

Changing the flow

Javier Vanegas, CANSO's Director of Latin America and Caribbean Affairs, describes the implementation of a virtual air traffic flow management node.

CANSO recently established CADENA – the CANSO Air Traffic Flow Management (ATFM) Data Exchange Network for the Americas.

The development has the potential to improve the safety, efficiency, cost effectiveness and environmental sustainability of air traffic management (ATM) in the Latin America and Caribbean region.

ATFM is essential for managing and operating safe, efficient airspace. It helps regulate air traffic to avoid exceeding airport or air traffic control capacity, ensuring that available capacity is used efficiently.

The key to successfully implementing ATFM is partnership and robust coordination among aviation stakeholders, and CADENA brings together regional ANSPs, international organisations and other stakeholders.

Complex and compact

The effective implementation of ATFM capabilities and collaborative decision-making (CDM) processes are expected to prove especially beneficial in the Caribbean region. There are multiple flight information regions (FIRs) in a compact and complex area (as shown in Figure 1) and air traffic demand is expected to grow rapidly – around 5% annually.

At present, while the region relies heavily on aviation for tourism and trade, there is no integrated network for ATFM situational

awareness; and ATFM operations across FIR boundaries are inconsistent. Furthermore, the region is prone to significant tropical weather disruptions, which can cause increased air traffic complexity and send delays and disruptions rippling to neighbouring states.

Effective ATFM measures require the inclusion of approximately 70% of air traffic demand. While areas such as the United States, Europe and Australia can easily meet this percentage by applying ATFM measures to their internal domestic demand, this is not the case for the Caribbean region. Here the ANSPs are operating within smaller areas and most of the traffic originates from neighbouring FIRs.

Transforming ATM

CANSO has a key role to transform ATM performance across the Latin America and Caribbean region by sharing best practice, raising awareness of key issues and organising seminars, workshops and training.

In particular, CANSO recognises the importance of balancing airspace demand and capacity and pre-planning to improve ATFM capabilities. As the Federal Aviation Administration (FAA) State of Affairs Survey (2015) showed, some Caribbean States are already in the planning stage for ATFM development and others have ATFM initiatives in progress. But there are still opportunities to develop and improve ATFM and CDM in the region.

CADENA's main objective is to champion the effective use of ATFM in the region and encourage the sharing of operational information between ANSPs and stakeholders for a safer, seamless airspace.

Each CADENA partner is responsible for providing an overview of their current ATFM and CDM capabilities and helping the group understand how to address the region's multi-FIR, multi-State need for ATFM and CDM.

The work highlights the benefits of ATFM and CDM and allows a detailed insight into the importance of sharing operational data with all CANSO Member FIRs in the region. It also helps identify the steps to successful regional implementation. These could include new or improved ATFM and CDM architecture, data management network connectivity, bi-lateral and multi-lateral traffic management data exchange agreements and regional operational letters of agreement and procedures.

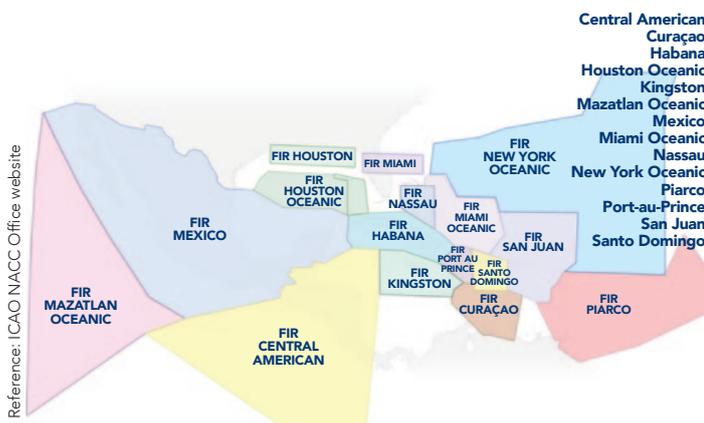


Figure 1. The 14 Caribbean flight information regions.

AFTM matters

Regional cooperation, collaboration, communication and commitment are significant pillars of this project.

As the group develops, CADENA members will:

- Review existing national plans for ATFM and CDM
- Review the technical and operational aspects
- Prepare the necessary documentation, agreements and procedures
- Ensure implementation is harmonised within the region and between regions
- Establish internal and regional training
- Consider the necessary activities to ensure harmonisation of ATFM and CDM standards and procedures in coordination with ICAO and stakeholders.

This work will also involve maintaining an overview of ATFM and CDM programmes being conducted across the globe to facilitate their coordination and alignment, reviewing the effectiveness of existing and planned ATFM and CDM programmes in Latin America and the Caribbean and making specific recommendations regarding ATFM and CDM in the region.

How it works

There are many essential components for successfully implementing the ATFM capabilities and CDM processes in the region. Sharing information is one of the most important.

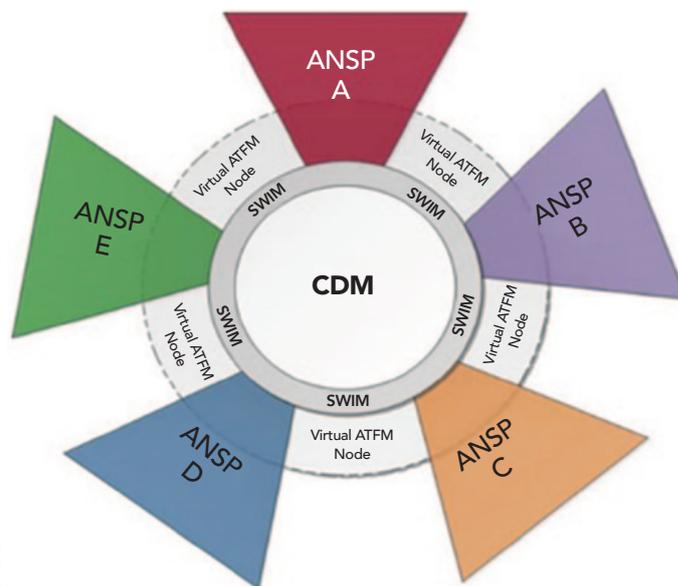
While ATFM and CDM do not necessarily require specific tools and technology, they do require shared situational awareness, timely communication, collaboration and coordination with system stakeholders on operational information. Under this system, each CADENA partner, participating collaboratively in cross-border ATFM, will be an equal participant in which ATFM is distributed via pre-arranged processes and protocols, providing shared situational awareness.

To support data sharing and networking solutions, CADENA partners will be targeted for connection to FAA's Traffic Flow Management System (TFMS) via System Wide Information Management (SWIM).

SWIM is a concept based on an open architecture and readily-available technologies that will assist in bringing together

CADENA partners

The current CADENA partners include: Corporación Centroamericana de Navegación Aérea (COCESNA), Dutch Caribbean Air Navigation Service (DC-ANSP), Empresa Argentina de Navegación Aérea (EANA), Empresa Cubana de Aeropuertos y Servicios Aeronáuticos (ECASA), Federal Aviation Administration (FAA), Jamaican Civil Aviation Authority (JCAA), Instituto Dominicano de Aviación Civil (IDAC), Servicios a la Navegación Aérea en el Espacio Aéreo Mexicano (SENEAM) and Trinidad and Tobago Civil Aviation Authority. It will also involve key organisations and other stakeholders.



Source: FAA

Virtual ATFM Node supported by participating ANSPs, SWIM, and CDM.

disparate systems, processes and data. Ultimately the concept allows ANSPs to control the entire information lifecycle while sharing it as required – creating and enhancing a seamless airspace. Its implementation on a regional level is vital to the effective and integrated development of ATFM capabilities and CDM processes.

The end game is a virtual ATFM node concept as shown above. In this concept, each ANSP operates as an independent entity but is interconnected by the information sharing network, thereby forming a virtual ATFM node. By exchanging flight information with each other, the entire regional traffic flow becomes available among participants and enables effective ATFM. Participating ANSPs manage the air traffic flow and address associated issues by using the common set of principles established by the CADENA governance process.

AFTM for the future

CANSO's CADENA initiative offers a regional, cross-border ATM communications protocol and a seamless operational atmosphere that incorporates operational procedures and practices. Its performance reporting and review structure will enable partners to share a common situational awareness and facilitate the safe and efficient movement of air traffic throughout the region.

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 their own future for air traffic management.

To find out more about CADENA or becoming a Member of CANSO, please visit: canso.org ➔