

# CADENA – CIIFRA Advancements

Tenth North American, Central American  
and Caribbean Working Group Meeting  
(NACC/WG/10)

8 September 2025

# CADENA Fact Sheet



- Today, CADENA provides Regional ATFM/CDM in support of 14 international ANSPs, 5 States/Territories, 5 FAA ARTCCs, 1 FAA CERAP, FAA ATO Space Ops, CNES, 13 US air carriers, 20 international air carriers, and various other stakeholders.
- Since 2016, CADENA has:
  - ✓ Coordinated and facilitated **47 hurricane conferences** to manage flows and ensure safety in the LAC Region.
  - ✓ Coordinated and facilitated **36 Space Launch conferences**. The conferences include pre-launch coordination between ATO Space Ops, LAC region ANSPs and airlines; and live launch conferences that provide real-time launch details.
  - ✓ Been instrumental in identifying and resolving **78 technical issues** through CDM. Many of these technical issues included coordination with FAA ARTCCs.
  - ✓ Issued **514 Urgent Advisories** concerning significant operational impacts to airlines and ATC providers.
- **\*CADENA's airspace optimisation efforts began in 2021. Today, these efforts reduce ~29 million kg of CO2, save airlines around 140,000 flying minutes, and ~\$ 21 million each year.**
- **\*In 2024, CADENA provided Regional ATFM/CDM in support of 1 million flights in the LAC Region. US air carriers operated the vast majority (~86.2%) of these flights.**

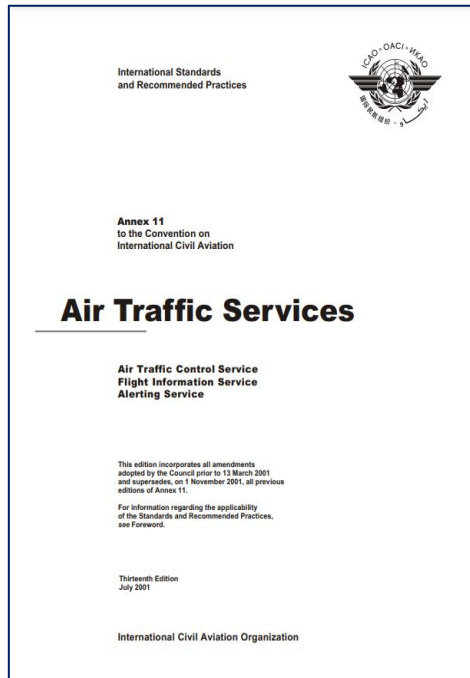
## **Purpose:**

- Establish an operational Regional ATFM/CDM system
- Facilitate the development of optimised airspace

## **Objectives:**

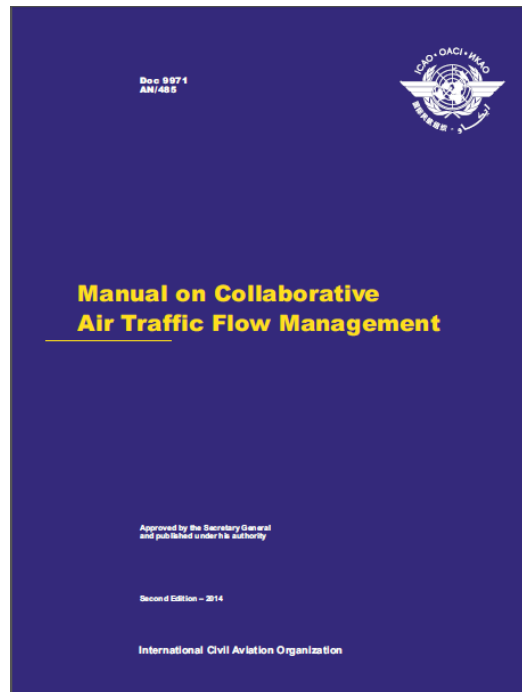
- Exchange operational information
- Promote common situational awareness
- Enhance operational safety
- Improve operational efficiency

# In Concert with ICAO- No Country Left Behind



## ANNEX 11 – Air Traffic Services

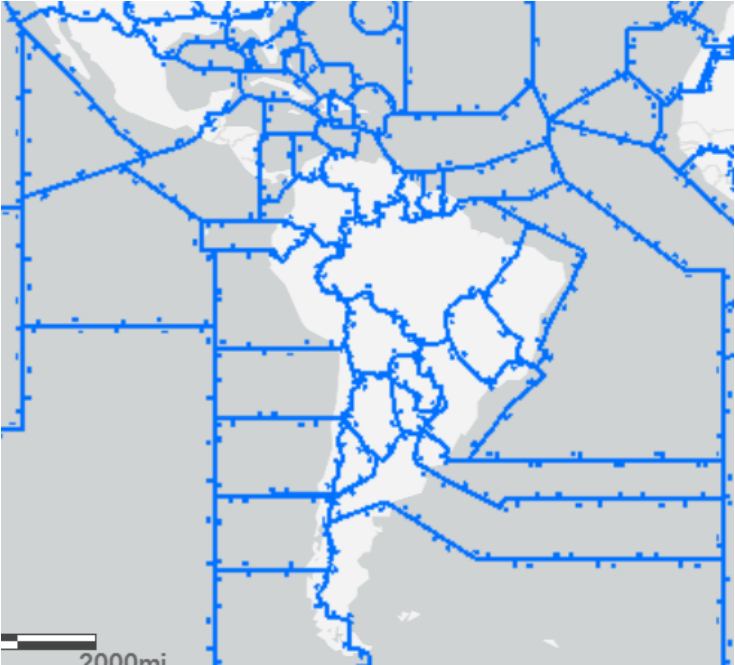
- Section 2.32 – Contingency Arrangements
- Attachment C – Material Relating to Contingency Planning



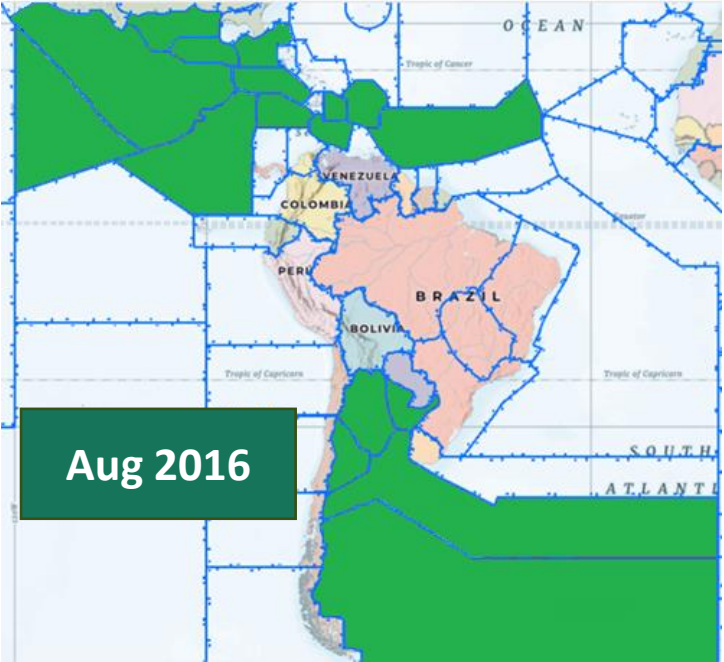
## ICAO DOC 9971 – Collaborative ATFM

- CADENA regional ATFM/CDM Procedures Manual is based on ICAO Doc 9971

# CADENA Participating ANSPs

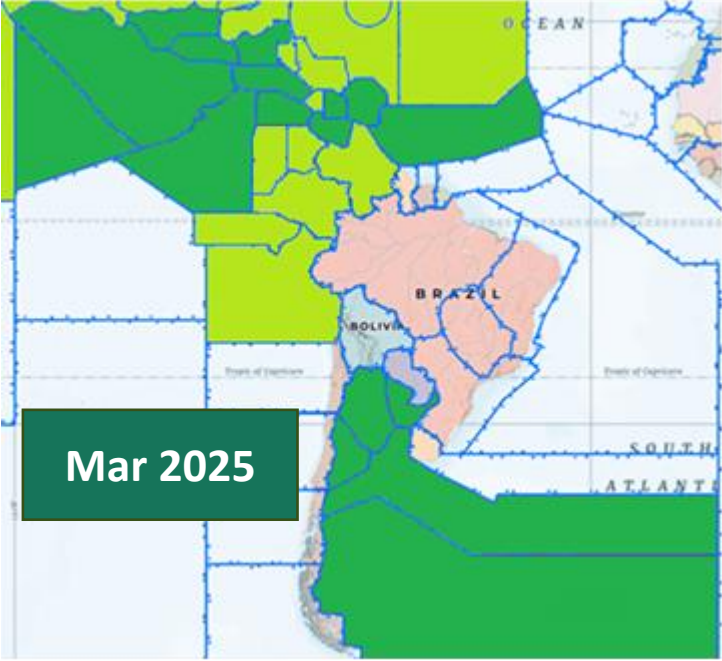


**Before CADENA  
2015**



**Aug 2016**

- COCESNA (Central America)**
- EANA (Argentina)**
- ECNA (Cuba)**
- DC-ANSP (Curacao)**
- FAA (USA) - ZMA, SJU, ZHU**
- IDAC (Dominican Republic)**
- JCAA (Jamaica)**
- SENEAM (Mexico)**
- TTCAA (Trinidad & Tobago)**



**Mar 2025**

- COCESNA (Central America)**
- EANA (Argentina)**
- ECNA (Cuba)**
- DC-ANSP (Curacao)**
- FAA (USA) - ZMA, SJU, ZHU**
- IDAC (Dominican Republic)**
- JCAA (Jamaica)**
- SENEAM (Mexico)**
- TTCAA (Trinidad & Tobago)**

- BANSA (Bahamas)**
- CAA (Panama)**
- CORPAC (Peru)**
- DGAC (Ecuador)**
- FAA (USA) – ATCSCC & Space Ops**
- INAC (Venezuela)**
- OFNAC (Haiti)**
- UAEAC (Colombia)**

# CADENA PARTICIPANTS TODAY (Mar 3, 2025)

## ANSPs

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

## State/Territory/Group

- ANSA (Aruba)
- DGAC (Costa Rica)
- MWCR (Cayman Islands)
- TNCM (Sint Maarten)
- CNES (France)
- CARRG (Caribbean Aviation Resilience and Recovery Group)



# CADENA – Major Accomplishments



<b>2016</b>	Aug: 1 <sup>st</sup> CADENA RIG Meeting <b>Dec: Weekly Ops Webex</b>
<b>2017</b>	May: 1 <sup>st</sup> Hurricane Training <b>Aug: CADENA OIS v1.0</b>
<b>2018</b>	<b>Oct: PASA Route database established</b>
<b>2019</b>	<b>Oct: Contingency Procedures established</b>
<b>2020</b>	<b>Aug: PASA E2E</b> via CADENA OIS Dec: 31 <sup>st</sup> Vaccine Flight KMIA to SCEL

<b>2021</b>	<b>Jul: CADENA UPR Trials</b> started Nov: Virtual Support System
<b>2022</b>	Sep: First Trial Routes published <b>Oct: SDR Trial</b> started
<b>2023</b>	<b>Jan: Twice Weekly Ops Webex</b> Apr: MMUN Offload Op Trial
<b>2024</b>	<b>May: Inter FIR SDR Trial</b> Jun/Jul: Daily (8-day) Hurricane Beryl Webex
<b>2025</b>	<b><u>Traffic Management Log</u> via OIS</b>

# CADENA's Accomplishments



**2016**

**2017**

**2018**

**2019**

**2020**

**2021**

**2022**

**2023**

**2024**

Year	CPRA	CPRA	CPRA	CPRA
2023	\$1.1B	\$1.1B	\$1.1B	\$1.1B
2024	\$1.1B	\$1.1B	\$1.1B	\$1.1B
Total	\$2.2B	\$2.2B	\$2.2B	\$2.2B

Dec 31, 2024

# CADENA Supports LAC Regional ATFM/CDM



## Twice-Weekly CADENA Operational Planning Web

**CANSO** LATIN AMERICA AND CARIBBEAN

SHAPING OUR FUTURE SKIES

canso.org

# CADENA Operations Planning Web Conference

MONDAY, February 24, 2025  
1500 UTC

**Mondays at 1500 UTC**  
**Thursdays at 1500 UTC**

## CADENA Operational Information System (OIS)

CANSO CADENA

Contingency Forms

- Information
- Regional TMM 0
- Active Reroutes 0
- Delays 0
- Advisories 20
- Español

- Master Slide Deck
- ADP Link Files
- Reroute Repository
- Contingency Form
- Airport Capacity
- Sector Capacity
- Participant List
- Acronyms
- LOA List

### Regional Operations Plan

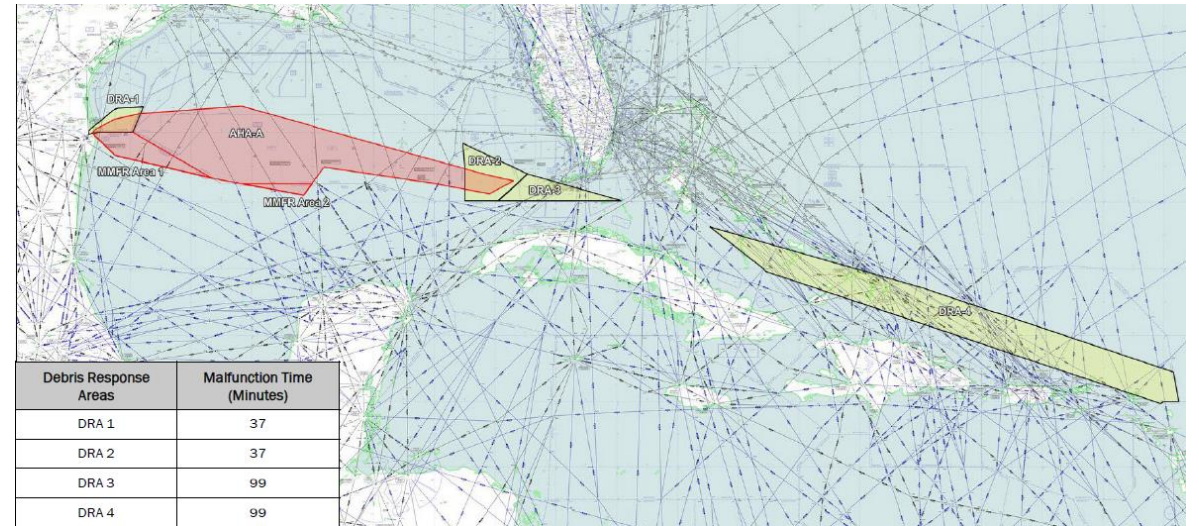
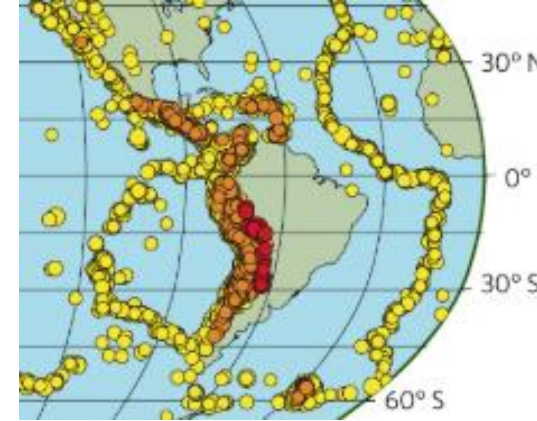
- IDAC Dominican Republic: 17/Jan/2025 11:55**
  - Anticipated Demand Information MEDIUM
  - TMM Planned NONE
  - Urgent Advisory NONE
  - Weather NO SIGNIFICANT WEATHER
  - Volcanic Ash NONE
  - Constraints (A0699/24 NOTAMN A) MDCY B) 2412271230 C) 2501:
  - Special Events NONE
  - Equipment Outages (A0593/24 NOTAMR A0541/24 A) MDPC B) 24
  - Other NONE
- EANA Argentina: 17/Jan/2025 09:39**
  - Anticipated Demand Information HIGH
  - TMM Planned SABE: FLOW CONTROL MDI FM SABE BTN 2501171C

THE NEXT CADENA PLANNING WEB CONFERENCE WILL BE HELD ON MONDAY, JANUARY 20, 2025 AT 1500 UTC

UTC: 17/Jan/2025 13:01:24

<https://www.cadenois.org/>

# Contingency Planning and Response



# CADENA Supports “Ad Hoc” Events

## CADENA Ad Hoc Web Conferences

**CANSO** LATIN AMERICA AND CARIBBEAN

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**CADENA Update:**

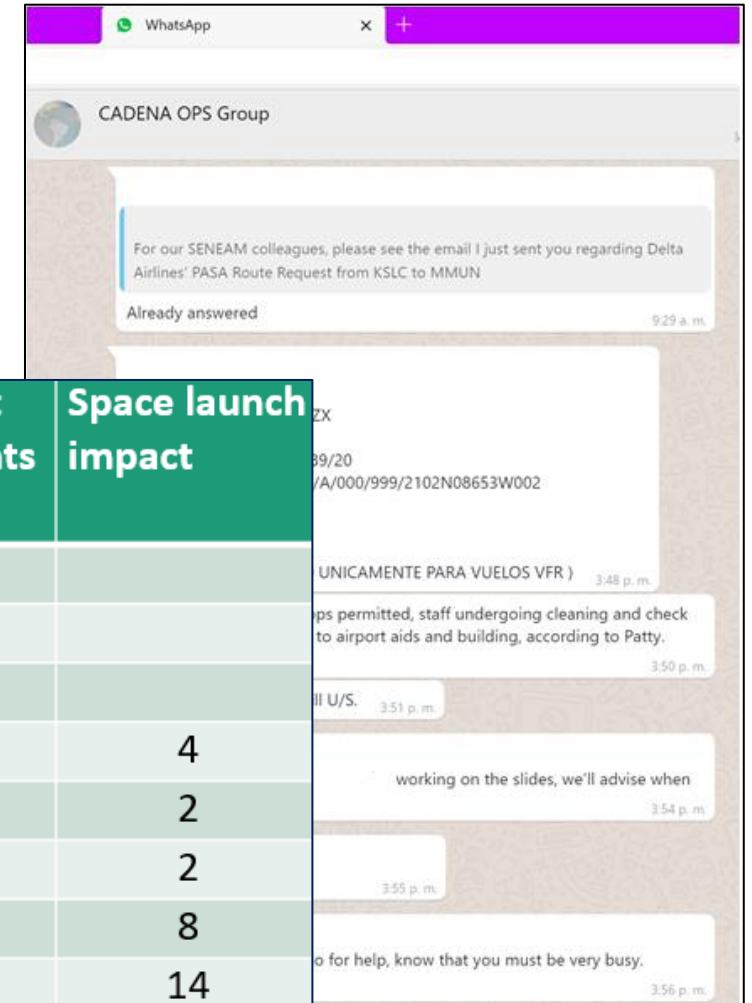
**Blue Origin Blue Ring (N0116) Pathfinder Mission**

MONDAY, January 6, 2025  
1200 UTC

## CADENA Ad Hoc Web Conference Occurrences by Event and Year

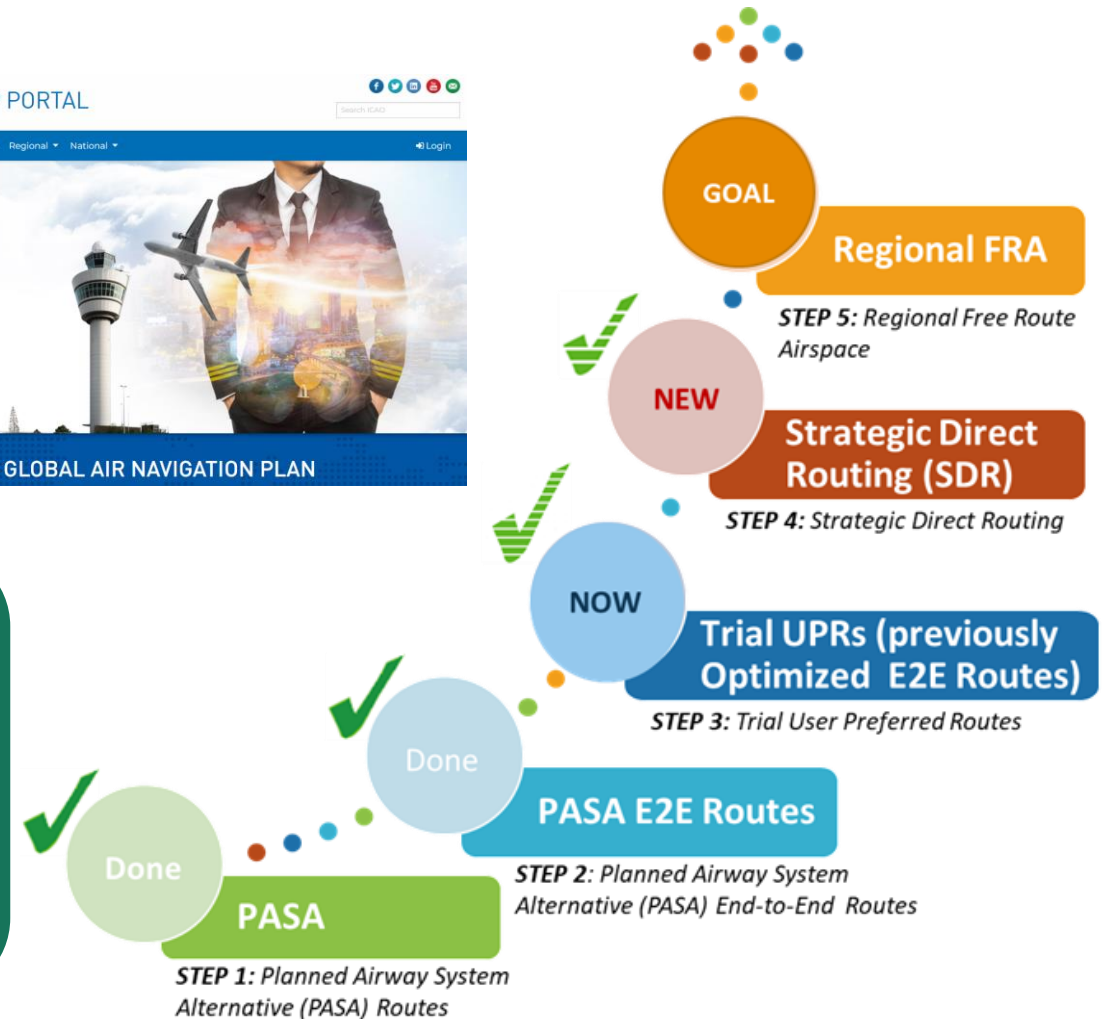
	Hurricanes and Tropical Storms	Volcanic	ATC-Zero	Equipment outages	Airport incidents	Space launch impact
<b>2017</b>	4		3	1	1	
<b>2018</b>	3	1		6	5	
<b>2019</b>	4		2	3	3	
<b>2020</b>	9		12	1	6	4
<b>2021</b>	7	3	9	9	7	2
<b>2022</b>	6	2	5	5	5	2
<b>2023</b>	5		2	2	6	8
<b>2024</b>	9			3	2	14
<b>2025</b>						5

## CADENA WhatsApp Chat (Sample: Hurricane Delta)



# CADENA's 5-step roadmap to facilitate the development of optimised airspace

- **Step 1:** PASA routes database created and stored in OIS since 2018
- **Step 2:** PASA E2E tactical route coordination via OIS since 2020
- **Step 3:** Trial UPRs since 2021



## CIIFRA Project (CANSO-IATA-ICAO FRA Project)

- **Step 4:** SDR to implement GANP/ASBU FRTO B0/1 since 2022
- **Step 5:** To implement GANP/ASBU FRTO B1/1 between SENEAM and COCESNA since 2024

# Future Improvements - Regional Traffic Management Log via CADENA OIS

## Allows entry and storage of event records

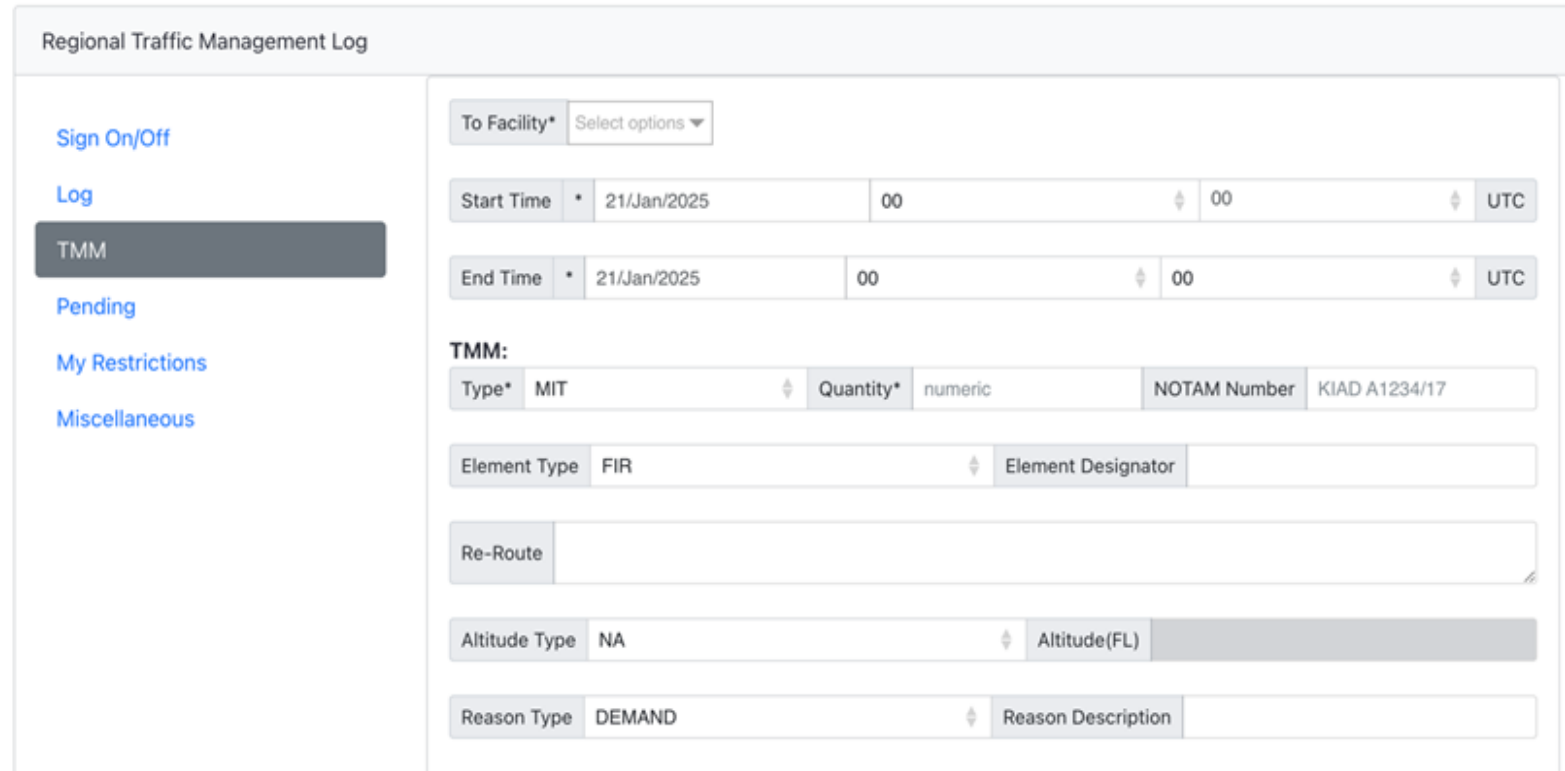
- Post-operational analysis
- More opportunities to improve safety and efficiency

## Allows quick exchange of:

- TMMs
- Associated advisories
- Outages

## Requires:

- Socialization of TM log idea
- Procedures
- Addendum to operational Letters of Agreement



The screenshot displays the 'Regional Traffic Management Log' interface. On the left is a navigation menu with options: 'Sign On/Off', 'Log', 'TMM' (highlighted), 'Pending', 'My Restrictions', and 'Miscellaneous'. The main content area contains the following fields:

- To Facility\***: Select options
- Start Time**: 21/Jan/2025 00:00 UTC
- End Time**: 21/Jan/2025 00:00 UTC
- TMM:**
  - Type\***: MIT
  - Quantity\***: numeric
  - NOTAM Number**: KIAD A1234/17
- Element Type**: FIR
- Element Designator**: [empty]
- Re-Route**: [empty]
- Altitude Type**: NA
- Altitude(FL)**: [empty]
- Reason Type**: DEMAND
- Reason Description**: [empty]

# CADENA Monetary Benefits



1-yr Estimate	Time (min)	Fuel (kg)	CO2 (kg)	Cost (\$)
Trial UPR	38,574	3,359,141	10,614,878	\$ 5,964,311
SNEAM SDR	77,874	3,349,337	10,583,902	\$ 10,503,302
COCESNA-SENEAM FIRs	2,731	224,148	708,309	\$ 455,978
EMOVI-ANEPU FIRs	491	17,254	54,400	\$ 61,200
Delta Airlines SDR/FRA	19,259	2,351,860	7,431,877	\$ 3,849,734
	<b>Total</b>	<b>138,929</b>	<b>9,301,740</b>	<b>29,393,366</b>
				<b>\$ 20,834,526</b>

As of Feb 15, 2025

- COCESNA-SENEAM Inter FIR SDR Trial – United Airlines data only
- ECNA-SENEAM (EMOVI-ANEPU) Inter FIR DCT Trial
- Delta Airlines Trial UPR operations are transitioned to DL SDR category, but original data is still included in Trial UPR category.


## Sample Contingency Cases

- 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
- CMP - Jamaica Loss of Radar Surveillance Case Study – \$175.5K
- UAL - Colombia Loss of Satellite Comm Case Study – \$192.0K
- VOL - Filed FPLs via CADENA OIS while AFTN outage - \$690.8K
- JBU – Hurricane Debby E2E PASA – 23 min, 1.7K kg of fuel, 5.3K kg of CO<sub>2</sub>, \$3.6K of USD per flight (total of 7 flights used E2E PASA for this hurricane)

## Sample Improvement Cases

- WALKY Project – Move WALKY position – 165,323kg of CO<sub>2</sub>/year; \$166.2K/year
- LIR12NM Project – Shortcut to LIR – 415,224kg of CO<sub>2</sub>/year; \$413.6K/year
- UM219 Offload Project – Reduce Cancun Departure Delay - 110,232kg of CO<sub>2</sub>/year; \$6.0M/year

- **Data sharing – SWIM?**
  - **Low-hanging fruit – What type of data can we share as a region?**
- **Systems interoperability - All systems must speak to each other**
- **Future of air navigation safety in the LAC region – safety data sharing**
- **Integration of new entrants – How are we going to deal with new airspace users?**
- **Are we ready for the future of air navigation?**



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**THANK YOU**

