INTERNATIONAL CIVIL AVIATION ORGANIZATION

Strategic Approach Towards the Implementation of Air Navigation Improvements

GREPECAS/23 Meeting

Mexico City, Mexico, 4-6 March 2026

Fernando Hermoza

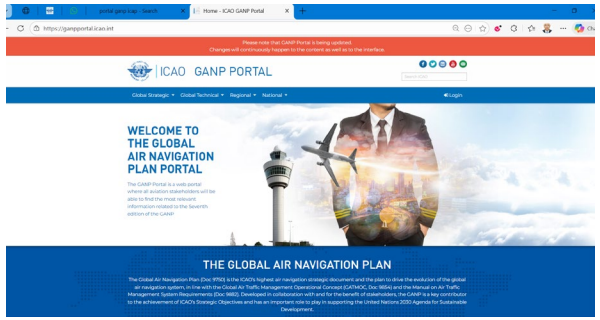
ATM/SAR Officer – ICAO SAM Regional Office

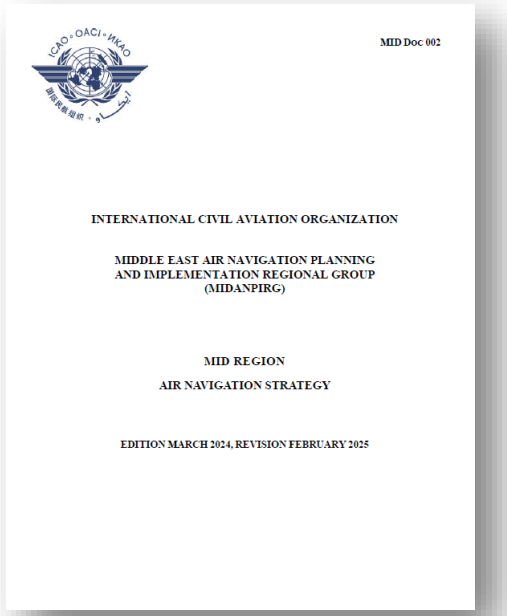
ICAO

Agenda Item 11: Strategic Approach Towards the Implementation of Air Navigation Improvements

- proposal for a strategic model for the implementation of air navigation priorities will be presented to grant the alignment of all components of GREPECAS, specifically the programme B
- Harmonization of ANS implementation work in the Panamerican Region
- Approach to an Air Navigation Implementation Programme (aligned with the GANP, ASBU Framework, and Performance Framework) with the ICAO Strategic Plan 2026 – 2050
- A42 recommendations alignment
- more effectiveness organization to better identify and work on the priorities in the CAR/SAM Regions.
- Better alignment with Safety, Security and other ANS related areas

Background





- WP/4.2 - GANP Eighth edition
- WP/6.2 - Improving Implementation Planning and Monitoring.

  Appendix – MID Doc 002 - MID REGION AIR NAVIGATION STRATEGY
- IP/6.1 - Proposal for the RANP Volume III Template – improvement for ASBU implementation and monitoring

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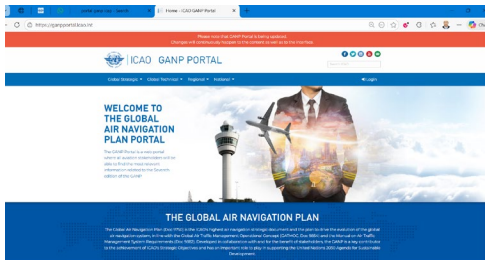
GANP



Stable elements

RANP

CAR/SAM AIR NAVIGATION PLAN

VOLUMEN I

VOLUME I

Dynamic elements

Page i

VOLUMEN II

CAR/SAM AIR NAVIGATION PLAN

VOLUME II

Disclaimer

GREPECAS endorsed both drafts of the new e-ANP Vol I by the Fast Track Procedure on 28 September 2015.

Dynamic/flexible elements

APÉNDICE A / APPENDIX A

(English only)

TEMPLATE APPROVED BY THE COUNCIL on 18 June 2014

CAR/SAM AIR NAVIGATION PLAN

VOLUME III

VOLUMEN III

VERSION 0.1

(Draft submitted for approval by GREPECAS /21)

Note 1: The text highlighted with yellow indicates general guidance supplied by ICAO HQ, to fill out the template.

Note 2: The text highlighted with green indicates improvements proposed by Secretariat for the **template** (still to be validated by ICAO HQ), in order to facilitate the understanding of the Volume III paragraphs and tables, in terms of the properly application of the performance-based planning.

Note 3: Regarding the editorial presentation of the proposed changes (applied to version 0), the reviewed text is arranged to show deleted text with a line through it and new text highlighted with grey, as shown below:

1. ~~Text to be deleted is shown with a line through it~~	~~text to be deleted~~
2. New text to be inserted is highlighted with grey shading	new text to be inserted
3. ~~Text to be deleted~~ is shown with a ~~line through it~~ followed by the replacement text which is highlighted with grey shading	new text to replace existing text

NANP

Plan Nacional de Navegacion Aerea

ESTADO

Alignment

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ICAO Strategic Plan 2026 - 2050

VISION: A safe, secure and sustainable international civil aviation system that connects the world for the benefit of all nations and people.

Three Essential Aspirations

Net-Zero Carbon Emissions
Achieve net-zero carbon emissions by 2050 for international civil aviation operations.

Connected Transport System
Serve as an integral part of a thriving, connected, accessible, inclusive, and affordable transport system for people and goods, contributing to socio-economic development, while ensuring no country is left behind.

Zero Fatalities
Achieve zero fatalities in international aviation from accidents and acts of unlawful interference.

Strategic Goals

Every Flight is Safe and Secure

Aviation is Environmentally Sustainable

Aviation Delivers Seamless, Accessible, and Reliable Mobility for All

No Country Left Behind

The International Civil Aviation Convention and Other Treaties, Laws and Regulations Address All Challenges

The Economic Development of Air Transport Assures the Delivery of Economic Prosperity and Societal Well-Being for All

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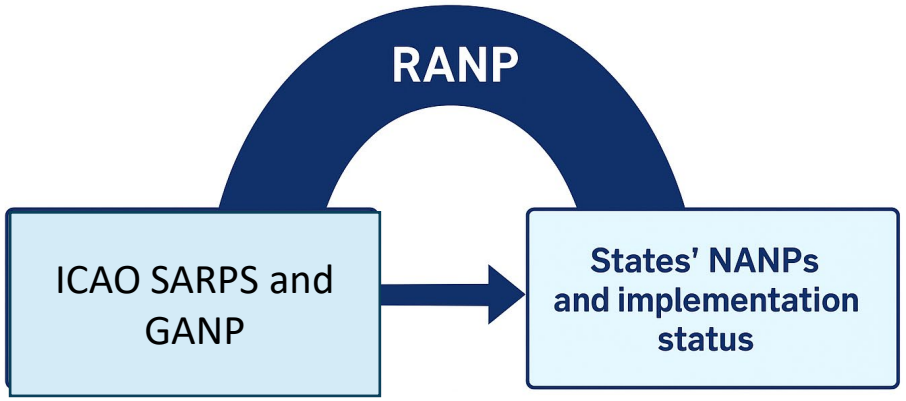

The RANP represent the **bridge** between, on one side, the global provisions (ICAO SARPs, PANs, **etc)** and the GANP, and on the other side, the States' NANPs and implementation status.

How to strengthen and activate the GANP > RANP > NANP interconnection, to implement improvements in CAR/SAM Regions?

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Let us propose a “model”....

ASBU threads

Operational

ACAS -Airborne Collision Avoidance System (ACAS)	NOPS-Network Operations
ACDM -Airport Collaborative Decision Making	OPFL-Improved access to optimum flight levels in oceanic and remote airspace
APTA-Improve arrival and departure operations	RSEQ-Improved traffic flow through runway sequencing
CSEP -Cooperative Separation	SNET-Ground-based Safety Nets
DATS Digital Aerodrome Air Traffic Services	SURF-Surface operations
FRTO-Improved operations through enhanced en-route trajectories	TBO-Trajectory-based operations
GADS-Global Aeronautical Distress and Safety System (GADSS)	WAKE-Wake Turbulence Separation

Interdependences?

Technology

ASUR	Surveillance systems	Technology
COMI	Communication infrastructure	Technology
COMS	ATS Communication service	Technology
NAVS	Navigation systems	Technology

Interdependences?

Information

AMET	Meteorological information	Information
DAIM	Digital Aeronautical Information Management	Information
FICE	Flight and Flow Information for a Collaborative Environment (FF-ICE)	Information
SWIM	System Wide Information Management	Information

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ASBU threads

Operational

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METRICS

IMPLEMENTATION

PERFORMANCE IMPROVEMENT

KPI' S and PIs

Information

AMET	Meteorological information	Information
DAIM	Digital Aeronautical Information Management	Information
FICE	Flight and Flow Information for a Collaborative Environment (FF-ICE)	Information
SWIM	System Wide Information Management	Information

METRICS

Technology

ASUR	Surveillance systems	Technology
COMI	Communication infrastructure	Technology
COMS	ATS Communication service	Technology
NAVS	Navigation systems	Technology

METRICS

Bedrock ?

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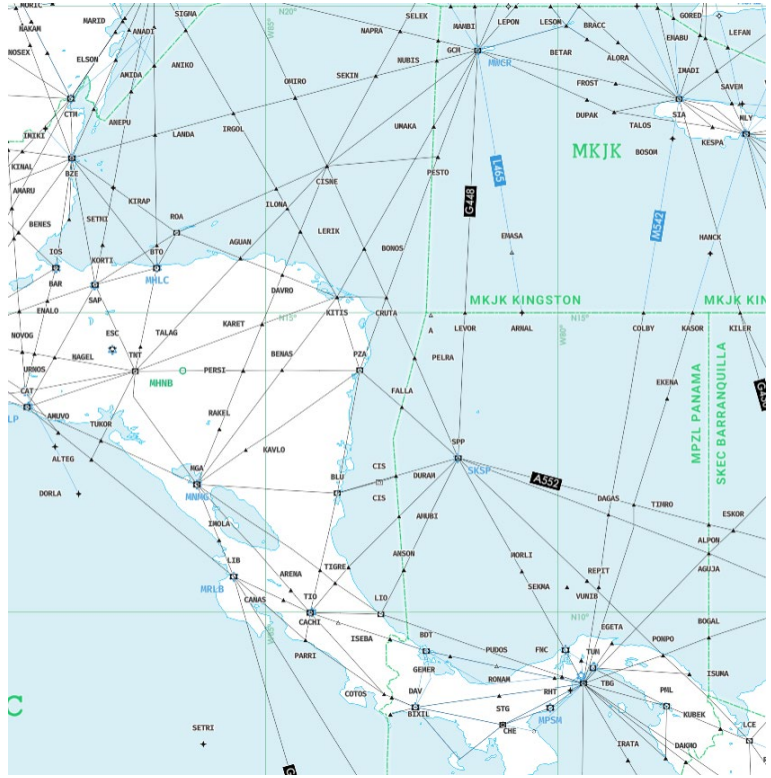
Operational (example)

FRTO threads – Improved operations through enhanced en-route trajectories

Aligned with three goals: SAFETY -CAPACITY – EFFICIENCY

FRTO elements

a) FRTO-B0/1: Direct routing (DCT)
b) FRTO-B0/2: Airspace planning and FUA
c) FRTO-B0/3: Pre-validated and coordinated ATS routes (UPRs)
d) FRTO-B1/2: Performance Based Navigation (PBN) routes
e) FRTO-B1/1: Free route airspace (FRA)



Complements (Non ASBU solutions):

- ICAO 30/10 Project: 10 NM aircraft separation minima in continental airspace and 30 NM separation in remote oceanic airspace
- Regional ATM contingency management Framework

Information (example)

AMET - Aeronautical meteorological information

a) AMET B0/1: OBS
b) AMET B0/2: FOREC
c) AMET B0/3: CLIMAT
d) AMET B0/4: DISSEMINAT

DAIM - Digital aeronautical information management

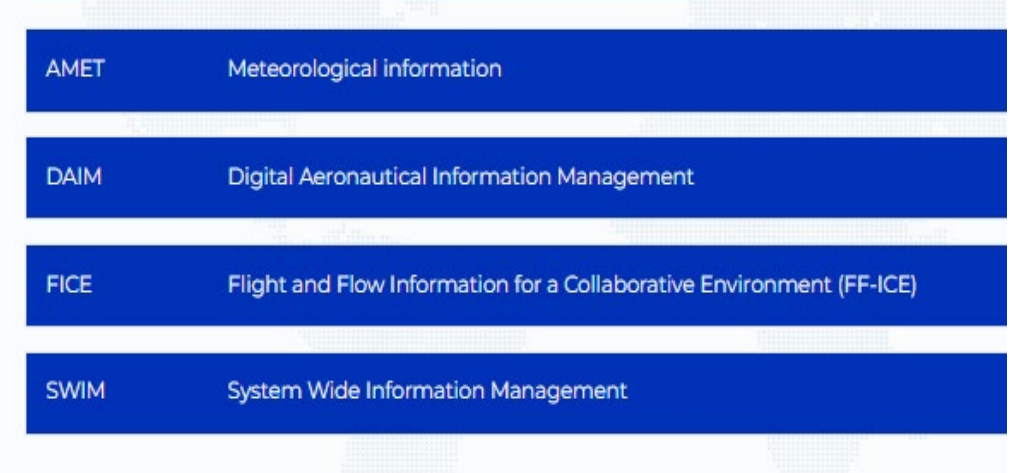
a) DAIM B1/1: Quality assurance
b) DAIM B1/2 : DIG AIP data sets

FICE - Flight and Flow Information

a) FICE-B0/1: AIDC basic

SWIM - System-wide information management

TBD (Block 2 elements)



Technology –enablers (example)

COMI - VHF air-ground communications infrastructure

- The VHF is considered a component of the basic building blocks (BBB)
- COMI-B2/1: Air -ground ATN/IPS

COMI - Communications infrastructure

- COMI-B0/7: AMHS - ATS Message Handling System
- COMI-B1/1: Ground-Ground Aeronautical Telecommunication Network/Internet Protocol Suite (ATN/IPS)

NAVS – Navigation systems

- NAVS-B0/4: Navigation minimal operating networks (Nav. MON)

ATS surveillance (MSSR or ASUR-B0/1: ADS-B) is considered a component of the basic building blocks (BBB)

Metrics – ASBU implementation report

1. Percentage of FIRs/ACCs applying Direct routing (DCT)
2. Number of UPR routes implemented
3. Percentage of states applying FUA procedures according to Doc 10088
4. Percentage of ACCs with MTCD implemented
5. Percentage of AIDC connections planned and implemented
6. Percentage of AMHS connections planned and implemented

MET metrics:

1. Number of States with QMS implemented and certified
2. Number of States with implementation of OPMET message reporting greater than 90%.
3. Number of FIRs with SIGMETs and Notices implemented
4. Number of aerodromes with AWOS implemented and operational
5. Number of States with climatological tables implemented and updated
6. Number of States ready to exchange OPMET information in digital format (IWXXM)

AIM metrics:

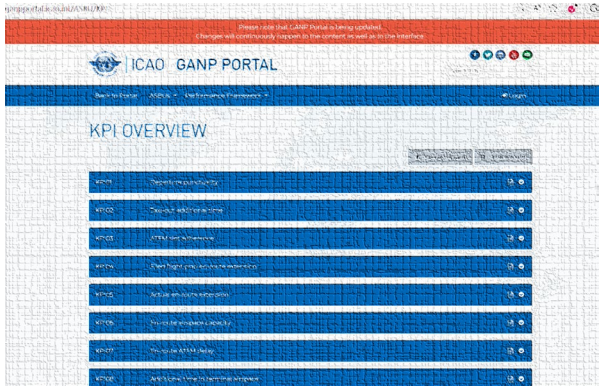
1. Number of States with QMS/AIM implemented and updated
2. Numbers of States with e-AIP implemented
3. Numbers of States with Digital Terrain Data implemented
4. Numbers of aerodromes with Obstacle Data in digital format implemented
5. Numbers of States with implementation of NOTAM exchange in digital format implemented
6. Numbers of States ready to exchange IM messages in the SWIM

CNS metrics:

1. Number of installed and operational ADS-B ground stations
2. Percentage of States with ADS-B data integrated in their control centres
3. Percentage of operational surveillance data links between States (including MLAT, ADS-B, radar)
4. Percentage of States reporting surveillance performance based on coverage, latency and update metrics

Key performance indicators (KPI)

a) KPI04: Filed flight plan en-route extension
b) KPI05: Actual en-route extension
c) KPI06: En-route airspace capacity
d) KPI17: Level-off during climb
e) KPI19: Level-off during descent



MODEL

- **Every Flight is safe and secure**
- **Aviation is environmentally sustainable**
- **Aviation delivers seamless, accessible, and reliable mobility for all**

GREPECAS and NACC & SAM Air navigation Implementation Groups

OPERATIONAL

APTA
SNET
NOPS

FRTO B1-1 - Free Route Airspace (FRA)

FRTO B0-1 : DCT (SDR)

FRTO B0-3 : UPR s

S E P A R . L O N G . 3 0 / 1 0 P r o j e c t

FRTO B0-2 : F U A

FRTO B1-2 : RNP ROUTES

- ***Metric: Progress of implementation***
- ***KPIs GANP + PIs***
  - *KPI 04*
  - *KPI 05*
  - *KPI 17*
  - *KPI 19*
  - *KPI 20**
  - *KPI 23**

INFORMATION

DAIM –Digital Aeronautical Information Management
Digital Data Sets

AMET – Meteorological information : OBS, Forecast, Climat., Disseminat

FICE – Flight and Flow Information for a Collaborative Environment

Metrics

TECHNOLOGY

BBB, Basic Building Block : VHF ground-air / MSSR Surveillance ATS

COMI – Comm. infrastructure air-ground & ground-ground

NAVS - Navigation systems

ASUR – Surveillance systems

Metrics

Bedrock

BASIC BUILDING BLOCK - BBB

BASIC BUILDING BLOCK - BBB >> ATS, AIM, MET, AGA (SAR)

Periodical Verification

Let us propose a consensus....

WP/6.2 Drafted conclusion

Conclusion GREPECAS/23/XX	**Development of the "Strategy for air navigation in the CAR/SAM Regions"**
What: That: States, Industry and International Organizations- members of the SAM /IG and NACC/WG, assisted by the Secretariat, to develop the document "Strategy for Air Navigation in the CAR/SAM Regions", based on the content and objectives of MID Doc 002, as well as other similar references in ICAO Regions, and aligned with the principles of Resolution A42-6.	**Expected impact:** ☒ Polítics / Global ☒ Interregional ☐ Economics ☐ Enviroment ☒ Técnico / Operacional
Why: To establish regional air navigation priorities. Define and prioritize ASBU Elements and NO-ASBU solutions. Strengthen the performance monitoring framework (KPIs) and establish a harmonized framework for monitoring the status of ASBU implementation. Provide the regional governance structure.	
When: GREPECAS/24	**Status:** ☒ Valid/ ☐ not valid / ☐ Finished
Who: ☒ States ☒ OACI ☒ Others: Organisations and Industry SAM/IG and NACC/WG	

*** Interoperability**
*** Performance based Implementation**
*** Environmental and financial sustainability**
*** Realistic and gradual implementation**

- **ICAO Strategic Goals:**
  - ❑ **Every Flight is safe and secure**
  - ❑ **Aviation is environmentally sustainable**
  - ❑ **Aviation delivers seamless, accessible, and reliable mobility for all**

- CAR/SAM air navigation objectives
- ASBU threads & elements prioritization+ non ASBUs
- Implementation and Monitoring
- Governance
- Alignment and harmonization

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Email: fhermoza@icao.int

Thank You!