International Civil Aviation Organization
CAR/SAM Regional Planning and Implementation Group (GREPECAS)
Eighteenth Meeting of the CAR/SAM Regional Planning and Implementation Group (GREPECAS/18)
Punta Cana, Dominican Republic, 9 to 14 April 2018

Agenda Item 4: Review of GREPECAS programmes and projects

4.6 Projects under the AIM Programme (B0-DATM)

REVIEW OF PROJECTS UNDER THE AIM PROGRAMME (B0-DATM)

(Presented by the Secretariat)

Summary

This working paper makes reference to GREPECAS Programmes and Projects within the context of the transition from AIS to AIM, showing the progress made by CAR/SAM States, Territories and international organisations regarding electronic processing and digital management of aeronautical information and data, through the implementation of the aeronautical information exchange model (AIXM), the implementation of the quality management system (QMS) and the provision of electronic terrain and obstacle (eTOD) sets to users.

References:

- Annex 15 – *Aeronautical information services*
- ICAO Roadmap for the transition from AIS to AIM
- Report of the Seventeenth meeting of the CAR/SAM Regional Planning and Implementation Group (GREPECAS/17), Cochabamba, Bolivia, 21-25 July 2014
- Report of the Third meeting of the NAM/CAR air navigation implementation working group (ANI/WG/3), Mexico City, Mexico, 4-6 April 2016
- Report of the Third meeting of the CAR/SAM Programmes and Projects Review Committee (PPRC/3), Mexico City, Mexico, 21-23 July 2015
- Report of the Fourth meeting of the CAR/SAM Programmes and Projects Review Committee (PPRC/4), Lima, Peru, 12-14 July 2016
- Report of the SAM/AIM/10 meeting

ICAO strategic objectives	*B – Air navigation capacity and efficiency* *E- Environmental protection*

1. Introduction

1.1 This paper presents the status of activities under Programme G on Aeronautical Information Management (AIM) in the CAR and SAM Regions for their respective projects: G-1 – *Developments for the supply of electronic terrain and obstacle data (eTOD) in the States*, and G-2 – *Development of quality specifications applicable to the digital AIM environment* for the CAR Region, and Projects G-1 – *Implementation of the provision of electronic terrain and obstacle data (eTOD)*, G-2 – *Implementation of aeronautical information exchange systems (AIXM)* and G3 - *Implementation of the quality management system in AIM units* for the SAM Region, the details of which appear in **Appendices A** and **B** to this paper, respectively.

1.2 Project activities were aligned with the regional air navigation priorities and objectives defined for the CAR and SAM Regions. Likewise, an approach consistent with Aviation System Block Upgrades (ASBU) was applied in AIM project activities.

1.3 It is also important to note that eTOD provides a significant support to States for the Performance-based navigation (PBN) implementation project, PANS-OPS, aeronautical charts and other air navigation and aerodrome surface applications.

2. Discussion

CAR Region

2.1 In relation to paragraph 1.2 above, and based on AIM objectives set forth within the context of air navigation services (ANS) in the "*No country left behind*" (NCLB) strategy and under ANIWG monitoring, a regional AIM meeting was held to address issues related to Projects G1 and G2.

2.2 In support of Project G1 – *Developments for the supply of electronic terrain and obstacle data (eTOD)*, theCAR/SAM electronic terrain and obstacle data (eTOD) seminar was held on 23-25 November 2015 at the ICAO NACC Regional Office in Mexico City, Mexico. The seminar was directed by Mr. Gilbert Lasnier, ICAO Headquarters expert in geographical information systems and responsible for the development, maintenance and evolution of the geographical information system (GIS) on the ICAO website. This event was held to assist States in the development and implementation of their national action plans in compliance with Annex 15 – *Aeronautical information services*, and Doc 9881 - *Guidelines for Electronic Terrain, Obstacle and Aerodrome Mapping Information (Disclaimer)*. The event introduced an optional use of drones for surveying Areas 2 and 3. Furthermore, the establishment of letters of agreement (LoAs) between States and international organisations was encouraged once again in order to contribute to eTOD implementation. It should be noted that some States continue reporting that they have started their eTOD action plans, but progress made is minimal and, in most cases, nil. An eTOD survey is proposed to update the status of implementation of the 4 related areas (see **Appendix B** to this paper). See the following table (please report any updates):

State (UN code)	% estimated progress by States in their eTOD action plans
ATG (PIARCO)	0
BHS	0
BRB	25
BLZ (COCESNA)	0
CRI	33
CUB	40
DOM	33
SLV	0
GRD (PIARCO)	0
GTM (COCESNA)	15
HTI	0
HND (COCESNA)	0
JAM	15
MEX	35
NIC	20
KNA (PIARCO)	0
LCA (PIARCO)	0
VCT (PIARCO)	0
TTO (PIARCO)	33

2.3 According to the implementation goals for Phase 1 of the transition to AIM, which includes Project G2 – *Development of quality specifications applicable to the digital AIM environment*, States that have implemented or have started the process of implementation of the quality management system (QMS) have made 83% progress, as established in the *Declaration of Port-of-Spain* (Trinidad and Tobago, April 2014).

2.4 Some CAR States that perform AIS/AIM functions in accordance with basic local requirements, as in the case of a single aerodrome and a simple airspace structure, are undergoing an integration process to be part of an AIM QMS made up by several States, as is the case of E/CAR States, following the COCESNA model in Central America, and Curacao, which expressed its interest in following this same model.

2.5 Coordination with Trinidad and Tobago started in 2013 to modify the LoAs that existed with the States for the development of the Integrated aeronautical information package (IAIP) and their integration into the AIM-QMS implemented by Trinidad and Tobago (in process of certification in 2016). Likewise, COCESNA, as part of its AIM-QMS (already certified), is extending the benefits of this system to those States that have joined as providers of validated information and data, using the procedures, processes and formats required by the QMS for each case, under the respective LoAs. In both cases, the IAIP is already being produced by Trinidad and Tobago and by COCESNA.

2.6 It may also be noted that more States of the Region have implemented or started to implement QMS. See the following table (please report any updates):

State	% implementation estimated by June 2016
ATG (PIARCO)	85
BHS	0
BRB	85
BLZ (COCESNA)	100
CAN	CERTIFIED
CRI	CERTIFIED TYPIFIED
CUB	CERTIFIED
DOM	CERTIFIED
SLV (CEPA)	Action plan
USA	CERTIFIED
GRD (PIARCO)	85
GTM	100 NOT CERTIFIED
HTI	0
HND (COCESNA)	100
JAM	25
MEX	CERTIFIED
NIC	100 NOT CERTIFIED
KNA (PIARCO)	85
LCA (PIARCO)	85
VCT (PIARCO)	85
TTO (PIARCO)	85

2.7 The general difficulties reported by States still persist, as shown for Projects G1 and G2:

Id.	Main difficulties identified in the transition from AIS to AIM
1	Implementation of Phase 1 (consolidation): in some States, the implementation of Step 17 (QMS) is not applicable (N/A) because of the existence of a very basic AIS (AIM) structure, with only one officer. Integration into a group of States (Trinidad and Tobago, COCESNA and Curacao) has been pursued.
2	The adjusted deadlines for implementation of Phases 2 and 3 would be 2018 and 2025
3	Financial restrictions
4	Availability of resources (human and material, such as software and hardware) and knowledge (minimum experience required), training and competencies required for experts, and assessment of the most relevant aspects for AIM tasks, incorporation of new experts in the areas of GIS, AIXM databases, etc.
5	Lack of detailed ICAO guidance material; AIM documentation with detailed description of measures to assist States in the implementation process, and the requirement to update ICAO Annexes 15 and 4, documents and manuals that contain AIM requirements, AIM-QMS Doc. 9839, AIM TRAIN and others
6	Commitment with data originators through letters of agreement, and adoption by all data originators of the appropriate provisions (national regulations)

Conclusion

2.8 The CAR Region shows significant progress, mainly in QMS implementation, and to a lesser degree in eTOD. In order to improve programmes, it is suggested to increase the number of skilled State personnel participating in AIM implementation programmes, with continuous assistance by ICAO Regional Offices through the respective projects created to that end.

2.9 As an important emerging issue, it is suggested that the Meeting take note of system-wide information management (SWIM) as a priority for the evolution of the global ATM system, which incorporates the basic requirements of SESAR, Next-Gen, CARATS, and other regional programmes. In this regard, AIM is a critical element of support to all existing and emerging systems that depend on electronic data. Likewise, States are urged to review and consider the new PANS-AIM, as a preliminary result in the development of an AIM operational concept that will go beyond the current objective of the roadmap for the transition of AIS to AIM of generating "electronic or digital AIM products", adopting a more integrated approach related to the AIM extended domain called "information management" (IM), which is becoming an urgent task in direct support of ATM and SWIM users.

SAM Region

Project G1: Implementation of the provision of electronic terrain and obstacle data (e-TOD)

Progress made by SAM States in e-TOD implementation

AREA 1 - Terrain

2.10 The PPRC/4 and SAM/AIM/9 meetings analysed the continuation of Project G1, noting the following progress made regarding terrain and obstacle surveys related to the various areas set forth in Annex 15:

AREA 1 – Terrain

2.11 Information was collected on compliance with Area 1 requirements concerning terrain surveys, with the following results:

a) Regarding this implementation, **Argentina, Brazil, Chile, Colombia, French Guiana, Panama, Peru** and **Venezuela** have a Terrain and/or Elevation or Surface Digital Model for the development of Area 1. **Panama** informed that a survey was being conducted at national level, currently reaching 90%, to be completed by December 2016. The percentage of implementation is 56% as to the number of States in the Region that have digital models. **44% is still pending completion before November 2016. 7% progress made since March 2016.**

b) Regarding compliance with Table 8-1 of Annex 15 on terrain requirements for Area 1, the States that meet the requirement are **Argentina, Brazil, Chile, French Guiana, Panama, Peru** and **Venezuela.** The percentage of implementation at present is 57%. **43% is still pending completion before November 2016. 14% progress made since March 2016.**

c) Regarding compliance with the ISO 19110 methodology for the digital model, **Argentina, Brazil, Chile, Colombia, French Guiana, Panama, Peru** and **Venezuela**

report compliance, reaching 56% of SAM States. **44% is still pending completion before November 2016. 14% progress made since March 2015.**

AREA 1 – Obstacles

2.12 Information was compiled on compliance with Area 1 requirements concerning obstacle surveys, with the following results:

a) Regarding the availability of an obstacle database covering Area 1, **Argentina, Brazil, Colombia, French Guiana and Peru** meet the requirement, increasing the percentage of compliance in the Region to 42%. **Chile** complies only partially and therefore is not considered as completed. **58% is still pending completion by November 2016. 7% progress made since March 2016.**

b) **Argentina, Brazil, Chile, Panama, Peru, Uruguay** and **Venezuela** meet the obstacle requirements established in Table 8-1 for Area 1. The level of implementation in the Region reaches 42%. **58% is still pending completion by November 2016. 28% progress made since March 2016.**

AREA 2 - Terrain

2.13 Regarding action plans for obtaining electronic terrain data in Area 2a, **Argentina, Bolivia, Brazil, Chile, Ecuador, Panama, Paraguay, Peru** and **Uruguay** make up **56% of compliance. 44% is still pending, which should have been completed in 2015. No progress observed since August 2016.**

2.14 Upon analysing compliance with the provision of terrain data corresponding to the take-off path, the States that reported the development of an action plan were **Argentina, Brazil, Chile, Ecuador, Panama, Paraguay, Peru** and **Uruguay**. Compliance increased by 57% in the Region. **43% is still pending, which should have been completed in 2015. 8% progress made in this area since August 2016.**

2.15 Regarding the provision of electronic terrain data corresponding to the area defined by the lateral extensions of aerodrome obstacle limitation surfaces, **Argentina, Brazil**, **Chile**, **Ecuador**, **Panama**, **Paraguay** and **Peru** account for **50% implementation. 50% is still pending, which should have been completed in 2015. 15% progress made since August 2016.**

AREA 2 - Obstacles

2.16 **Argentina, Bolivia, Brazil, Chile, Ecuador, Panama, Paraguay** and **Peru** have developed action plans for data collection in Area 2a concerning obstacles that penetrate the obstacle limitation surface, in accordance with Appendix 8 to Annex 15, reaching 57% compliance. **43% is still pending, which should have been completed in 2015. 8% progress made in this area since August 2016.**

2.17 Likewise, **Argentina, Bolivia, Brazil, Chile, Ecuador, Panama, Paraguay** and **Peru** reported progress in their action plans for the provision of electronic data on objects protruding from the 1.2% flat slope with respect to the take-off path, increasing implementation in the Region from 42% to 57%. **43% is still pending, which should have been completed in 2015. 15% progress made since**

August 2016.

2.18 Regarding the provision of electronic data on penetration of the aerodrome obstacle limitation surfaces, **Argentina, Bolivia, Brazil, Chile, Ecuador, Panama, Paraguay** and **Peru** developed action plans to comply with this requirement. The percentage of compliance is 64%. **36% is pending completion in 2016. 15% progress made since March 2016.**

2.19 Also in the Region, **Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, French Guiana, Panama, Paraguay, Peru, Suriname** and **Uruguay** have defined a Manual on technical specifications for e-TOD implementation. **16% is pending completion in 2016. No progress reported since August 2016.**

2.20 Regarding obstacle surveying tasks for Area 2, Argentina reported to the SAM/AIM/10 meeting that it had completed obstacle surveying in four airports, Chile in two airports, Panama is conducting a bidding process for two airports, Peru has completed the bidding process for the Cuzco airport, and Uruguay is planning to complete the survey by the end of 2017.

2.21 At that same meeting, Suriname noted that, regarding e-TOD implementation, plans were being prepared and they could not yet give dates nor outline an action plan for terrain or obstacles.

2.22 Guyana noted that project implementation would still take some time. It noted that, regarding Area 2, the main runway was being expanded, and workload would double if the obstacle survey were to start now. The runway is to be completed in 2017, after which they would prepare the obstacle survey plan for Area 2.

e-TOD training in the SAM Region

2.23 The SAM/AIM/10 meeting took note that, regarding e-TOD training in the Region, there had been no changes. **Argentina, Brazil, Chile, Colombia, Ecuador, French Guiana, Panama** and **Uruguay**, **which accounted for 56% of States,** still had plans for e-TOD training. **44% is still pending completion in 2016. No progress made in this area since August 2016.**

2.24 Regarding the inclusion of operational concepts in training, **the Region had reached 72% implementation. 28% is still pending completion in 2016. No progress made since August 2016.**

2.25 Regarding the equipment and programmes needed for e-TOD information management, the Region shows 56% compliance with this requirement. **44% still pending completion in 2016. 7% progress made since March 2016.**

Service level agreements (SLAs) and geographical information systems (GIS)

2.26 Regarding the signing of service level agreements (SLAs) between AIM units and data providers, the Meeting took note that Argentina had implemented the SLA. Chile reported that the procedure had been included in quality management processes. Paraguay informed that it had issued a circular containing the requirements to be met by data and information providers when providing data to AIS/AIM, to replace the requirement for an SLA. Guyana noted that it had prepared a draft SLA and was working with 15 providers for its implementation. Bolivia noted that it had not yet implemented the SLA, and Venezuela stated that it was preparing a draft SLA.

2.27 The Secretariat highlighted the importance of publishing an AIC containing the numeric requirements, in order to keep up-to-date with the respective changes made by the amendments to Annex 15**. At present, SLA implementation reaches 57%. 14% progress made since August 2016.**

2017 State	% of States with automated systems or GIS = 56%	% of States that establish SLAs = 57%
ARG	**YES**	**YES**
BOL		NO
BRA	**YES**	**YES** (standard)
CHI	**YES**	**YES** within the integrated quality system
COL	**YES**	**YES** (included within quality management processes)
ECU		---
FGY	**YES**	---
GUY		NO (in process)
PAN	**YES**	**YES**
PAR		**YES** (issued a circular)
PER	**YES**	**YES**
SUR		**NO**
URU	**YES**	**YES**
VEN		NO (In process. Has prepared draft letters to data providers.)

Corrective action plan for e-TOD

2.28 Both the SAM/AIM/9 and the PPRC/4 meetings drew the attention of States to the fact that the "lack of compliance with the provision of terrain and obstacle data in electronic format" starting on 12 November 2015 was an "A" deficiency. Accordingly, the Secretariat had requested States to submit action plans to address these deficiencies. The action plans submitted by States so far have horizons reaching 2018, 2019 and 2020.

2.29 The Secretariat prepared a Corrective Action Plan Model containing detailed information, which is subject to follow-up. The SAM/AIM/10 meeting examined this model and decided to present it as a guide for the submission of action plans for e-TOD implementation.

2.30 Sustained progress has been made in the SAM Region regarding equipment and training, which need to continue supporting e-TOD implementation. In this sense, the States are encouraged to send their experts to workshops and/or meetings held for training the experts of the Region. The description of **Project G1** appears in **Appendix C1** to this working paper.

2.31 It should be noted that, with the support of Project RLA/06/901, a seminar on e-TOD was held in October 2017 at the SAM Regional Office in Lima.

Project G2: Implementation of aeronautical information exchange systems (AIXM)

2.32 The PPRC/4 and SAM/AIM/10 meetings reviewed the activities carried out within the framework of Project G2. In this sense, the coordinator of Project G2, in coordination with the Secretariat,

presented a series of activities that were reviewed by the SAM/AIM/10 meeting, which deemed it important to update activity dates and status. These changes are shown in **Appendix C2**.

2.33 The activities carried out include the drafting of documents for analysing the operation of AIXM systems. These documents were based on EUROCONTROL documentation and are the following: *Temporality Model*, *AIXM Conceptual Model*, *Generation of the AIXM Application Scheme,* and *Component Identification and Reference*. These documents were circulated at the SAM/AIM/8 meeting with a view to receiving comments and suggestions from the States in order to develop the final Guide on AIXM Implementation document. The SAM/AIM/10 meeting felt that, although there was software available in the market that described all the technical characteristics defined in the document, it was important to develop this document because it would help in the definition of the technical specifications of the software to be requested, and would address the technical aspects related to information technology.

2.34 Given the technical content of the document, the need was felt within the project to instruct States that IT and AIS/AIM experts should work together in AIXM implementation so that they may supplement each other's knowledge and systems to be used.

2.35 One of the activities of the Project was the conduction of AIXM tests. The dates agreed at the SAM/AIM/9 meeting were 30 March 2017 between Argentina and Panama, and 27 April 2017 between Brazil and Peru. However, due to changes in focal points in some of the States, tests could not be coordinated, and thus were not carried out.

2.36 The SAM/AIM/9 meeting noted that, since AIXM was related to the implementation of SWIM (**S**ystem **W**ide **I**nformation **M**anagement), Project G2 should be extended to include the implementation process within the Project. As a first step, a seminar on SWIM is scheduled to be held in December this year with the support of Project RLA/06/901.

Project G3: Implementation of the Quality Management System in AIM units of the SAM Region

2.37 The PPRC/4 and SAM/AIM/10 meetings took note of the progress made in the implementation of the quality management system for the processes that take place in AIM units.

2.38 Both meetings expressed concern for the situation in **Colombia** and **Venezuela**, which had not yet certified their AIM systems, as well as for the delays in quality implementation in **Bolivia, Guyana** and **Suriname**. In this regard, Guyana and Suriname presented corrective action plans for the implementation of the quality management system by the end of 2017 or first half of 2018.

2.39 The situation that has delayed this implementation involves Ecuador, where administrative issues have prevented re-certification of the AIM/QMS certification obtained in 2012.

2.40 Given the changes made to ISO 9001, the Secretariat conducted courses in October 2017 for updating knowledge in audit techniques, delivered by an external firm, with the participation of AIM and MET experts from the States.

2.41 The Secretariat reported at the PPRC/4 and SAM/AIM/10 meetings that ISO 9001 had changed its requirements in September 2015 and that the transition period for adjusting the quality management systems already implemented and certified was 3 years (September 2018). When analysing this issue, the aforementioned meetings considered that these changes to ISO 9001 affected all States that had already been certified and those that had not yet implemented the AIM/QMS.

2.42 States have been following up on this issue, and in 2017, 5 States finished adjusting their AIM/QMS to the requirements introduced through version 2015 of the ISO standard. These five States have certified their AIM/QMS through an external certifying organisation.

2.43 The Declaration of Bogota included in its objectives the completion of ***Phase 1 of the Roadmap for the transition of AIS to AIM by 2016***. This commitment must be replicated at national level for the implementation of AIM/QMS and its certification within an agreed date in order to successfully complete the implementation of Phase 1.

2.44 The latest information on quality implementation shows that this process has not been completed in all States. The status of implementation is shown in the following table:

STATE	% of implementation October 2016	Date of implementation	% progress	Remarks
Argentina	100%	FEB/2016	30%	ISO 9001:2008 certified
Bolivia	50%	TBD	20%	The provider AASANA has trained two experts for quality implementation. One DGCA official attended the Lead Auditor course conducted in February 2015.
Brazil	**CERTIFIED**	----------	----------	**ISO 9001:2015 certified**
Chile	**CERTIFIED**	----------	----------	**ISO 9001:2015 certified**
Colombia	90%	SEP/2014	25%	Has engaged a consultancy service for AIM and MET QMS certification.
Ecuador	**Has not obtained the re-certification**	----------	----------	No information on plans for re-certifying**.**
French Guiana	**CERTIFIED**	----------	----------	**No information on plans for adjusting to ISO 9001:2015**
Guyana	70%	DEC/2017	35%	Presents implementation and certification plan. Expect to complete implementation in July 2018.
Panama	**CERTIFIED**	DEC/2017	10%	**ISO 9001:2015 certified**
Paraguay	**CERTIFIED**	----------	----------	**ISO 9001:2015 certified**
Peru	**CERTIFIED**	---------	----------	**ISO 9001:2015 certified**
Suriname	50%	AUG/2014	5%	Presented action plan

STATE	% of implementation October 2016	Date of implementation	% progress	Remarks
Uruguay	**CERTIFIED**	---------	--------	Plans to certify under ISO 9001:2015 on the first half of 2018.
Venezuela	85%	NOV/2014	0%	No progress made.

2.45 **Appendix C3** shows details of Project G3.

3. **Suggested action**

3.1 The Meeting is invited to:

a) take note of the information contained in this working paper;

b) review the document and Appendix A for the CAR Region and Appendix C for the SAM Region, in order to approve the progress made in their implementation;

c) review the progress made in AIM projects;

d) provide the human resources required for efficient execution of projects in the CAR Region; and

e) agree on other actions it may deem necessary, and answer the survey contained in Appendix C.

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APPENDIX A
CAR REGION PROJECTS

CAR Region	**PROJECT DESCRIPTION (DP)**	DP N° G1	
Programme	**Title of the Project**	**Start**	**End**
AIM (ICAO Programme Coordinator: Raúl Martínez)	Developments for the supply of electronic terrain and obstacle data (e-TOD) in the States (CAR) Project coordinator: Alfredo Mondragón (COCESNA) Experts contributing to the project: None	12/04/18	31/12/25
Objective	Support the implementation of the provision of e-TOD data by CAR Region States and provide States with guidelines on e-TOD implementation.		
Scope	The scope of the project includes the assessment and identification of implementation levels associated to the provision of electronic terrain and obstacle data. It includes guidance for the drafting of an action plan and guidance for e-TOD implementation to support the development of Digital Terrain Models (DTMs) to support the production of electronic aeronautical charts and other products required by the users.		
Metrics	Number of States with an Action Plan for the implementation of e-TOD. Number of States that establish letters of agreement with neighboring Cartographic Institutes and States (FIR) Number of States that implement Areas 1, 2, 3 and 4		
Strategy	The conduction of project activities will be coordinated through communications among project members, the Project Coordinator, and the Programme Coordinator, mainly through teleconferences (and other electronic means). The Project Coordinator will coordinate with the Programme Coordinator for the inclusion of additional experts, if warranted by the tasks and work to be performed. The results of the work done will be submitted for consideration and review of State experts in the form of a final consolidated document for analysis, review and approval, and for presentation to the GREPECAS PPRC by the Programme coordinator.		
Goals	Develop a survey to determine e TOD implementation status. Develop a document with the results of the survey and prepare a training plan focused on supporting States with more requirement and difficulties for e TOD implementation.		
Rationale	Compliance with Annex 15 and Annex 4 SARPs and ICAO Document 9881. Availability of information of e TOD process development of States to facilitate implementation in those States where it is necessary.		
Related projects	This project is related to projects G2 “Development of quality specifications applicable to the digital AIM environment”		

Project deliverables	Relationship with the performance-based regional plan (PFF)	Responsible party	Status of Implementation	Delivery date	Comments
Prepare a regional survey in accordance with the objectives of the eTOD project	PFF: CAR AIM	RO/AIM ICAO NACC		April 2018	The survey -in process- will be sent to the States (Appendix C, WP-13)
Prepare analysis of survey data and present an Action Plan in accordance with the objectives of the eTOD project	PFF: CAR AIM	RO/AIM ICAO NACC		December 2018	It will be published on the website of the NACC Office
Resources required	Designation of Experts in the execution of the deliverables. Commitment of the States in supporting the designated Coordinators and Experts. (No experts from the States have been designated in this Project to date)				

Grey *Task not started*
Green *Activity underway as scheduled*
Yellow *Activity started with some delay but expected to be completed on time*
Red *It has not been possible to implement this activity as scheduled; mitigating measures are required*

CAR Region	**PROJECT DESCRIPTION (DP)**	DP N° G2	
Programme	**Title of the Project**	**Start**	**End**
AIM (ICAO Programme Coordinator: Raul Martinez)	Development of quality specifications applicable to the digital AIM environment Project coordinator: RO/AIM Experts contributing to the project: None	September 2018	December 2020
Objective	Support Quality Management System (QMS) implementation by the CAR Region States and provide them guidelines for this implementation.		
Scope	The scope of the project includes the assessment and identification of implementation levels associated to quality management in AIM services of the Region. Drafting of an action plan and guidelines for the implementation of QMS in support to the digital/electronic environment of AIM.		
Metrics	Number of States that have implemented the QMS ISO 9001: 2008. Change to ISO 9001-2015		
Goals	Prepare a survey to determine the status of implementation of the QMS. Prepare the document with the results of the survey and prepare a Training Plan aimed at supporting the States with the most requirements and difficulties for the implementation of the QMS.		
Strategy	Project activities will be coordinated among project members, the Project Coordinator, and the Programme Coordinator, mainly through teleconferences (and other available electronic means). The Project Coordinator will coordinate with the Programme Coordinator for the inclusion of additional experts, if required by the tasks and works to be executed. The results of the work done will be submitted to the consideration and review by State experts in the form of a final consolidated document for analysis, review, and approval, and for presentation to the GREPECAS PPRC by the Programme Coordinator.		
Rationale	The quality management system in AIM services must provide users the necessary assurance and confidence of the fact that the distributed aeronautical information/data meets quality requirements in terms of accuracy, resolution and integrity. It is necessary for States to have ICAO guidelines on the implementation process of the QMS.		
Related projects	This project is related to projects G1 " Developments for the supply of electronic terrain and obstacle data (e-TOD) in the States "		

Project deliverables	Relationship with the performance-based regional plan (PFF)	Responsible party	Status of implementation*	Delivery date	Comments
Prepare a regional survey in accordance with the objectives of the QMS project	PFF: CAR AIM	RO/AIM ICAO NACC		August 2018	The survey -in process- will be sent to the States
Prepare analysis of survey data and present an Action Plan in accordance with the objectives of the QMS project		RO/AIM ICAO NACC		December 2018	It will be published on the website of the NACC Office
Resources required	Designation of Experts in the execution of the deliverables. Commitment from the States in supporting the designated Coordinators and Experts. (No experts from the States have been designated in this Project to date)				

Grey *Task not started*
Green *Activity underway as scheduled*
Yellow *Activity started with some delay but expected to be completed on time*
Red *It has not been possible to implement this activity as scheduled; mitigating measures are required*

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APPENDIX/APÉNDICE B

eTOD Implantación Implementation

Abril-2018/ April- 2018

Abril-2018/ April- 2018

Encuesta sobre el nivel de implantación de la norma para la provisión de Datos electrónicos sobre el terreno y obstáculos (eTOD) para el Área 1 (Ref.: Anexo 15, 10.1.3).
Survey about the implementation level of standard for the provision of electronic terrain and obstacles Data (eTOD) for Area 1 (Ref.: Annex 15, 10.1.3)

Proyecto/ Project G-1
Región / CAR Region

Opción /Option Columna C3 / Column C3	Opción /Option Columna C4 / Column C4	Opciones/Options Columna C5 / Column C5
Y = SI / Yes	N = No	P = Parcialmente / Partially N/A = No aplicable / Not applicable S/R – W/A = Sin respuesta / Without answer V/C – S/C= Ver comentarios / See comments

C1	C2	C3	C4	C5
	PREGUNTA **QUESTION**	**SI** **YES**	N=NO	
1	**¿Dispone su Administración de un Modelo Digital del terreno (MDT) o de un Modelo digital de elevación (MDE) u otro? (Especifique) /** Does your Administration have a model digital terrain (MDT) or a Model for Digital Elevation (MDE) or other? (Specify).			
2	**¿De dónde los obtuvo? (¿de la propia organización, de organización externa – ¿cuál?) /** Where did you obtain it? (from your organisation, an external organization – which?).			
3	**¿Qué precisión tiene dicho modelo? /** Which accurateness does this model have?			
4	**¿Cumple con Tabla A8-1; requisitos de los datos sobre el terreno para el Área 1 del Anexo 15? /** Does it comply with Table A8-1; data requirements for Annex 15			
5	**¿Dicho modelo cumple con la serie de Normas ISO 19110? (Sí/No) /** Does such model comply with the series of ISO Standard 19110? (Yes/No)			
6	**¿Qué precisión tiene dicho modelo?** Which is the accurateness of such model?			
7	**¿Dispone de una base de datos de obstáculos que abarque todo el territorio de su país? (Sí/ No) /** Is there an obstacle data base covering all territory in your country? (Yes/No).			
8	**¿Cómo los obtuvo? (¿de la propia organización, de organización externa? – ¿cuál?) /** How did you get them (from your organization? From an external organization? – which?			
9	**¿Dichos datos cumplen con la serie de Normas ISO 19110? (Sí/No) /** Does the data comply with the series of ISO Standard 19110? (Yes/No).			
10	**¿Cumple con Tabla A8-2; requisitos de los datos sobre obstáculos para el Área 1 del Anexo 15? /** Does it comply with Table A8-1; data requirements on terrain for Annex 15 Area 1?			
11	**¿Ha establecido la Oficina un plan detallado con las tareas, plazos, análisis de riesgos, aspectos económicos y demás para la ejecución del proyecto de implantación del e-TOD para el Área 1? (Si/No) (Si la respuesta es Sí, indicar plan y fechas de cumplimiento). /** Has your office established a detailed plan with tasks, risk analysis, economical aspects, etc, for the execution of the e-TOD implementation project for Area 1 (Yes/No) (if answer is yes, indicate plan and dates of compliance).			

C1	C2	C3	C4	C5
	PREGUNTA QUESTION	**Y = SI /YES**	**N=NO**	
12	**¿Ha definido la Oficina un manual de especificaciones técnicas para dicha implantación? (Sí/No). (Consultar si se puede acceder al mismo). /** Has the office defined a manual with technical specifications for such implementation? (Yes/No). (Ask if there is easy access to the same).			
13	**¿Ha definido y firmado Acuerdos de Nivel de Servicio (SLA) con los proveedores de datos? (Sí/ No). (Consultar si se puede obtener una copia modelo de los mismos). /** Has your office defined and signed service level agreements (SLA) with data providers? (Yes/No). (Ask if there is an available copy of the same).			
14	**¿Dispone de un programa de capacitación para aquellas personas que tengan que operar con los datos del e-TOD en la dependencia AIS? (Sí/No). (Consultar si se puede acceder al mismo). /** Is there a training programme for those persons that have to operate with E-TOD data in AIS unit? (Yes/ No). (Ask if the same may be accessed).			
15	**¿Se han tenido en cuenta los conceptos operacionales en este proyecto? (Sí/No). (Comentar el plan). /** Have operational concepts been taken into account? (Yes/No). (Comments on the plan).			
16	**¿La Oficina dispone de equipamiento y programas para la gestión de la información referida a e-TOD? (Sí/No). (En caso de respuesta Sí, indicar característica de los equipos y programas). /** Does the office have equipment and programmes for information management referred to e-TOD (Yes/No). (In case answer is Yes, indicate the characteristic of equipment and programmes).			
17	**¿Se han definido cronogramas y especificaciones para la carga y verificación de los datos referidos al e-TOD? (Sí/No). (En caso de respuesta Sí, indicar tiempos y formas de la verificación). /** Have schedules and specifications been defined for the load and data verification referred to e-TOD? (Yes/No). (In case answer is Yes, indicate times and ways to check).			

Opción /Option Columna C3 / Column C3	Opción /Option Columna C4 / Column C4	Opciones/Options Columna C5 / Column C5
Y = SI / Yes	N = No	P = Parcialmente / Partially N/A = No aplicable / Not applicable S/R – W/A = Sin respuesta / Without answer V/C – S/C= Ver comentarios / See comments

Pregunta No. Question #	COMENTARIOS / COMMENTS

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APPENDIX C1

SAM Region	**PROJECT DESCRIPTION (DP)**	DP N° G1	
Programme	**Project Title**	**Start**	**End**
AIM (ICAO programme coordinator: Jorge Armoa)	Implementation of the provision of electronic terrain and obstacle data (e-TOD) (SAM) Project coordinator: Juan González (Uruguay) Experts contributing to the project: SAM/AIM IG	26/09/11	31/12/19
Objective	Support the implementation of the provision of e-TOD by SAM States, and provide guidance to States on GIS acquisition and management.		
Scope	The scope of the project contemplates the assessment and identification of implementation levels associated to the provision of electronic terrain and obstacle data. It contemplates the drafting of an Action plan and guides for the implementation of e-TOD to support developments in the provision of electronic terrain and obstacle data for the evolution of digital terrain models (DTM) to gradually improve electronic aeronautical charts and other similar products, with the support of tools such as geographical information systems (GIS).		
Metrics	• Number of States that have implemented GIS or automated systems. • Guide-document with action plan approved. • Number of States that establish SLAs. • Number of main international airports with Area 2 (eTOD) surveyed and published.		
Strategy	Project activities will be coordinated among project members, the Project coordinator, and the Programme coordinator, mainly through teleconferences (GoToMeeting application) and meetings that may be held within the context of other scheduled events, based on the activities of the work programme. The Project coordinator will coordinate with the Programme coordinator for the inclusion of additional experts, if warranted by the tasks and works to be executed. The results of the work done will be submitted to the consideration and review of State experts in the form of a final consolidated document for analysis, review, and approval, and for presentation to the GREPECAS PPRC by the Programme coordinator.		

Goals	Draft the guide-document containing the objectives of the e-TOD project. 2012. Define the technical and e-TOD project specifications. 2012. Prepare the document containing the e-TOD technical specifications. 2012. Guide for the acquisition of a geographical information system (GIS). 2012. GIS implementation Manual. 2012. Available methodologies and tools for surveying Area 2. 2013 Main international airports with Area 2 surveyed. 2019
Rationale	Compliance with the SARPs of Annexes 15 and 4 to facilitate the execution of performance-based air operations and to advance with the AIS-AIM Transition Roadmap. A close relationship with other projects is needed in order to define the operational requirements of the aforementioned applications and their respective tentative dates of implementation.
Related projects	This project is related to Project G3 "Implementation of the Quality Management System in AIM units" in the SAM State**s**.

Project deliverables	**Relationship with the performance-based regional plan (PFF)/ASBU**	**Responsible party**	**Status of implementation***	**Delivery date**	**Comments**
Survey on the status of eTOD implementation	PFF: SAM AIM/02	Juan González Uruguay		30/11/2011	Finalised on schedule
Generate follow-up report	PFF: SAM AIM/02	Juan González Uruguay		30/04/2012	Finalised on schedule
Develop Guide-Document with the objectives of the eTOD project	PFF: SAM AIM/02	Juan González Uruguay		30/09/2012	Finalised on schedule Delivered 30/09/2012.
Define the technical specifications of the eTOD project	PFF: SAM AIM/02	Juan González Uruguay		30/09/2012	Finalised on schedule Delivered 30/09/2012.
Develop the document with eTOD technical specifications	PFF: SAM AIM/02	Juan González Uruguay		30/09/2012	Finalised on schedule Delivered 30/09/2012.

Guide for the acquisition of a geographical information system (GIS)	PFF: SAM AIM/01	Juan González Uruguay		09/03/2012	Finalised on schedule
GIS implementation manual	PFF: SAM AIM/01	Juan González Uruguay		09/03/2012	Finalised on schedule
Present to States the different options and tools available for surveying Area 2	ASBU:BO30 DATM	ICAO coordinator		26/07/2013	Finalised on schedule
Guide for the development of a digital terrain model (DTM) or digital elevation model (DEM)	PFF: SAM AIM/02 ASBU:BO30 DATM	*Ad-hoc* group SAM/AIM/7 meeting		30/03/2015	Finalised on schedule
Completion of DTM and/or DEM by 50% of States prior to the SAM/AIM/7 meeting	PFF: SAM AIM/02 ASBU:BO30 DATM	States		12/11/2017	Completed in 49% of States.
Availability of e-TOD information management programmes	PFF: SAM AIM/02 ASBU:BO30 DATM	States		12/11/2017	Completed in 49% of States.
Action plan for electronic **terrain** data in Area 2	PFF: SAM AIM/02 ASBU:BO30 DATM	States		12/11/2017	Completed in 49% of States.
Action plan for electronic **obstacle** data in Area 2	PFF: SAM AIM/02 ASBU:BO30 DATM	States		12/11/2017	Completed in 42% of States.
Resources needed	Designation of experts for the execution of some of the deliverables. More commitment by States to support the designated coordinators and experts.				

**Grey* *Task not started*
Green *Activity underway as scheduled*
Yellow *Activity started with some delay but expected to be completed on time*
Red *It has not been possible to implement this activity as scheduled; mitigating measures are required*

APPENDIX C2

SAM Region	**PROJECT DESCRIPTION (DP)**	DP N° G2	
Programme	**Project Title**	**Start**	**End**
AIM (ICAO Programme coordinator: Jorge Armoa Cañete)	G2: Implementation of aeronautical information exchange systems (AIXM) (SAM) Project coordinator: Ing. Karina Calderón Experts contributing to the project: SAM/AIM/IG	01/03/12	01/12/17
Objective	Prepare an action plan to be implemented by States for the application of the aeronautical information/data exchange model.		
Scope	The scope of the project contemplates the evaluation and identification of automation levels associated to the integration of the aeronautical information and data exchange model in the Region, through surveys, the identification of database providers, and follow-up on the development of SARPs on this matter.		
Metrics	Number of States that have implemented an action plan for data exchange systems.		
Goals	Complete all the documentation needed by States before 31/12/16.		

Strategy	Project activities will be coordinated among project members, the Project Coordinator, and the Programme Coordinator, mainly through teleconferences (GoToMeeting application). Seminars/meetings are scheduled in accordance with work programme activities. The Project coordinator will coordinate with the Programme coordinator for the inclusion of additional experts, if warranted by the tasks and work to be performed. Coordination will take place between the CAR and SAM Regions. The results of the work done will be submitted to the consideration and review of State experts in the form of a final consolidated document for analysis, review, and approval, and for presentation to the GREPECAS PPRC by the Programme coordinator.
Rationale	Integrate aeronautical information to allow for interoperability of ATM systems while preserving safety, applying information exchange models.
Related projects	*This project is related to Project G3 "Implementation of the Quality Management System in AIM units in SAM States".*

Project deliverables	**Relationship with the performance-based regional plan (PFF)**	**Responsible party**	**Status of implementation***	**Delivery date**	**Comments**
Survey of the provision of IAIP, using a table	D-ATM	ICAO coordinator		16/03/12	Finalised on schedule at the SAM/AIM meeting
Circulation of IAIP survey to States	D-ATM	ICAO coordinator		16/03/12	Finalised on schedule at the SAM/AIM meeting
Collection and updating	D-ATM	ICAO coordinator		16/03/12	Finalised on schedule at the SAM/AIM meeting
Collection of experiences in SAM States with the electronic AIP (PDF format)	D-ATM	ICAO coordinator		16/03/12	Finalised on schedule at the SAM/AIM meeting

Development of AIXM action plans	D-ATM	ICAO coordinator		24/04/15	Finalised on schedule
Gathering of AIXM documentation	D-ATM	ICAO coordinator		22/05/15	Finalised on schedule
Translation of AIXM documentation	D-ATM	ICAO		10/07/15	Finalised on schedule
Review of AIXM documentation	D-ATM	ICAO coordinator		21/08/15	Finalised on schedule
Validation of documentation	D-ATM	ICAO coordinator		30/11/16	
Drafting of document describing AIXM testing steps	D-ATM	ICAO coordinator		28/02/17	
Conduction of AIXM tests	D-ATM	ICAO coordinator		30/03/17 and 27/04/17	Not finalised on schedule
Report on the results of data transmission and reception tests	D-ATM	ICAO coordinator		31/05/17	
AIXM seminar	D-ATM	ICAO coordinator		02/10/15	Finalised on schedule
Drafting of guidance material for AIXM concept management	D-ATM	ICAO coordinator		27/12/16	
Resources needed	Designation of experts for the execution of some of the deliverables. Greater commitment by States to support coordinators and experts.				

**Grey* *Task not started*
Green *Activity underway as scheduled*
Yellow *Activity started with some delay but expected to be completed on time*
Red *Activity not implemented on time; requires mitigation measures*

APPENDIX C3

SAM Region	**PROJECT DESCRIPTION (DP)**	DP N° G3	
Programme	**Project Title**	**Start**	**End**
AIM (ICAO programme coordinator: Jorge Armoa Cañete)	Implementation of the quality management system at AIM units of SAM States Project coordinator: Oscar Dioses (Peru) Experts contributing to the project: SAM/AIM IG Ing. David Díaz (Peru)	03/10/11	01/11/20
Objective	Implement guides applicable to the quality management system in a digital/electronic AIM environment in the SAM Region, based on the regional performance objectives of the SAM performance-based implementation plan.		
Scope	The scope of the project contemplates the evaluation and identification of implementation levels associated to quality management in AIM services in the Region. Drafting of an action plan and guides for the implementation of QMS in a digital/electronic AIM environment.		
Metrics	Percentage of States with ISO 9001:2008 QMS certification Percentage of States with ISO 9001:2015 QMS certification		
Goals	50% of States with ISO 9001:2008 implemented by 2013 and certified by 2014. 50% of States with ISO 9001:2015 implemented by 2018 and certified by 2019. 80% of States with ISO 9001:2015 implemented by 2019 and certified by 2020.		
Strategy	Project activities will be coordinated among project members, the Project coordinator, and the Programme coordinator, mainly through teleconferences (GoToMeeting application) and meetings that may be held within the context of other scheduled events, based on the activities of the work programme. The Project coordinator will coordinate with the Programme coordinator for the inclusion of additional experts, if warranted by the tasks and work to be performed. The results of the work done will be submitted to the consideration and review of State experts in the form of a final consolidated document for analysis, review, and approval, and for presentation to the GREPECAS PPRC by the Programme coordinator.		

Rationale	The quality management system in AIM services must provide users the required guarantee and assurance that the aeronautical information/data distributed meets quality requirements in terms of accuracy, resolution and integrity. There needs to be a close relationship with other projects in order to determine the operational requirements of the aforementioned applications and their respective tentative dates of implementation.
Related projects	This project is related to Projects G1 "Implementation of the provision of electronic terrain and obstacle data e- TOD" and G2 "Implementation of Aeronautical Information Exchange Systems (AIXM)".

Project deliverables	Relationship with the performance-based regional plan (**PFF)**	**Responsible party**	**Status of implementation***	**Delivery date**	**Comments**
Preparation of surveys to establish the levels of compliance and implementation of AIM-QMS based on ICAO guides	PFF: SAM AIM/01	ICAO coordinator		25/11/11	Finalised on schedule
Circulation of surveys among States	PFF: SAM AIM/01	ICAO coordinator		17/02/12	Finalised on schedule
Collection and tabulation of the information sent by States	PFF: SAM AIM/01	ICAO coordinator		13/04/12	Finalised on 30/3/12
Description of QMS implementation steps	PFF: SAM AIM/01	SAM/AIM/WG		30/03/12	Finalised on schedule
QMS self-assessment questionnaire	PFF: SAM AIM/01	David Diaz RLA/06/901		30/03/12	Finalised on schedule

Template with QMS assessment results	PFF: SAM AIM/01	David Diaz RLA/06/901		30/03/12	Finalised on schedule
QMS implementation plan	PFF: SAM AIM/01	David Diaz RLA/06/901		19/10/12	Finalised on schedule
QMS procedures and preventive actions	PFF: SAM AIM/01	Oscar Dioses Peru		19/10/12	Finalised on schedule
QMS internal audit procedure	PFF: SAM AIM/01	Oscar Dioses Peru		19/10/12	Finalised on schedule
Procedure for controlling AIS service management system records	PFF: SAM AIM/01	Oscar Dioses Peru		19/10/12	Finalised on schedule
Procedure for drafting QMS documents	PFF: SAM AIM/01	Oscar Dioses Peru		19/10/12	Finalised on schedule
Service control procedure – QMS non-conforming products	PFF: SAM AIM/01	Oscar Dioses Peru		19/10/12	Finalised on schedule
Procedures for controlling the documents of the AIS service management system	PFF: SAM AIM/01	Oscar Dioses Peru		19/10/12	Finalised on schedule
Model of SLA with service providers to ensure the quality of information and	PFF: SAM AIM/01	Juan J. González Uruguay		19/10/12	Finalised on schedule

AIM data exchange.					
Cyclic redundancy (CRC) provided to States	B0 DATM	Juan J. González Uruguay		30/03/2015	Finalised on schedule
AIM training programmes	B0 DATM	Juan J. González Uruguay		30/03/2015	Finalised on schedule
Collection of certifications, and production of report on status of ISO 9001:2008 certification	B0 DATM	ICAO coordinator		01/11/18	Brazil, Chile, French Guiana, Paraguay, Peru and Uruguay have obtained ISO 9001:2008 certification.
Collection of action plans for adjusting the implemented QMS/AIM to ISO 9001:2015	PFF: SAM AIM/01	ICAO coordinator		01/11/18	The Secretariat has sent letters informing about changes to ISO 9001 in September 2015 and that certifications under version 2008 of the standard will all expire in September 2018. Brazil, Chile, Panama, Paraguay, Peru, and Uruguay have obtained ISO 9001:2015 certification.
Collect certifications and prepare report on the status of ISO 9001:2015 certification in the SAM Region	B0 DATM	ICAO coordinator		01/12/2019	
Resources required	Designation of experts for the execution of some of the deliverables. More commitment by States to support the designated coordinators and experts.				

**Grey* *Task not started*

Green	*Activity underway as scheduled*
Yellow	*Activity started with some delay but expected to be completed on time*
Red	*It has not been possible to implement this activity as scheduled; mitigating measures are required*