



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

3.4 Projects of the Ground-Ground and Ground-Air Communications Infrastructure Programme

DESCRIPTION AND FOLLOW-UP OF THE ACTIVITIES OF THE ATN INFRASTRUCTURE (D1) AND GROUND-GROUND AND AIR-GROUND ATN APPLICATIONS (D2) PROJECTS OF THE GROUND-GROUND AND GROUND-AIR COMMUNICATIONS INFRASTRUCTURE PROGRAMME FOR THE CAR AND SAM REGIONS

(Presented by the Secretariat)

SUMMARY	
This working paper presents a brief description of the projects and updated information on the status of implementation of activities related to the ATN Architecture and ATN ground-ground and ground-air applications projects of the ATN architecture programme for the CAR and SAM Regions.	
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 First Meeting of the CNS/ATM Subgroup (CNS/ATM/2) Lima, Peru, 15-19 March 2010;• Report of the Second Meeting of the CNS/ATM Subgroup (CNS/ATM/2), Mexico City, 16-19 November 2010;• Report of the Sixteenth Meeting of the CAR/SAM Regional Planning and Implementation Group (GREPECAS/16), Punta Cana, Dominican Republic, 28 March to 1 April 2011	
ICAO strategic objectives:	<i>A – Safety</i> <i>C- Environmental protection and sustainable development of air transport</i>

1. Background

1.1 The GREPECAS/6 meeting, with a view to implementing performance-based regional plans in the CAR/SAM Regions pursuant to the Global Air Navigation Plan and the Global ATM Operational Concept, agreed to modify the GREPECAS organisation, whereby the AERMET, AGA/AOP, AIM and CNS/ATM Subgroups and their respective task forces were eliminated and their work programmes and terms of reference transformed into programmes and projects. Accordingly, it formulated Decisions 16/45 and 16/47.

1.2 In compliance with GREPECAS Decision 15/34 and to ensure better ATM and CNS coordination and the development of CAR/SAM performance-based plans for the implementation of the ATM global concept, the CNS/ATM Subgroup had already organised its work programme in nine projects distributed in four programmes (PBN, ATFM, automation and ATM situational awareness), serving as a reference for the new GREPECAS organisation.

1.3 In order to organise the work programme of the CNS/ATM Subgroup in projects, the Communications, Navigation, Surveillance and Air Traffic Management Subgroup held two meetings, the first one in Lima, Peru, on 15-19 March 2010, and the second one in Mexico City, Mexico, on 16-19 November 2010.

1.4 Decisions 16/45 and 16/46 maintained the nine projects distributed in the same four programmes of the CNS/ATM Subgroup, now with a view to improving effectiveness, reducing the time required for obtaining approvals, actions and results, having better internal coordination among the different bodies, participants and responsibilities, and having a project management and cost reduction methodology. GREPECAS/16 considered that the nine projects and four programmes would be implemented separately in the CAR and SAM Regions. Accordingly, officers of the NACC and SAM Regional Offices will coordinate CAR and SAM programmes, respectively.

1.5 There will be nine projects for the CAR Region and nine projects for the SAM Region. The coordinators of the CAR Region will be experts of CAR States, and the coordinators of SAM projects will be experts of the SAM Region.

1.6 As a result of this division, although in general the same titles for projects and programmes were maintained, some changes were made in project activities to be consistent with the reality of the respective region.

1.7 Planning for the implementation of activities related to ATN and its applications is contemplated in the ATN Architecture Implementation (D1) and the ATN Ground-Ground and Ground-Air Applications (D2) projects, both under the Ground-Ground and Ground-Air Communications Infrastructure Programme.

2. Discussion

2.1 At present, in the CAR Region, Project D addresses ATN architecture and its ATN ground-ground and ground-air applications, while Project D1 in the SAM Region deals with ATN ground-ground and ground-air applications. In order to facilitate the task of reviewing the projects for the CAR and SAM Regions, respectively, **Appendices A** and **B** to this working paper contain a project description document and the respective GANTT diagram.

2.2 Project description documentation contains information on objectives, scope, metrics, strategy, rationale, related projects, deliverables, responsible parties, resources needed, start and end, and a section for comments describing the status of the deliverable. The GANTT diagram shows, for each project, the time that is foreseen will be devoted to the various tasks or activities throughout the life cycle of the project.

2.3 Coordination of follow-up activities between the project coordinator and the experts nominated by the States, as well as the required coordination with the project coordinator were done *via* teleconferences or face-to-face meetings within the meeting schedule at each Regional Office.

2.4 Project achievements include the following:

- a) CAR Region: Project D assessed the technical capabilities and characteristics of CAR regional networks for ATN implementation. A third assessment involving the new MEVA III network and the MPLS IP digital network of the East Caribbean is contemplated. Likewise, assessments and preparatory work were initiated for the implementation of AMHS interconnections and their respective implementation plan.
- b) SAM Region: Project D1 conducted a study of the new ATN backbone architecture, developed the technical specifications, and started a bidding process for the implementation of a new ground- and satellite-based network that uses the IP protocol (REDDIG II) on the first half of 2012.

2.5 Difficulties encountered in the CAR Region for the implementation of project activities include the reduced number of experts, which hinders the attainment of deliverables. To the extent possible, other experts of the CAR working groups and the MEVA TMG should be available. The SAM Region currently lacks the experts to implement some of the activities, and it is expected that this situation will be resolved by the end of the first quarter of 2012.

3. **Suggested action**

3.1 The Meeting is invited to:

- a) take note of the information contained in this working paper; and
- b) review the project description and the GANTT diagram for each project described in **Appendices A** and **B** with a view to approving their planning, progress and implementation.

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APPENDIX A

PROJECT ON THE ATN INFRASTRUCTURE IN THE CAR REGION AND ITS GROUND-GROUND AND GROUND-AIR APPLICATIONS

CAR Region	PROJECT DESCRIPTION (DP)	DP N° D	
Programme	Title of the Project	Start	End
Ground-ground and air-ground communications infrastructure (ICAO programme coordinator: Julio Siu)	ATN infrastructure in the CAR Region and its ground-ground and ground-air applications <i>Project coordinator:</i> Dulce Roses (United States) <i>Experts contributing to the project:</i> Carlos Jimenez (Cuba) Fernando Casso (Dominican Republic) Roger Perez/Eduardo Vega/Mayda Avila (COCESNA) Veronica Ramdath/ Randy Gomes (Trinidad and Tobago) Susan E. Pfingstler (IATA)	March 2010	June 2015
Objective	Support the implementation of the ATN network in the CAR Region and of its ground-ground and air-ground applications, based on the regional performance objectives of the NAM/CAR performance-based implementation plan (NAM/CAR RPBANIP) and the CAR/SAM PNA CNS 1 Ba, 1Bb, and 1Bc plans.		
Scope	The project contemplates: <ul style="list-style-type: none"> • an analysis of the existing ATN implementation capacity of CAR networks • an assessment and definition of technical improvements and/or requirements for ATN implementation • guides and recommendations to expedite the implementation of ground-ground (AIDC, AMHS) and air-ground (using VDL2 and FMC WPR) applications, taking into account Doc GOLD 		
Metrics	<ul style="list-style-type: none"> • Percentage of implementation of ATN architecture and routers • Number of AMHS/AIDC applications implemented in the CAR Region • Number of guides on ATN and ATN applications completed 		
Strategy	<ul style="list-style-type: none"> • Project activities were coordinated amongst project members, the project coordinator, and the programme coordinator, mainly via teleconferences and meetings held during events contemplated in the work programme, as was the case of the meeting held immediately after the AMHS meeting in April 2012. • The project coordinator and the programme coordinator coordinated the requirements of other projects, together with information from the NAM/CAR implementation working groups. Additional experts were added as required for specialised tasks. • The deliverables of this project were sent to the programme coordinator for submittal to GREPECAS. 		

Rationale	Support implementation and propose documentation for use by States as a reference for the transition, testing, and contingencies related to the new flight plan format.
Related projects	This project is related to the projects of Programmes B, C, and MET

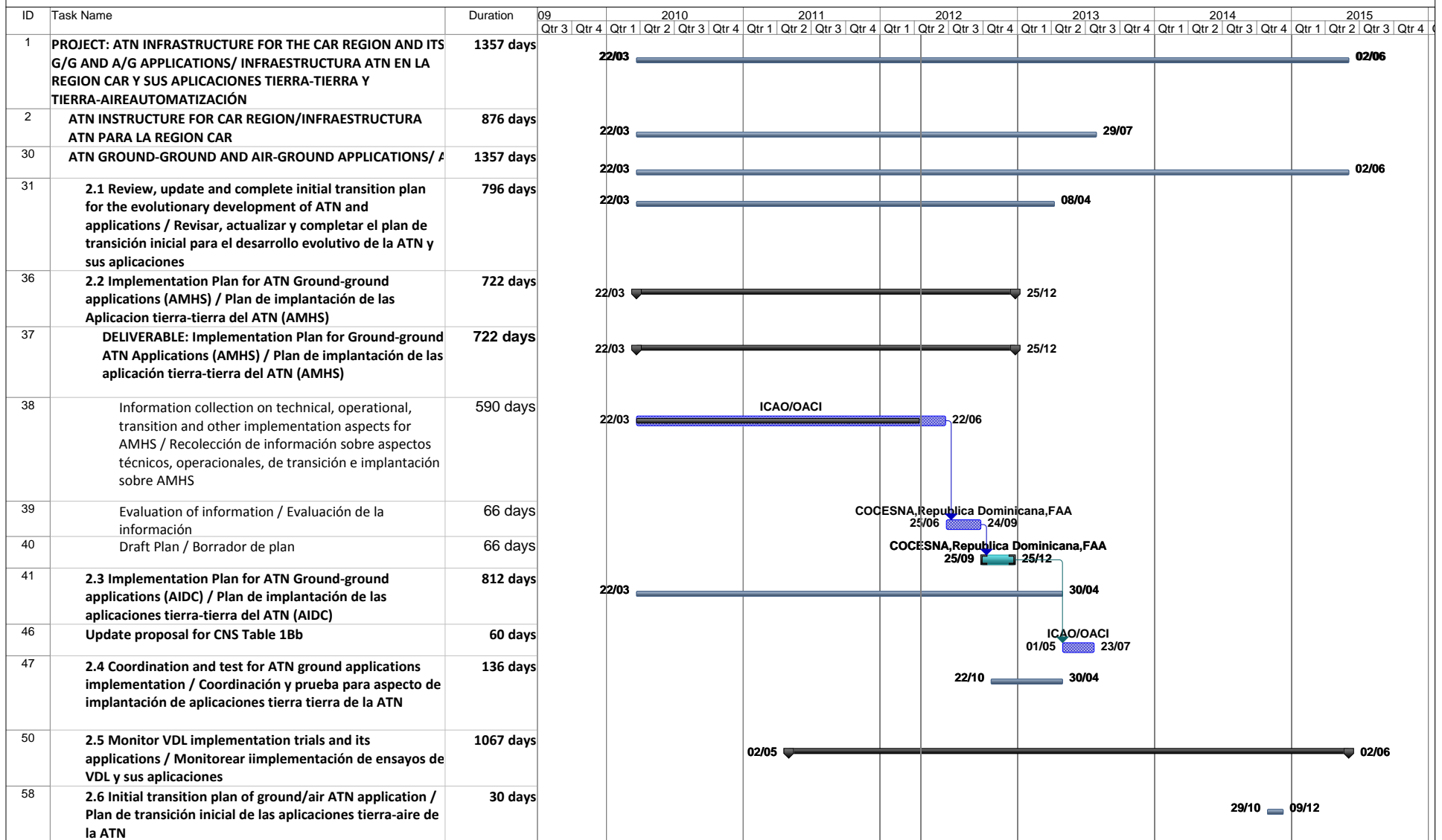
Project Deliverables	Relationship with the regional performance-based plan (PFF)	Responsible Party	Status of Implementation ^{1*}	Date of delivery	Comments
Performance assessment of the MEVA II REDDIG interconnection	RPO 9, NAM/CAR RPBANIP	Project D		Completed	Assessments made during MEVA TMG meetings
Technical study of CAR networks for ATN implementation	RPO 9, NAM/CAR RPBANIP	Project D		December 2012	To be conducted in 3 parts: The first and second parts concerning the MEVA II and ECAR networks have been completed. Currently, work is being done on the third part involving MEVA III- ECAR MPLS
Assessment of preliminary test results to determine the required bandwidth for the ATN network in the CAR and SAM Regions	RPO 9, NAM/CAR RPBANIP	Project D		Completed	Completed 2010
Study for the configuration of an IP backbone network	RPO 3,9, 11, 12 NAM/CAR RPBANIP	Project D		March 2013	
Updating of the CAR/SAM regional ATN router plan	RPO 1,3,5,9,11, 12 NAM/CAR RPBANIP	ICAO		July 2013	
Study of communication requirements to support ATFM implementation	RPO 3 and 9 NAM/CAR RPBANIP	Project D		January 2013	

¹ *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

Project Deliverables	Relationship with the regional performance-based plan (PFF)	Responsible Party	Status of Implementation ^{1*}	Date of delivery	Comments
Study of communication requirements to support the migration to the new OPMET format	RPO 9 and 12 NAM/CAR RPBANIP	Project D		January 2013	
Plan for the transition of ATN and ATN applications in the CAR Region	RPO 1,3,4,5,9,11 and 12 NAM/CAR RPBANIP	Project D		April 2013	
AMHS addressing plan	RPO 9, NAM/CAR RPBANIP	States/ Territories/ International Organisations		Completed	
Plan for the implementation of ATN ground-ground applications (AMHS)	RPO 1,3,5,9,11, 12 NAM/CAR RPBANIP	States/ Territories/ International organisations		December 2012	
Plan for the implementation of ATN ground-ground applications (AIDC)	RPO 9 NAM/CAR RPBANIP	Project D		April 2013	
Proposed update of Table CNS 1Bb	RPO 9 NAM/CAR RPBANIP	ICAO		July 2013	
Assessment and recommendations related to AMHS coordination and testing	RPO 9, NAM/CAR RPBANIP	ICAO		April 2013	
Plan for the implementation of VDL and its applications in the CAR Region	RPO 9, NAM/CAR RPBANIP	ICAO		July 2014	
Assessment of the results of trials on the implementation of VDL and its applications	RPO 9, NAM/CAR RPBANIP	Project D		May 2015	
Plan for the transition of ATN ground-air applications	RPO 9, NAM/CAR RPBANIP	Project D		June 2015	

Project Deliverables	Relationship with the regional performance-based plan (PFF)	Responsible Party	Status of Implementation ^{1*}	Date of delivery	Comments
Monitoring of the implementation of available technology for ATN ground-air applications	RPO 9, NAM/CAR RPBANIP	ICAO/ States/ Territories		June 2015	
Resources needed	Designation of experts and implementation of activities by the group of experts (WGs).				

CAR/SAM REGIONAL PLANNING AND IMPLEMENTATION GROUP / GRUPO REGIONAL CAR/SAM DE PLANIFICACION Y EJECUCION (GREPECAS)
ATN INFRASTRUCTURE AND GROUND-GROUND AND AIR-GROUND APPLICATIONS / INFRAESTRUCTURA ATN Y SUS APLICACIONES TIERRA-TIERRA Y TIERRA-AIRE



APPENDIX B1

PROJECT ATN ARCHITECTURE IN THE SAM REGION

SAM Region	PROJECT DESCRIPTION (PD)	PD N° D1	
Programme	Project Title	Starting Date	Ending Date
Ground-ground and Air-ground Telecommunications Infrastructure (Programme Coordinator: Onofrio Smarrelli)	ATN Architecture in the SAM Region <i>Project Coordinator: Athayde Licério Vieira Frauche (Brazil)</i> <i>Contributing experts: Omar Gouarnalusse (Argentina), Michel Areno (France), Jose Luis Paredes (Peru), Jesús Bolívar (Venezuela), Christian Amaris de León (Colombia) and Hernando Lara (Bolivia)</i>	March 2010	June 2013
Objective	Study and implementation of optimum architecture for an IP protocol backbone network (REDDIG II) for the SAM Region		
Scope	<p>Study and implementation of an IP backbone network for the SAM Region, including an optimum configuration and considering, among other deliverables, the following:</p> <ul style="list-style-type: none"> • Technical review of the regional telecommunications networks (ground, satellite or mixed) for the implementation of ATN under a cost-benefit analysis • Holding of trials to determine the ATN bandwidth necessary to support ground applications • IP addressing scheme (IPv4 and IPv6) and analysis of the data communications infrastructure in support to ATS operational requirements in the short, medium and long term • Support in the bidding process by TCB (Montreal) and in the implementation of the IP backbone network for the SAM Region 		
Metrics	<ul style="list-style-type: none"> • Percentage concluded of the study for an IP backbone network for the SAM Region • Drafting of technical specifications for REDDIG II • REDDIG II implementation percentage 		
Strategy	<ul style="list-style-type: none"> • All tasks will be conducted by experts nominated by States of the SAM Region members of the project <i>ATN Architecture in the SAM Region</i>, under management of the project coordinator, in coordination with the programme coordinator. Communications among project members, as well as between the project coordinator and programme coordinator, shall be carried out through teleconferences and the Internet. In addition, the programme coordinator, together with the project coordinator and the contributing experts, can convene at SAM/IG implementation meetings • Once studies are completed and REDDIG II is implemented, the results will be submitted to the ICAO programme coordinator as a final consolidated document for its analysis, review, approval and presentation at the GREPECAS PPRC 		

<p>Justification</p>	<ul style="list-style-type: none"> • A study on an ATN IP backbone network for the SAM Region will permit defining the optimum communications network architecture for said Region, currently mainly based on REDDIG (satellite digital communications network). • To arrive to the conclusion on the better network infrastructure, the determining of the current applications demand in terms of band width is considered very important. In this respect, States are carrying out tests, mainly AMHS, to determine the associated space segment. The action is considered as the beginning of the network's cost-benefit relationship research. • In addition, the increasing band width requirements for new services such as automation, surveillance, ATFM and meteorology. Also, a close relationship with the other programmes and their respective projects is necessary, with the aim of collecting the operational requirements demanded by the mentioned applications and their respective tentative implementation dates • After developing all tasks necessary for determining the better network infrastructure, technical specifications for the purchasing and implementation of the SAM backbone network (REDDIG II) will be drafted • This project ends once the SAM IP backbone network (REDDIG II) is implemented • This project contributes to the implementation of SAM PFF CNS 01, CNS04, ATM 05, ATM 06, MET 04 and AIM 02 of the <i>Air Navigation System Performance-Based Implementation Plan for the SAM Region (SAM PBIP)</i>
<p>Related Projects</p>	<ul style="list-style-type: none"> • Air Navigation Systems in Support of PBN • Automation • Improve ATM Situational Awareness • Implementation of the ICAO New Flight Plan Format • ATN Ground-ground and Air-ground Applications

Project Deliverables	Relationship with Performance Based Regional Plan (PFF)	Responsible	Status of Implementation ¹	Delivery Date	Remarks
Analysis of the current SAM communications network (REDDIG)	PFF SAM CNS01	REDDIG Administration, Project Coordinator and Omar Gouarnalusse (Argentina)		August 2010	Completed
Analysis of the current MEVA II/ REDDIG interconnection	PFF SAM CNS01	REDDIG Administration		June 2011	Completed
Analysis of the AMHS band width impact on the current REDDIG satellite infrastructure	PFF SAM CNS01	Project Coordinator and Omar Gouarnalusse (Argentina)		September 2010	Completed
Long term applications requirements in the SAM Region	PFF SAM CNS01 PFF SAM CNS 04 PFF SAM MET 04 PFFs SAM ATM 05 and 06 PFF SAM AIM 02	ICAO		September 2010	Completed

¹**Gray:** Activity has not started**Green:** Activity has or will deliver planned milestone as scheduled**Yellow:** Activity is behind schedule on milestone, but still within acceptable parameters to deliver milestone on time**Red:** Activity has failed to deliver milestone on time, mitigation measures need to be identified and implemented

Project Deliverables	Relationship with Performance Based Regional Plan (PFF)	Responsible	Status of Implementation ¹	Delivery Date	Remarks
Comparative study on satellite, ground and mixed (satellite and ground) IP based network models for the SAM Region	PFF SAM CNS 01	Project Coordinator, Omar Gouarnalusse (Argentina) and REDDIG Administration		October 2010	Completed Approved by REDDIG Member States
Definition of ATN IP network infrastructure model for the SAM Region	PFF SAM CNS 01	Project Coordinator, Omar Gouarnalusse (Argentina) and REDDIG Administration		October 2010	Completed Approved by REDDIG Member States
Completion of IPv4 addressing plan for the SAM Region	PFF SAM CNS 01	Project Coordinator and Omar Gouarnalusse (Argentina)		August 2010	Completed The addressing scheme was approved through GREPECAS Conclusion 16/37
Drafting of technical specifications for REDDIG II	PFF SAM CNS01 PFF SAM CNS 04 PFF SAM MET 04 PFFs SAM ATM 05 and 06 PFF SAM AIM 02	Project Coordinator, Omar Gouarnalusse (Argentina) and REDDIG Administration		August 2011	Completed and approved by REDDIG Member States
Drafting of safety guidelines for REDDIG	PFF SAM CNS 01	REDDIG Administration		May 2012	An initial document has been drafted

Project Deliverables	Relationship with Performance Based Regional Plan (PFF)	Responsible	Status of Implementation ¹	Delivery Date	Remarks
Drafting of IP Routing Policy	PFF SAM CNS 01	Project Coordinator		October 2013	An initial document has been drafted
Support in the bidding process and in the offer evaluation		Project Coordinator, Omar Gouarnalusse (Argentina), Michel Arenó (France), José Luis Paredes (Peru), Jesus Bolívar (Venezuela), Hernando Lara (Bolivia), Christian Amaris (Colombia) and REDDIG Administration		April 2012	The bidding will be conducted by TCB, under coordination with the ICAO Regional office. The evaluation process will count with the REDDIG Administration and CNS experts selected by the REDDIG Member States
Support in the implementation of REDDIG II		REDDIG Administration, Project Coordinator and Omar Gouarnalusse (Argentina)		November 2012- December 2013	This activity is scheduled to start at the end of 2012
Monitor the ATN architecture project activities in the SAM Region		ICAO		March 2010- December 2013	
Resources necessary	Economic contribution necessary for the implementation of REDDIG II				

CAR/SAM REGIONAL PLANNING AND IMPLEMENTATION GROUP / GRUPO REGIONAL CAR/SAM DE PLANIFICACION Y EJECUCION (GREPECAS)
ATN ARCHITECTURE IN THE SAM REGION / ARQUITECTURA DE LA ATN EN LA REGION SAM SAM

ID	Nombre de la tarea	2009		2010		2011		2012		2013		2014	
		H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2
1	ATN ARCHITECTURE IN THE SAM REGION / ARQUITECTURA DE LA ATN EN LA REGION SAM SAM			19/03								30/01	
2	PROJECT MANAGEMENT PROCESS/PROCESOS DE GERENCIAMIENTO DEL PROYECTO			19/03	12/07								
3	FORMALIZATION OF THE PROJECT FORMALIZACIÓN DEL PROYECTO			19/03	12/07								
4	DP (Description of the Project / Descripción del Proyecto)			19/03	12/07								
20	EAP												
25	PROCESS FOR THE STUDY OF A SAM ATN INFRASTRUCTURE / PROCESOS DE ESTUDIOS DE UNA INFRAESTRUCTURA DE LA ATN SAM			02/06	09/07								
26	START OF THE PROJECT / INICIO DEL PROYECTO			19/05								24/12	
27	Collect and analyze current networks infrastructure and applications/services / Levantar y Analizar la infraestructura y Aplicaciones/Servicios de las Redes Actuales			19/05	29/07								
28	Analysis of the current SAM communications network (REDDIG) / Analisis de la situación actual de la red de comunicaciones SAM (REDDIG)			O. Gouarnalusse, A. Frauche 19/05	03/08								
29	Analysis of REDDIGs current infrastructure / Análisis de la Infraestructura actual de la REDDIG			O. Gouarnalusse, A. Frauche, Administración REDDIG 19/05	22/06								
30	Analysis of bandwidth used in REDDIG / Análisis del ancho de banda utilizado en la REDDIG			O. Gouarnalusse, A. Frauche 19/05	26/07								
31	Analyze bandwidth for AFTN service / Analizar el ancho de Banda para el Servicio AFTN			O. Gouarnalusse, A. Frauche 19/05	26/07								
32	Identify and analyze traffic generated by the application / Identificar e analizar el tránsito generado por la aplicación			O. Gouarnalusse, A. Frauche, Administración REDDIG 19/05	26/07								
33	Analysis of the bandwidth used by the application / Análisis del ancho de banda utilizado por la aplicación			O. Gouarnalusse, A. Frauche, Administración REDDIG 19/05	26/07								
34	Analyze band for voice over frame relay / Analizar Banda para Voz Over Frame Relay			19/05	26/07								
35	Identify and analyze traffic generated by the application / Identificar y analizar el tránsito generado por la aplicación			O. Gouarnalusse, A. Frauche, Administración REDDIG 19/05	26/07								
36	Analysis of the bandwidth used with DAMA / Análisis del ancho de banda utilizado con la utilización de DAMA			O. Gouarnalusse, A. Frauche, Administración REDDIG 19/05	26/07								
37	Analysis of the bandwidth used with PAMA / Análisis del ancho de banda utilizado con la utilización de PAMA			O. Gouarnalusse, A. Frauche, Administración REDDIG 19/05	26/07								
38	Analyze band for surveillance/automated systems / Analizar banda para sistema de vigilancia/automatizados			19/05	26/07								

CAR/SAM REGIONAL PLANNING AND IMPLEMENTATION GROUP / GRUPO REGIONAL CAR/SAM DE PLANIFICACION Y EJECUCION (GREPECAS)
ATN ARQUITECTURE IN THE SAM REGION / ARQUITECTURA DE LA ATN EN LA REGION SAM SAM

ID	Nombre de la tarea	2009		2010		2011		2012		2013		2014	
		H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2
39	Identify and analyze traffic generated by the application / Identificar e analizar el tránsito generado por la aplicación			O. Gouarnalusse, A. Frauche, Administración REDDIG 19/05	26/07								
40	Analysis of the bandwidth used by the application / Análisis del ancho de banda utilizado por la aplicación			O. Gouarnalusse, A. Frauche, Administración REDDIG 19/05	26/07								
41	Identify possible logistical problems in terms of equipment discontinuity / Identificar posibles problemas logísticos en términos de discontinuidad de equipos			O. Gouarnalusse, A. Frauche, Administración de la REDDIG 23/06	14/07								
42	Final report / Informe Final			O. Gouarnalusse, A. Frauche, Administración de la REDDIG 27/07	03/08								
43	Analysis of the current MEVA II/REDDIG interconnection / Analisis de la situacion atual de la Interconexión MEVA II/REDDIG				13/09		03/06						
44	Analysis of the current interconnection infrastructure / Análisis de la Infraestructura actual de interconexión				Administración REDDIG 13/09		21/12						
45	MEVA II/REDDIG interconnection performance analysis / Análisis del desempeño de la interconexión MEVA II /				Administración REDDIG 13/09		21/12						
46	Analysis of the bandwidth used in the interconeciton / Análisis del ancho de banda utilizado en la interconexión				13/09		22/04						
47	Analysis of bandwidth for AFTN service / Analizar el ancho de Banda para el Servicio AFTN				13/09		22/04						
48	Identify and analyze traffic generated by the application / Identificar y analizar el tránsito generado por la aplicación				Administración REDDIG 13/09		21/12						
49	Analysis of the bandwidth used by the services / Análisis del ancho de banda utilizado por los servicios				Administración REDDIG 13/09		22/04						
50	Analyze band for voice over frame relay / Analizar Banda para Voz Over Frame Relay				13/09		21/12						
51	Identify and analyze traffic generated by the application / Identificar e analizar el tránsito generado por la aplicación				Administración REDDIG 13/09		21/12						
52	Analysis of the bandwidth used with DAMA / Análisis del ancho de banda utilizado con la utilización de DAMA				Administración REDDIG 13/09		21/12						
53	Analysis of the bandwidth used with PAMA / Análisis del ancho de banda utilizado con la utilización de PAMA				Administración REDDIG 13/09		21/12						
54	Analyze band for surveillance/automated systems / Analizar Banda para Sistema de Vigilancia/automatizados				13/09		21/12						
55	Identify and analyze traffic generated by the application / Identificar y analizar el tránsito generado por la aplicación				Administración REDDIG 13/09		21/12						
56	Analysis of the bandwidth used by the application / Análisis del ancho de banda utilizado por la aplicación				Administración REDDIG 13/09		21/12						

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ATN ARCHITECTURE IN THE SAM REGION / ARQUITECTURA DE LA ATN EN LA REGION SAM SAM

ID	Nombre de la tarea	2009		2010		2011		2012		2013		2014	
		H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2
57	Identify possible logistical problems in terms of equipment discontinuity / Identificar posibles problemas logísticos en términos de discontinuidad de equipos					Administración REDDIG 22/12	12/01						
58	Final report / Informe Final					Administración de la REDDIG 25/04	30/05						
59	Remittance of information to Programme Coordinator / Envío de las Informaciones al Coordinador de Programa					Administración REDDIG 03/06	03/06						
60	Consolidated report on the survey and analysis of the current network infrastructure and applications/services / Informe Consolidado del levantamiento y análisis de la infraestructura e Aplicaciones/Servicios de la Red Actual					Coordinador Proyecto 06/06	29/07						
61	DESARROLLO DEL PROYECTO												
62	Comunicaciones de datos en apoyo a la ATM					19/05	28/10						
63	Trials to determine the ATN bandwidth to support ATM applications / Pruebas para Determinar el Ancho de Banda de la ATN para Soportar Aplicaciones ATM					19/05	10/01						
64	Trials guideline for AMHS bandwidth / Guía de pruebas de Ancho de Banda AMHS					19/05	16/08						
65	Study the message statistics among States /Estudiar las estadísticas de mensajes entre Estados					Coordinador Proyecto 19/05	26/05						
66	Prepare the simulation script / Preparar el "script" para la simulación					Coordinador Proyecto 19/05	26/05						
67	Trials schedules / cronogramas de pruebas					O. Gouarnalusse, A. Frauche 15/07	16/07						
68	Trials types / Tipos de pruebas					A. Frauche 15/07	27/07						
69	Carry out trials between Argentina (Ezeiza) and Brazil (Manaos) / Realizar las Pruebas entre Argentina (Ezeiza) y Brasil (Manaos)					O. Gouarnalusse, A. Frauche 28/07	04/08						
70	Analysis of the data and AMHS bandwidth determination / Análisis de los Datos y Determinación del Ancho de Banda para AMHS					05/08	16/08						
71	Analysis of the trials AMHS data between Argentina (Ezeiza) nad Brasil (Manaus) Análisis de los datos de las pruebas de AMHS entre Argentina (Ezeiza) y Brasil (Manaos)					O. Gouarnalusse, A. Frauche 05/08	16/08						
72	Final report on bandwidth necessary for AMHS / Informe Final de la determinación del ancho de banda necesario para AMHS					Coordinador Proyecto 25/08	01/09						
73	Análisis del impacto del ancho de banda en la infraestructura actual satelital					01/09	10/01						
74	Inform REDDIG Administration of the trial results between Ezeiza and Manaos / Informar a la Administración de la REDDIG los resultados de las pruebas entre Manaos y Ezeiza					Coordinador Proyecto, Coordinador Programa 01/09	02/09						
75	Bandwidth in REDDIG / Ancho de Banda en la REDDIG					02/09	30/09						

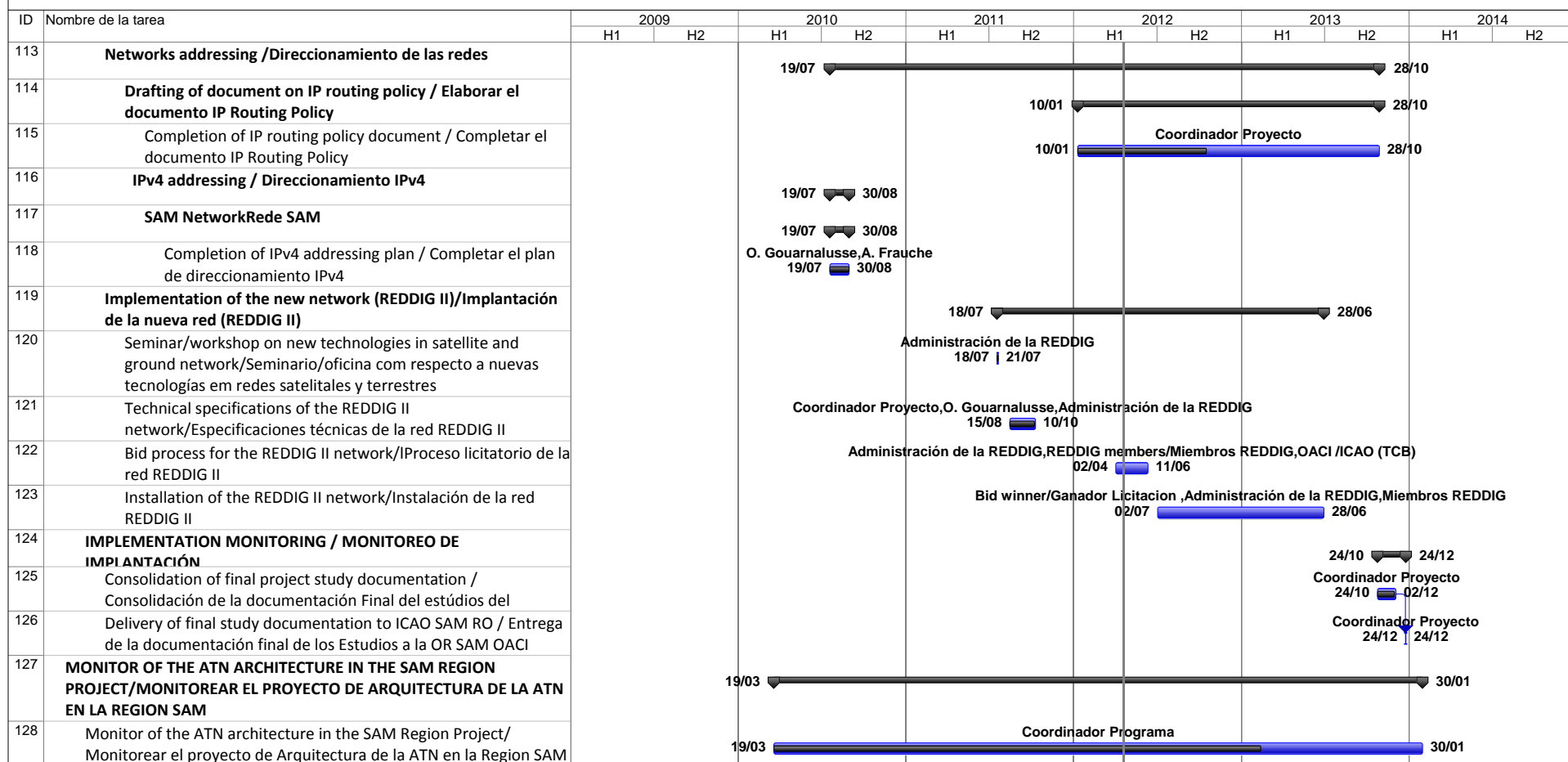
CAR/SAM REGIONAL PLANNING AND IMPLEMENTATION GROUP / GRUPO REGIONAL CAR/SAM DE PLANIFICACION Y EJECUCION (GREPECAS)
ATN ARCHITECTURE IN THE SAM REGION / ARQUITECTURA DE LA ATN EN LA REGION SAM SAM

ID	Nombre de la tarea	2009		2010		2011		2012		2013		2014	
		H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2
76	Study the bandwidth necessary for AMHS under current configuration / Estudiar el ancho de banda necesario para AMHS con la configuración actual			O. Gouarnalusse, A. Frauche 02/09 23/09									
77	Determine the costs increase for AMHS / Determinar el incremento de costos para AMHS			O. Gouarnalusse, A. Frauche 23/09 30/09									
78	Study and analysis of bandwidth in the MEVAII/REDDIG interconexión / Estudio y análisis de la utilización de ancho de banda en la interconexión de las redes MEVA II/ REDDIG			01/11 10/01									
79	Study the bandwidth necessary for AMHS under current configuration / Estudiar el ancho de banda necesario para AMHS con la configuración actual			Administración REDDIG 01/11 31/12									
80	Determine the costs increase for AMHS in the MEVAII/REDDIG / Determinación de los costos para el incremento de banda en la MEVAII/REDDIG			Administración REDDIG 03/01 10/01									
81	Identify and study the new services and applications in the SAM Region / Identificar y estudiar los nuevos servicios e aplicaciones ATN en la Región SAM			19/05 08/09									
82	Long term applications requirements for the SAM Region / Requerimientos de Aplicaciones a lo largo del tiempo en la Región SAM			19/05 08/09									
83	ATM AUTOMATION AND SITUATIONAL AWARENESS / AUTOMATIZACION ATM Y CONPRENSION SITUACIONAL			19/05 08/09									
84	Automation (systems interconnection) / Automatización (Interconexión de Sistemas)			19/05 30/06									
85	Analysis of bandwidth requirements for AIDC/OLDI application / Analizar los requerimientos de ancho de banda para la aplicación AIDC/OLDI.			Coordinador Proyecto, Coordinador Programa 19/05 30/06									
86	Analizar los requerimientos de ancho de banda para la aplicación de datos radar.			Coordinador Proyecto, Coordinador Programa 19/05 30/06									
87	Improvement to the situational awareness / Mejora a la Comprensión Situacional			28/07 08/09									
88	Analysis of bandwidth requirements for ADS application / Analizar los requerimientos de ancho de banda para las aplicación ADS			Coordinador Proyecto, Coordinador Programa 28/07 08/09									
89	Analysis of bandwidth requirements for Multilateration application / Analizar los requerimientos de ancho de banda para la aplicación Multilateración.			Coordinador Proyecto, Coordinador Programa 28/07 08/09									
90	AIM			19/05 30/06									
91	Analyze the bandwidth requirements for related applications / Analizar los requerimientos de ancho de banda para las aplicaciones relacionadas			Coordinador Proyecto, Coordinador Programa 19/05 30/06									
92	ATFM			19/05 30/06									

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ID	Nombre de la tarea	2009		2010		2011		2012		2013		2014	
		H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2
93	Analysis of bandwidth requiriements for applications in support of ATFM implementation / Analizar los requerimientos de ancho de banda para las aplicaciones em apoyo de la Implantación de la ATFM			Coordinador Proyecto, 19/05	Coordinador Programa, 30/06								
94	MET												
95	Analizar los requerimientos de ancho de banda para las aplicaciones MET			Coordinador Proyecto, 19/05	Coordinador Programa, 30/06								
96	Consolidated report on the study for new services and ATM/ATN applications in the SAM Region / Informe Consolidado del Estudio de Nuevos Servicios y Aplicaciones ATM / ATN em la Región SAM			Coordinador Proyecto, 23/08	Coordinador Programa, 06/09								
97	Study of the desired scenario / Estudio del escenario deseado												
98	SAM Network / Red SAM												
99	Infrastructure of a satellite network / Infraestructura de una Red Satélite												
100	Study on a SAM satellite IP network structure / Estudiar una estructura de rede IP SAM satelital			O. Gouarnalusse, A. Frauche, 16/08	Administración de la REDDIG, 30/08								
101	Determination of SAM satellite network costs / Determinación de los costos de Red SAM Satelital			O. Gouarnalusse, A. Frauche, 23/08	Administración de la REDDIG, 06/09								
102	Infrastructure of a ground network / Infraestructura de una Red Terrestre												
103	Study on a SAM ground IP network structure / Estudiar una estructura de rede IP SAM Terrestre			O. Gouarnalusse, A. Frauche, 16/08	Administración de la REDDIG, 30/08								
104	Determination of SAM ground network costs / Determinación de los costos de Red SAM Terrestre			O. Gouarnalusse, A. Frauche, 23/08	Administración de la REDDIG, 06/09								
105	Infrastructure of a mixed network (satellite + ground) / Infraestructura de una Red Mixta (Satélite + Terrestre)												
106	Study on a SAM mixed IP network structure (satellite + ground) / Estudiar una estructura de rede IP SAM Mixta (terrestre y satélite)			O. Gouarnalusse, A. Frauche, 16/08	Administración de la REDDIG, 30/08								
107	Determination of SAM mixed network costs / Determinación de los costos de Red SAM Mixta			O. Gouarnalusse, A. Frauche, 23/08	Administración de la REDDIG, 06/09								
108	Comparative analysis between network infrastructures / Análisis comparativo entre las infraestructuras de red.			O. Gouarnalusse, A. Frauche, 08/09	Administración de la REDDIG, 06/10								
109	Analysis of desired platform implementation costs / Análisis de costos de implementación de la plataforma deseada			O. Gouarnalusse, A. Frauche, 06/09	Administración REDDIG, 04/10								
110	Definition of desired platform / Definición de la Plataforma deseada			Miembros REDDIG, 06/10	Administración de la REDDIG, 22/10								
111	Drafting of guide on development of information security / Elaborar Guía de Desarrollo de Seguridad de la Información							10/01	31/05				
112	Completion of guide on REDDIG network communications security / Completar el guía de seguridad para la red de comunicación REDDIG					Coordinador Proyecto, 10/01	Administración de la REDDIG, 31/05						

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APPENDIX B2

PROJECT ATN GROUND-GROUND AND AIR GROUND APPLICATIONS IN THE SAM REGION

SAM Region	PROJECT DESCRIPTION (PD)	PD N° D2	
Programme	Project Title	Starting Date	Ending Date
Ground-ground and Air-ground Telecommunications Infrastructure (Programme Coordinator: Onofrio Smarrelli)	ATN Ground-ground and Air-ground Applications in the SAM Region <i>Project Coordinator: Omar Gouarnalusse (Argentina)</i> <i>Contributing experts: Javier Vittor (Argentina), Andres Jansen (Brazil)</i>	May 2010	December 2014
Objective	Develop the implementation of ATN ground-ground and air-ground applications in the SAM Region		
Scope	Implementation of SAM ATN ground-ground and air-ground applications, including, at least: <ul style="list-style-type: none"> Operational integration of international AMHS connections in the SAM Region Operational integration of international AIDC connections in the SAM Region Guidelines for the implementation of DCL, DATIS, DVOLMET & CPDLC services through VDL in the SAM Region 		
Metrics	<ul style="list-style-type: none"> Number of AMHS interconnections as per CAR/SAM FASID Table 1Bb Number of AIDC interconnections as per CAR/SAM FASID Table 1Bb Drafting of following guidelines: Guideline for the use of AIDC / Guideline for the establishment of ground-air data links in terminal, approach and aerodrome areas / Guideline for the implementation of DCL, DATIS and DVOLMET systems / Guideline for the implementation of CPDLC through VDL in the SAM Region 		
Strategy	<ul style="list-style-type: none"> All tasks will be conducted by experts nominated by States and organizations of the SAM Region members of the project <i>ATN Ground-ground and Air-ground Applications in the SAM Region</i>, under management of the project coordinator, in coordination with the programme coordinator. Communications among Project members, as well as between the Project coordinator and programme coordinator, shall be carried out through teleconferences and the Internet. In addition, the programme coordinator, together with the project coordinator and the contributing experts, can convene at SAM/IG implementation meetings Once studies are completed, the results will be submitted to the ICAO programme coordinator as a final consolidated document for its analysis, review, approval and presentation at the GREPECAS PPRC 		

Justification	<ul style="list-style-type: none">• The implementation of ground-ground and air-ground data communications infrastructure will contribute to the reduction of air traffic control incidents, increasing the capacity of the transition of information with regard to the currently analogue based applications• This project contributes to the implementation of the SAM PFF SAM CNS 01, CNS 02, ATM 05, ATM 06, MET 03, MET04 and AIM 02 of the <i>Air Navigation System Performance-Based Implementation Plan for the SAM Region (SAM PBIP)</i>
Related Projects	<ul style="list-style-type: none">• Automation (systems interconnection)• ATFM• Improve ATM Situational Awareness• Implementation of the ICAO New Flight Plan Format

Project Deliverables	Relationship with Performance Based Regional Plan (PFF)	Responsible	Status of Implementation ¹	Delivery Date	Remarks
Document on regional strategy for the implementation of ground-ground and air-ground applications in the SAM Region	PFF SAM CNS 01 PFF SAM CNS 02	Omar Gouarnalusse (Argentina)		June 2012	An initial review to the strategy was presented at SAM/IG/8 meeting (Lima, Peru, 10-14 October 2011)
Guideline for the use of AIDC with the aim of reducing coordination errors	PFF SAM CNS 01 PFF SAM ATM 06	Javier Vittor (Argentina)		November 2012	The guideline will be based on the Argentinean experience in the IP AIDC implementation between the Cordoba and Ezeiza ACCs. The GREPECAS-approved <i>Interface control document</i> (ICD) for data communications among ATS units in the Caribbean and South American Regions will be reviewed.
Guideline for the establishment of ground-air data links in terminal, approach and aerodrome areas	PFF SAM CNS 02 PFF SAM ATM 06	ICAO		October 2012	An initial plan for data link implementation was drafted, and presented at SAM/IG/8 meeting. Pending is the designation of an expert for the conduct of this activity
Guideline for the implementation of DCL, DATIS, DVOLMET systems	PFF SAM CNS 02 PFF SAM ATM 06 PFFs SAM MET 03 y 04	Andrés Jansen (Brazil)		June 2013	The guideline will be based on the Brazilian experience in the implementation of these systems

¹

Gray: Activity has not started

Green: Activity has or will deliver planned milestone as scheduled

Yellow: Activity is behind schedule on milestone, but still within acceptable parameters to deliver milestone on time

Red: Activity has failed to deliver milestone on time, mitigation measures need to be identified and implemented

Project Deliverables	Relationship with Performance Based Regional Plan (PFF)	Responsible	Status of Implementation ¹	Delivery Date	Remarks
Operational integration of AMHS among States	PFF SAM CNS 01 PFF SAM ATM 05 PFF SAM ATM 06 PFF SAM MET 03, PFF SAM MET 04 PFF SAM AIM 02	States / Project Coordinator / Programme Coordinator		June 2014	Of all the AMHS installed in the Region, the following are interconnected in AMHS (P1 Protocol) Peru-Colombia, Guyana-Suriname, Argentina-Paraguay Other States are in the process of implementation, having drafted and signed MoUs to this end Follow-up to the implementation of AMHS integration is carried out at SAM/IG meetings
Operational integration of AIDC service between adjacent ACCs	PFF SAM CNS 01 PFF SAM ATM 06	States / Project Coordinator / Programme Coordinator		November 2014	To date no AIDC interconnection trials have been held between the Ezeiza and Cordoba ACCs. The integration is still not being used operationally Many States of the Region have drafted and signed MoUs to carry out the integration
Monitor the implementation of ATN ground-ground and air-ground applications activities in the SAM Region		ICAO		March 2010- November 2014	
Resources necessary	Designation of experts for the conduct of some of the deliverables				

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APLICACIONES TIERRA-TIERRA Y AIRE-TIERRA DE LA ATN EN LA REGION SAM / ATN GROUND-GROUND AND AIR-GROUND APPLICATIONS IN THE SAM REGION

ID	Task Name	Duration	2010		2011		2012		2013		2014		2015
			H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H1
1	Aplicaciones Tierra–tierra y Aire–tierra de la ATN en la Región SAM/ ATN Ground-ground and Air-ground Applications in the SAM Region	1190 days											
2	Documento de estrategia regional para la implantación de aplicaciones tierra - tierra y aire – tierra de la Región SAM/ Regional strategy document for the implementation of ground-ground and air-ground applications in the SAM Region	240 days											
3	Recolectar información /Collect information	50 days	<p>OACI/ICAO ,Omar Gouarnalusse / Argentina (CP)</p>										
4	Entrega de propuesta de borrador / Delivery of draft proposal	103 days	<p>Omar Gouarnalusse / Argentina (CP) ,OACI/ICAO</p>										
5	Revision de la propuesta borrador / Review of draft proposal	82 days	<p>Omar Gouarnalusse / Argentina (CP) ,OACI/ICAO ,Estados SAM</p>										
6	Entrega documento final / Delivery of final document	5 days	<p>Omar Gouarnalusse / Argentina (CP)</p>										
7	Guía de orientación para el uso del AIDC con la finalidad de reducir errores de coordinación/Guideline for the use of AIDC with the aim of reducing coordination errors	247 days											
8	Recolectar información /Collect information	47 days	<p>Javier Vittor (Argentina)</p>										
9	Entrega de propuesta de borrador / Delivery of draft proposal	84 days	<p>Javier Vittor (Argentina)</p>										
10	Revision de la propuesta borrador / Review of draft proposal	85 days	<p>Omar Gouarnalusse / Argentina (CP) ,OACI/ICAO</p>										
11	Entrega documento final / Delivery of final document	5 days	<p>Javier Vittor (Argentina)</p>										
12	Guía de orientación para el establecimiento de enlaces de datos tierra-aire en área terminal, aproximación y aeródromo/Guideline for the establishment of ground-air data links in terminal, approach and aerodrome areas	287 days											
13	Recolectar información / Collect information	27 days	<p>OACI/ICAO</p>										
14	Entrega de propuesta de borrador / Delivery of draft proposal	5 days	<p>OACI/ICAO</p>										
15	Revision de la propuesta borrador / Review of draft proposal	79 days	<p>Omar Gouarnalusse / Argentina (CP) ,Estados SAM</p>										
16	Seminario/Taller de Aplicaciones Tierra/Tierra y Tierra Aire de la ATN / Seminar Workshop of Ground Ground and Ground Air ATN Applications	5 days	<p>OACI/ICAO</p>										

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APLICACIONES TIERRA-TIERRA Y AIRE-TIERRA DE LA ATN EN LA REGION SAM / ATN GROUND-GROUND AND AIR-GROUND APPLICATIONS IN THE SAM REGION

ID	Task Name	Duration	2010		2011		2012		2013		2014		2015
			H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	
17	Entrega documento final / Delivery of final document	5 days											
18	Guía de orientación para la implantación de sistemas DCL, DATIS, DVOLMET / Guideline for the implementation of DCL, DATIS, DVOLMET systems	435 days											
19	Recolectar información /Collect information	155 days											
20	Preparación y entrega de propuesta de borrador / Preparation and delivery of draft proposal	101 days											
21	Revision de la propuesta borrador / Review of draft proposal	104 days											
22	Preparación documento final / Preparation of final document	66 days											
23	Entrega documento final / Delivery of final document	5 days											
24	Integración operacional del servicio AMHS entre Estados / Operational integration of AMHS among States	1071 days											
25	Implantación de la integración operacional de sistemas AMHS	1071 days											
26	Integración operacional del servicio AIDC entre ACC's adyacentes / Operational integration of AIDC service between adjacent ACCs	816 days											
27	Implantación de la integración operacional del AIDC	816 days											
28	Monitorear las actividades de implantación de las aplicaciones tierra-tierra y aire-tierra de la ATN en la Región SAM / Monitor the implementation of ATN ground-ground and air-ground applications activities in the SAM Region	1190 days											
29	Monitorear las actividades de implantación de las aplicaciones tierra-tierra y aire-tierra de la ATN en la Región SAM / Monitor the implementation of ATN ground-ground and air-ground applications activities in the SAM Region	1190 days											

