



Agenda Item 1: Follow-up to the implementation of air navigation priorities

FOLLOW-UP TO AIM IMPLEMENTATION GOALS

(Presented by the Secretariat)

SUMMARY	
<p>This working paper refers to GREPECAS Programmes and Projects within the context of AIS-to-AIM transition, and presents the progress made by SAM States, Territories and international organisations in the implementation of the quality management system (QMS), the availability of electronic terrain and obstacle data (e-TOD) sets to users, and AIXM, which is being addressed as part of the second phase of AIS-to-AIM transition.</p>	
References	
<ul style="list-style-type: none">• Eighteenth meeting of GREPECAS - Punta Cana, Dominican Republic, 9-13 April 2018• Fifth meeting of Air Navigation and Safety Directors – Lima, Peru, 2018• Annex 15 – Aeronautical information services• Report of the first AIM-IS meeting• SAM/AIM/11 meeting - Lima, Peru, 23-27 April 2018	
<i>ICAO strategic objectives:</i>	<i>A - Safety B – Air navigation capacity and efficiency</i>

1. Introduction

1.1 The completion of Phase 1 of the Roadmap for the transition from AIS to AIM is a very important landmark to achieve the consolidation of AIS.

1.2 The Fifth meeting of air navigation and safety directors reviewed the status of implementation of steps in Phase 1, within the context of the Declaration of Bogota.

1.3 Amendment 40 to Annex 15, effective in November 2018, includes rules for the transition to Phase 2 of the Roadmap, depending on the availability of technology and the inclusion of Procedures for Air Navigation Services for AIM (PANS-AIM).

1.4 ICAO Annex 15 has been subject to consecutive amendments to provide the regulatory framework for implementations that should be carried out in follow up of the Roadmap.

2. Discussion

2.1 The ANFS/5 meeting reviewed the progress made in the attainment of the goals of the Declaration of Bogota concerning AIM requirements. It also took note that, of all the items contemplated in Phase 1 of the Roadmap for the transition from AIS to AIM, the Project on implementation of quality in aeronautical information management (AIM) units is the one that is hindering the transition most.

2.2 The information collected through the ICAO Regional Office regarding the transition from AIS to AIM Roadmap implementation show that States are taking several measures in this direction. Specific efforts are centred in the implementation of the different steps of the transition from ICAO AIS to AIM roadmap (Phases 1, 2, 3); however, up to date, the Region has not totally implemented Phases 1 and 2. Also, GREPECAS has identified that Annex 15 fundamental standards are not being implemented and has marked these as air navigation deficiencies.

2.3 The Meeting should consider the action required to move to the provision of aeronautical information in electronic format. In this regard, the Meeting will recall that GREPECAS/18 reviewed implementations in the AIM area. The aforementioned meeting expressed its concern over delays experienced in e-TOD implementation; *ad hoc* group had even been established to analyse strategies that could expedite implementation. The recommendations of the *ad-hoc* group are shown in **Appendix A** to this working paper.

2.4 The Meeting should agree that States should be required, specifically regarding AIS, to take all appropriate measures to evolve their systems and services in order to ensure the resolution of these deficiencies. Also, AIM implementation is a clue milestone in the evolution process of the System Wide Information Management (SWIM) environments: if challenges are not faced correctly, the SWIM evolutions is in risk of not being completed.

2.5 The Meeting should know that staying in *status quo* is not recommended. It is imperative to draw up a strategy and action plans to move towards the future of the AIM. The AIM-IS (AIM - Implementation Strategy) has been working on the design of the strategy for the implementation of the AIM, in order to lead the implementation of the same. The actions to be taken forward for this are:

- Support the implementation of the AIM requirements (Annex 15, edition 16, and PANS-AIM)
- Review and / or improve existing requirements (for example, in answer to State Letter 2017/22);
- identification of specific training needs;
- direct assistance to States for the transition to AIM; and
- support to any other AIM implementation, as needed.

2.6 Regarding AIXM implementation, important progress is being made in the Region. Initial data exchange tests have been conducted through AIXM between Argentina and Panama, with successful results. Other tests are scheduled for this year with the possible participation of Argentina, Brazil, Panama, and Venezuela. However, despite the successful results obtained, it is necessary for the other States to join in the implementation of AIXM, since benefits would improve if implementation is carried out at regional level. Regarding e-AIP implementation, Argentina, Chile and Panama stated that their plans were being developed and would be consolidated in 2019. In Peru, the process would be completed by the first quarter of 2019. Argentina is awaiting the acquisition of the e-AIP module, currently subject to a bidding process.

2.7 The Meeting shall also consider the new requirements introduced by Amendment 40 to Annex 15, as well as the new Doc 10066 - PANS-AIM. It should be noted that the changes introduced by Amendment 40 and the new PANS-AIM will provide the regulatory framework for the implementation of the digital phase of aeronautical information management, which will serve as the basis for the implementation of system-wide information management (SWIM). One of the main requirements introduced by the PANS-AIM is the need to develop data catalogues.

2.8 The Meeting should also take note of AIM implementation priorities. It is important to recall that implementation calls for interoperable systems. Data and system interoperability requires the implementation of the elements of B0-DATM, a module that is essential for PIA 2. Priorities for the period 2018-2022 established by the ANFS/5 meeting are contained in **Appendix B** to this working paper.

2.9 Regarding phase 1 steps, those that have experienced delays are the implementation of the QMS / AIM and the e-TOD. In relation to the QMS / AIM, Brazil, Chile, Paraguay, Peru, Panama and Uruguay have been certified with the ISO 9001: 2015 standard. Argentina depends to the call for tenders for a computer package for aeronautical information management (e-AIP modules, e-TOD, among others), which would lead to a rethinking of the AIM processes and, thus, to the QMS approach. Bolivia indicated no important progress due to the many management changes, which have delayed the process. Guyana, on the other hand, has indicated that they had concluded the personnel training of the ISO 9001 Standard version 2015, and that they already have a draft of the Quality Manual, currently under revision. Venezuela informed that the processes of adapting QMS implemented in the AIM areas to the 2015 version would be culminated in the first quarter of 2019. No information was provided by Colombia, Ecuador and Suriname.

2.10 Regarding e-TOD, States actions plans and their present status are shown in the following table:

SAM STATES	ACTION PLAN	FOLLOW-UP
<i>Argentina</i>	Estimated date: 27 November 2019.	Will review the action plan and corrections will be sent with more detailed information.
<i>Bolivia</i>	Start of corrective action: July 2017	Corrective action was initiated on the scheduled date.
<i>Brazil</i>	2017 - 8 AD 2018 - 8 AD 2019 - 8 AD 2020 - 7 AD 2021 - 7 AD 2022 - 7 AD	Brazil modified its action plan as indicated.
<i>Chile</i>	Completion foreseen by 2022. Surveys have started in Areas 2a, 2b and 2c at the Arturo Merino Benítez airport in Santiago and Chacalluta in Arica.	Surveying has also been completed at the Diego Aracena airport in Iquique.
<i>Colombia</i>	Has not submitted a plan.	
<i>Ecuador</i>	Has not submitted a plan.	
<i>French Guiana</i>	Has not submitted a plan.	
<i>Guyana</i>	Estimated start date: April 2017. The seven first points of the action plan should have been completed by now.	As reported by Guyana, work is being carried out as planned.

SAM STATES	ACTION PLAN	FOLLOW-UP
<i>Panama</i>	Has not submitted a plan.	
<i>Paraguay</i>	Data collection for Areas 2a, b, c, d, completed. Other e-TOD related activities are foreseen for 2016-2019.	
<i>Peru</i>	Has not submitted a plan.	Peru will hold a meeting among the civil aeronautical authority, the service provider (CORPAC), and aerodrome operators to draft the plan.
<i>Suriname</i>	Has not submitted a plan.	
<i>Uruguay</i>	Has not submitted a plan.	
<i>Venezuela</i>	Activities regarding terrain and obstacle data started on the second semester of 2017.	

3. Conclusions

3.1 In relation to the above, the Meeting should agree that the most important requirement to comply with the AIS transition to AIM Roadmap, is to focus on implementation, which should be the priority.

3.2 States must be aware that a solid foundation must be created by improving the quality of existing products and services for encouraging, afterwards, the migration to digital formats.

3.3 The implementation of the AIM progress is imperative, but an effective strategy for the continuous planning and progress of the digitalization work should be design first. The main point of this strategy should be the awareness of civil aviation authorities and ANSP regarding implications of the delay in the implementation of the AIM and the impact on global priorities, such as PBN, A-CDM, AFTM, SWIM, among others.

3.4 In this regard, the Meeting could agree on the following conclusion:

Conclusion ANFS/6-XX: AIM implementation

That States:

- a) that have not concluded Phase I of the AIS to AIM Roadmap establish the necessary procedures to comply with the implementation and the certification of the QMS/AIM and e-TOD data provision;
- b) that have not initiated Phase II implementation of the AIS to AIM Roadmap establish the necessary procedures to initiate aeronautical information and data digitalization phase; and
- c) carry out workshops for the CAA authorities and ANSP awareness on the impacts that the delay in the AIM implementation can have on ICAO global priorities such as PBN, AFTM, A-CDM and SWIM, among others.

4. **Suggested action**

4.1 The Meeting is invited to:

- a) take note of the information provided herein;
- b) review and discuss AIM/QMS implementation and certification activities;
- c) review and discuss e-TOD and AIXM implementation activities;
- d) plan for PANS-AIM implementation;
- e) review AIM implementation priorities for the period 2018-2022; and
- f) take any other action it may deem appropriate.

APPENDIX A

REPORT OF THE E-TOD *AD-HOC* GROUP

1. Participating States:

Brazil, Costa Rica, Panama, Dominican Republic, Trinidad and Tobago, Uruguay, and the Secretariat (CAR and SAM AIM ROs). The delegates of Cuba and CANSO also expressed their intention to join in for subsequent tasks.

2. Based on the proposals presented in WP/29, the Group agreed to establish an *ad hoc* working group to address the implementation of e-TOD and to define activities. The Secretariat presided over the meeting. Mr. Jorge Armoa served as rapporteur and made a brief introduction. The working group approved the proposal based on the seven items identified in WP/29, as follows:

- i. Implement appropriate regulations to support e-TOD data collection and management by the competent authority: State/government authorities, air navigation service providers (ANSPs), aerodrome operators, military, etc.
- ii. Define the data collection method, whether topography (using WGS-84) or other means (drones, satellite images/3D graph information processing/LIDAR).
- iii. Define the format in which data will be stored and distributed.
- iv. Implement the required infrastructure (one database - GIS) capable of managing/hosting e-TOD data. (The database must be able to load the required terrain data in the digital surface model (DSM) or digital terrain model (DTM) with the associated metadata traceability).
- v. Make sure that the State has the necessary resources to manage and maintain the e-TOD database in coordination with the military representatives (national security issues).
- vi. Make sure that State human resources are duly trained in terrain and obstacle data management (*i.e.*, understand the complexities of terrain data file formats and terrain data file bundling).
- vii. Make sure that the State has implemented a quality management system (QMS) with the associated processes and procedures to ensure quality in data processing from origin to publication (controlled harmonised aeronautical information network - CHAIN) in AIP section AD 2.10 (or other related IAIP documents).

3. The proposals of the Group are:

- a. The Group proposes States an exchange between geodetic and aeronautical mapping institutions.
- b. Give priority to eTOD area 3 for international airports.
- c. Assess the allocation of resources to a number of airports in each CAR and SAM State.
- d. Allow time for the development of plans in each project stage.
- e. Use satellite images and LIDAR data for areas 1 and 2, and drones for areas 3 and 4.
- f. Share expenditures among various State institutions that could derive benefits based on a cost-benefit analysis, maintaining continuity of e-TOD projects with adequate resources.
- g. Establish work agreements among State institutions and the military for the conduction of work, giving priority to areas 1 and 3.

- h. Consider the use of 3D data management software to obtain e-TOD products.
 - i. Request States that have started e-TOD to share information and experts to advise other States that so require.
 - j. Incorporate universities and mapping/geodetic institutes into the project.
 - k. Identify project risks and develop plans to address them.
 - l. Create a team in each CAR and SAM State to conduct cost-benefit analyses.
4. The *ad-hoc* group will keep in contact to follow up on the tasks and activities in both Regions in a coordinated manner. Progress will be reported to the CAR and SAM AIM ROs. Such progress will be reported at the upcoming CRPP/5 meeting through a working paper.

APPENDIX B

AIM AREA

B0 – DATM: Service improvement through digital aeronautical information management 2017-2019				
ELEMENTS	SCOPE	INDICATORS/ METRICS	GOALS: %/ Date	STATUS
1- AIXM	All States	Indicator: % of States that have implemented AIXM in an AIS database. Metrics: Number of States that have implemented AIXM in an AIS database.	Tests 2018 (4 States: ARG, BRA, PAN, URU) 49% by 2018 100% by 2019	XX% (X States)
2- Electronic AIP	All States	Indicator: % of States that have implemented an IAID to manage production of the electronic AIP (eAIP). Metrics: Number of States that have implemented an IAID to manage production of the electronic AIP (eAIP).	60% by 2018 100% by 2019	XX% (X States)
3- Electronic terrain and obstacle data (e-TOD)	All States	Indicator: % of States that have implemented the terrain data set. Metrics: Number of States that have implemented the terrain data set. Indicator: % of States that have implemented the obstacle data set. Metrics: Number of States that have implemented the obstacle data set.	Area 1: Obstacles: 51% by 2018	Area 1: Terrain: XX% (XX States) Obstacles: XX% (XX States)

B0 – DATM: Service improvement through digital aeronautical information management 2017-2019				
ELEMENTS	SCOPE	INDICATORS/ METRICS	GOALS: %/ Date	STATUS
Cont.: 3- Electronic terrain and obstacle data (e-TOD)	All States	Indicator: % of States that have implemented the data set for terrain and obstacles that penetrate the terrain and obstacle data collection surface. Metrics: Number of States that have implemented the data set for terrain and obstacles that penetrate the terrain and obstacle data collection surface.	AREA 2b, 2c and 2d Obstacles: 100% by 2019	AREA 2b, 2c and 2d Terrain: XX% (XX States) Obstacles: XX% (XX States)
4- Digital NOTAM	All States	Indicator: % of States that have included the digital NOTAM in their National AIS-to-AIM transition plans. Metrics: Number of States that have included the digital NOTAM in their National AIS-to-AIM transition plans.	28% by 2019 51% by 2021 100% by 2023	XX% (XX States)
5- Integrated aeronautical information databases (IAID)	All States	Indicator: % of States that have developed integrated aeronautical information databases (IAID). Metrics: Number of States that have developed integrated aeronautical information databases (IAID).	56% by 2018 100% by 2019	XX% (XX States)
6- Data catalogues	All States	Indicator: % of States that have developed data catalogues. Metrics: Number of States that have developed data catalogues.	56% by 2020 100% by 2022	XX% (XX States)
