

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)	<p style="text-align: center;">ATN Architecture in the SAM Region</p> <p style="text-align: center;"><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></p>	March 2010	March 2014
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 • Safety guidance for the implementation of IP networks 		
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 		

Goals	<ul style="list-style-type: none"> • Finalize the SAM IP backbone network study (REDDIG II) by mid-2011 • Finalize the drafting of technical specifications for the implementation of REDDIG II by mid-2011 • Start installation of REDDIG II by September 2013 • Operation of REDDIG II in January 2014
Justification	<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>
Related Projects	<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	Programme Coordinator		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 implementation of IP networks	PFF SAM CNS 01	Project Coordinator		October 2012	An initial document has been drafted

Project Deliverables	Relationship with Performance Based Regional Plan (PFF)	Responsible	Status of Implementation ¹	Delivery Date	Remarks
Support in the bidding process and in the offer evaluation		REDDIG Administration		June 2012	Completed The bidding process started in April 2012, and was completed with the evaluation of offers from six bidding companies and the appointment of the winning bidder. In the offer evaluation, the following participated: Omar Gouarnalusse, Argentina Athayde Frauche, Brasil Michel Arenó, France Aldo Pereira, Paraguay Jose Luis Paredes, Peru
Support in the implementation of REDDIG II		REDDIG Administration, Project Coordinator and Omar Gouarnalusse (Argentina)		March 2013- March 2014	This activity is scheduled to start in March 2013
Monitor the ATN architecture project activities in the SAM Region		ICAO		March 2010- March 2014	
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			02/06	09/07								
25	PROCESS FOR THE STUDY OF A SAM ATN INFRASTRUCTURE / PROCESOS DE ESTUDIOS DE UNA INFRAESTRUCTURA DE LA ATN SAM			19/05								24/12	
26	START OF THE PROJECT / INICIO DEL PROYECTO			19/05	29/07								
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						

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
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) and Brazil (Manaos) 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

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									

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
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						

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

