



International Civil Aviation Organization
CAR/SAM Regional Planning and Implementation Group (GREPECAS)
First Meeting of the Programmes and Projects Review Committee (PPRC/1)
(Mexico City, Mexico, 25-27 April 2012)

Agenda Item 3: Review of GREPECAS Programmes and Projects

3.2 Projects of the ATFM Programme

Follow-up of the Activities of ATFM Programme Projects

(Presented by the Secretariat)

SUMMARY	
<p>This working paper presents the activities for the regional implementation of the “Air traffic flow management” programme and its associated projects, “Improved demand-capacity balancing and Flexible use of airspace” approved at GREPECAS/16.</p>	
REFERENCES	
<ul style="list-style-type: none">• Report of the Fifteenth Meeting of the CAR/SAM Regional Planning and Implementation Group (GREPECAS/15), Rio de Janeiro, Brazil, 13-17 October 2008;• Report of the Sixteenth Meeting of the CAR/SAM Regional Planning and Implementation Group (GREPECAS/16), Punta Cana, Dominican Republic, 28 March-1 April 2011;• CAR/SAM AFTN Manual	
ICAO strategic objectives:	<i>A – Safety</i> <i>C- Environmental protection and sustainable development of air transport</i>

1. Background

1.1 As a result of the GREPECAS mandate and the experience of the CNS/ATM/SG, the eighth meeting of the ACG endorsed the proposal of a new ICAO organisation, which was presented at the GREPECAS/16 meeting and that involves several significant changes, such as the transformation of all subgroups into programmes and projects.

1.2 Likewise, during the GREPECAS/16 meeting where the existing subgroups were replaced with current projects, the representatives recalled that two projects were related to the ATFM Programme: Improvement of demand-capacity balancing and Flexible use of airspace.

2. Discussion

2.1 Regarding the “Air traffic flow management” Programme, the “Project for improving demand-capacity balancing” takes into account the importance of harmonising ATFM implementation in CAR/SAM States/Territories and International Organisations. In compliance with GREPECAS Decision

16/35, the meeting analysed and approved the CAR/SAM ATFM Manual, agreeing to its adoption by CAR/SAM States/Territories and International Organisations.

2.2 One of the issues identified at the SAM/IG meetings in the SAM Region was the lack of personnel specifically devoted to ATFM activities, and the fact that the persons responsible for managing ATFM in their States were involved in other functions, thus preventing continuity of tasks in this area.

2.3 Therefore, the creation or identification and maintenance of stable working groups to ensure the continuity of activities at national and regional level are deemed advisable.

2.4 Based on the above, one of the solutions found has been the inclusion in Regional Project RLA/06/901 of a Course on Runway and ATC Sector Capacity to be conducted in two phases and to be completed in May 2012, to train instructors in the performance of their activities in ATFM units.

2.5 During that same GREPECAS/16 meeting, it was noted that the “*Flexible use of airspace*” project established that the civil/military coordination philosophy facilitated the planning and conduction of military operations and providing the necessary conditions for mitigating possible adverse effects for civil aviation. The implementation of project activities will be coordinated through the drafting of a regional strategy and work programme for the implementation of the flexible use of airspace applying a phased approach, starting with a more dynamic sharing of reserved airspace, taking into account UASs.

2.6 Accordingly, with the support of Regional Project RLA/06/901, an expert has been hired to develop guidance material for the implementation of the flexible use of airspace concept, which shall be submitted in the first half of 2012.

2.7 Taking into account the importance of these projects, the States attending the SAM/IG/8 meeting agreed to report the status of implementation of ATFM in order to analyse its evolution based on the progress made at regional level, mainly with respect to factors affecting implementation, such as automation tools.

ICAO Global ATFM Manual

2.8 In many areas of the world, the main challenge is runway and ATC sector capacity, and ATFM is one solution. Since the nature of ATFM requires local solutions adapted to each operating environment, any global guidance material shall be drafted so as to provide a range of tools, procedures and recommended practices. ICAO Headquarters in Montreal, following the guidance of the D/ANB, has established a team to coordinate the development of this material entitled the ***ICAO Global ATFM Manual***. The first meeting of the group, held in Amsterdam on 5-8 March 2012, proposed and approved the use of the CAR/SAM ATFM Manual as a basis for the development of the future ICAO Global ATFM Manual.

2.9 It should be noted that progress related to project implementation is directly related to the action plans of the regional implementation groups, as approved by the States. The details of the activities related to CAR projects may be found in **Appendix A**, and to SAM projects in **Appendix B**.

3. Suggested action

3.1 The Meeting is invited to take note of the information contained in this working paper and to analyse **Appendices A and B**.

APPENDIX A1

PROJECT ON THE IMPROVEMENT OF DEMAND-CAPACITY BALANCING (DCB)

CAR Region	PROJECT DESCRIPTION (DP)	DP N° A1	
Programme	Title of the Project	Start	End
<i>Improve demand-capacity balancing (DCB)</i> (Programme coordinator: Victor Hernandez)	<i>Improve demand-capacity balancing (DCB)</i> Project coordinator: Ron Fisher (United States)	2008	2016
Objective	Support ATFM implementation based on the regional performance objectives of the NAM/CAR performance-based implementation plan (NAM/CAR RPBANIP)		
Scope	Gradual implementation of the ATFM service in the CAR Region to ensure demand-capacity balancing (DCB)		
Metrics	<ul style="list-style-type: none"> • Percentage of delayed flights • Air traffic demand • Runway and ATC sector capacity 		
Strategy	Project activities will be coordinated amongst project members, the project coordinator and the programme coordinator. The programme and project coordinators will coordinate the requirements of other projects and NAM/CAR implementation working groups. Experts nominated by the States, Territories, and International Organisations will be incorporated as needed.		

Rationale	GREPECAS supported ATFM implementation to ensure optimum air traffic flow during periods in which demand exceeds or is expected to exceed the available capacity of the ATS system.
Related projects	<ul style="list-style-type: none">• Implement performance-based navigation (PBN)• Flexible use of airspace• Improve ATM situational awareness• Implementation of the new ICAO flight plan format

Project Deliverables	Relationship with the NAM/CAR RPB-ANIP	Responsible Party	Status of Implementation*	Date of Delivery	Comments
Establish ATFM coordination procedures	RPOs 2, 3	Ron Fisher		2010	The regional ATFM manual was developed
Identify key stakeholders for purposes of coordination and cooperation, using a CDM process	RPOs 2, 3	States, Territories, International Organisations		2008	Regional coordination has been established with all stakeholders
Develop regional procedures for efficient and optimum use of aerodrome and runway capacity	RPOs 2, 3, 4, 5, 7,	States, Territories, International Organisations		2011	Regional Airport Acceptance Rate (AAR) procedures developed
Develop methods for demand/capacity forecasting;	RPOs 3	Ron Fisher		2012	
Identify and analyse traffic flow issues and develop methods for gradually improving efficiencies, as needed, through enhancements in: <ul style="list-style-type: none"> airspace organisation and management (AOM) and airway structure (unidirectional routes) 	RPOs 1, 2, 3, 9	Ron Fisher		2014	A PBN airspace concept was developed to improve airspace organisation and management (AOM)

<ul style="list-style-type: none"> communication, navigation and surveillance systems 					
Define common elements of situational awareness amongst FMUs; <ul style="list-style-type: none"> common traffic displays, common weather displays (Internet), communications (teleconferences, web), and methodology of daily advisory services through teleconferences 	RPOs 1, 2, 3, 9	States, Territories, International Organisations		2014	Regional Teleconferences are carried out on weekly basis
Identify training needs and develop the corresponding guidelines	RPOs 3	States, Territories, International Organisations		2014	Some ANSPs have developed training plans, as needed. A regional ATS Capacity workshop was held in Mexico City in 2011
Develop of ATS contingency plans and determine operational/technical considerations	RPOs 1, 2, 3	States, Territories, International Organisations		2010	Catalogue of ATS contingency plan developed, including hurricane and volcanic ash coordination procedures
Develop a strategy and framework for the implementation of ATFM units	RPOs 3	States, Territories, International Organisations		2016	
Develop a performance measuring programme	RPOs 1, 2, 3	ICAO		2010	Implementation results presented at NACC/DCA meetings
Monitor system performance	RPOs 1, 2, 3	ICAO		2010	The ICAO NACC Regional Office conducts this activity

Resources needed	CAR regional project with the participation of States, with a view to supporting ATFM training
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Grey	Tasks not started yet
Green	Activity being implemented as scheduled
Yellow	Activity started with some delay, but expected to be implemented on time
Red	Activity not implemented on time; mitigation measures are required.

APPENDIX A2

PROJECT ON THE IMPLEMENTATION OF THE FLEXIBLE USE OF AIRSPACE (FUA)

<i>CAR Region</i>	PROJECT DESCRIPTION (DP)	DP N° A2	
<i>Programme</i>	Title of the Project	Start	End
<i>Implementation of flexible use of airspace (FUA)</i> (Programme coordinator: Victor Hernandez)	<i>Implementation of flexible use of airspace (FUA)</i> Project coordinator: Ron Fisher (United States)	2008	2014
Objective	Support the implementation for optimisation, balancing and equity in the use of airspace amongst the different users, and for better civil/military coordination and cooperation, strengthening safety, based on the regional performance objectives of the NAM/CAR performance-based implementation plan (NAM/CAR RPBANIP)		
Scope	Drafting of guides for the implementation of the flexible use of airspace (FUA).		
Metrics	<ul style="list-style-type: none"> • Percentage of civil/military coordination committees implemented • Number of civil/military coordination and cooperation agreements implemented • Reduction in the number of permanently reserved airspaces 		
Strategy	Activities will be coordinated amongst project members, the project coordinator, and the programme coordinator. The programme and project coordinators will coordinate the requirements of other projects and NAM/CAR implementation working groups. Experts nominated by the States, Territories, and International Organisations will be incorporated to execute tasks, as required.		

Rationale	GREPECAS supported the implementation of the flexible use of airspace (FUA) with a view to optimising ATS airspace efficiency and air traffic flow management (ATFM).
Related projects	<ul style="list-style-type: none">• Implement PBN• Improve demand-capacity balancing• Improve ATM situational awareness

Project Deliverables	Relationship with the NAM/CAR RPB-ANIP	Responsible Party	Status of Implementation*	Date of Delivery	Comments
Regional guidance material	RPOs 2	States, Territories, International Organisations		2011	ICAO has developed guidance material on civil/military coordination to be used by States/Territories to develop national policies, procedures, and standards
Establish civil/military coordination bodies	RPOs 2	States, Territories, International Organisations		2012	Several States have established civil-military coordination bodies
Arrange for permanent liaison and close cooperation between civil ATS units and appropriate air defence units	RPOs 1, 2, 3	Ron Fisher		2014	
Conduct a regional review of special use airspace	RPOs 1, 2, 3	Ron Fisher		2014	
Full integration of civil and military aviation activities	RPOs 1, 2, 3	States, Territories, International Organisations		2016	

Monitor system performance	RPOs 2	ICAO		2010	ICAO NACC Regional Office conducts this activity
Resources needed	CAR regional project with the participation of States to support civil/military coordination for flexible use of airspace (FUA)				

Grey Task not started yet
 Green Activity being implemented as scheduled
 Yellow Activity started with some delay, but expected to be implemented on time
 Red Activity not implemented on time; mitigation measures are required.

END

APPENDIX B1

PROJECT ON IMPROVING DEMAND-CAPACITY BALANCING

PROJECT DESCRIPTION (DP)		DP N° B1	
<i>Programme</i>	Title of the Project	Start	End
<i>Air traffic flow management (ATFM)</i> (Programme coordinator: Celso Figueiredo)	Improve demand-capacity balancing <i>Project coordinator: Juarez Franklin Gouveia (Brazil)</i> <i>Experts contributing to the project: Jorge Fernandez (ATS consultant), Tomas Yentzch (Paraguay)</i>	2012	2018
Objective	Avoid overloading the ATC and airport system, strengthening safety, taking into account the reduction of delays caused by weather and traffic conditions that leads to a reduction of fuel consumption and contaminating emissions. Likewise, it seeks to improve prediction and management of excess demand for services in ATC sectors and aerodromes.		
Scope	The scope of the project defines that the implementation of the ATFM service should start with a monitoring of airports and airspace in order to identify significant increments in ground delays and in-flight holding, as well as bottlenecks (ATC sector, runway, apron, and airport facilities). Furthermore, the determination of capacity and the analysis of air traffic demand are important elements for improving demand-capacity balancing.		
Metrics	<ul style="list-style-type: none"> - Percentage of delayed flights - Air traffic demand - Runway and ATC sector capacity 		

Strategy	<p>The implementation of project activities will define ATFM implementation in the SAM Region through the analysis of airspace demand and capacity, taking into account that States in the phase of implementation shall coordinate with the ATM community the necessary actions for ATFM implementation. The infrastructure and the database, as well as the policy, standards and procedures are important components for the implementation of this project.</p>
Rationale	<p>GREPECAS considered that early implementation of ATFM shall ensure an optimum air traffic flow to or through certain areas during periods when demand exceeds or is expected to exceed available ATC system capacity. Therefore, the ATFM systems should reduce aircraft delays both in flight and on ground in order to avoid system overload.</p>
Related projects	<ul style="list-style-type: none">• Flexible use of airspace• PBN operational implementation• Implementation of the new ICAO flight plan format• Automation

Project deliverables	Relationship with the regional performance-based plan (PFF)	Responsible Party	Status of Implementation *	Date of Delivery	Comments
Assess the progress made in the ATFM implementation work programme	PFF SAM ATM 05	Juarez Franklin Gouveia		2012	-
Calculation of airspace capacity (ATC sector) of airspace regions of the States	PFF SAM ATM 05	Juarez Franklin Gouveia		SAM/IG/9	States shall submit their studies to the Secretariat before SAMIG/9. Brazil and Colombia already submitted their studies.
List of airspace sectors in which demand exceeds existing capacity during certain periods, including simulations conducted by States, if necessary.	PFF SAM ATM 05	Juarez Franklin Gouveia		SAM/IG/9 SAM/IG/10	States shall submit their studies to the Secretariat before SAMIG/9. Brazil and Colombia have already submitted their studies.
List of operational factors affecting demand and airspace capacity, with a view to optimising existing capacity, including simulations, if necessary.	PFF SAM ATM 05	Juarez Franklin Gouveia		SAM/IG/9	States shall submit their studies to the Secretariat before SAMIG/9. Brazil and Colombia already submitted their studies.








Policy, standards and procedures that define the frame of reference for the implementation of ATFM centralised units.	PFF SAM ATM 05	Juarez Franklin Gouveia		2014	-
Regional strategy for the implementation of the flexible use of airspace (FUA)	PFF SAM ATM 04	Marco Vidal		2015	-
Definition of common situational awareness elements	PFF SAM ATM 06	Paulo Vila		2012	States exchange information via web conferences. Paraguay, Colombia and Venezuela exchange information via web conferences. The States undertake to hold web conferences starting on 21 November 2011, in accordance with the implementation plan.
Personnel trained in strategic ATFM measures applicable to the airspace	PFF SAM ATM 05	Juarez Franklin Gouveia		TDB	Ongoing activity. An ATFM/CDM course was held in Brazil in 2010 with the participation of several States.
List of factors affecting the decision to implement.	PFF SAM ATM 05	Juarez Franklin Gouveia		SAM/IG/9	-

ATFM system performance oversight plan.	PFF SAM ATM 05	Juarez Franklin Gouveia		2013	-
ATFM post-implementation follow-up programme	PFF SAM ATM 05	Juarez Franklin Gouveia		August 2013	-
Resources needed	Designation of experts for the execution of some of the deliverables.				

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ID	Task Name	1st Half				2nd Half				
		Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4
1	B1 - IMPROVE THE BALANCE BETWEEN DEMAND AND CAPACITY/MEJORAR EL EQUILIBRIO ENTRE LA DEMANDA Y CAPACIDAD		19/10	19/10						
2	B1.1 Airport demand/capacity (runway capacity) analysis / Análisis de la Demanda y Capacidad		30/09	States / Estados		14/05				
3	Calculation of airport (runway capacity) and ATC sectors Capacity in the SAM Region as per the Course offered by Brazil/Cálculo de la Capacidad de Pista y Sectores ATC de acuerdo al método impartido en el Curso de Capacidad de Pista ofrecido por			States / Estados						
4	Determine operational factors affecting airport demand/Determinar los factores operacionales que afectan la demanda y la capacidad del aeropuerto para optimizar la utilización de la capacidad existente, incluyendo simulaciones, de ser necesario			States / Estados		14/05	14/05			
5	B1.2 Infrastructure and data base /Infraestructura y Base de Datos		States / Estados	19/10						
6	Send to the Automation Group the data base information of Brazil, United States/Enviar al Grupo de Automatización los resultados de las bases de datos de dependencias ATFM de Brasil, Estados Unidos y									
7	B1.3 Policy, standards and procedures / Política, Normas y Procedimientos									
8	Publish AIP Supplements/ Publicar suplementos AIP									
9	B1.4 Monitor system performance/ Monitorear performance del sistema			10/10	States / Estados		14/05			
10	Implement the ATFM post-implementation follow-up programme at airports/Implantar programa de seguimiento pos-implantación de la ATFM en los aeropuertos			10/10	States / Estados		14/05			
11	Execute the ATFM post-implementation follow-up programme at airports/Ejecutar programa de seguimiento pos-implantación de la ATFM en los aeropuertos			10/10	States / Estados		14/05			
12	B1.5 Final decision for implementation / Decisión final de implementación			14/05	States / Estados		18/05			

ID		Task Name	1st Half			2nd Half		1st Half		2nd Half	
			Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4
13		Review factors affecting decision to implement / Revisar factores que afectan decisión de implantación				States / Estados 14/05					
14		Declare pre-operational implementation within area defined/ declare pre-operational implantación Pre-operacional dentro de área				States / Estados					
15		Declare the final operational implementation in the defined area/ Declarar implantación operacional definitiva dentro de área definida				States / Estados 18/05					
16		B1.6 Demand and airspace capacity analysis / Análisis de la Demanda y Capacidad del Espacio Aéreo									
17		Identify airports where periods exist where demand exceeds existing capacity / Identificar aeropuertos donde existan períodos cuando la demanda es mayor a la capacidad existente		19/10		States / Estados	14/05				
18		Determine operational factors affecting airport demand and capacity. / Determinar factores operacionales que afectan la demanda y la capacidad del aeropuerto para optimizar la utilización de la capacidad existente		19/10		States / Estados	14/05				
19		Present the conclusions on existing airport capacity / Presentar las conclusiones de la capacidad aeroportuaria existente		19/10		States / Estados	14/05				

APPENDIX B2

PROJECT ON THE FLEXIBLE USE OF AIRSPACE

PROJECT DESCRIPTION (DP)		DP N° B2	
<i>Programme</i>	Title of the Project	Start	End
<i>Airspace flow management (AFM)</i> (Programme coordinator: Celso Figueiredo)	Flexible use of airspace (FUA) <i>Project coordinator: Marco Vidal</i> <i>Experts contributing to the project: Jorge Fernandez (ATS consultant), Tomas Yentzch (Paraguay)</i>	2012	2018
Objective	Optimisation, balance and equity in the use of airspace among the different users, and better civil/military coordination and cooperation, strengthening safety.		
Scope	The FUA concept will be applied harmoniously in the FIRs for which States are responsible, allowing for the short- and medium-term introduction of airspace improvements in accordance with the ATS route network optimisation programme.		
Metrics	<ul style="list-style-type: none"> • Percentage of civil/military coordination committees or similar bodies implemented • Number of civil/military coordination and cooperation agreements implemented • Reduction in the number of permanently reserved airspaces 		

Strategy	<p>The project on the implementation of the flexible use of airspace will be implemented applying a phased approach, which starts with a more dynamic sharing of the reserved airspace, taking into account UASs. Likewise, SAR activities and military exercises and activities may require joint coordination and cooperation between two or more States at a given point in time, thus the importance of having civil/military coordination and cooperation committees in place. The systematic application of this concept will be taken into account for the optimisation of the route network, especially for the definition of scenarios for the implementation of non-permanent or conditional routes.</p>
Rationale	<p>The flexible use of airspace is an airspace management concept described by the International Civil Aviation Organization (ICAO), dealing with the optimisation, balancing and equity in the use of airspace amongst the different civil and military users. This is facilitated by strategic coordination and dynamic interaction, and is based on Appendix O to Assembly Resolution A 37-15, the GPI-1 initiative of the Global Air Navigation Plan (ICAO Doc 9750) and GREPECAS conclusions.</p>
Related projects	<p>PBN operational implementation Improvement of demand-capacity balancing Implementation of the new ICAO flight plan format Automation</p>

Project Deliverables	Relationship with the regional performance-based plan (PFF)	Responsible Party	Status of Implementation *	Date of Delivery	Comments
Guidance material on the flexible use of airspace concept	PFF SAM ATM 04	Marco Vidal		SAM/IG/9	Project RLA/06/901 is supporting the hiring of 2 experts for a period of 3 weeks to develop such material.
Proposals for route implementation and/or realignment based on the FUA	PFF SAM ATM 04	Marco Vidal		SAM/IG/9	-
Regional strategy and work programme for implementing the flexible use of airspace through a phased approach, starting with a more dynamic sharing of reserved airspace, taking into consideration UASs.	PFF SAM ATM 04	Marco Vidal		2018	-

Resources needed	Designation of experts in the execution of some of the deliverables.
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Green	Activity being implemented as scheduled
Yellow	Activity started with some delay, but expected to be implemented on time
Red	Activity not implemented on time; mitigation measures are required.

GRUPO REGIONAL CAR/SAM DE PLANIFICACION Y EJECUCION / CAR/SAM REGIONAL PLANNING AND IMPLEMENTATION GROUP
FLEXIBLE USE OF AIRSPACE / USO FLEXIBLE DEL ESPACIO AÉREO

ID	Task Name	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
1	FLEXIBLE USE OF AIRSPACE / USO FLEXIBLE DEL ESPACIO AÉREO																
2	Develop guidance material on civil/military coordination and cooperation, for the definition of policies, pro / Elaborar material de orientación sobre coordinación y cooperación civil/militar para estipular políticas, procedimientos y normas nacionales	01/01															
3	Model for FUA LOA / Desarrollar modelo de carta de acuerdo FUA																
4	Present model for using non-permanent routes similar to that applied in EUROCONTROL (Conditional Routes – CDR) / Presentar modelo de empleo de rutas no permanentes, similares al aplicado en EUROCONTROL	01/01															
5	Define criterion for defining scenarios in which non-permanent routes are applied / Definir criterio para definición de los escenarios en que son aplicadas rutas no permanentes																
6	Define criterion for categorising non-permanent routes / Definir criterio para la categorización de rutas no																
7	Representation of non-permanent routes in aeronautical charts / Representación de las rutas no permanentes en las Cartas Aeronáuticas																
8	Carry out an assessment of the amount and extension of reserved airspaces / Llevar a cabo una evaluación de la cantidad y extensión de espacios aéreos reservados																
9	Establish committees or similar civil/military coordination bodies / Establecer comités u órganos similares de coordinación civil/militar																
10	Select person or group of persons who will develop the task and Comm. Secretariat. / Seleccionar a la persona o grupo de personas que se harán cargo del desarrollo de la tarea y de la Secretaría del																
11	Prepare terms of reference and objectives of the committee. / Elaborar los términos de referencia y objetivos del Comité																
12	Develop work programme / Desarrollar un programa de trabajo																
13	Approve terms of reference and work programme / Aprobar los términos de referencia y el programa de																

