

REGIONAL FOCUS

Introducing the CADENCE Operational Information System in Africa

For: CANSO Africa

Date: 9 May 2022

CADENCE Task Force



Mr. Joe Hof

**Co-Chair CADENCE Task
Force**

CGH Technologies



Ms. Midori Tanino

**Co-Chair CADENCE Task
Force**

FAA

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 air navigation service providers (ANSPs) and aviation stakeholders around the world



BACKGROUND Of CADENCE - CADENA ^{CANSO}

CANSO ATFM Data Exchange Network for Americas

- The capabilities offered by the CADENCE TF are based on the successful operational work accomplished by the CADENA
 - CADENA is a multi-nodal, regional ATFM/CDM system operated under the policy of **transparency, inclusiveness, and collaboration**
 - CADENA's success is based on the “**simple-to-achieve solutions**” and “**do the best you can**” approaches
-
- ❑ The baseline CADENCE OIS is offered at no cost.
 - ❑ Can start with low investment (e.g., computer, internet, human resource)

Basic Solutions



OIS BENEFITS– Examples

Qualitative Benefits - understood intuitively

- More information sharing, better decisions
- Better coordination, better decisions
- Better decisions, more benefits

Quantitative (monetary) Benefits

- 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
- VOL - Filed FPLs via CADENA OIS while AFTN outage - \$690.8K
- DAL - PASA Optimization Trial (ATL-LIM) - \$384.0K/yr, 835,360kg of CO2
- BWA - PASA Optimization Trial (POS-MIA) - \$160.2K/yr, 271,934kg of CO2
- UAL - PASA Optimization Trial (IAH-PVR) - \$296.0K/yr, 307,168kg of CO2
- ARG - PASA Optimization Trial (EZE-MIA) - \$209.4K/yr, 375,944kg of CO2
- DAL – CIIFRA UPR Trial Step 2 (ATL-LIM) - \$491.2K/yr, 1,133,893kg of CO2



Numbers in this briefing should not be interpreted literally, however, **the savings achieved by stakeholders are real**.

ATFM Situation in Latin Americas

Similarities?

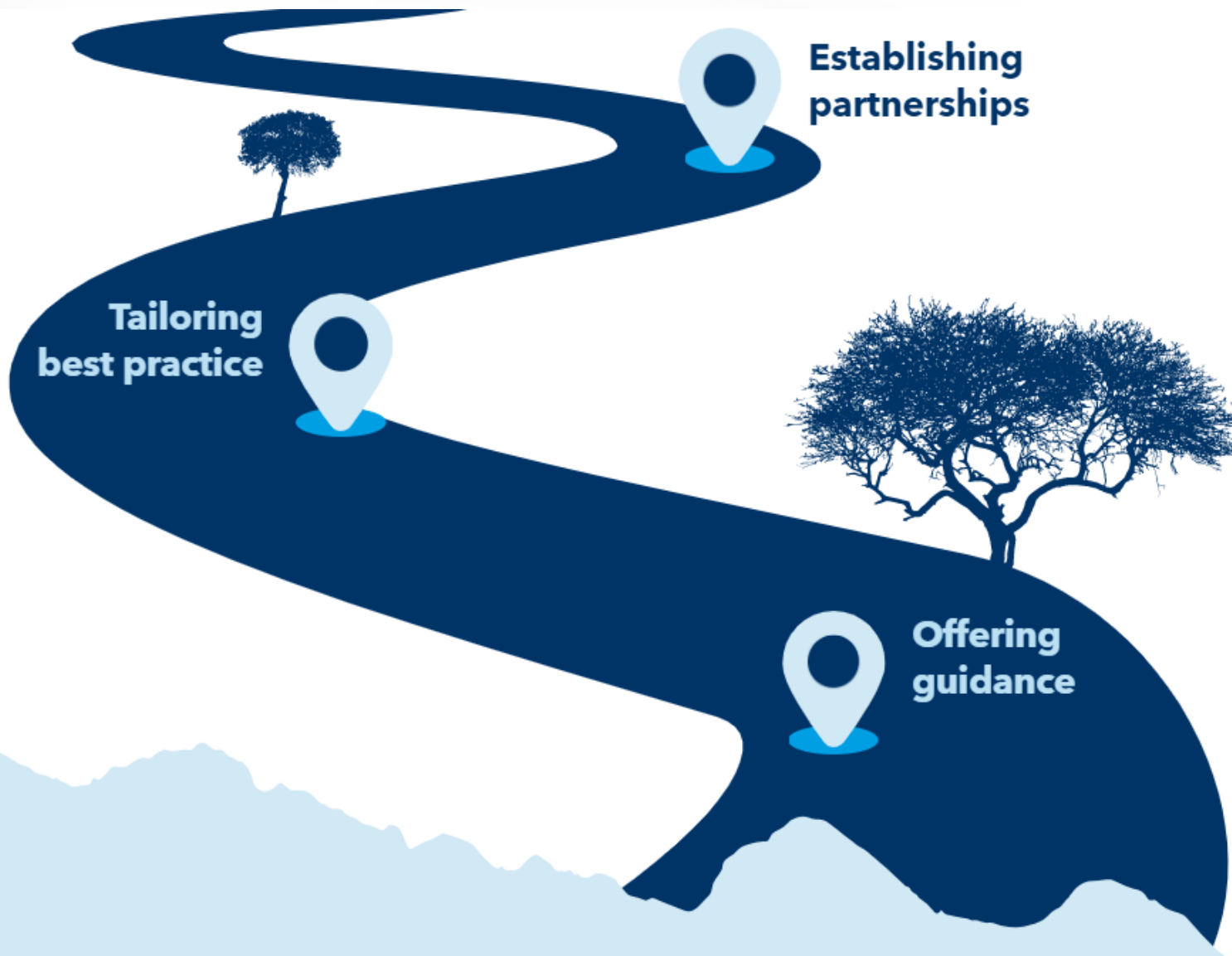
- Fragmented airspaces
 - Multi-nodal ATFM operation
 - Most states need adjacent states to conduct effective ATFM
 - Collaboration is a must
- Many states are financially constrained
 - Difficult to make big financial investments
 - Difficult to make investment with low ROI to yourself
- Latin America had little ATFM operational experiences in a collaborative manner prior to CADENA



CANSO Mombasa ATFM Roadmap

“CANSO Mombasa ATFM Roadmap requires strong partnership, collaboration, **a platform for data and information sharing**, and most importantly – stakeholder commitment to achieve seamless operations in Africa.”

The CANSO Africa Conference 2018 concluded with seven emerging issues



1. Collaboration

2. Technology and innovation

3. Policies and regulations

4. Data and information sharing

5. Member commitment

6. Implementation plan of CDM, A-CDM and ATFM

7. Compliance with ICAO requirements

Beyond the Pandemic: **Collaborating for Safe and Sustainable Operations – A CANSO Operations and Safety Workshop**

The COVID-19 pandemic has raised new questions for the ANSPs and the Industry at large, including:

- What will we need to do differently to ensure safe operations?
- What will change in our operational environment?
- How do we enhance safety while providing efficient operations for airspace users?
- What are the future focus areas for the workgroups?
- What can the safety and operations workgroups achieve together?
- How do we collaborate with other agencies and partners?



CADENCE OIS

– baseline version available at no cost



Exchange:

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

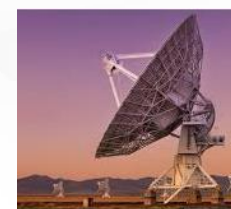
Enter:

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

<https://www.cadenois.org> Public domain for read only. Member domain to read and upload information.

Strength of CADENCE - CADENA

The value of information exchange and collaboration is most recognized during irregular operations



- Weekly CADENA Operational and Ad hoc Web Conferences
- CADENA Operational Procedures Manual (based on ICAO DOC 9771)
- Contingency Operational Processes
- 15 contingency forms
- Contingency Handling Trainings

CADENA OIS
supports information exchange

Volcanic Ash Contingency Event CADENCE OIS Demonstration for CANSO Africa

Demo Purpose and Objectives

Purpose:

- ✓ To demonstrate some of the operational capabilities of the CADENCE OIS

Objectives:

- ✓ All: Navigate the public-facing CADENCE OIS homepage
- ✓ Volunteers:
 - ✓ Log in to ANSP (or airline) page
 - ✓ Navigate the ANSP (or airline) page
 - ✓ Upload exercise documents

Exercise Timeline

0700 UTC:

Goma Tower supervisor notifies Brazzaville ACC supervisor that the a major volcanic eruption is occurring at Mount Nyiragongo

Exercise

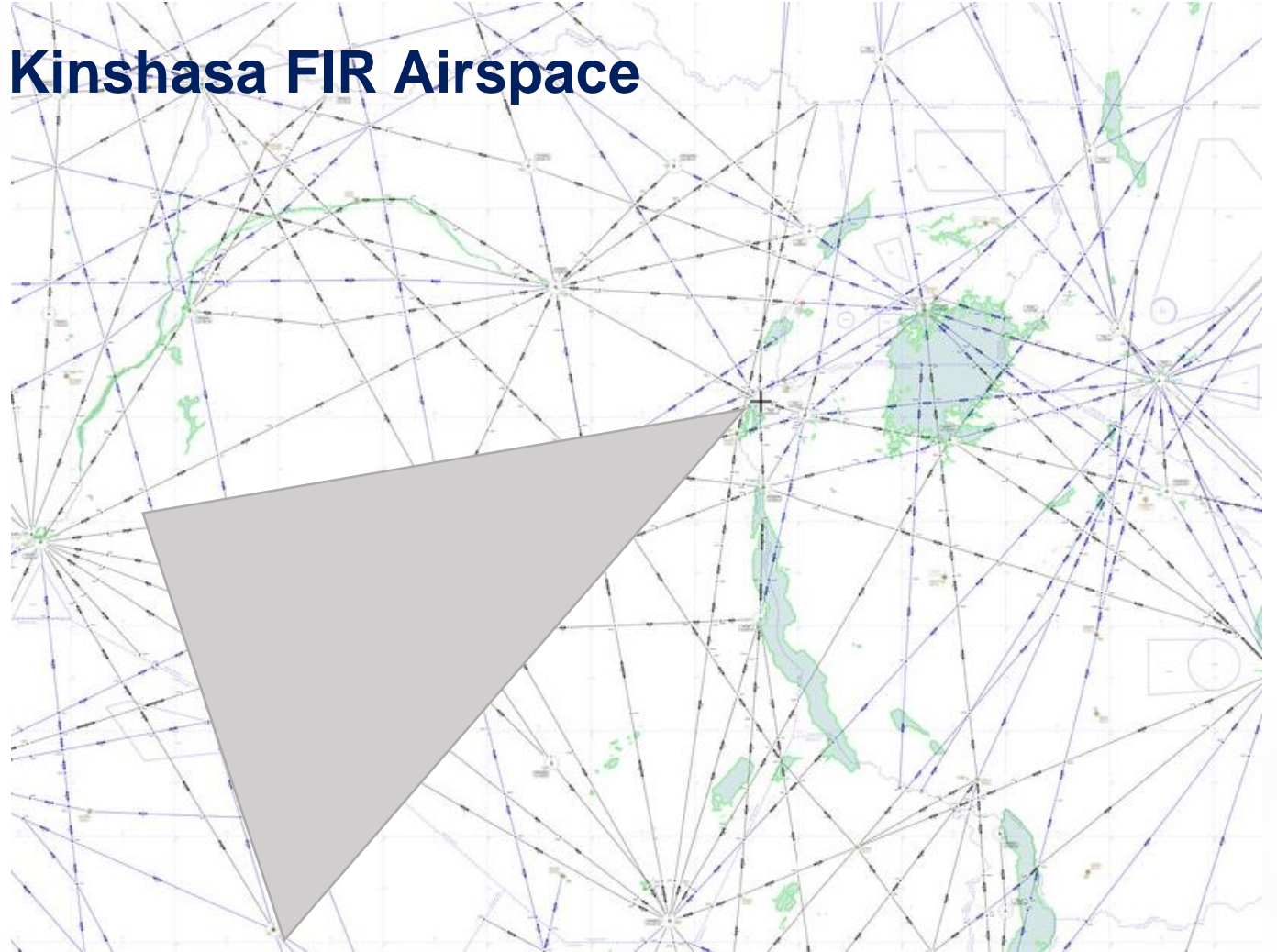
Mount Nyiragongo Volcano - Africa



Mount Nyiragongo



Kinshasa FIR Airspace



Exercise

Goma News Media Coverage at 0730 UTC



Exercise

Sample Volcanic Eruption Checklist

10: Volcanic Eruption	Impacted Facility: ACC (Brazzaville) / Airport Tower (Goma)
Initial ATFM Action	Follow-Up ATFM Actions
<ul style="list-style-type: none">● Notify adjoining FMUs via landline● Notify stakeholders, as able● Post an Urgent Advisory on the CADENCE OIS● Update the Volcanic Ash portion of the ATFM Daily Plan on the CADENCE OIS	<ul style="list-style-type: none">● If the situation is severe, notify CADENCE and ICAO leadership● Gather information on:<ul style="list-style-type: none">○ How significant is the eruption and its impact to airport and sector capacity?○ Will TMMs be required to manage excess traffic demand?○ Have aircraft diverted?○ If so, how many and to which airports?● If circumstances require, CADENCE leadership will schedule and conduct a CADENCE CDM web conference, including airspace users, to relay available information and establish next steps

Sample: CADENCE Contingency Form



EXERCISE

Impacted Facility / Sector: FZMA (GOM)
REF #: May 9, 2022 – 0700 UTC

Type of Contingency

☐ Communication ☐ Facility ☐ Surveillance ☐ Staffing ☒ **Other**

Detail

Mount Nyiragongo explosive eruption

Traffic Management measures

<input type="checkbox"/> Miles-in-trail (MIT)	<input type="checkbox"/> Minutes-in-trail (MINIT)	<input checked="" type="checkbox"/> Re-routing
<input type="checkbox"/> Fix Balancing	<input type="checkbox"/> Level Capping	<input type="checkbox"/> Tunnelling
<input checked="" type="checkbox"/> Airborne Holding	<input type="checkbox"/> Ground Delay Program (GDP)	<input checked="" type="checkbox"/> Ground Stop (GS)

Detail

FZNA (GOM) Ground stop in effect. Expect an update at 1800 UTC.

FIRs Affected


☒ **FZZA** ☒ **HTDC** ☒ **FLFI** ☒ **FNAN**

EXERCISE FMU Actions

- Notifications – a team effort
- Update CADENCE OIS
 - ☐ Urgent Advisory [“Exercise, Exercise”]
 - ☐ CADENCE Contingency Form [“Exercise”]
 - ☐ Monitor Chat

EXERCISE

CADENCE OIS UPDATE



CADENCE OIS

Information

Regional TMM 0

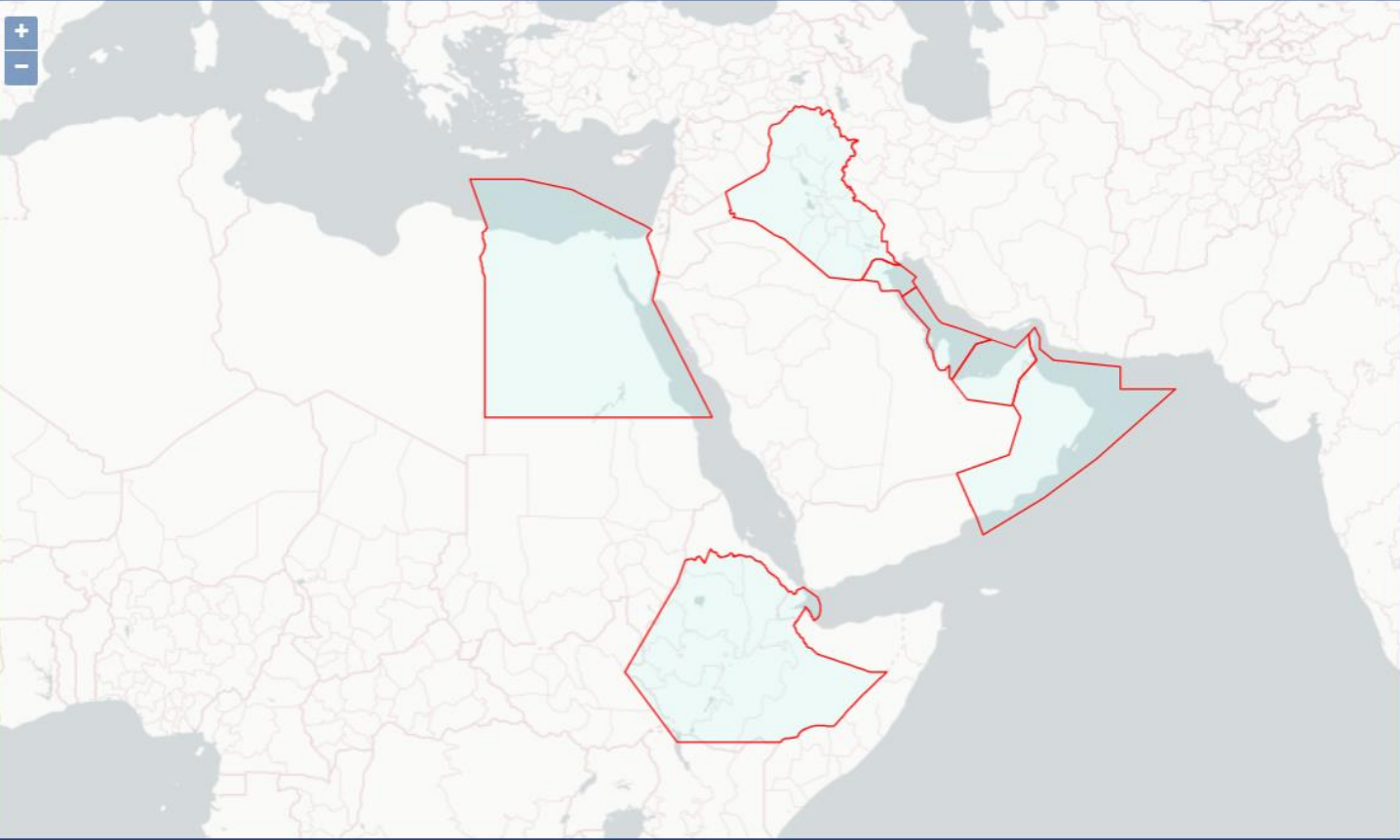
Active Reroutes 0

Delays 0

Advisories 0

+

-



Regional Operations Plan

Constraints

Special Events

Equipment Outages

Other

FIR CAIRO :-

Anticipated Demand Information

TMM Planned

Urgent Advisory

Weather

Volcanic Ash

Constraints

Special Events

Equipment Outages

Other

FIR ADDIS ABABA :-

Anticipated Demand Information

TMM Planned

Urgent Advisory


Weather

Volcanic Ash



EXERCISE

CADENCE OIS UPDATE



CADENCE OIS

Information

Regional TMM 0

Active Reroutes 0

Delays 0

Advisories 0

Master Slide Deck

ADP Link Files

Reroute Repository

Contingency Form

Airport Capacity

Sector Capacity

Participant List

Acronyms

LOA List

Regional Operations

Constraints

Special Events

Equipment Outages

Other

FIR CAIRO :-

Anticipated Demand Information

TMM Planned

Urgent Advisory

Weather

Volcanic Ash

Constraints

Special Events

Equipment Outages

Other

FIR ADDIS ABABA :-

Anticipated Demand Information

TMM Planned

Urgent Advisory

Weather

Volcanic Ash



THE NEXT CADENCE PLANNING WEB CONFERENCE WILL BE HELD ON THURSDAY, MAY 12 AT 1000 UTC

29/Apr/2022 16:46:55

CADENCE Ad Hoc Web Conference

MONDAY, May 9, 2022
0900 UTC

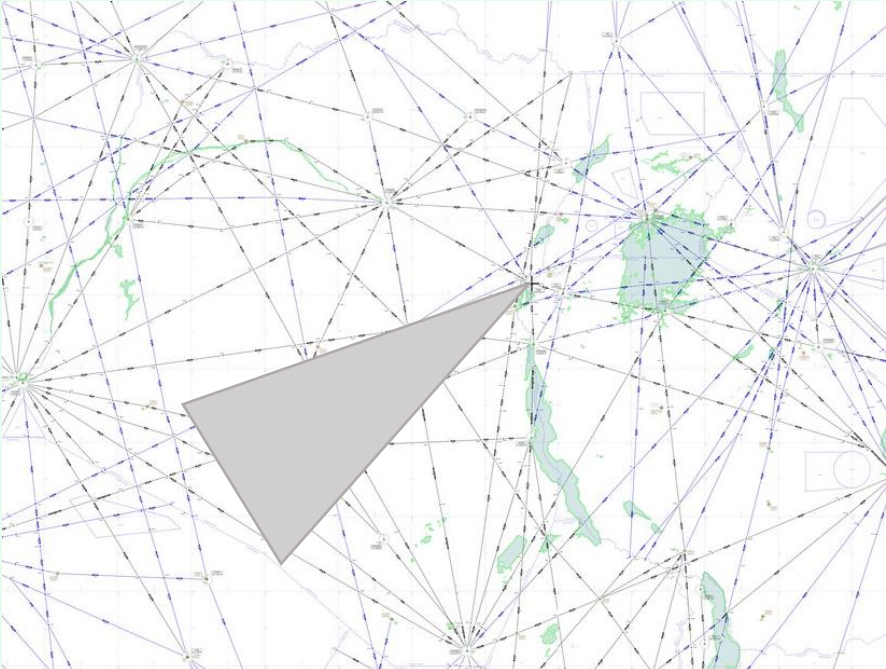
Host FMU Actions

- ☐ Welcome the participants to the CADENCE 0900 UTC Ad Hoc web conference
- ☐ Explain the purpose of the web conference
- ☐ Brief on what you know
- ☐ Call on the other participating ANSPs to brief on the information they have
- ☐ Ask for airline comments and questions



Prog Chart at 0700 UTC

CADENCE MT. NYIRAGONGO UPDATE – MAY 9, 2022 0900 UTC

IMPACT IN YOUR AIRSPACE	PROJECTED IMPACT
<p>VOLCANO MT. NYIRAGONGO – LOCATION: AFRICA ASH CLOUD: TO FL 390, MOVING SW @ 10 kts</p> 	<p>AIRPORT – FZNA (GOM)</p> <p>IMPACT: HIGH</p> <p>STATUS: CLOSED</p> <p>PROJECTED OPENING: MAY 10, 2300 UTC</p> <p>NOTAMS: V0003/21, A0005/21</p>

CADENCE MT. NYIRAGONGO UPDATE – MAY 9, 2022 0900 UTC

STAFFING ISSUES	✓ EQUIPMENT OUTAGES (AIRPORT AND ENROUTE) ✓ PRIORITY OF EQUIPMENT RESTORATION
<ul style="list-style-type: none">• Goma Tower has been evacuated	<ul style="list-style-type: none">• No ATC services are being provided at Goma (FZNA/GOM)• All land-based instrument approaches are out of service

CADENCE MT. NYIRAGONGO UPDATE – MAY 9, 2022 0900 UTC**ANSP name**

IMPACTED ROUTES / PLANNED RE-ROUTES	PLANNED TRAFFIC MANAGEMENT MEASURES
<p>IMPACTED ROUTES:</p> <ul style="list-style-type: none">• UB531• UA613• UM306 <p>ALTERNATE ROUTES AVAILABLE:</p> <ul style="list-style-type: none">• UL434• UH4	<ul style="list-style-type: none">• Ground stop for all traffic landing FZNA (GOM)

CADENCE MT. NYIRAGONGO UPDATE – MAY 9, 2022 0900 UTC

OTHER ISSUES

- The lava flow is expected to reach the aerodrome.
- If it does, RWY 18/36 will be unavailable for relief efforts
- Helicopter operations are still permitted

CADENCE

Stakeholder comments / questions

Airlines
IATA
ALTA
ACI



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 for 20 years.
- CGH Technologies will support the CADENCE OIS for 20 years.

Next Steps



- CADENCE TF is available to meet with aviation stakeholders to provide:
 - ✓ Additional operational and technical information.
 - ✓ High level demonstrations to management.
 - ✓ In-depth demonstrations to Operational Staff.



Questions and Answers