

***AIR NAVIGATION  
PLAN/REGIONAL PERSPECTIVE***

***IMPLEMENTATION OF  
CNS/ATM SYSTEMS***



**Carlos Stehli – Deputy Regional Director  
ICAO SAM Office**

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***ICAO REGIONAL OFFICES -  
OBJECTIVE***

***The objective of Regional Offices is identical to that of the Organization as a whole***

“Meet the needs of the peoples of the world for safe, regular, efficient and economical air transport (Art. 44, Convention of Chicago)”

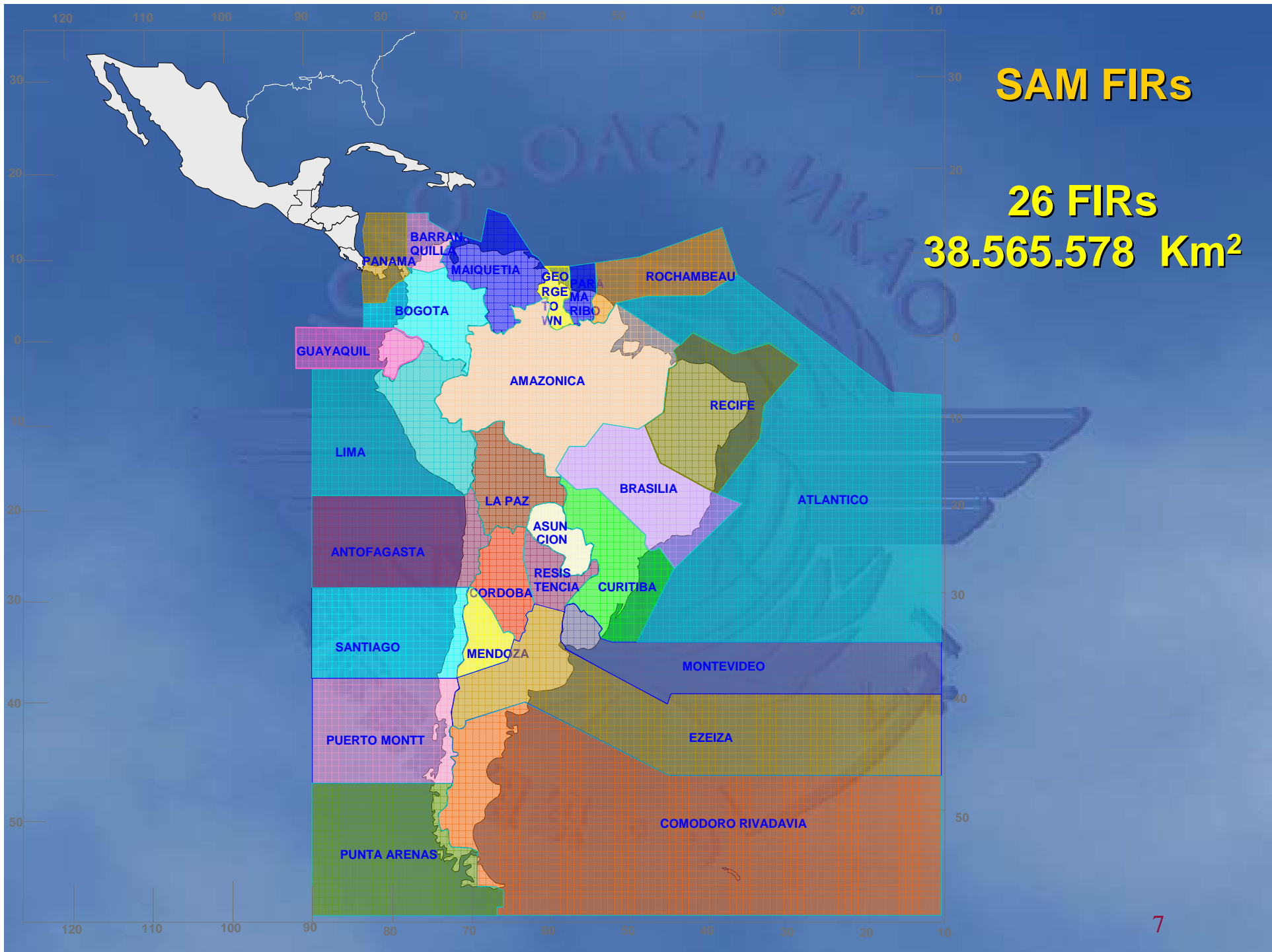
- ***Share the Organization’s vision and mission***
- ***Represent ICAO Secretary General to the States to which they are accredited.***
- ***Conduct regional programmes maintaining continuous communication with States and Regional Organizations for the implementation of policies, SARPs and regional air navigation plans.***

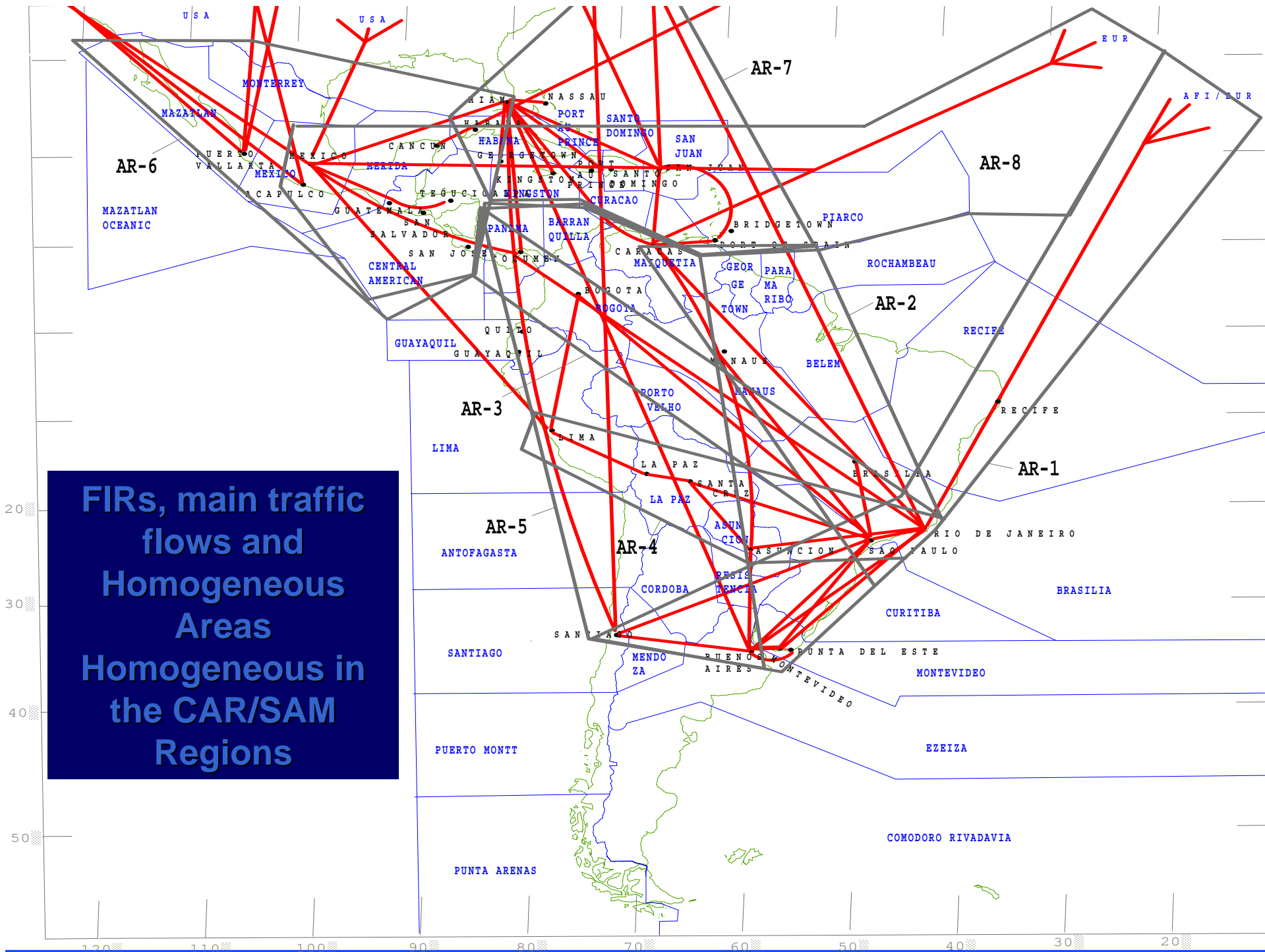


***REGIONAL AIR  
NAVIGATION PLAN***

***CAR/SAM ANP, Doc. 8733***

- **Document approved by the Council and published under the authority of the Secretary General.**
- **Contains in detail the facilities, services and procedures to be provided by States according to Art. 28 to the Convention of Chicago.**
- **Formulated by the Regional Air Navigation Meetings (RAN) in two Volumes:**
  - Vol I – BASIC ANP**
    - Permanent principles within planning horizon**
    - AREAS: GEN, BORPC, AOP, AIS/MAP, ATM, CNS, MET, SAR**
  - VOL II – FASID**
    - Requirements subject to the dynamic of the implementation process**
    - AREAS: GEN, AOP, AIS/MAP, ATM, CNS, MET, SAR**
- **Revised and updated by GREPECAS.**
- **In current process of integration with the Global Air Navigation Plan (GANP) – eANP**
- **Fundamental planning document for the implementation of the Global/Regional ATM System**





**FIRs, main traffic flows and Homogeneous Areas Homogeneous in the CAR/SAM Regions**

# AOP

➤ **Basic – Required international aerodromes**

➤ **FASID –AOP Table**

- 1. Aerodromes by State**
- 2. Alternative aerodromes**
- 3. RFF Service**
- 4. ATS Requirements**
- 5. Physical Characteristics**
- 6. Radio-aids**
- 7. Lighting-aids**
- 8. Signals**
- 9. RVR**

# CNS

- **BASIC – Planning criteria and regional recommendations for CNS systems (in process of amendment).**
- **FASID – CNS Tables**
  - 1. Aeronautic Fix Service (AFS)**
    - 1.1 Table CNS 1A - AFTN (Doc. 8259)**
    - 1.2 Table CNS 1B – Plan ATN (In process of amendment).**
    - 1.3 Table CNS 1C – ATS Oral Circuits.**

Digital South American Network (REDDIG), MEVA II, COCESNA Network, CAFSAT - cover AFS requisites
  - 2. Aeronautical Mobile Service (AMS (R))**
    - 2.1 Table CNS 2 A (VHF 25 KHz of channels separation, data link requirements (VDL, HF/SSB; Mode S, AMSS, HFDL)).**

Air-to-Air Channel 123.400 MHz. 136 – 137 MHz separated for VDL air-ground.
    - 2.2 Table CNS 2 B, HF/SSB Communications Service in route. Frequencies families in the bands from 2 to 22 MHz**

# CNS

## ➤ FASID – CNS Tables (cont.)

### 3. **Aeronautical Navigation Radio Service**

#### 3.1 Table CNS 3 – Navigation Radio Aids (in process of amendment)

Radio navigation systems are being examined in order to support the PBN implementation. Current plans for RNAV-5 (continental) RNP10/RNP4 (oceanic) for In-route navigation and RNAV1/RNP1 for Terminal navigation

While GNSS is established and during transition, VOR/DME will be used.

ILS will be retained until its use is operationally and economically acceptable.

### 4. **Surveillance Service**

#### 4.1 Table CNS 4 – Surveillance Systems (PSR, SSR, ADS-C)

The Regional Strategy is under preparation in the light of new technologies, such as, Multilateration and ADS-B,.

Programmes to develop ADS-B regional trials. Surveillance data exchange.

## ATM

- **Basic:** Routes Network - Table ATS 1.  
Under Project RLA/06/901 a restructuration of routes network is being studied in order to rationalize this and to apply PBN concepts
- **FASID:** ATM evolution tables (to be updated by GREPECAS)  
SSR codes assignment plan.

## SAR

- **Basic:** Plan for the Search and Rescue Regions (SRR)  
– SAR Chart
- **FASID:** Search and Rescue facilities

# AIS/MAP

- **Basic:** Guidance material and recommendations for AIS/MAP implementation/planning. A concept of an integrated automated AIS system.
- **FASID:** Requisites regarding facilities and services.
  1. Table AIS 1-Aerodrome AIS/MAP Services Organization
  2. Table AIS 2-Services to be provided in aerodromes
  3. Table AIS 3/Chart AIS 1- NOF Requisites
  4. Table AIS 4- Availability of elements of the integrated aeronautical information package in other States
  5. Table AIS 5-Requisites for WGS-84
  6. Table AIS 6-Requisites for aeronautical charts production
  7. Table AIS 7/Chart AIS 2-Responsibilities for the production of sheets of the series of ICAO world aeronautical chart 1:1000000.
  8. Table AIS 8- Requisites of the integrated aeronautical information package

## MET

- **Basic:** Basic planning criteria of aeronautical meteorology
- **FASID:** Requisites for facilities and services.
  1. Tables MET 1A/1B, Chart MET1-MET Services required in aerodromes and WMO requisites
  2. Tables MET 2A/2B-OPMET exchange
  3. Table MET3 and Chart MET 2/3- Tropical Cyclones Advisory Centres. Volcanic Ashes Advisory Centres.
  4. Table MET 4
  5. Tables MET5/6, Charts MET 4/5/6- WAFS requirements
  6. Table MET 7- ISCS/1 Users, VSAT equipment and access

# Global Air Navigation Plan (GANP) (Doc.9750)

*Document of global planning in support to the development of ICAO Strategic Objectives, related to the efficiency of air operations, which presents a strategy to achieve a transition towards global ATM in an evolutionary and harmonized manner.*

- ✓ Covers all aspects contemplated in air navigation services
- ✓ Was developed in coordination with the industry and the States
- ✓ Contains 23 operational initiatives (GPIs) which allow to support the planning/implementation of ATM improvements at short and medium term.
- ✓ Will integrate current CNS/ATM regional plans
- ✓ Harmonized with the GASP
- ✓ Regional planning/implementation tool-**PIRGs**

**GREPECAS**



***AIR NAVIGATION PLAN  
IMPLEMENTATION MECHANISMS***

# **IMPLEMENTATION MECHANISMS AVAILABLE**

## **1. Internal**

**Correspondence, Meetings, Seminars, Workshops/Courses, Special Implementation Projects (SIPs), assistance on multinational systems.**

## **2. Use of ICAO technical cooperation**

**Regional Projects, National Projects**


## **3. Support to Planning and Implementation Groups (PIRGs)**

**GREPECAS**

**Consultations and dissemination of information through the Organizations' and Regional Offices' web sites ([www.lima.icao.int](http://www.lima.icao.int))**

# GREPECAS – CURRENT STRUCTURE (GREPECAS/15)



The background features a large, faint watermark of the International Civil Aviation Organization (ICAO) logo. The logo consists of a globe with latitude and longitude lines, surrounded by a laurel wreath. The text 'ICAO' is written in English at the top and in Chinese characters at the bottom of the globe.

***DEVELOPMENT OF  
REGIONAL CNS/ATM  
SYSTEMS***

# REGIONAL AIR NAVIGATION SYSTEM

## 1. THE CURRENT SYSTEM COMPRISE

### Conventional systems

AFTN, ATS SPEECH circuits,  
VOR/DME/ILS/NDB, SSR

mainly manual procedures are apply

Low degree of automation

CNS/ATM systems in development (data link, GPS procedures, development of RNAV, RVSM, RNP10 routes)

## 2. THE FUTURE SYSTEM WILL COMPRISE

Progressive use of the GANP GPIs towards a performance standards based system, in accordance with the ATM operational concept

## 3. IMPLEMENTATION HORIZON

25 years starting in 2000

# ACHIEVEMENTS IN THE IMPLEMENTATION OF CNS/ATM TECHNOLOGY

## CNS technology

- ✓ Regional Digital Networks – REDDIG, MEVA and COCESNA as multinational systems
- ✓ National Digital Networks
- ✓ AMHS
- ✓ Air/Ground and ATIS-D data links
- ✓ SBAS trial platform and results of ionosphere studies. GBAS trials
- ✓ Radar data exchange
- ✓ ATM automation programme

## ATM achieved improvements

- ✓ Review of ATS routes structure
- ✓ Implementation of RNAV, RNP10 and RVSM routes

# SHORT AND MEDIUM TERM FUTURE PLANNING

- **Strategy**
  - ✓ **Use of Global Air Navigation Plan and harmonized Regional Plans - eANP**
  - ✓ **Events of information sharing and instruction- PBA**
  - ✓ **Technical Cooperation**
  - ✓ **Multinational Systems Implementation (OMR)**
- **Regional Operational Initiatives**
  - ✓ **Air Traffic Flow Management (ATFM)**
  - ✓ **Performance Based Navigation (PBN)**
  - ✓ **ATS Air routes Optimización**
  - ✓ **SMS/QMS**
- **Technology support**
  - ✓ **Progressive implementation of CAR/SAM ATN Plan**
  - ✓ **Data link between ATS dependencies (AMHS, AIDC)**
  - ✓ **Air/ground data link and CPDLC/ADS-C/B applications**
  - ✓ **ATM/AIM automation**
  - ✓ **Use/implementation of GNSS – ABAS, GBAS technology**

## GOALS PROPOSED TO BEGINN WITH THE IMPLEMENTATION TOWARDS GLOBAL ATM IN THE REGION

### ➤ **Proposed horizon for the next 5 years**

PBN - RNAV-5

Strategic ATFM - ATFM in airports

MET/AIM - (Quality Management System) QMS

COMMUNICATIONS - AMHS

Argentina, Brazil, Peru, Colombia, Ecuador, Paraguay

ATM AUTOMATION

Radar data interchange, AIDC/OLDI

SURVEILLANCE-Pre-operational ADS-B Trials, Multilateration

REDDIG IMPROVEMENTS

Satellite segment increase, Re-structure

MEVA II/REDDIG interconnection.

OMR IMPLEMENTATION IN THE SAM REGION

### ➤ **Main tools** - RLA/06/901, RLA/03/902, new project for OMR

### ➤ **Cost/benefit studies**

# CONCLUSIONS

- **CAR/SAM Regions move ahead towards Global/Regional ATM**
- **CAR/SAR Air Navigation Plan is continuously being reviewed by GREPECAS in correspondence to ICAO guidelines regarding transition towards Global/Regional ATM system.**
- **GREPECAS is progressively re-shaped to develop its work based on a performance approach (PBA).**
- **In CAR/SAM Regions, significant CNS/ATM improvement has been made, and GANP initiatives have been identified, in order to continue progressing towards the global ATM system.**
- **ICAO Regional Offices have developed an implementation programme for the CAR/SAM Regions, with technical cooperation tools established for advising States in matters of CNS/ATM implementation towards global ATM system.**



***THANK YOU  
VERY MUCH !!!***