



# ICAO

International Civil Aviation Organization  
North American, Central American and Caribbean Office  

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WORKING PAPER

NACC/DCA/07 — WP/17 Rev.  
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**Seventh Meeting of the North American, Central American and Caribbean Directors of Civil Aviation  
(NACC/DCA/07)**

Washington, D. C., United States, 19 – 21 September 2017

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**Agenda Item 5: NAM/CAR Regional Safety/Air Navigation/Aviation Security Implementation Matters**

**5.2 Effectiveness of air navigation implementation mechanisms**

**CANSO ATFM Data Exchange Network for the Americas (CADENA)**

(Presented by CANSO)

**EXECUTIVE SUMMARY**

CANSO is supporting the implementation of ATFM/CDM in the region, expanding the work being conducted by ICAO NACC and SAM and assist in fulfilling the requirements specified in the *Port-of-Spain* and *Bogota Declarations*.

CANSO's CADENA initiative offers a regional, cross-border ATM communications protocol and a seamless operational atmosphere that incorporates operational procedures and practices. Implementing regional, networked ATFM requires the establishment of CDM practices among Members and regional and international stakeholders. These practices will be inclusive and transparent and provide the opportunity for exchanging operational information to facilitate a shared situational awareness and promote sound strategic and tactical planning in a CDM environment of multilateral decision-making.

<b>Action:</b>	CADENA invites States and international organisations to participate in the weekly operational planning web conferences and CADENA OIS.
<b>Strategic Objectives:</b>	<ul style="list-style-type: none"><li>• Safety</li><li>• Air Navigation Capacity and Efficiency</li></ul>
<b>References:</b>	<ul style="list-style-type: none"><li>• CAR/SAM ATFM CONOPS</li><li>• Port of Spain and Bogota Declaration</li><li>• Doc 9971</li><li>• CADENA ATFM-CDM Procedures Manual</li><li>• CADENA Requirements document and Business Rules Document</li><li>• High-Level CADENA Data Exchange Implementation Requirements and Information Request for Connectivity and Data Handling</li><li>• CADENA Air Traffic Management and Collaborative Decision Making Letter of Agreement</li></ul>

## 1. Introduction

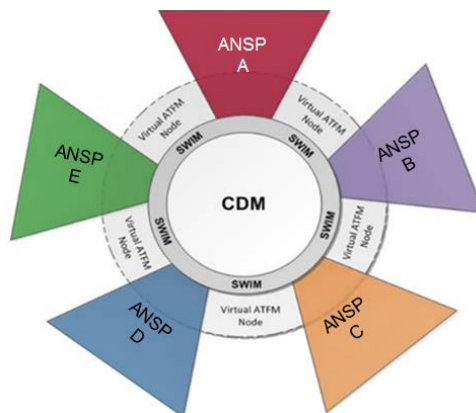
1.1 The Latin America and Caribbean CANSO CEO Committee (LAC3) established a virtual-node air traffic flow management (ATFM) network named CANSO ATFM Data Exchange Network for the Americas (CADENA), among air navigation service providers (ANSP) and stakeholders to contribute to a safe, orderly and expeditious flow of air traffic in June 2016.

## 2. Discussion

2.1 Air traffic flow management (ATFM) is essential for managing and operating safe and efficient airspace. It helps regulate air traffic to avoid exceeding airport or airspace capacity while ensuring that available capacity is used efficiently.

2.2 There are many essential components for successful implementation of ATFM capabilities and collaborative decision-making (CDM) processes in the region, and sharing information among stakeholders is primary. CADENA will promote universal situational awareness through timely communication, collaboration, and coordination of operational data and information to ANSPs, airspace users, and other stakeholders. Implementing regional, networked ATFM requires the establishment of CDM practices among Members and stakeholders.

2.3 CADENA encourages regional ANSPs to connect to System Wide Information Management System (SWIM). SWIM will provide the region with greater access to real-time information on flight data, airport operations, and weather. This connectivity will help ensure that the entire region has common situational awareness of traffic demand and constraints to enhance safety, improve efficiency, and better manage resources. The end state is a virtual ATFM node concept as shown in the figure below. In this concept, each ANSP operates as an independent entity and ANSPs are interconnected by the information sharing network (i.e., SWIM), forming a virtual ATFM node. By exchanging flight information with each other, the regional traffic flow becomes apparent among participants and enables efficient ATFM. Participating ANSPs manage the air traffic flow and address associated issues by using the standard set of principles and procedures established by the CADENA governance process.



### 3. CADENA Development

3.1 CANSO Members signed the CANSO ATFM Data Exchange Network for the Americas (CADENA) Member ANSP Air Traffic Management and Collaborative Decision Making Letter of Agreement in December 2016. This agreement commits signatories to promote and facilitate the safe and efficient movement of air traffic in the region and will enable the continuity of active operations through ATFM and CDM procedures and processes.

3.2 CADENA has held four CADENA Regional Implementation Group (RIG) meetings. During the third CADENA RIG meeting, CADENA organised an industry day, on the first day of the event, CANSO Associate Members offered an educational session concentrated on ATFM solutions.

3.3 CADENA RIG completed a High-Level Requirements Flight Data Exchange Information document and drafted the CADENA Data Publication Business Rules document.

3.4 CADENA hosts weekly ATFM planning web-conferences following CDM processes among regional ANSPs and stakeholders. Weather, staffing, vectorisation, constraints, equipment outages, restrictions, special events and airport configuration are some of the items openly discussed and shared among CADENA members, airlines and airports. Each week, CADENA ANSP members rotate the lead of the web conference.

3.5 CADENA ANSP RIG Members include: COCESNA, DC-ANSP, DECEA (CGNA), EANA, ECNA, FAA, IDAC, JCAA, SENEAM and TTCAA.

3.6 Since December 2016, CADENA has trained a total of eleven airlines, as well as the Latin American and Caribbean Air Transport Association (ALTA), the International Air Transport Association (IATA), National Business Aviation Association (NBAA), and Airports Council International, (ACI) to participate in the weekly web planning conferences. We expect additional regional carriers to join in the future.

3.7 CADENA stakeholders and international organisation Members currently include Aeromexico, American Airlines, Azul Aerolineas, Caribbean Airlines, Copa, Delta, Jetblue, Sky Airlines, United Airlines, UPS, Volaris, ALTA, IATA, ACI, and NBAA.

3.8 On August 28, CADENA launched the initial Operational Information System (OIS) web page. The OIS enables common situational awareness and allows regional ANSPs to exchange information including ATFM Daily Plans, expected demand, proposed traffic management measures, constraints, volcanic ash plumes, special events, and runway closures to improve planning and collaborative decision making. The OIS data will enable operational analysis and development of targeted performance improvement plans. The CADENA OIS is accessible to stakeholders as well as the public. During its first week of use, the CADENA OIS received 2,682 hits from 262 unique IP addresses. Visit: <https://www.cadenois.org>



3.9 Most importantly, CADENA offers each partner the opportunity to have its say and play a central role in improving the safety, efficiency, cost effectiveness and environmental sustainability of ATM in the region. Partners are encouraged to lead by example, determine best practice and ultimately decide how they want to shape the future of air traffic management.

#### 4. Identified benefits by CADENA members and stakeholders

4.1 Since CADENA began operations in August 2016, CADENA Members identified the following improvements:

- Supports operational safety
- Reduced delays due to weather conditions
- Reduced delays due to ATC sector congestion
- Reduced fuel consumption and CO2 emissions
- Increased airport acceptance rates
- Supports connectivity of ANSPs in the region
- Assists with ATFM implementation process and roadmap
- Enabled increased cooperation and collaboration with adjacent FIRs in high-volume winter season
- Improved efficiency and flow of information between FIRs through the weekly CADENA operations planning web conference
- Promoted regular teleconferences with their underlying TMAs
- Established means for receiving advanced notification of TMM including miles-in-trail and minutes in trail
- Enabled better operational planning, such as de-combining sectors and conducting training

4.2 Following the CADENA planning web conference, stakeholders, identified:

- ATFM coordination has moved from single ANSP perspective to a regional perspective allowing improved coordination
- CADENA initiative utilizes CDM, allowing the entire aviation community to participate and provide input to the strategic planning. This provides operators with a forum to inform of deviation in the number of operations for planning purposes
- Reduction in surprise to operators allowing for improved operational performance
- Early detection of constraints and identification of real alternatives routes and trajectories
- Awareness of special events including VIP movements and expected impact to the day's operations
- The sharing of the agreed and documented CADENA operational plan is beneficial for coordination purpose

## **5. Suggested actions**

5.1 This Meeting is invited to:

- a) Take note of the information provided in the working paper;
- b) Air navigation services providers who are not members of CADENA are encouraged to participate in the weekly ATFM/CDM operational planning web conference; and
- c) CANSO invites all regional air navigation services providers to use and input data in the CADENA OIS