International Civil Aviation Organization

SEMINAR/WORKSHOP
(SAM ANIP-PB)

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Performance-Based Implementation Plan For the SAM Region

(Part II –ATM)

Chapter 4 ATM

Introduction

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General Principles

- Unrestricted access to air navigation services listed in this document must be guaranteed to all SAM States.
- Fully comply with national plans, as well as with the standards governing the use of the new systems, is acknowledged.
- Accept the global nature of the ATM Operational Concept
- CNS infrastructure must be carefully planned.
- Progressive introduction of CNS.

Gaps of the Current ATM System in the SAM Region

- Incipient implementation of PBN and absence of ASM
- Lack of cost-benefit analysis
- Lack of flexible use of airspace
- Lack of ATFM services
- Lack of coordination in the provision of existing CNS/ATM services
- Inadequate quality of communication media and language difficulties.
- Lack of ATS surveillance
- Lack of harmonization in automated ATM systems
- Limited facilities for real-time exchange of information

Limitations of the current ATM system

- Inefficient aircraft operations
- Lack of arrival and departure procedures
- Exclusion of civil air traffic reserved airspaces
- Routes based on radio aids
- Excessive ground and en-route delays related to the system
- Insufficient flexibility to properly address disturbances in airline operations caused by meteorological conditions.

Strategy for the Implementation of Performance Objectives

- ATM evolution is based on Global Plan initiatives applicable to:
  - En-route operations;
  - TMA operations; and
  - Air operations in general

Strategy for the Implementation of Performance Objectives

Planning has been based on seven global aspects, as shown in Attachment D, and as listed below:

- En-route airspace optimisation. (SAM PFF 01)
- TMA airspace structure optimisation. (SAM PFF 02)
- Implementation of RNP approaches. (SAM PFF 03)
- Improvements in civil-military coordination and cooperation (SAM PFF 04)
- Implementation of the new flight plan. (SAM PFF 05)
- ATFM implementation (SAM PFF 06)
- Improvement of ATM situational awareness (SAM PFF 07)

Benefits
En-route airspace optimization: PFF SAM 01

Safety

- Reinforces airspace safety

Environmental protection and sustainable development of air transport

Reduces miles flown, fuel consumption, and , thus, CO2 emissions into the atmosphere

- Increases airspace capacity
- Takes advantage of aircraft capacity to fly optimum paths

Metrics

- Number of implemented PBN (RNAV/RNP) ROUTES
- Reduction of CO2 emissions

2012 – 2018 Strategy

TASKS

- Formulate airspace concept and establish requirements
- Assess the progress of Version 2 of the SAM ATSRO and RNAV5 implementation
- Optimise oceanic routes and implement RNAV10 (RNP10) corridors.
- Assess PBN action plan
- Assess the status the ATS routes optimisation programme
- Complete implementation of RNAV5 continental routes
- Implement non-permanent routes
- Prepare Version 03 of the ATS routes network
- Implement trunk routes RNP4 and RNP2
- Define spacing between route centrelines
- Implement random routes
- Assess safety before each implementation
- Monitor progress

Benefits
TMA structure optimisation (PFF SAM 02)

Safety

- Implementation of continuous descent (CDO) operations
- Increased safety during landing, thus reducing the incidence of CFIT
- Strengthens airspace safety

Environmental protection and sustainable development of air transport

- Reduces miles flown, fuel consumption and, consequently, CO2 emissions into the atmosphere;
- Increases airspace capacity, since it permits the establishment of separate arrival/departure flows, and even the segregation of IFR from VFR flights;
- Takes advantage of aircraft capacity for flying optimum paths;
- Airport arrival/departure under any meteorological condition.

Metrics

- Number of TMAs with SIDs/STARs already implemented.
- Number of TMAs that have implemented CDO operations

2012 – 2018 Strategy

TASKS

- Assess the progress made in the terminal area PBN action plan.
- Implement standard RNAV 1 arrival/departure routes in selected TMAs with ATS surveillance.
- Implement RNAV 1 and/or RNP 1 standard arrival/departure routes in all the TMAs of international airports.
- Implement CDO operations in all the TMAs of international airports.
- Implement RNAV1/RNP1 exclusionary airspace in high-density TMAs.
- Assess safety during stages prior to implementation
- Monitor progress.

Benefits

Implementation of RNP approaches (PFF SAM 03)

Safety

- Increases safety during landing, reducing the incidence of CFIT
- Permits the establishment of safe approach procedures at airports with limitations due to rough terrain.

Environmental protection and sustainable development of air transport

- Reduces miles flown, fuel consumption, and thus CO2 emissions into the atmosphere;
- Takes advantage of aircraft capacity for flying optimum paths;
- Improved airport operational minima

Metrics

- Number of RNP APCH procedures that have been implemented, including APV Baro VNAV.

2012 – 2018 Strategy

T A S K S

- Assess progress of PBN action plan on approach procedures.
- Implement RNP APCH procedures (or RNP AR APCH when operationally advantageous), including APV BARO VNAV, at least at all international airports.
- Start-up of the implementation of GLS procedures (GBAS landing) at selected airports.
- Assess safety during the stages before implementation.
- Monitor the progress made during implementation.

Benefits

Improvements in Civil Military coordination and cooperation (PFF SAM 04)

Safety

- Strengthens airspace safety.

Environmental protection and sustainable development of air transport

- Permits a more efficient ATS route structure and increased airspace capacity.
- Greater availability for civil aviation of restricted airspace at times when there is no military activity

Metrics

- Number of committees or similar civil/military coordination bodies implemented
- Number of civil/military coordination and cooperation agreements implemented

2012 – 2018 Strategy

TASKS

- Develop guidance material on civil/military coordination and cooperation
- Establish civil/military committees;
- Arrangements to have a permanent relationship between ATS civil units and the appropriate air defence units
- Establish procedures for temporary reservation and issuance of NOTAMs,
- Regional review of special use airspace;
- Develop a strategy and programme for FUA
- Integration of civil and military aviation activities
- Monitor progress during implementation

Benefits
Implementation of New FPL (PFF SAM 05)

Safety

- Improve airspace safety

Environmental protection and sustainable development of air transport

- Enables a more efficient ATS routes structure and to increase airspace capacity
- Enhanced availability for restricted airspace civil aviation in schedules where no military activities exist

Metrics

Number of Civil/Military committees implemented

- Amount of civil/military coordination and cooperation agreements implemented

2012 – 2013 Strategy

TASKS

- Guides on the transition to the new FPL
- Develop a regional strategy for the transition
- Identification of stakeholders and possible impact (FPL/RPL/CPL)
- Assessment of current/future flight plan processing capabilities with respect to the new FPL
- Trials processing systems new FPL processing
- Development of contingency procedures
- Identify main parties involved in FP data flow and definition of transition steps
- Publication of transition actions, trials and others
- Assess transition actions and make adjustments
- Implement the transition plan
- Monitor transition activities

Benefits
ATFM Implementation (PFF SAM 06)

Safety

- Manage airspace safety

Environmental protection and sustainable development of air transport

- Less delays caused by meteorological and traffic conditions, leading to a reduced consumption of fuel and emission of pollutants
- Improved and more fluid traffic flows
- Improved prediction
- Improved management of the demand that exceeds service in ATC sectors and aerodromes
- Operational efficiency
- Increased airport capacity
- Improved airspace capacity

Metrics

- Number of flights delayed due to measures implemented by ATC

2012 – 2018 Strategy

TASKS

- Assess ATFM programme
- Develop a regional method for establishing demand/capacity forecasts
- Develop and implement procedures for an efficient use of aerodrome and runway capacity
- Develop and implement methods for improving efficiency, as required, through airspace management (AOM), CNS systems, ATS coordination
- Develop a strategy and frame of reference for the implementation of the centralised ATFM unit
- Implement the centralised ATFM unit
- Develop and implement operational procedures between Centralised ATFM units
- Monitor implementation

Benefits
Improve ATM situational awareness (PFF SAM 07)

Safety

- Reduces number of CFIT accidents
- Enhances safety.

Environmental protection and sustainable development of air transport

- Improved air traffic demand
- Contributes to collaboration between the flight crew and the ATM system
- Contributes to collaborative decision-making (CDM) through the sharing of aeronautical data
- Reduced workload for pilots and controllers
- Increases airspace capacity
- Availability of electronic terrain and obstacle data in the cockpit
- Contributes to operational efficiency

Metrics

- Number of interconnected ATC automated systems
- Number of ACCs with AIDC
- Number of ACCs with CPDLC tools

2012 – 2018 Strategy

TASKS

- Develop a guide and an action plan for improving situational awareness of pilots and controllers.
- Implement flight plan data processing systems (new FPL format) and data communication tools between ACCs.
- Implement ATS surveillance technologies and their applications as required.
- Implement air-ground communication systems through Data link.
- Implement advanced automation support tools to contribute to aeronautical information sharing.

Questions?