SAFE SKIES.
**SUSTAINABLE FUTURE.**

# NACC/WG 9

## September 30 – October 04 2024


Airspace Optimization Task Force (AOTF)
Update – 02/10/2024

Presented by: Riaaz Mohammed – AOTF Rapporteur

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# Objectives




## Update on AOTF activities

Provide an update on the work conducted by the AOTF

## KPIs

Discuss the applicable KPIs


## Transition to FRTO

Discuss the challenges to the transition to FRTO

## Goals of AOTF

Present the goals of the AOTF


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# What is FRTO?



## Improved operations through enhanced en-route trajectories

| FRTO Block | Description | Enablers (Based on assessments these may vary based on ANSP needs) |
|---|---|---|
| Block 0 | En-route trajectories are enhanced by using more direct routings, and collaborative airspace management process and tools. ATCOs are assisted by tools for the conflict identification and conformance monitoring.<br>Directs may be tactical or based on prior approval such as the case with UPRs. | • Controller/Pilot Communication<br>• ATS procedures/LOAs/MOUs<br>• ATCO/Pilot training/briefings<br>• ATFM procedures/LOAs/MOUs<br><br>Recommended<br>• Surveillance<br>• Basic ATM System with MTCD<br>• ATFM system<br>• CPDLC |
| Block 1 | In continental airspace, the most important operational improvement is related to Free Route Airspace (FRA) as the continuation of direct routing introduced in FRTO B0. For airspace where FRA cannot be deployed, or for connectivity between FRA and terminal manoeuvring areas (TMAs), RNP routes might be considered. Collaborative airspace management is enhanced with new features such as real time airspace management (ASM) data exchanges. Additional system capabilities such as dynamic sectorization intend to align the traffic demand to the available capacity. | • Controller Pilot Communication<br>• Surveillance<br>• ATS procedures/LOAs/MOUs<br>• ATCO/Pilot training/briefings<br>• Basic ATFM system including procedures/LOAs<br>• ATM System with advanced MTCD<br><br>Recommended<br>• CPDLC<br>• AIDC<br>• Advanced ATFM system<br>• Regional ATFM coordination<br>• RNP routes |
| Block 2 | The most important operational improvement is related to the large scale cross border Free Route Airspace (FRA) as the continuation of FRTO B1. Large scale FRA (e.g. Continental operations) are envisaged to be widely deployed, except where structure provides for efficient performance-based routings into and out of high density airspace. There is a need ensure a smooth transition between FRA and highly structured airspace based on Dynamic Airspace Configuration (DAC) principles. There is a need for more dynamic, accurate and precise information on constraints allowing the FRA extension and accommodation of different business trajectories. | • Controller/Pilot Communication<br>• Surveillance<br>• ATS procedures/LOAs/MOUs<br>• ATCO/Pilot training/briefings<br>• ATM System with advanced MTCD<br>• CPDLC<br>• AIDC<br>• Advanced ATFM system which includes Regional interoperability<br>• RNP routes |

# NEOSPACE-1 Project



GREPECAS Decision 21/07 – Approval of the Caribbean/South American Airspace Optimization Programme and the NEOSPACE -1 project.

Development of an action plan geared towards a harmonized approach to the optimization of the airspace across the CAR/SAM Region; taking into consideration:

a) ASBU modules/elements related to APTA and FRTO;

b) Participation of States;

c) Input from all relevant stakeholders; and

d) Continuation and strengthening of ongoing implementations.

# Discussions between NACC/AOTF and SAM/IG



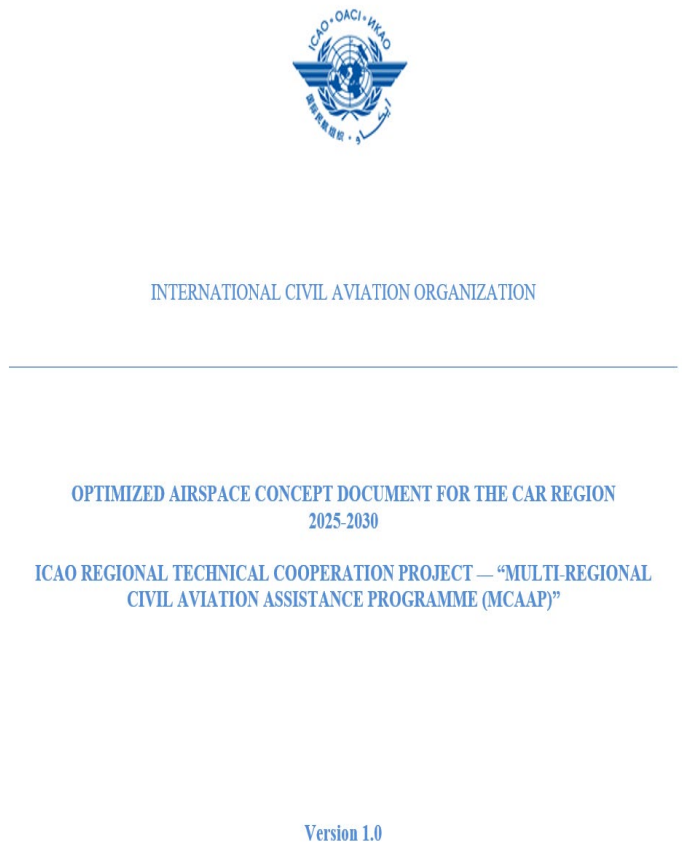
Creation of an Overarching Document for Free Route Airspace (FRA)

- Collaboration/Coordination
- Harmonization
- Each State/Organization assess and implement SDRs within their own FIR based on their capabilities
- Connectivity between upper/lower airspace to be coordinated with parent FIR and TMAs within
- Phased approach - Cross-border FRA in the upper airspace

# CAR Airspace Concept Document



- Reviewed and edited
- SDR guidance material added
- Roadmap with objectives added
- Submitted for approval



INTERNATIONAL CIVIL AVIATION ORGANIZATION

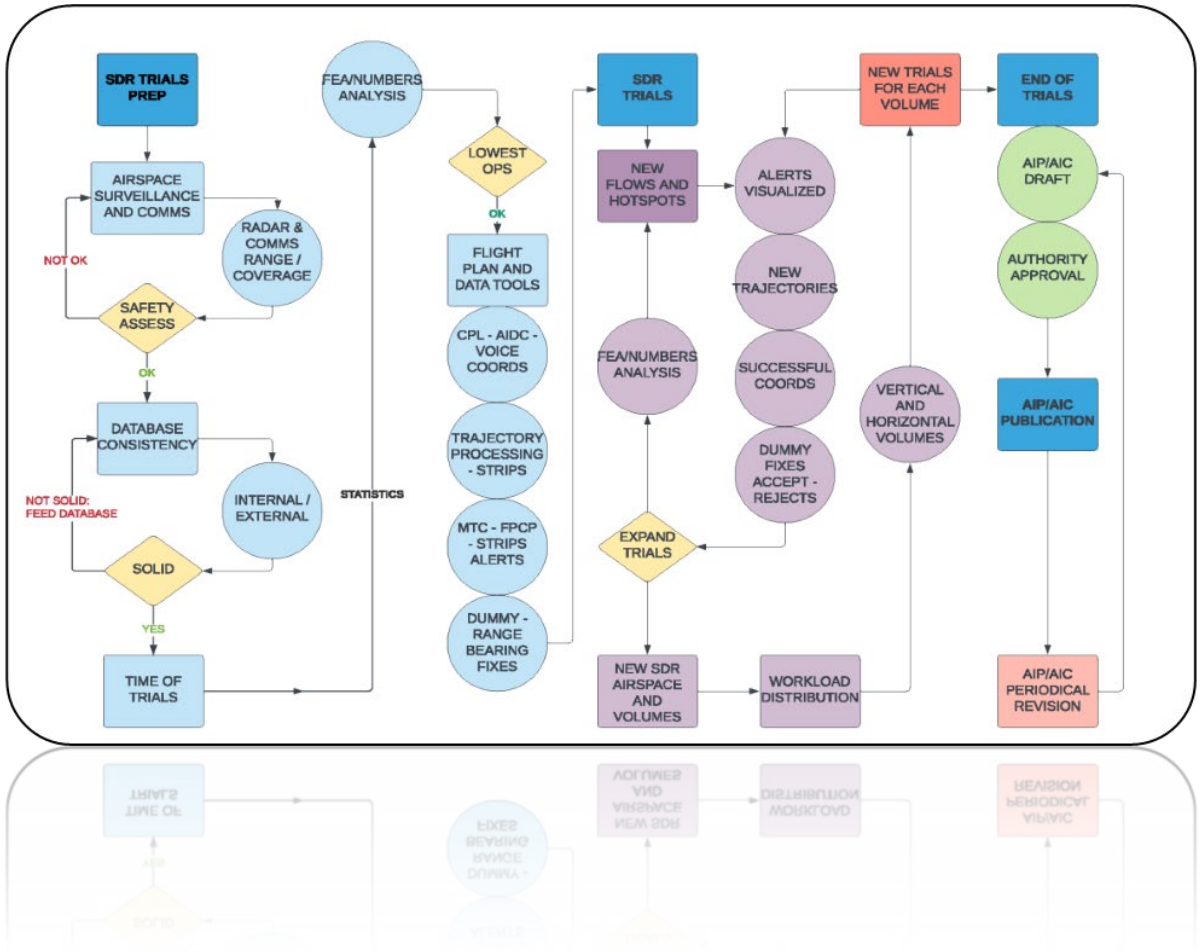
OPTIMIZED AIRSPACE CONCEPT DOCUMENT FOR THE CAR REGION
2025-2030

ICAO REGIONAL TECHNICAL COOPERATION PROJECT — "MULTI-REGIONAL CIVIL AVIATION ASSISTANCE PROGRAMME (MCAAP)"

Version 1.0

# SDR Guidelines to CAR States






AOTF3 Meeting – State/Organization to assess their capability

- Airspace density/complexity
- CNS Capabilities
- ATM System Capability
- ATS Procedures
- Data Analysis/Safety Case

# CIIFRA – CANSO, IATA, ICAO Free Route Airspace Team



- Participation: Currently, 12 airlines, including major carriers such as American Airlines, Delta Airlines, and United Airlines, along with cargo and general aviation entities, are actively involved in CIIFRA initiatives.
- Inter FIR SDR Trial: COCESNA and SENEAM initiated an inter FIR SDR Trial involving major airlines like American Airlines, Delta Airlines, United Airlines, and Aeromexico, with plans for temporary suspension in September 2024 for system updates.
- Route Standardization Efforts: Efforts to standardize flight plan filing procedures in the Latin America and the Caribbean (LAC1) region are underway, supported by ICAO NACC recommendations to streamline AIP publication and improve accessibility.

# Discussion on KPIs to be established



Seven (7) Key Performance Indicators (KPIs) that measure various aspects of airspace performance, including departure and arrival punctuality, en-route efficiency, and fuel consumption are being considered by the AOTF:

a) KPI01 Departure punctuality

b) KPI05 Actual en-route extension

c) KPI07 En-route ATFM delay

d) KPI08 Additional time in terminal airspace

e) KPI12 Airport/Terminal ATFM delay

f) KPI14 Arrival punctuality

g) KPI16 Additional fuel burn


During the AOTF4 in Havana, Cuba, September 23 – 27, 2024, the TF members agreed to postpone a decision on the applicable KPIs until the Workshop on Global Air Navigation Plan Key Performance Indicators (KPIs) scheduled for the end of October 2024.

# Challenges to transition to FRA



- The requirement of some Flight Data Processors (FDP) within the automated ATM system to accept flights without a prior known position in its database
- The inability of the automated ATM system to predict conflicts on random tracks
- Lack of harmonization of UPR publications in States' AIPs
- Lack of training and briefings to Air Traffic Controllers (ATCOs) and pilots
- Outdated LOAs/MOUs between adjacent facilities
- Connectivity between upper airspace and TMAs
- Financial cost of system upgrades
- Lack of SMEs within some States with knowledge on ATM systems


# Request for Collaboration Across ATM-Related Disciplines



## CNS

- Determine which ANSPs/FIRs have already tested and implemented acceptance of flights on random routes across common boundaries
- Determine which ANSPs/FIRs have systems that may be capable of accepting flights on random routes across common boundaries
- Find short-term solutions which may mitigate against system inability to accept flights on random routes across common boundaries

## AGA

- Identify the important aspects for connecting the construction impacts of terminal expansions and the closure of runways and taxiways to the infrastructure
- Understanding the priorities of AGA within each state will help AOTF fill in any missing milestones to establish a better plan

## AIM

- Harmonization of AIP across the Region
- Agree on a common methodology to publish UPRs in the AIP
- Reduction of duplicate FPLs
- Reduction in FPL errors
- Ensuring quality management of data
- Develop a common repository for a database on all approved UPRs across the NAM/CAR/SAM region so that all stakeholders can easily access the information

## MET

- Conduct a survey to determine areas for improvement
- The goal is to present a weather report in a consistent and easily understandable format

# Short – term goals of the AOTF



- Collaborate with the SAM/IG on the harmonization of Airspace Optimization initiatives throughout the CAR/SAM Region
- Analyze the capability of the various FIRs within the CAR region to allow SDRs
- Collaborate with stakeholders to harmonize AIP Publication of UPRs and SDRs
- Collaborate with States/Organizations to address the issues related to:
  - Errors in the ICARD database; and
  - FIR boundary inconsistencies

# Projected Benefits



Efficiency

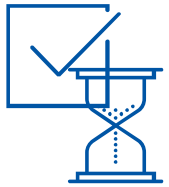
Environmental

Capacity

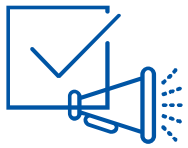
Safety

Improved flexibility for dispatchers to file routes based on operational considerations

Improved predictability based on advanced information on intended flight paths

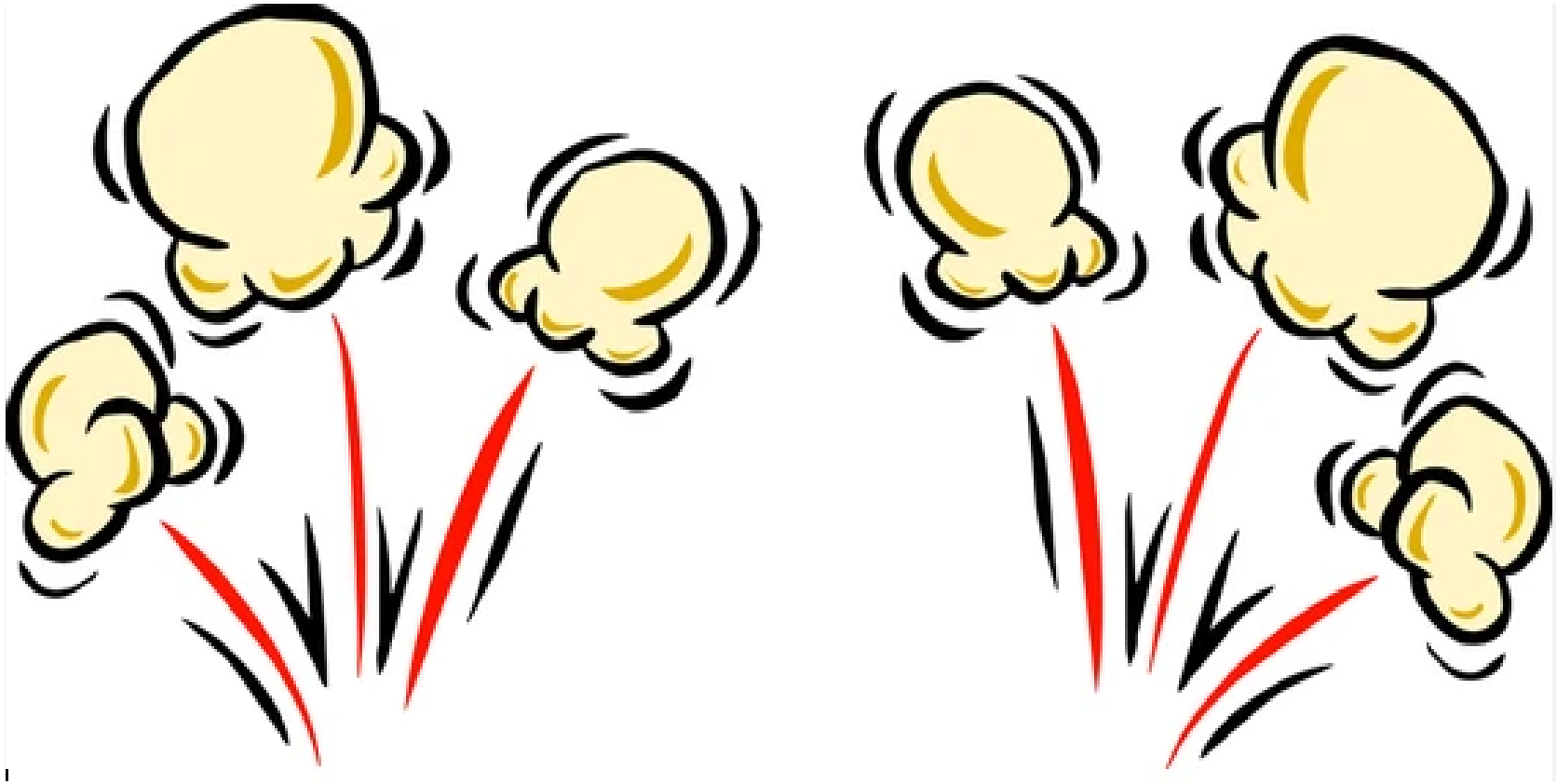


Reduced coordination between ATCOs



Reduced transmissions between ATCOs and pilots

Thank you for your attention



Pop the Questions!!!

# Thank You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