAA is also supportive of the Air Traffic Flow Management Network Concept underway in Southeast Asia and the Civil Air Navigation Service Organization Air Traffic Flow Management Data Exchange Network for the Americas (CADENA) as examples.*

*The FAA encourages Member States in the Middle-East to consider supporting and assigning resources to the recently established Air Traffic Flow Management Task Force (ATFM-TF) by the MID Air Traffic Management Sub-Group (ATM-SG). The ATFM TF could evaluate these concepts and deliver to the ATM-SG a proposal to incorporate similar concepts.*

### 1. INTRODUCTION

1.1. Air Traffic Flow Management (ATFM) is essential for managing and operating safe and efficient airspace. Over the past few years, States have acknowledged the rapid and sustained increase in air traffic demand globally with the trend continuing to grow in the foreseeable future. Furthermore, various air navigation service providers (ANSP) and airport operators are sometimes at or near capacity today. When situations such as adverse weather results in a reduction in capacity, traditional flow restrictions such as imposing larger longitudinal separation at transfer of control points are often used to regulate air traffic flow. Implementing these measures may not be the most effective and can result in negative impact on regional operations. There are methods individual States can adopt to improve upon existing air traffic management practices whereas cooperation and collaboration are foundational to

success. Among these are collaborative air traffic flow management (ATFM) and collaborative decision-making (CDM) principles.

1.2. Collaborative ATFM can be achieved in a number of ways. The Distributed Multi-Nodal ATFM Network Concept which is being tested in Southeast Asia and the CADENA initiative in Latin America and the Caribbean are two examples. The ICAO Document 9971, *Manual on Collaborative Air Traffic Flow Management* outlines the basic concepts and building blocks to structure collaborative ATFM, which can be customized regionally to fit the needs of individual member States.

1.3. Collaborative decision-making is a process focused on how to decide on a course of action agreed to by two or more ANSPs and their stakeholders. Through this process, the members involved share flight and flow information related to those decisions. The overall objective of CDM is to improve the performance of the Air Traffic Flow Management (ATFM) system as a whole while balancing the needs of the individual ANSPs and stakeholders.

## 2. DISCUSSION

2.1. One example of regional collaborative ATFM is being tested in Southeast Asia. The Distributed Multi-Nodal ATFM Network Concept taken from 39<sup>th</sup> Assembly Working Paper –A39-WP/243 – Presented by Australia, Hong Kong China, Indonesia, Lao PDR, Malaysia, Philippines, Singapore, Thailand, CANSO and IATA.

- a) The Distributed Multi-Nodal ATFM Network concept is based on a network of ANSPs leading independent ATFM operations within their domain and connected to other ANSPs and stakeholders through an effective information sharing mechanism. By establishing common ATFM guidelines and protocols and ensuring fully-interconnected information flow within the region, each ANSP, associated airspace users and airport operators – grouped together as an ATFM Node – can implement effective ATFM programs involving both domestic and intra-regional international flights while creating a channel for stakeholders' participation in the CDM process. This network of ATFM Nodes forms the broader ATFM body to support the regulation of air traffic for the region when required.
- b) Since June 2014, the Multi-Nodal ATFM Project members from the various States and international organizations have met over 10 meetings to develop the ATFM processes and procedures, and plan the conduct of operational trials. The project group adopted a multi-tiered participation approach to cater for the varying capabilities and level of readiness of the ANSPs, airport operators and airspace users.

2.2. Another example was presented by the Civil Air Navigation Services Organization (CANSO) at the ICAO South American Regional Office's Implementation Group meeting in May 2017, and at the Seventh Meeting of the North American, Central American and Caribbean Directors of Civil Aviation, NACC/DCA/07 – WP/17 Rev. 06/09/17. The paper explains a nodal concept for ATFM and CDM called the CANSO ATFM Data Exchange Network for the Americas, or CADENA.

- a) CADENA acknowledges that there are many essential components for successful implementation of ATFM capabilities and CDM processes in the region. The concept promotes a common situational awareness through timely communication, collaboration and coordination of operational data and information to individual ANSPs, airspace users, and other stakeholders. The implementation of regional,

networked ATFM requires the establishment of CDM practices among regional members and stakeholders. CADENA establishes the process for each ANSP to play a central role in improving the safety, efficiency, cost effectiveness, and environmental sustainability of ATM in the region in a transparent and inclusive environment of collaboration. Airline operators also benefit from increased situational awareness, improved predictability, and increased on-time performance.

- b) The end state for CADENA is a virtual ATFM node. In this concept, each ANSP operates as an independent entity while being interconnected by an information-sharing network – System-Wide Information Sharing (SWIM), thus forming the virtual node. By exchanging flight and flow information across nodes, the regional traffic flow becomes apparent among participants and enables a more efficient ATFM. Participating ANSPs manage the air traffic flow and address associated issues by using the standard set of principles established by the CADENA governance process.

### **3. CONCLUSION**

3.1. During the MIDANPIRG/16 meeting in May 2017, the ICAO Secretariat presented a paper on Air Traffic Flow Management with a decision that an ATFM Task Force be established to develop an ATFM Concept of Operations for the MID Region. The ATM SG was tasked to refine the draft terms of reference of the ATFM TF and States were asked to support the ATFM TF through:

- a) assignment of ATFM Focal Point to contribute to the work of the Task Force; and
- b) support the provision of required data in a timely manner, and in particular to the survey that will be carried out related to the airspace and sectors capacity, hot-spots, ATFM measures/system, etc.

3.2. The ATFM TF would provide the necessary leadership to establish a collaborative environment whereas ATFM and CDM would realize its fullest potential. However, given the growth in aviation demand along with increased complexities and constraints, it's vital that MID regional States commit resources to deliver the comprehensive operational and safety-driven advances the aviation community requires, and a willingness to cooperate to ensure the expectations of the ATM community will be balanced to achieve the best outcome based on equity and access.

### **4. ACTION BY THE MEETING**

4.3. The Group is invited to consider the contents of this paper.

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