

# Introducing the CADENCE and Operational Information System (OIS)



**canso**  
civil air navigation services organisation

For: ICAO APAC ATFM/SG/11  
Presented by: CADENCE Task Force  
Date: August 2-6, 2021

# Introduction

The CANSO Operations Standing Committee (OSC) oversees the Operations Programmes where seven (7) Work Groups and four (4) Task Forces improve operations in aviation. The CANSO ATFM Data Exchange Network for Cooperative Excellence Task Force (CADENCE TF) is the newest task force.



# Purpose of CADENCE TF

- The CADENCE TF is a strategic initiative designed to help develop, or enhance, a network for operational coordination and information sharing among ANSPs around the world.
- The CADENCE TF will focus on supporting the:
  - Enhancement of regional collaborative decision making (CDM) processes and procedures in regions where ATFM capabilities already exist.
  - The implementation of regional ATFM/CDM processes and procedures in regions where such capabilities have yet to be developed.

# CADENCE TF and ATFM/A-CDM WG

- The CADENCE TF and existing ATFM groups in APAC region with similar purposes will complement each other.
- CADENCE is operationally focused and run by operational people.
- The CADENCE TF will focus on the deployment of **quick**, **simple**, and **effective** operational improvements by means of a regionally **centralized OIS** that is designed to support ATFM/CDM through human-oriented information exchange.

# Background of CADENCE - **CADENA**

The core capabilities offered by the CADENCE TF is based on the successful operational work accomplished by the CANSO ATFM Data Exchange Network for Americas, **CADENA**.

- CADENA is a multi-nodal, regional ATFM/CDM OIS system operated under the policy of **transparency, inclusiveness, collaboration, and simple-to-achieve solutions**.
- CADENA became operational quickly and all ANSPs participate with relatively small investment.
- CADENA's effectiveness to improve ATFM/CDM is proven in the Latin America and Caribbean Regions.

# CADENA - multi-nodal regional ATFM/CDM

## ANSPs

- EANA (Argentina)
- COCESNA (Central America)
- UAEAC (Colombia)
- ECNA (Cuba)
- DC-ANSP (Curacao)
- IDAC (Dominican Republic)
- DGAC (Ecuador)
- FAA (USA)
  - ZMA, SJU, ZHU, ATCSCC
  - Space Operations Office
- OFNAC (Haiti)
- JCAA (Jamaica)
- SENEAM (Mexico)
- TTCAA (Trinidad & Tobago)
- INAC (Venezuela)

## State/Territory/Group

- ANSA (Aruba)
- DGAC (Costa Rica)
- MWCR (Grand Cayman)
- CARRG (Caribbean Aviation Resilience and Recovery Group)

- transparency
- inclusiveness
- collaboration
- basic solutions



# Background of CADENCE - CADENA

CADENA became operational quickly and all ANSPs can participate with small investment

- 2016 Jun – Established
- 2016 Dec – Started regional ATFM/CDM Operational Planning Web Conferences
- 2017 Aug – Initial version of the CADENA Operational Information System (OIS), **a web application platform**, launched



You need only:

1. Computer
2. Internet Access
3. Human Resource

# Background of CADENCE - CADENA

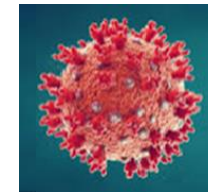
## Basic solutions using basic technologies

1. Face to face meetings
2. Email including group email
3. Teleconference
4. Forms such as ATFM Daily Plan and Contingency Form
5. Weekly Operational Web Conferences
6. Ad Hoc Web Conferences
7. Documents such as the Procedures Manual
8. CADENA OIS
9. Email notification
10. Planned Airway System Alternatives (PASA)
11. PASA end-to-end routes
12. PASA optimized routes (PBN and DCT)
13. Future - PASA for Free Route Airspace (CIFRA)
14. Training

- PASA efforts are no longer basic solutions
- Machine to Machine data exchange is also underway
  - TFM Data Exchange (flight data) between FAA and TTCAA started in Oct 2017
  - TFM DE between FAA and COCESNA (ready for deployment)
  - TFM DE via FAA's SWIM
  - Data fusion by FAA's TFMS

# Background of CADENCE - CADENA

CADENA has established effective ATFM/CDM in the Latin America and Caribbean Regions.



- CADENA has proven that the CADENA OIS web application is an effective means to exchange operational information.
- The value of information exchange and collaboration is most recognized during irregular operations.
- Reduced MIT, CO2, and airlines' operational cost.

# CADENA – Benefits Example



**Qualitative Benefits - understood intuitively**

**Quantitative (monetary) Benefits (Estimate)**

UAL - Hurricane Maria Recovery Operation Case Study – \$1.0M – \$5.4M

JBU - Return Home from Hurricane Maria Case Study – \$182.0K

AAL - Jamaica Loss of Radar Surveillance Case Study – \$225.0K

CPA - Jamaica Loss of Radar Surveillance Case Study – \$175.5K

UAL - Colombia Loss of Satellite Comm Case Study – \$192.0K

DAL - PASA optimization pilot test (ATL-LIM) - \$368.9K/yr, 1,118,000kg of CO<sub>2</sub>

DAL - PASA optimization pilot test (ATL-GRU) - \$301.8K/yr, 574,500kg of CO<sub>2</sub>

# Background of CADENCE LOA between CGH Technologies and CANSO



CANSO and CGH Technologies virtual signing – CADENCE  
(March 22, 2021)

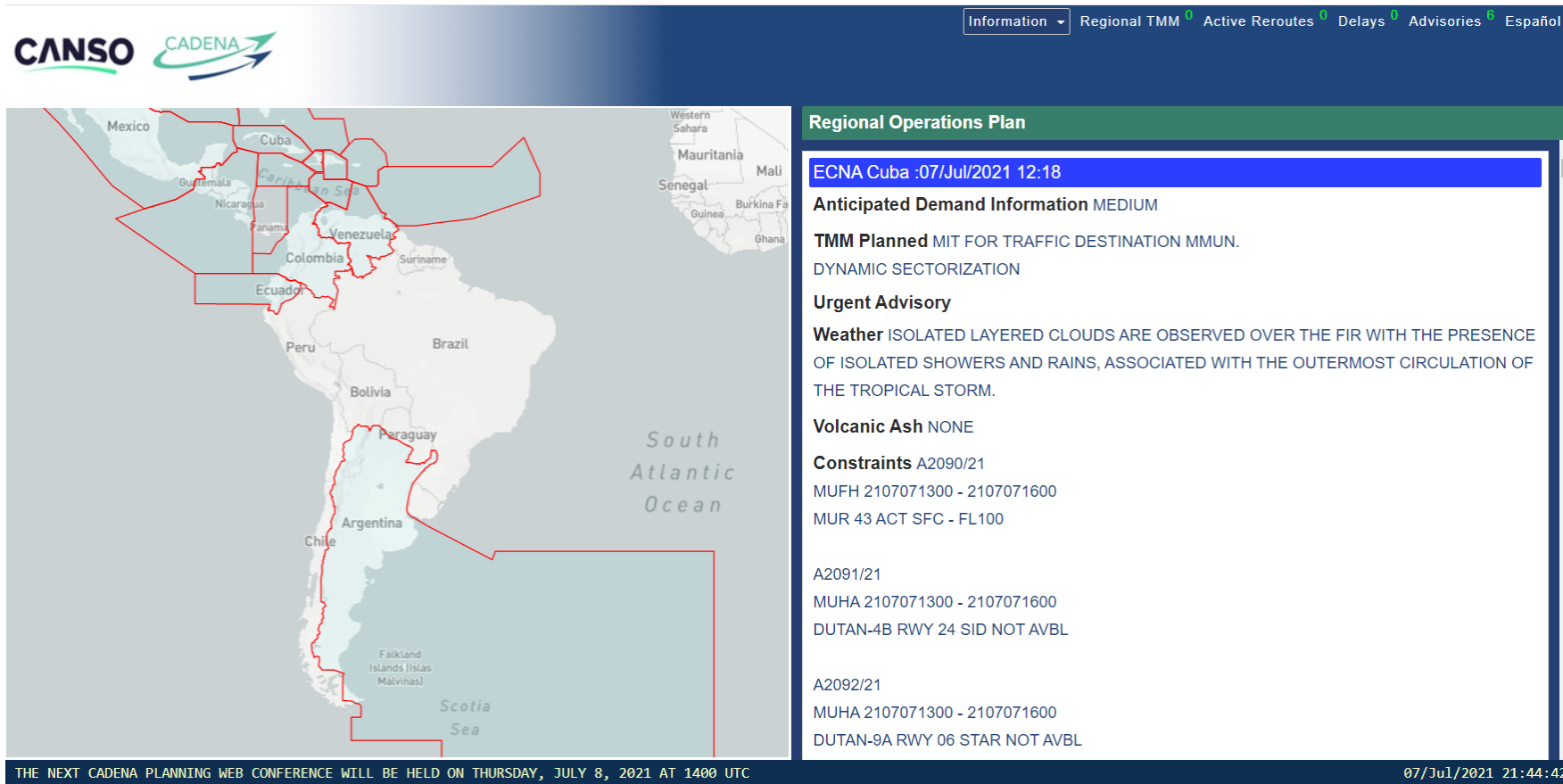
CGH Technologies built the CADENA OIS under the contract with the FAA.

CADENA OIS technology has been transferred from the FAA to CGH Technologies.

- The agreement secures the provision of a purpose-built collaborative software platform based on the successful regional initiative, CADENA.
- CADENA OIS version 3.2 is the baseline for the CADENCE OIS v1.0.
- The baseline CADENCE OIS is offered at no cost to regions and functional groups
- CGH Technology will support CADENCE for 20 years



# CADENCE OIS – baseline version shared at no cost



The screenshot displays the CADENA OIS interface. On the left is a map of the Americas with red outlines indicating flight paths or sectors. On the right is a 'Regional Operations Plan' for ECNA Cuba, dated 07/Jul/2021 12:18. The plan includes sections for Anticipated Demand Information (MEDIUM), TMM Planned (MIT FOR TRAFFIC DESTINATION MMUN. DYNAMIC SECTORIZATION), Urgent Advisory (Weather: ISOLATED LAYERED CLOUDS ARE OBSERVED OVER THE FIR WITH THE PRESENCE OF ISOLATED SHOWERS AND RAINS, ASSOCIATED WITH THE OUTERMOST CIRCULATION OF THE TROPICAL STORM.), Volcanic Ash (NONE), and Constraints (A2090/21, A2091/21, A2092/21) with associated MUHA and DUTAN codes. The interface also shows navigation tabs like 'Information', 'Regional TMM', 'Active Reroutes', 'Delays', 'Advisories', and 'Español'. A footer banner states: 'THE NEXT CADENA PLANNING WEB CONFERENCE WILL BE HELD ON THURSDAY, JULY 8, 2021 AT 1400 UTC' and the time is '07/Jul/2021 21:44:42'.

## Exchange:

- MS documents (Word, PPT, Excel)
- Text, pdf, and picture files

## Enter:

- ATFM Solutions
- Advisories/Notices
- Airport delay
- ATFM Daily Plan
- Calendars
- PASA Route Requests

<https://www.cadenois.org> CADENA OIS version 3.2 is the CADENCE OIS baseline.

Public domain for read only. Member domain to read and upload information.



# Also offered by CADENCE are:

- Most of the CADENA produced documents including CADENA ATFM/CDM Procedures Manual, CADENA OIS Manual, and training materials.
- Most of the CADENA forms including ATFM Daily Plan, the 14 Contingency event checklists.
- Most of the LOAs, PASA routes database, etc.
- Support to launch the use of a regional CADENCE OIS, including training.

# Why **Not?**

Trial

**No Cost**  
OIS

Proven  
Approach  
and  
Results



Daily Plan  
ATFM Solution  
Advisory

*Basic solutions*

With your management approval,  
hope to work together.

# Next Steps



CADENCE TF proposes to have an in-depth CADENCE OIS demonstration to APAC ANSPs

CADENCE TF is available to meet individually with ANSPs to:

- Supply more operational and technical information
- Give high level demonstration to management
- Give in depth demonstration to Operational Staff

# Questions and Answers



# CANSO

SHAPING OUR FUTURE SKIES

Visit us: [canso.org](https://canso.org)

Coleen Hawrysko, CANSO Operations Programme Manager [Coleen.Hawrysko@CANSO.org](mailto:Coleen.Hawrysko@CANSO.org)

Joe Hof, CGH Technologies, Co-Chair CADENCE Task Force [jhof@cghtech.com](mailto:jhof@cghtech.com)

Midori Tanino, FAA ATO CADENA PM, Co-Chair CADENCE Task Force [Midori.Tanino@faa.gov](mailto:Midori.Tanino@faa.gov)