



INTERNATIONAL CIVIL AVIATION ORGANIZATION

**NORTH AMERICAN, CENTRAL AMERICAN AND CARIBBEAN
REGIONAL OFFICE**

**NAM/CAR REGIONAL PERFORMANCE-BASED AIR NAVIGATION IMPLEMENTATION
PLAN**

NAM/CAR RPBANIP

Version: 2.0

(May, 2011)

1. INTRODUCTION

1.1 The Global Plan describes a strategy aimed at achieving near and medium term ATM benefits on the basis of available and foreseen aircraft capabilities and ATM infrastructure. It contains guidance on ATM improvements necessary to support a uniform transition to the ATM system envisioned in the global ATM operational concept (Doc 9854). The operational concept presents the ICAO vision of an integrated, harmonized and globally interoperable ATM system.

1.2 The Strategic Vision is *“To foster implementation of a seamless, global air traffic management system that will enable aircraft operators to meet their planned times of departure and arrival and adhere to their preferred flight profiles with minimum constraints and without compromising agreed levels of safety.”*

1.3 This vision is refined in the Mission of Implementation as follows:

To develop a seamless, globally coordinated system of air navigation services that will cope with worldwide growth in air traffic demand while:

- *improving upon the present levels of safety;*
- *improving upon the present levels of regularity;*
- *improving upon the overall efficiency and capacity of airspace and airports;*
- *improving operations allowing for capacity increase while minimizing fuel consumption and aircraft engine emissions;*
- *increasing the availability of user-preferred flight schedules and profiles; and*
- *minimizing differing equipment carriage requirements between regions.*

1.4 Having a strategic geographical location at the confluence of ATS routes connecting the major destinations, the airspace has become a vital link to the smooth flow of traffic between major airspace in NAM and CAR Regions.

1.5 The complexities of Caribbean airspace are unique in nature. Based on the topography, various types of aircraft from Helicopter to bigger type of jet aircraft are being operated in various sectors. Restricted airspace for Military flying and the mixed type of aircraft with unmatched capabilities occupy the airspace and their conflicting demands need to be accommodated.

1.6 Civil, commercial, Military, general Aviation, Space research, hobby and adventure flying, flying training, helicopter flying have been constantly increasing and thereby the airspace has been getting congested day by day. Technological innovations provide more simple and flexible solutions not only for transportation needs but also for national security and economic development.

1.7 Entry of Low Cost carriers with attractive flying schemes has boosted traffic in the recent past and the air transport industry is in the upswing with more and more air operations. These carriers have not only become a potential competitors to the currently established airlines but also potential challengers to the ATM system as the airspace/ airports are getting more and more congested and leading to delay and holding resulting in burning of extra fuel.

1.8 Military flying activities with frequent airspace and airport closures implies additional civil flight operations and workload on the capacity and air traffic management point of view.

1.9 More challenges are in the horizon to achieve an ATM seamless system in the CAR and NAM Regions. The expectation is more and more air operations among CAR and NAM Regions which will require gradual operational developments of ATM system to ensure an optimum air traffic flow towards among certain areas or through them, during periods in which the demand exceeds or is foreseen to exceed the available capacity.

1.10 New aircraft are capable of extremely accurate navigation during all phases of flight and many are equipped with satellite-based communication. Aircraft operations growth also has resulted in a relatively young airline fleet, most equipped with some or all of enhanced capabilities.

1.11 Implementation programmes are required to be addressed with a performance-based approach, in order to achieve improvements to the air navigation system and environmental benefits, thus preventing costly implementation processes.

2. REGIONAL PLANNING PROCESS

2.1 The regional planning process should be conducted in accordance with the global plan initiatives (GPIs) of the *Global Air Navigation Plan* (Doc 9750) and the ICAO vision for an integrated, harmonized and globally interoperable ATM system, as established in the Global ATM Operational Concept (Doc 9854).

2.2 The objective is to achieve the maximum level of inter-operability and harmonization among sub-systems for a seamless and interoperable regional ATM system for all users during all phases of flight, complying with agreed levels of safety, providing optimum economic operations, to be environmentally sustainable and to fulfill national aviation security requirements.

2.3 Planning should be developed through performance objectives with clearly defined implementation requirements. The planning horizon should be focused on the strategies of development, activities or main tasks for not less than 5 years (short-term) and no more than 10 years (medium-term). Some already identified tasks to be analyzed beyond this period may be included if they conform to ICAO ATM requirements.

3. PERFORMANCE OBJECTIVES

3.1 The performance objectives should be developed using a performance approach to reflect the necessary activities needed to support regional ATM system implementation.

3.2 During its life cycle, the performance objectives may change in a dynamic manner depending on the ATM system's evolution; therefore, these should be coordinated with and available to all interested parties within the ATM Community in order to achieve timely communication throughout the implementation process. The establishment of collaborative decision-making processes (CDM) ensures that all stakeholders are involved in and concur with the requirements, tasks and timelines.

3.3 The following sections describe aspects pertaining to the performance objectives and required changes, and how these changes foster harmonized improvements throughout the regional ATM system.

Benefits

3.4 Each performance objective should establish a group of common benefits for all stakeholders and be achieved through the strategies, the operational and technical activities planned. These benefits should be in accordance with the ICAO strategic objectives, and the ATM community expectations.

Strategy

3.5 The air navigation system evolution requires a progressive strategy with tasks and actions that best represent the national and regional implementation in accordance with the global planning framework. The final goal is to achieve harmonized regional implementation on a continuous evolution towards a global seamless ATM system.

3.6 This means the need to develop short and medium term implementation programmes, focusing on the necessary changes to the system in which a clear work commitment will be carried out by the parties involved.

3.7 The implementation programmes should define those tasks and activities that maintain a direct relation with ATM system components such as airspace organization, civil-military coordination, human factors, aeronautical regulations, operational safety management systems and environmental protection, among others.

3.8 The framework for regional activities should also include the coordination of activities with military authorities who play an important role in helping to ensure that the best use is made of the available airspace resources by all airspace users while still safeguarding national security.

3.9 The following principles should be considered when developing implementation programmes:

- The work should be organized using project management techniques and performance-based objectives in alignment with the Global Plan and the strategic objectives of ICAO. The implementation programmes should be in accordance with the progress, characteristics and regional implementation needs.
- All activities involved in accomplishing the performance objectives should be designed following strategies, concepts, action plans and roadmaps to align the regional work with the fundamental objective of achieving interoperability and seamlessness to the highest level.
- The implementation tasks should encourage human resources optimization, as well as promote the use of electronic communications means such as internet, videoconference, teleconference, phone and fax. It should be ensured that all the resources will be used efficiently, avoiding any duplication or unnecessary work.
- It should be ensured that performance objectives can be measured against timelines and performance targets, and that the regional progress achieved can be easily reported to the Air Navigation Commission and to the ICAO Council.

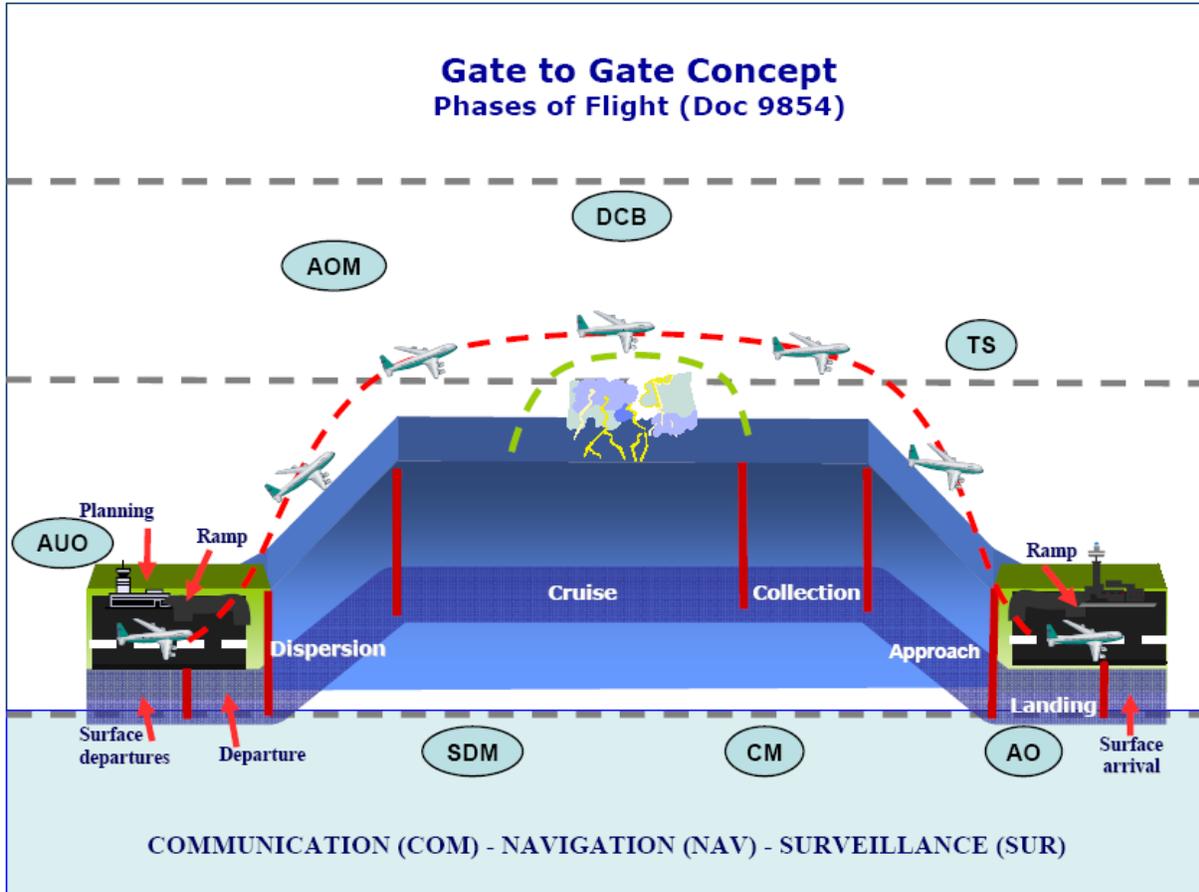
Identification of tasks

3.10 Each task should be identified firstly by the activity associated with components of the ATM system when describing the tasks. According to the Doc 9854, the designators for ATM components are as follows:

- **AOM** — Airspace organization and management
- **DCB** — Demand and capacity balancing
- **AO** — Aerodrome operations
- **TS** — Traffic synchronization
- **CM** — Conflict management
- **AUO** — Airspace user operations
- **SDM** — ATM service delivery management

3.11 Each designator looks to link ATM system component pertains to tasks and activities related to phases of air operations, ATC en-route, terminal and airport, capacity management, airspace management including its flexible use and aeronautical information management.

3.12 The infrastructure includes the ground technical systems and capacity required to support operations such as communications, navigation and surveillance, data processing, interoperability of systems, information management system and spectrum management, including both civil and military systems. The following diagram shows the ATM components in relation to the phases of flight:



Status

3.13 The status is mainly focused on monitoring the progress of the implementation activity as it progresses toward a specific completion date. The status of the activity is defined as follows:

- **Valid** the feasibility and benefits of an activity has been confirmed, work has been initiated but the activity itself has not been finalized.
- **Completed** implementation of the activity has been finalized by the involved parties.
- **Tentative** the feasibility and benefits of an activity investigated or to be developed.

3.14 A tentative status indicates a potential activity; normally this activity will not be included in the regional planning documents unless it is an ICAO defined requirement.

Relationship between Performance Objectives and Global Plan Initiatives (GPIs)

3.15 The 23 GPIs provide a global strategic framework and are designed to contribute to achieve the regional performance objectives and to support the logical progression of the regional implementation programmes. A set of operational improvements will be integrated once approved by the ICAO Council

3.16 Each performance objective should be referenced to the pertinent GPIs. The goal is to ensure that the work process will be integrated into the global planning framework

4 NATIONAL ACTION PLAN

4.1 States should develop their own national action plans reflecting the specific activities or tasks along with the expected benefits to be obtained and the date by which each should be completed according to the national needs and based on the regionally agreed performance objectives.

4.2 The strategic tasks should include the necessary detailed actions to successfully achieve the national performance objectives, relating these activities with the short and medium term regionally agreed performance objectives.

4.3 National plans should identify the individuals or teamwork responsible for achieving the objectives as well as a means for monitoring and eventually reporting progress on the actions to ICAO. The responsibilities and time-tables should be clearly defined so that the involved parties are aware of their commitments throughout the implementation process.

4.4 Additionally, national action plans should include adequate means to provide information on implementation progress achieved such as through a periodic reporting process. This facilitates senior management levels' efforts to prioritize the actions and resources required. The same information provided to ICAO will allow feedback and assistance to be provided specific for each Region as they work to achieve a Global ATM system.

4.5 For the development of a national action plan, the following subjects, as a minimum, should be analysed and properly documented:

a) Characteristics of the industry

Enumerate the current and projected growth of Air Traffic in your state and also identify, if any, the efficiency challenges in your State.

b) The air navigation service provider

Describe briefly the organization providing the air navigation services in your State including its institutional format, capital structure, principal shareholders and the management.

c) Major stakeholders/partners

Identify the major stakeholders/partners such as the air navigation service providers, the airspace users (the commercial airlines using the airspace, business aviation, general aviation, military, etc.) and the potential funding sources.

d) Risks and Limitations

Enumerate the limitations of the current conventional air navigation systems that may arise and which solution would depend on the State/Territory/International Organization.

e) Risk Management

What are the identified risks and briefly describe the risk mitigation plans/techniques.

f) National Performance-based Air Navigation Plan

- 1) Define the geographical scope of the National Air Navigation Plan and determine the major traffic flows.
- 2) Explain briefly the vision of your State/Territory/International Organization for achieving a seamless Global ATM system in accordance with ICAO Doc 9854.
- 3) Determine the current air navigation infrastructure and services.
- 4) Through gap analysis define near and medium term operational improvements.
- 5) Using a standard Performance framework form (PFF), develop different national performance objectives by determining relevant tasks and ensure the linkage to ATM components and Global Plan Initiatives (GPIs).

CAR/NAM REGIONAL PERFORMANCE OBJECTIVES (RPO)

1 IMPLEMENTATION OF PERFORMANCE BASED NAVIGATION (PBN)				
1.1 OPTIMIZE THE ATS ROUTE STRUCTURE EN-ROUTE AIRSPACE				
Benefits				
Environment	<ul style="list-style-type: none"> • reductions in fuel consumption; 			
Efficiency	<ul style="list-style-type: none"> • ability of aircraft to conduct flight more closely to preferred trajectories; • increase in airspace capacity; • facilitate the utilization of advanced technologies (e.g., FMS based arrivals) and ATC decision support tools (e.g., metering and sequencing), thereby increasing efficiency. 			
Strategy				
ATM Component	TASK DESCRIPTION	START-END	RESPONSIBLE	STATUS
AOM	a) Develop regional action plan	2007	GREPECAS	Completed
	b) Develop Airspace Concept based in CAR /SAM PBN Roadmap, in order to design and implement a trunk route network, connecting major city pairs in the upper airspace and for transit to/from aerodromes, on the basis of PBN and, in particular, RNAV/5, taking into account interregional harmonization	2008- 2010	States, Territories, Int. Org.	Completed
	c) Develop performance measurement plan	2008- 2010	States, Territories, Int. Org.	Completed
	d) Formulate safety plan	2008- 2010	States, Territories, Int. Org.	Completed
	e) Establish collaborative decision making (CDM) process	2008- 2010	States, Territories, Int. Org.	Completed
	f) Publish national regulations for aircraft and operators approval using PBN manual as guidance material	2008- 2011	States, Territories, Int. Org.	Valid
	g) Identify training needs and develop corresponding guidelines	2008- 2010	States, Territories, Int. Org.	Completed
	h) Implementation of ATS routes enroute (Phase I)	2008- 2011	States, Territories, Int. Org.	Valid
	i) Implementation of ATS routes enroute (Phase II)	2011-2013	States, Territories, Int. Org.	Valid
	j) Monitor implementation progress in accordance with CAR/SAM PBN implementation roadmap and State implementation plan	2008-2013	ICAO	Valid
GPIs	GPI/5: performance-based navigation, GPI/7: dynamic and flexible ATS route management, GPI/8: collaborative airspace design and management, GPI/10: terminal area design and management, GPI/11: RNP and RNAV SIDs and STARs and GPI/12: FMS-based arrival procedures			

1. IMPLEMENTATION OF PERFORMANCE-BASED NAVIGATION (PBN)				
1.2. OPTIMIZE THE ATS ROUTE STRUCTURE IN TERMINAL AREA AIRSPACE				
Benefits				
Environment	<ul style="list-style-type: none"> • reductions in fuel consumption; 			
Efficiency	<ul style="list-style-type: none"> • ability of aircraft to conduct flight more closely to preferred trajectories; • increase in airspace capacity; • facilitate utilization of advanced technologies (e.g., FMS based arrivals) and ATC decision support tools (e.g., metering and sequencing), thereby increasing efficiency. 			
Strategy				
ATM Component	TASK DESCRIPTION	START-END	RESPONSIBLE	STATUS
AOM	a) Develop regional PBN implementation plan	2007	GREPECAS	Completed
	b) Develop State PBN implementation plan	2008-2010	States, Territories	Completed
	c) Develop Airspace Concept based in CAR /SAM PBN Roadmap, in order to design and implement optimized standard instrument departures (SIDs), standard instrument arrivals (STARs), instrument flight procedures, holding, approach and associated procedures, on the basis of PBN and, in particular RNAV-1 and Basic-RNP1	2008-2011	States, Territories	Completed
	d) Develop performance measurement plan	2008-2010	States, Territories	Completed
	e) Formulate safety plan	2008-2010	States, Territories	Completed
	f) Establish collaborative decision making (CDM) process	2008-2010	States, Territories	Completed
	g) Publish national regulations for aircraft and operators approval using PBN manual as guidance material	2008-2010	States, Territories	Completed
	h) Identify training needs and develop corresponding guidelines	2008-2010	States, Territories	Completed
	i) Develop system performance monitoring plan	2008-2011	States, Territories	Valid
	j) Develop a regional strategy and work programme for implementation of SIDs and STARs	2008-2011	States, Territories	Completed
	k) Monitor implementation progress in accordance with CAR/SAM PBN implementation roadmap and State implementation plan	2008-2011	ICAO	Valid
GPIs	GPI/5: performance-based navigation, GPI/7: dynamic and flexible ATS route management, GPI/8: collaborative airspace design and management, GPI/10: terminal area design and management, GPI/11: RNP and RNAV SIDs and STARs and GPI/12: FMS-based arrival procedures.			

1. IMPLEMENTATION OF PERFORMANCE BASED NAVIGATION (PBN)				
1.3. IMPLEMENT RNP APPROACHES				
Benefits				
Efficiency	• Improvements in capacity and efficiency at aerodromes.			
Safety	• Improvements in safety at aerodromes.			
Strategy				
ATM Component	TASK DESCRIPTION	START-END	RESPONSIBLE	STATUS
AOM	a) Develop State PBN implementation plan.	2008-2009	States, Territories	Completed
	b) Develop Airspace Concept based in CAR /SAM PBN Roadmap, in order to design and implement RNP APCH with Baro-VNAV in accordance with assembly resolution A36-23, and RNP AR APCH where beneficial	2008-2010	States, Territories	Completed
	c) Develop performance measurement plan	2008-2010	States, Territories	Completed
	d) Formulate safety plan	2008-2010	States, Territories	Completed
	e) Establish collaborative decision making (CDM) process	2008-2010	States, Territories	Completed
	f) Publish national regulations for aircraft and operators approval using PBN manual as guidance material.	2008-2010	States, Territories	Completed
	g) Identify training needs and develop corresponding guidelines	2008-2010	States, Territories	Completed
	h) Implementation of APV procedures	2008-2016	States, Territories	Valid
	i) Formulate system performance monitoring plan	2008-2011	States, Territories	Valid
	j) Monitor implementation progress in accordance with CAR/SAM PBN implementation roadmap and State implementation plan	2008-2016	ICAO	Valid
GPIs	GPI/5: performance-based navigation, GPI/7: dynamic and flexible ATS route management, GPI/8: collaborative airspace design and management, GPI/10: terminal area design and management, GPI/11: RNP and RNAV SIDs and STARs and GPI/12: FMS-based arrival procedures.			

2. IMPLEMENT FLEXIBLE USE OF AIRSPACE (FUA)				
Benefits				
Efficiency	<ul style="list-style-type: none"> • increase airspace capacity; • allow a more efficient ATS route structure • ensure safe and efficient action in the event of unlawful interference; 			
Continuity	<ul style="list-style-type: none"> • make available military restricted airspace more hours of the day so that aircraft can fly on their preferred trajectories; and • improve search and rescue services. 			
Strategy				
ATM Component	TASK DESCRIPTION	START-END	RESPON-SIBLE	STATUS
AOM	a) Develop guidance material on civil/military coordination and co-operation to be used by States/Territories to develop national policies, procedures and rules.	2007	ICAO	Completed
	b) Develop a regional strategy and work programme for implementation of flexible use of airspace in a phased approach for dynamic sharing of restricted airspace	2008 – 2011	States, Territories	Completed
	c) Establish civil/military coordination bodies.	2008 – 2012	States, Territories	Valid
	d) Arrange for permanent liaison and close cooperation between civil ATS units and appropriate air defence units.	2008 – 2012	States, Territories	Valid
	e) Conduct a regional review of special use airspace, i. assess use of airspace management processes; ii. improve current national airspace management to adjust dynamic changes in tactical stage to traffic flows; iii. introduce improvements in ground support systems and associated procedures for the extension of FUA with dynamic airspace management processes; and iv. implement dynamic ATC sectorization in order to provide the best balance between demand and capacity to respond in real-time to changing situations in traffic flows, and to accommodate in short-term the preferred routes of users; and	2008 – 2012	States, Territories, Int. Org, ICAO	Valid
	f) full integration of civil and military aviation activities by 2012.	2008 – 2012	States, Territories	Valid
	g) Monitor implementation progress.	2008-2012	ICAO	Valid
GPIs	GPI/1: flexible use of airspace.			

3. IMPROVE DEMAND AND CAPACITY BALANCING (DCB)				
Benefits				
Environment	<ul style="list-style-type: none"> reduction in weather- and traffic-induced holding, leading to reduced fuel consumption and emissions; 			
Efficiency	<ul style="list-style-type: none"> improved and smoother traffic flows; improved predictability; improved management of excess demand for service in ATC sectors and aerodromes; improved operational efficiency; enhanced airport capacity; enhanced airspace capacity; and 			
Safety	<ul style="list-style-type: none"> improved safety management. 			
Strategy				
ATM Component	TASK DESCRIPTION	START-END	RESPONSIBLE	STATUS
DCB	a) Identify key stakeholders (ATC service providers and users, military authorities, airport authorities, aircraft operators and relevant international organisations) for purposes of coordination and cooperation, using a CDM process.	2008	GREPECAS	Completed
	b) Develop a regional strategy and work programme for harmonized implementation of ATFM service.	2007	GREPECAS	Completed
	c) Analyse traffic flow problems and develop methods for improving efficiencies on a gradual basis, as needed, in current: <ul style="list-style-type: none"> i. airspace organization and management (AOM) and ATS routes structure (unidirectional routes) and SID and STARS; ii. communication, navigation and surveillance systems; iii. aerodrome capacity; iv. ATS capacity; and v. ATS letters of agreement. 	2008–2012	States, Territories, Int. Org.	Valid
	d) Define common elements of situational awareness between FMUs; <ul style="list-style-type: none"> i. common traffic displays, ii. common weather displays (Internet), iii. communications (teleconferences, web), and, iv. daily teleconference/ messages methodology advisories. 	2010–2012	States, Territories, Int. Org.	Valid
	e) Develop methods to establish demand/capacity forecasting;	2007–2012	States, Territories, Int. Org.	Valid

	f) Develop a regional ATFM procedural manual to manage demand/capacity balancing.	2008–2010	GREPECAS	Completed
	g) Develop regional procedures for efficient and optimum use of aerodrome and runway capacity.	2008–2012	States, Territories, Int. Org	Valid
	h) Develop a regional strategy and framework for the implementation of a Centralized ATFM unit.	2008–2012	States, Territories, Int. Org	Valid
	i) Define common electronic information and minimum databases required for decision support and alerting systems for interoperable situational awareness between Centralized ATFM units.	2008–2014	States, Territories, Int. Org	Valid
	j) Develop operational agreements between Centralized ATFM units for interregional demand/capacity balancing.	2008–2015	States, Territories, Int. Org	Valid
	k) Monitor implementation progress.	2008-2015	ICAO	Valid
GPIs	GPI/1: flexible use of airspace; GPI/6: air traffic flow management; GPI/7: dynamic and flexible ATS route management; GPI/9: Situational awareness; GPI/13: aerodrome design and management; GPI/14: runway operations; and GPI/16: decision support systems and alerting systems.			

4. IMPROVE ATM SITUATIONAL AWARENESS				
Benefits				
Efficiency	<ul style="list-style-type: none"> • enhanced traffic surveillance; • enhanced collaboration between flight crew and the ATM system; • improved collaborative decision-making through sharing electronic aeronautical data information; • reduced of workload for both pilots and controllers; • improved operational efficiency; • enhanced airspace capacity; 			
Safety	<ul style="list-style-type: none"> • improved implementation on a cost-effective basis; • improved available electronic terrain and obstacle data in the cockpit; • reduced of the number of controlled flight into terrain related accidents; and • improved safety management. 			
Strategy				
ATM Component	TASK DESCRIPTION	START-END	RESPONSIBLE	STATUS
SDM	a) Identify parties concerned.	2009	GREPECAS	Completed
	b) Identify the automation level required according to the ATM service provided in airspace and international aerodromes, assessing <ul style="list-style-type: none"> i. operational architecture design, ii. characteristics and attributes for interoperability, iii. data bases and software, and iv. technical requirements. 	2008–2013	States, Territories, Int. Org	Valid
	c) Improve ATS interfacility communication.	2008–2015	States, Territories, Int. Org.	Valid
	d) Implement flight plan data processing system and electronic transmission tools.	2008–2012	States, Territories, Int. Org.	Valid
	e) Implement radar data sharing programs where benefits can be obtained.	2008–2012	States, Territories, Int. Org.	Valid
	f) Develop situational awareness training programmes for pilots and controllers.	2008–2012	States, Territories, Int. Org.	Valid
	g) Implement ATM surveillance systems for situational traffic information and associated procedures.	2010–2015	States, Territories, Int. Org.	Valid
	h) Implement ATS automated message exchanges, as required; <ul style="list-style-type: none"> a. FPL, CPL, CNL, DLA, etc. 	2008-2013	States, Territories, Int. Org.	Valid
	i) Implement automated radar handovers, where able.	2008–2014	States, Territories, Int. Org.	Valid
	j) Implement ground and air electronic warnings, as needed <ul style="list-style-type: none"> i. Conflict prediction ii. Terrain proximity iii. MSAW iv. DAIW v. Surveillance system for surface movement. 	2008–2013	States, Territories, Int. Org.	Valid

	k) Implement data link surveillance technologies and applications: ADS, CPDLC, AIDC, as required.	2008 – 2014	States, Territories, Int. Org	Valid
SDM	l) Implement additional/advanced automation support tools to increase sharing of aeronautical information i. ETMS or similar ii. MET information iii. AIS/NOTAM dissemination iv. Surveillance tools to identify airspace sector constraints v. A-SMGC in specific aerodromes, as required.	2010 – 2013	States, Territories, Int. Org	Valid
	m) Implement teleconferences with ATM stakeholders.	2008 - 2014	States, Territories, Int. Org	Valid
	n) Monitor implementation progress	2008-2014	ICAO	Valid
GPIs	GPI/1: flexible use of airspace; GPI/6: air traffic flow management; and GPI/7: dynamic and flexible ATS route management; GPI/9: Situational awareness; GPI/13: aerodrome design and management; GPI/14: runway operations; and GPI/16: decision support and alerting systems; GPI/17: implementation of data link applications; GPI/18: aeronautical Information; GPI/19: meteorological systems.			

5. IMPLEMENTATION OF THE NEW ICAO FLIGHT PLAN FORMAT				
Benefits				
Efficiency	<ul style="list-style-type: none"> improved operational efficiency; enhanced airspace capacity; improved implementation on a cost-effective basis; 			
Safety	<ul style="list-style-type: none"> improved safety management 			
Strategy				
ATM Component	TASK DESCRIPTION	START-END	RESPONSIBLE	STATUS
SDM	a) Guidelines on transition to new Flight Plan Format	2009	ICAO	Completed
	b) Develop regional strategy for transition to new Flight Plan Format	April 2010	GREPECAS	Completed
	c) Identification of stakeholders involved and possible impact by implementation of New Flight Plan Format (FPL/RPL/CPL)	1/10/2009-30/6/2010	States, Territories, Int. Org	Completed
	d) Evaluation of current/future flight plan processing capabilities regarding the New Flight Plan Format.	1/10/2009-30/12/2010	States, Territories, Int. Org	Completed
	e) Conduct trials between systems with NEW flight Plan processing capacity.	18/7/2011-30/6/2012	States, Territories, Int. Org	Valid
	f) Develop of contingency procedures and determination of operational/ technical considerations for the transition	1/1/2011-30/6/2011	States, Territories, Int. Org	Valid
	g) Identification of major parties considering FP data flow and definition of transition steps based on: <ul style="list-style-type: none"> systems with capability to process both formats: current and NEW. Systems to be upgraded/implemented before 2012 and that will be capable to process New Flight Plan Format. 	1/1/2011-30/6/2011	States, Territories, Int. Org	Valid
	h) Publication on Transition Actions, Trials and other publication for the users and stakeholders	30/6/2011-30/6/2012	States, Territories, Int. Org	Valid
	i) Assessment of Transition Actions and make adjustments	18/7/2011-30/6/2012	States, Territories, Int. Org	Valid
	j) Conduct Transition plan	1/4/2012-30/6/2012	States, Territories, Int. Org	Valid
	k) Monitor the transition activities	1/10/2009-15/12/2012	ICAO	Valid
GPIs	GPI/1: flexible use of airspace; GPI/6: air traffic flow management; and GPI/7: dynamic and flexible ATS route management; GPI/9: Situational awareness; GPI/13: aerodrome design and management; GPI/14: runway operations; and GPI/16: decision support and alerting systems; GPI/17: implementation of data link applications; GPI/18: aeronautical information; GPI/19: meteorological systems; GPI-21: Navigation Systems; GPI-22: Communications Infrastructure and GPI-23: Aeronautical radio spectrum.			

6. IMPROVE SAR SYSTEM				
Benefits				
Efficiency	<ul style="list-style-type: none"> • enhanced traffic surveillance; • enhanced collaboration between stakeholders; • improved operational efficiency; • improved implementation on a cost-effective basis; 			
Safety	<ul style="list-style-type: none"> • improved safety management. 			
Strategy				
ATM Component	TASK DESCRIPTION	START-END	RESPONSIBLE	STATUS
SDM	a) Develop regional strategy to improve SAR System	End 2009	ICAO	Completed
	b) Identify parties concerned	End 2009	ICAO	Completed
	c) Conduct comprehensive analysis of SAR requirements based on risk assessment and quality assurance principles	2009 - 2012	States, Territories, Int. Org, ICAO	Valid
	d) Foster the harmonization of policies, regulations, practices and procedures of the aeronautical/maritime SAR services, in accordance with ICAO Standards and Recommended Methods.	2009 - 2012	States, Territories, Int. Org, ICAO	Valid
	e) Develop, update and ratify SAR agreements with RCCs of adjacent States.	2009 - 2012	States, Territories, Int. Org	Valid
	f) Develop, update and ratify SAR agreements with SAR service International agencies.	2009 - 2012	States, Territories, Int. Org	Valid
	g) Foster the establishment of joint aeronautical/maritime SAR Committees, including the integration of voluntary SAR organizations, as well as the development of agreements between all the stakeholders of the national SAR service	2009 - 2012	States, Territories, Int. Org, ICAO	Valid
	h) Develop human resources and training planning strategy in line with ICAO SAR guidelines and the regional agreements reached.	2009 - 2012	States, Territories, Int. Org, ICAO	Valid
	i) Monitor implementation progress	2009 - 2012	ICAO	Valid
GPIs	GPI/6: air traffic flow management; and GPI/9: Situational awareness			

7. ENHANCE CAPACITY AND EFFICIENCY OF AERODROME OPERATIONS					
Benefits					
Safety	<ul style="list-style-type: none"> • Improve situational awareness. • Efficient use of aerodrome resources. • Safely manoeuvre in all weather conditions. • Precise surface guidance to and from a runway. • Reduced incident/accident factors. • Reduced number of deficiencies. • Reduction in fuel consumption. • Reduced wildlife / bird strikes. 				
Efficiency					
Environment					
Strategy					
ATM Component		TASK DESCRIPTION	Start-End	RESPONSIBLE	Status
AO		a) Implementation of Aerodrome Certification	12/2009 12/2014	States, Territories	Valid
		b) Analyze new requirements for rapid exit taxiways for increasing runway capacity.	12/2009 12/2014	States, Territories	Valid
		c) Implementation of action plans for runway incursion prevention.	12/2009 12/2014	States, Territories	Valid
	d) Implement the Airport Capacity analysis, Enhancement and Planning procedure (ACE)	12/2009 12/2013	States, Territories	Valid	
	e) Minimizing the effects of adverse meteorological conditions on aerodrome operational capacity.	12/2009 12/2013	States, Territories	Valid	
	f) Implement Airport Collaborative Decision Making (CDM), prioritizing the following aspects: <ul style="list-style-type: none"> • Collaborative management of the capacity of a CDM Airport during periods of a predicted or unpredicted reduction of capacity. • Determination of Turnaround and Variable Taxi Times • Apron Congestion 	12/2010 12/2014	States, Territories	Valid	
	g) Implement Advanced Surface Movement Guidance and Control System (A-SMGCS)	12/2013 12/2014	States, Territories	Valid	
	h) Monitor implementation progress.	12/2009 12/2014	ICAO	Valid	
GPIs	GPI/6 Air traffic flow management; GPI/9 Situational awareness; GPI/13 Aerodrome design and management; GPI/14 Runway operations; GPI/15 Match IMC and VMC operating capacity; GPI/18 Aeronautical information.				

8. PROTECTION AND OPTIMUM USE OF RADIOFREQUENCY SPECTRUM				
Benefits				
Efficiency	<ul style="list-style-type: none"> • Efficient use of aviation radio spectrum • Ensure availability of frequencies for services and aeronautical systems 			
Safety	<ul style="list-style-type: none"> • Assurance of aviation spectrum 			
Strategy				
ATM Component	TASK DESCRIPTION	START-END	RESPONSIBLE	STATUS
AOM, DCB, AO, TS, CM, AUO, SDM	a) Ensure Regional coordination for the protection of the aviation spectrum at WRC-12, and beyond	2009-2011	States, Territories, Int. Org, ICAO	Valid
	b) Ensure Participation of Civil Aviation Experts in State's delegation to ITU WRC Meetings	2009-2010	States, Territories, Int. Org.	Completed
	c) Disseminate ICAO policy statements of requirements for aeronautical radio frequency spectrum	2009-2010	GREPECAS	Completed
	d) Implement frequency spectrum management	2009-2011	States, Territories, Int. Org.	Valid
	e) Support ICAO Position during WRC-12	2012	States, Territories, Int. Org.	Valid
	f) Disseminate WRC-2012 results and ICAO Position for WRC-2016 Process	2012-2016	States, Territories, Int. Org.	Valid
	g) Monitor the understanding of radio spectrum management and support on WRC-2012 and WRC-2016	2009-2016	ICAO	Valid
GPIs	GPI/1: flexible use of airspace; GPI/6: air traffic flow management; GPI/7: dynamic and flexible ATS route management; GPI/9: Situational awareness; GPI/14: runway operations; GPI-21: Navigation Systems, GPI-22: Communications Infrastructure and GPI-23: Aeronautical radio spectrum.			

9. OPTIMIZATION AND MODERNIZATION OF COMMUNICATION INFRASTRUCTURE				
Benefits				
Efficiency	<ul style="list-style-type: none"> • Improvements in ATS coordination • Increase availability of communications • Avoid misunderstandings in communications • Facilitate the utilization of advanced technologies 			
Continuity	<ul style="list-style-type: none"> • improvement of airspace interoperability and seamlessness; and • allow improvements to the provision of air traffic control services to all aircraft operations. 			
Safety	<ul style="list-style-type: none"> • Improvement in safety in airspaces and aerodromes 			
Strategy				
ATM Component	TASK DESCRIPTION	START-END	RESPONSIBLE	STATUS
AO, TS, CM, AUO, AOM, SDM	a) Review the status of performance of current AFS Services and identify deficiencies or improvements (AFTN, oral ATS services, A/G communications)	2009-2010	States, Territories, Int. Org,	Completed
	b) Analysis and formulation of plans for implementing improvement or solving deficiencies	2009-2010	States, Territories, Int. Org,	Completed
	c) Develop Regional ATN Planning documents	2009-2012	GREPECAS	Valid
	d) Coordination and testing of ATN G-G Application implementation aspects	2009-2012	States, Territories, Int. Org,	Valid
	e) Planning and trial activities for A-G data Application implementation	2010-2014	States, Territories, Int. Org,	Valid
	f) Technical review of Regional Telecommunication networks for ATN implementation	2009-2010	States, Territories, Int. Org,	Completed
	g) Implement available technologies in to facilitate ground and airborne applications (CPDLC, ADS-C, ADS-B)	2009-2015	States, Territories, Int. Org,	Valid
	h) Monitor the implementation and improvement of the telecommunications and ATN applications issues.	2009-2015	ICAO	Valid
GPIs	GPI/1: flexible use of airspace; GPI/6: air traffic flow management; GPI/7: dynamic and flexible ATS route management; GPI/9: Situational awareness; GPI/14: runway operations; GPI-17: Data Link Application, GPI-21: Navigation Systems and GPI-22: Communications Infrastructure			

10. IMPLEMENTATION OF WGS-84 AND e-TOD				
Benefits				
Efficiency	<ul style="list-style-type: none"> • support to PBN • improve aircraft operating limitations analysis • support aeronautical chart production and on-board databases (FMS) 			
Safety	<ul style="list-style-type: none"> • improve situational awareness • improve electronic terrain and obstacle data in display cockpit • CFIT reduction • support technologies of ground proximity and minimum safe altitude warning systems (GPWS) 			
Strategy				
ATM Component	TASK DESCRIPTION	START-END	RESPON-SIBLE	STATUS
AOM, DCB, AO, TS, CM, AUO, SDM	<i>Electronic terrain and obstacle data (e-TOD)</i>			
	a) share experience and resources in the implementation of e-TOD through the establishment of an e-TOD Regional working group.	2011–2015	GREPECAS States, Territories, Int. Org.	Valid
	b) Implement technical requirements of ICAO Doc 9881, as required.	2010-2015	GREPECAS States, Territories, Int. Org.	Valid
	c) report requirements and monitor implementation status of e-TOD using electronic media to ICAO NACC Regional Office	2010-2011	States, Territories, Int. Org.	Valid
	d) develop a high level agreement for the management of a national e-TOD programme.	2010-2016	States, Territories, Intl Org.	Valid
	<i>WGS-84</i>			
	e) establish WGS-84 implementation goals in coordination with the national PBN implementation	2010-2012	GREPECAS States, Territories, Intl Org.	Valid
	f) Implement technical requirements of ICAO Doc 9674, as required	2010-2011	GREPECAS States, Territories, Intl Org.	Valid
g) monitor implementation status of WGS-84 using the AIS-5 Table of the FASID and take corrective action as required.	2010-2016	ICAO, States, Territories, Intl Org.	Valid	
GPIs	GPI-5: Performance-based navigation; GPI-9: Situational awareness; GPI-11: RNP and RNAV SIDs and STARS; GPI-18: Aeronautical Information; GPI-20: WGS-84; GPI-21: Navigation systems			

11. IMPLEMENTATION OF THE AIM TRANSITION				
Benefits				
Efficiency	<ul style="list-style-type: none"> implement standards and recommendations from Annex 15 and Doc. 8126, that apply to the wide range of aeronautical information products of the Integrated Aeronautical Information Package (IAIP), services and electronic aeronautical information technologies; support the generation and distribution of aeronautical information which serves to improve the safety, accessibility and cost-effective of air traffic services in the CAR Region; the benefits are mentioned in performance objectives for PBN; and 			
Safety	<ul style="list-style-type: none"> support electronic aeronautical chart production and on-board databases (FMS); improve situational awareness; and ensure, to the greatest extent possible, that aeronautical information safety solutions are regionally harmonized 			
<i>Strategy</i>				
ATM Component	TASK DESCRIPTION	START END	RESPONSIBLE	STATUS
CM, AUO, DCB, TS, AOM, AO, SDM	The tasks to implement the identified steps in the roadmap must be specified and conducted in accordance with the first phase for the transition from AIS to AIM as follows: a) comply with the process to introduce and implementation of amendments of the Annexes 15 and 4 to the Chicago Convention;	2010–2013	States / Territories	Valid
	b) report periodically to the ICAO NACC Office on the generation and distribution of aeronautical information of the IAIP for improving the safety of air traffic services in the Region;	2010–2016	States / Territories	Valid
	c) develop a method to measure the performance and outcomes from States, Territories and International Organizations on the distribution of quality assured aeronautical information to better understand the ATM requirements, safety and effectiveness related to the electronic distribution of the information;	2011–2016	ICAO, GREPECAS	Valid
	d) assist States, Territories and International Organizations to take proper decisions related to their aeronautical information current services and the transition to AIM;	2010–2015	ICAO	Valid
	e) assist States, Territories and International Organizations in their process for the transition to AIM, in order to implement ICAO standards for aeronautical information products, services and technologies, as required;	2011–2016	ICAO, GREPECAS	Valid
	f) support AIM developments to achieve the ATM system foreseen in the <i>Global Air Traffic Management Operational Concept</i> ; including the NOTAM contingency plans; and	2010–2015	States / Territories	Valid

	g) ensure that AIM solutions harmonize and integrate at a regional and international level, and to avoid unnecessarily requirements imposed by the transportation of equipments on board or the use of ground systems.	2012–2016	ICAO States / Territories	Valid
GPIs	GPI-5: Performance-based navigation; GPI-9: Situational awareness; GPI-11: RNP and RNAV SIDs and STARs; GPI-18: Aeronautical Information; GPI-20: WGS-84; GPI-21: Navigation systems			

12. IMPROVE AVAILABILITY OF METEOROLOGICAL INFORMATION				
Benefits				
Efficiency	<ul style="list-style-type: none"> improve aerodrome and airspace capacity improve situational awareness of pilots reduce unnecessary consumption of fuel and prevent unnecessary delays due to minimal meteorological conditions at the airports 			
Safety	<ul style="list-style-type: none"> improve flight planning schedule Increase the number of flights in areas of fair weather conditions and prevent or reduce flights in areas of adverse meteorological conditions and volcanic ash clouds prevent landing operations at aerodromes under minimal meteorological conditions 			
Strategy				
ATM Component	TASK DESCRIPTION	START – END	RESPON-SIBLE	STATUS
AOM, DCB, AO, TS, AUO	a) Increase facilities to disseminate and exchange aeronautical meteorological information i) Increase NOAAnet workstations, AFTN terminals and internet facilities to disseminate OPMET data at meteorological offices and stations. ii) Increase AFTN, internet and other communications facilities to relay aircraft special reports from the air traffic control units to the meteorological offices. iii) Expand the number of WIFS workstations used to receive OPMET data and meteorological products of the World Area Forecast System.	2009-2012	States / Territories	Valid
	b) Increase availability, timeliness and quality of OPMET data i) Improve the use of the METAR and TAF codes/templates used to disseminate meteorological reports and aerodrome forecasts ii) Enhance preparation and availability of SIGMET information on hazardous meteorological conditions and volcanic ash clouds iii) Enhance the availability of landing forecasts, TREND, considering user requirements	2009-2012	States / Territories	Valid
	c) Ensure continuous operation of meteorological and communications equipment at the meteorological offices and stations, through: - Implement lightning, voltage spike and line protections to prevent damage to automatic meteorological stations	2009-2015	States / Territories	Valid
	d) Establish contingency procedures to disseminate OPMET data, via Internet, in case of failure of the AFTN or NOAAnet facilities.	2009-2012	States / Territories ICAO	Valid
AO	e) Improve the quality of data, provided by meteorological sensors, used in meteorological reports <ul style="list-style-type: none"> Establish verification and calibration programmes of data provided by meteorological instruments and automated weather systems at the aerodromes 	2009-2015	States / Territories	Valid
AUO	f) Implement oversight programmes to ensure availability and quality of OPMET data issued by CAR States and Territories and Territories and provide assistance if required	2009-2015	States / Territories	Valid

AUO	g) Improve participation of States and Territories in the International Airways Volcano Watch and provide assistance if necessary	2009-2015	ICAO Washington VAAC	Valid
AUO	h) Improve participation of States and Territories in the International Tropical Cyclone Watch and provide assistance if necessary	2009-2015	ICAO Miami TCAC	Valid
AOM, DCB,AO, TS, AUO	i) Implement Quality Assurance System programmes for the aeronautical meteorological service	2010-2012	States / Territories	Valid
AUO	j) Develop yearly staffing analysis and training programme on aeronautical meteorological matters for operational personnel	2009-2015	States / Territories ICAO, WMO AR IV	Valid
AUO	Prepare monthly satellite and radar weather images to detect areas of low frequency of cumulonimbus and thunderstorms to be used for air traffic flow planning	2010-2016	States / Territories ICAO	Valid
AO, TS	k) Increase the number of automated weather systems at the aerodromes	2011-2015	States, Territories	Valid
	l) Implement meteorological data downlinks at the MET and ATS units	2012-2015	States / Territories	Valid
	m) Implement meteorological data up links from automated meteorological stations and MET and ATS units for aircrafts	2012-2015	States / Territories	Valid
SDM	n) Monitor implementation progress	2009-2016	ICAO	Valid
GPIs	GPI/6: air traffic flow management; GPI/7: flexible/dynamic ATS route management; GPI/9: situational awareness; GPI/14: runway operations; GPI/17: implementation of datalink applications; GPI/18: aeronautical information; GPI 19: Meteorological systems.			