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ASSEMBLY — 37TH SESSION

TECHNICAL COMMISSION

Agenda Item 35: The global air traffic management (ATM) system

ATM DEVELOPMENTS TOWARDS THE VISION IN THE GLOBAL ATM OPERATIONAL CONCEPT

(Presented by Brazil)

EXECUTIVE SUMMARY

Since the endorsement of the Global ATM Operational Concept by the 11th Air Navigation Conference, the Brazilian Airspace Control Department has undertaken several initiatives to implement operational improvements aligned with the vision in the Global Concept and according to the Global Plan Initiatives (GPIs) described in the ICAO Global Air Navigation Plan (GANP).

Following a performance-based approach (PBA), operational improvements were implemented in some portions of Brazilian airspace and the benefits accrued from these implementations are serving to attend several expectations of the ATM community, such as increasing capacity, predictability, cost effectiveness, and reduced impact of operations on the environment among others.

This paper describes some of the initiatives and requests specific actions from ICAO towards the harmonization, at a global level, on the means to calculate and report specific benefits.

Action: The Assembly is invited to:

a) take note of the improvements being made by the Brazilian Airspace Control Department to improve the air navigation system at a local and regional level, towards the vision established by the Global Concept;
b) urge ICAO to continue the development and application of a performance-based approach that supports the Global Air Navigation System including establishment of specific indicators and metrics to measure performance;
c) ask ICAO to develop and deliver a methodology or a tool that can be used by States, international organizations and air navigation service providers (ANSPs) to measure and report the benefits of operational improvements in a harmonized way; and
d) invite ICAO to consider the development of a simple automated tool to be used to measure and benchmark fuel savings accrued from operational improvements as a first step.

Strategic Objectives:	This working paper relates to Strategic Objectives A and D.

1. INTRODUCTION

1.1 Since the endorsement of the Global ATM operational Concept by the 11th Air Navigation Conference in 2003, the Brazilian Airspace Control Department has been implementing operational improvements aligned with the vision of the Global Concept and following the Global Plan Initiatives (GPIs) described in the ICAO Global Air Navigation Plan (GANP).

1.2 The Brazilian initiatives are focused on the evolution of the Global Air Navigation System to attend the expectations of the ATM community and promote the means by which interoperability can be assured at an early stage with the related benefits.

1.3 To this end, initiatives such as performance-based navigation (PBN), airspace restructuring, air traffic flow management (ATFM) were put in place to the benefit of users of Brazilian airspace and air navigation infrastructure.

1.4 The implementation of GPIs is paving the way towards the vision established by the Global Concept, and therefore means to measure and report the performance in a harmonized way could be necessary in short term to benefit all States implementing operational improvements.

1.5 With the possibility of a 12th Air Navigation Conference in 2012, it could be a good opportunity for States to report in a harmonized way the benefits being achieved with the implementation of operational improvements in the air navigations systems.

2. PERFORMANCE-DRIVEN OPERATIONAL IMPROVEMENTS

2.1 Improved safety, efficiency and reduced aviation impact on environment are among the goals that are driving operational improvements in Brazilian airspace.

2.2 Following a performance-based approach (PBA), initiatives such as those mentioned hereunder are being implemented to attend the expectations of the ATM community in the airspace where Brazil has the service provision responsibility.

3. PERFORMANCE-BASED NAVIGATION (PBN)

3.1 Performance-based navigation is considered vital to attend several expectations of the ATM community so as to increase and improve the use of airports under all weather conditions. Having this in mind, besides the introduction of new area navigation routes, Brazil conducted a process of restructuring two medium-demand/medium-complexity terminal areas to improve capacity, facilitate accessibility and provide experience gain both to the air navigation service provider (ANSP) and airspace users.

3.2 It is worth mentioning the reorganization of the flow arriving to and departing from the Brasilia and Recife terminal area (TMA).

3.3 These mentioned TMAs, with an average movement of 1 200 flights a day concentrated in only one airport per TMA and in certain periods of the day, had an increase in traffic of 6 per cent a year, which could impact the ATFM balance if no proper measures had been taken in time.

3.4 New arrival, approach and departure procedures, using the PBN concept as a basis were developed and implemented for the sake of increased capacity, reduced points of conflict and consequently improved accessibility and predictability for the operations at the airports within the mentioned terminal areas.

4. DEMAND AND CAPACITY BALANCING

4.1 To improve the flow of traffic in Brazilian airspace, new procedures were introduced by the air traffic flow management unit, named CGNA, with all involved stakeholders active cooperation and participation.

4.2 The improved procedures served to increase the predictability at national level, reducing holdings along the enroute phase of flight as well as on the ground with the associated benefits to the airspace users and ANSPs.

5. AUTOMATIC DEPENDENT SURVEILLANCE AND CONTROLLER PILOT DATA LINK COMMUNICATION

5.1 To provide surveillance and communication in oceanic areas where the provision of radar and very high frequency (VHF) coverage is not feasible, procedures based on automatic dependent surveillance contract (ADS-C) and controller pilot data link communication (CPDLC) were put in place in all oceanic airspace under Brazil’s responsibility (Atlantico FIR).

5.2 Studies are now in place to apply the automatic dependent surveillance broadcast (ADS-B) in certain portions of airspace where radar is not feasible at low altitude and to support specific requirements and needs.

6. AERONAUTICAL INFORMATION MANAGEMENT

6.1 Flight flow information management is considered vital for the implementation of the new ATM concepts.

6.2 It is understandable that to allow the implementation of a global interoperable air navigation system, which will attend to the expectations of the community, system-wide information management is needed, and also, as a consequence, the migration from AIS to AIM.

6.3 The Brazilian aeronautical information system is being prepared for the transition and to cope with the needs of the ATM community. The implementation of a central database containing all aeronautical information, compliant with ISO 9000 standards, including specific systems, will allow the application of the electronic AIP (e-AIP), integrated NOTAM information and the management of electronic terrain and obstacle data (eTOD).

7. MEASUREMENT OF THE BENEFITS

7.1 All the above-mentioned operational improvements are paving the way towards the vision established by the Global ATM Operational Concept and are being made according to a PBA as recommended by ICAO.

7.2 One of the elements of the PBA is the indicators and metrics definition and monitoring according to the targets established at global, regional or national level to demonstrate the benefits accrued with the operational improvements.

7.3 In this regard, if a harmonized number of indicators and metrics could be developed to measure the benefits of the operational improvements, such as fuel savings, safety improvement, and capacity increase, it would facilitate the benchmarking process and consequently the States' implementation and evaluation in an early stage of the GPIs implementation.

7.4 Also, for some of the benefits related to the key performance areas established by the Global ATM Operational Concept, a specific measurement tool and reporting methodology should be developed to improve evolution tracking and also to facilitate benchmarking related to the operational outcome. Considering the importance of fuel savings both to the cost effectiveness of international operations and to the environment at a global level, this indicator could be considered a first goal.

7.5 Brazil, as well other States, have their tools to calculate the mentioned benefits; however, the diversity in the methods of measurements and different report formats add unnecessary complexity to the benchmarking process.

8. CONCLUSIONS

8.1 The Brazilian Airspace Control Department is implementing gradually the GPIs established by the GANP as a way to achieve the Global ATM Operational Concept vision aiming at an interoperable global air traffic management system for all users, supporting all phases of flight that are safe, provides for optimum economic operations, it is environmentally sustainable and meets national security requirements.

8.2 The States are encouraged to apply the PBA for the operational improvements implementation.

8.3 ICAO should consider the development of common, harmonized metrics and indicators related to the operational improvements as per the Global Air Navigation Plan.

8.4 Moreover, ICAO should initiate the development of a simple automated tool to enable the Global Plan Initiatives implementation benefit measurement at an early stage considering global fuel savings benchmarking as the first objective for such a tool.

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