



ICAO

International Civil Aviation Organization
North American, Central American and Caribbean Office

Integrated Aeronautical Information Management Transition Planning Meeting IAIM (AIM Strategy)

Draft Report

Mexico City, Mexico 29 to 31 October 2018

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HISTORICAL

ii.1 Place and Date of the Meeting

The Integrated Aeronautical Information Management Transition Planning Meeting (IAIM-AIM Strategy) was held at the ICAO NACC Regional Office in Mexico City, Mexico, from 29 to 31 October 2018.

ii.2 Opening Ceremony

Mr. Ricardo Delgado, Regional Officer, Aviation Security of the North American, Central American and Caribbean (NACC) Office of the International Civil Aviation Organization (ICAO) provided opening remarks, welcomed the participants and officially opened the meeting.

ii.3 Officers of the Meeting

Mr Raúl Martínez, Regional Officer, Aeronautical Information Management (RO/AIM) of the ICAO NACC Regional Office acted as Secretary of the IAIM-AIM Strategy Meeting assisted by AIM Specialist Mr. Alfredo Santos Mondragón (COCESNA).

ii.4 Working Languages

The working languages of the Meeting were English and Spanish. The working papers, information papers and draft report of the meeting were available to participants in both languages.

ii.5 Schedule and Working Arrangements

It was agreed that the working hours for the sessions of the meeting would be from 09:00 to 15:30 hours daily with adequate breaks.

ii.6 Agenda

Agenda Item 1: Review and Approval of the Agenda, Working Method and Schedule of the Meeting

Agenda Item 2: Introduction to Doc 10066 — Procedures for Air Navigation Services — Aeronautical Information Management (PANS-AIM)

Agenda Item 3: Doc 10066 — Procedures for Air Navigation Services — Aeronautical Information Management (PANS-AIM)

3.1 Aeronautical Data Catalogue

3.2 Main changes and implications on States and Stakeholders

Agenda Item 4: ICAO NACC Aeronautical Information Management (AIM) Objectives

4.1 AIM short Term Objectives

4.2 AIM mid Term Objectives

4.3 AIM long Term Objectives

Agenda Item 5: CAR Region AIM prioritization

5.1 Development of Regional Implementation Plan

Agenda Item 6: AIM measuring and monitoring

Agenda Item 7: Other Business

ii.7 Attendance

The Meeting was attended by 10 States/Territories from the CAR Region and 2 International Organizations, totalling 17 delegates as indicated in the list of participants.

ii.8 Recommendations for the ANI/WG AIM Task Force.

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ii.9 List of Working and Information Papers and Presentations

WORKING PAPERS

Number	Agenda Item	Title	Date	Prepared and Presented by
WP/01	1	Provisional Agenda And Schedule Of The Meeting	21/09/18	Secretariat
WP/02	3	Doc 10066 and its Applicability	18/10/18	Secretariat
WP/03	3.2	System-Wide Information Management (SWIM)	18/10/18	Secretariat
WP/04	4.1	Short-Term AIM Objectives	22/10/18	Secretariat
WP/05	4.2	Mid-Term AIM Objectives	23/10/18	Secretariat
WP/06	4.3	Long-Term AIM Objectives	23/10/18	Secretariat
WP/07	5.1	Development of the Regional Implementation Plan	23/10/18	Secretariat
WP/08	6	AIM Implementation In The CAR Region	18/10/18	Secretariat
WP/09	6	AIM Metrics and Monitoring	24/10/18	Secretariat
WP/10	4	Validation on Proposed amendment to Annex 1 - Personnel Licensing related to AIS/ARO personnel	24/10/18	Cuba

INFORMATION PAPERS				
Number	Agenda Item	Title	Date	Prepared and Presented by
IP/01	---	List of Working, Information Papers and Presentations	21/09/18	Secretariat
IP/02	7	Other Emerging Issues Impacting The Global Air Navigation System	18/10/18	Secretariat
IP/03	5	Advances in the Application of AIM Roadmap in the Republic of Cuba	27/10/18	Cuba

PRESENTATIONS				
Number	Agenda Item	Title	Presented by	
P/01	2	AIM Status Update	Secretariat	
P/02	3	Introduction to Doc 10066	Secretariat	
P/03	3.1	Aeronautical Data Catalogue	Secretariat	
P/04	5	AIM Strategy	Secretariat	
P/05	4	Safeguarding Aeronautical Information	United States	

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Agenda Item 1 Review and Approval of the Agenda, Working Method and Schedule of the Meeting

1.1 The Secretariat presented WP/01, inviting the Meeting to approve the provisional Agenda and the schedule and referred to the IP/01 with the list of related documentation. The Meeting approved the agenda as presented in the historical of this report without modification or changes to the schedule.

**Agenda Item 2 Introduction to Doc 10066 — Procedures for Air Navigation Services —
Aeronautical Information Management (PANS-AIM)**

2.1 With presentation P/01, the Meeting learned of the current Aeronautical Information Management (AIM) status, regarding the main progress that the date of applicability of Doc 10066 - *Procedures for Air Navigation Services — Aeronautical Information Management (PANS-AIM)* on 8 November 2018, and the adequacy of related ICAO documents such as Annex 15 – *Aeronautical Information Services* and Doc 8126 – *Aeronautical Information Services Manual*, and also the future progress of AIM.

2.2 The Meeting was informed about the status of "Update of the AIM status" by ICAO and the activities that are being coordinated with the Regional Offices to promote the process of transition from Aeronautical Information Services (AIS) to AIM in the States that particularly have difficulties completing the implementation of the AIM.

2.3 The different AIM provisions of ICAO were discussed, how to follow the path to full implementation and future developments by updating and developing a documentation framework that allows States to know the AIM Standards and Recommended Practices (SARPs) of Annex 15 and guides in the different current and emerging AIM issues that are being prepared for the new version of Doc 8126 - *Aeronautical Information Services Manual*, which is divided into four volumes, namely with the following general contents:

New structure of Aeronautical Information Services Manual Doc. 8126:

Volume	Content	Directed to
1	Orientation for the organizational development of AIS that includes the transition to the AIM	Management bodies, Air Navigation Service Providers (ANSP), regulators
2	Guidance for processing aeronautical data and information in a data-centric environment	Operational personnel
3	Guidance for the provision of aeronautical information in a standardized presentation	Operational personnel
4	Guidance to provide digital products and services	Operations personnel, AIM software manufacturers

2.4 With the restructuring of the Annex 15 requirements, the prescriptive, detailed and procedural texts have been transferred to the PANS-AIM to give greater visibility to standardized methods and procedures, as well as to the global change of traditional AIS towards AIM. Since the PANS consist mainly of texts relating to the normalization of methods and procedures, texts such as product specifications, standardized procedures and protocols are ideal for promulgation in the PANS-AIM. These specifications will constitute a means for further harmonization in the AIM domain, as well as a vehicle for the new AIM technical requirements.

2.5 The Meeting also knew and agreed that it is necessary to lead the way towards implementation, with the following main tasks:

- a) Review and/or improve existing requirements;
- b) Development of AIM guidance material;
- c) Development of Web-based guidance;
- d) Identification of specific training needs;
- e) Direct assistance to States for the AIM transition; and
- f) Any other AIM implementation support; as necessary.

2.6 In particular, the importance of Annex 15 and its new amendment 40, which incorporates the AIM issues mentioned in substitution of AIS, was highlighted. The importance of the new Doc 10066, which contains the bases for the development of an AIM operational concept, was also highlighted and the corresponding provisions for the establishment of an information service that serves as a replacement for the information that is currently provided in a traditional manner.

2.7 The Secretariat indicated that the provision of digital data sets through System Wide Information Management (SWIM) services should be facilitated, as well as identifying and analysing the aeronautical information requirements specific to Unmanned Aircraft Systems (UAS) Traffic Management and facilitating the migration of aeronautical map products in paper to the digital environment and identify the requirements for the graphic representation of aeronautical information in a SWIM environment.

2.8 On the other hand, the Meeting was informed that 12 AIM projects were defined at the ICAO Headquarters to address the globally identified priorities, of which the 5 most immediate ones that will be addressed through the establishment of working groups were established. experts from all the Regions, called Multidisciplinary Technical Assistance Mission (TEAM), to attend to States or groups of States. The TEAMS will be oriented to the following projects initially:

- 1) Support to the AIM Global Implementation
- 2) World Geodetic System - 1984 (WGS-84)
- 3) Aeronautical Charts
- 4) Notice to Airmen (NOTAM)
- 5) Digital Data Sets

2.9 Additionally, the TEAMS will be established under the following guidelines:

- Create a framework for the TEAMS
- Objective: to help States and Air Navigation Service Providers (ANSPs) eliminate obstacles to implementation
- AIM TEAMS do not have direct control over the implementation process within a State; decisions related to the implementation of improvements to Aeronautical Information Services fall on the State and its designated ANSP

- Process: Selection of the candidate State
 - Data collection
 - Coordination
 - On-site visit
 - Follow up
- Terms of reference (drafted)
- Find stable partners

2.10 In the analysis of these five projects, the AIM Specialists agreed on the need to make proposals for each one, the impact, action plan and metrics as the four aspects that served to draw the most appropriate route to support the future of the global implementation of AIM.

2.11 P/01 concluded with the importance of creating frameworks for the work teams and specialists that could contribute with the States and ANSPs to eliminate obstacles for implementation.

2.12 Training needs by AIM competence at all levels, online or in classrooms, as well as ways of establishing business plans to fund them are not something that has been overlooked, rather they are very relevant nowadays.

2.13 Under WP/02, the Meeting was informed on the structure and conformation of Doc 10066 and its applicability, both for the editorial aspects where the origin of the information is specified, as well as the changes or additions that are applicable this year 2018.

2.14 The Meeting expressed interest in the possibility that more opportunities may be available to know in greater detail the implications of the content of the document, which may well be incorporated into the new training by competencies of the AIM specialists, and in the topics of the agenda of future seminars and workshops promoted by ICAO or other organizations that support the state of AIM in this regard.

Agenda Item 3 Introduction to new Doc 10066 —PANS-AIM

Content of the new Doc 10066 - PANS-AIM

3.1 The Secretariat invited the Meeting to carry out an analysis of the contents of the new Doc 10066 PANS-AIM, which will become effective on 8 November 2018. For this action, it went through the most significant events in the adoption and approval processes of the first edition of the PANS AIM Doc 10066.

3.2 The Secretariat made an introduction to Doc 10066 - PANS-AIM, highlighting the contribution made by the AIM specialists from the Study Group on Aeronautical Information Services (AIS) - Aeronautical Information Management (AIM) (AIS-AIMSG) , who collaborated with ICAO for its conformation, both in the extraction of the information that comes from Annex 15 - *Aeronautical Information Services*, and from the information from Doc 8126 - *Manual for Aeronautical Information Services*, and the incorporation of new information for the AIM transition.

3.3 The introduction of PANS-AIM (Doc 10066) has minimal implications for States and the industry, however, several requirements of Annex 15 have been transferred to the PANS-AIM, which will imply the need to modify the regulatory framework of the State, in order to take due account of the new references and to update the processes for notifying or stop notifying differences to ICAO and to ensure that significant differences are published in the State's Aeronautical Information Publication (AIP), so the following recommendation emerged:

RECOMMENDATION	
IAIM/1	FIRST PANS-AIM WORKSHOP 2019
<p>What:</p> <p style="padding-left: 20px;">That,</p> <p style="padding-left: 20px;">ICAO carries out a PANS-AIM workshop in 2019.</p>	<p>Expected impact:</p> <p><input type="checkbox"/> Political / Global</p> <p><input type="checkbox"/> Inter-regional</p> <p><input type="checkbox"/> Economical</p> <p><input type="checkbox"/> Environmental</p> <p><input checked="" type="checkbox"/> Technical/Operational</p>
<p>Why:</p> <p style="padding-left: 20px;">States need to know and study the new procedures for air navigation services in aeronautical information management</p>	
<p>When: Second semester of 2019</p>	<p>Status: <input checked="" type="checkbox"/> Valid / <input type="checkbox"/> Superseded / <input type="checkbox"/> Finalized</p>
<p>Who: <input type="checkbox"/> States <input checked="" type="checkbox"/> ICAO <input type="checkbox"/> Other:</p>	

3.4 The Attachments to the Working Paper were analysed and a list of tasks for the application was presented, including a review of the new guidance material, as well as a step-by-step evaluation of the implications of the first proposed edition of the PANS-AIM; the attachments have the following contents:

- A — List of tasks for the application and review of guidance texts
- B — Implications assessment
- C — First edition of the PANS-AIM
- D — Preamble to the first edition of PANS-AIM

3.5 It was indicated that with the restructuring of the requirements of Annex 15, the prescriptive and procedural texts have been transferred to the PANS-AIM, in order to give greater visibility to standardized methods and procedures, as well as to the global change of traditional AIS towards the AIM, taking into account that the PANS consist of normalization texts of methods and procedures, as well as of product specifications and protocols that are ideal for their promulgation in the PANS-AIM. These specifications will constitute a greater harmonization in the AIM domain and a vehicle for the new emerging technical requirements of AIM.

Introduction to Doc 10066 - PANS-AIM

3.6 With the presentation on the introduction to PANS-AIM, it was reported that they could eventually become standards when the maturity and stability necessary for their adoption as such has been reached, that the basic principles contained in the SARPs of Annex 15 are amplified, to complement their application; in this regard, it is expected that States publish updated lists of differences in their AIPs between their national procedures and the related PANS.

3.7 The Meeting discussed the elements that PANS-AIM provides as a vehicle for expanded or new specifications related to quality management practices, data management to achieve integrity requirements, improved or new specifications for digital data sets as well as the procedures for data exchange.

3.8 An important aspect pointed out by the Secretariat was the introduction of the Aeronautical Data Catalogue, modifying the product-centred paradigm into one focused on data, containing the following fundamental aspects in AIM:

- Provides a common list of terms, and facilitates formal agreements between data originators and the aeronautical information service
- Provides the means for States to facilitate the identification of organizations and authorities responsible for the creation of data
- Is a unique source of all data quality requirements
- Contains existing data quality requirements
- Is adaptable to future quality requirements

Aeronautical Data Catalogue

3.9 The Secretariat devoted a session to the Aeronautical Data Catalogue, providing a description and defining the data quality requirements. Additionally, the Aeronautical Data Catalogue presents the scope of the data and information that an AIS organization can collect and maintain, considering that it:

- symbolizes the shift from product-centric environments to data-centric environments in the AIM domain
- is the reference point for all provisions related to the creation and publication of aeronautical data and represents a common language for data originators and AIS organizations

3.10 The Aeronautical Data Catalogue in PANS-AIM:

- provides a description of the aeronautical data
- defines the quality requirements of the data
- consolidates the aeronautical data that an AIS will collect and maintain
- facilitates formal arrangements
- allows national and regional extensions
- is, not only an ICAO SARP, but a tool to facilitate its work

3.11 The phased migration was another subject known to the Meeting, which would allow the States to have minimum implications on the financial aspect, a harmonization within the AIM domain. Evolution in steps also allows that the experience acquired in the first phases be incorporated in the subsequent ones and it ensures that a solid base be available before adopting more advanced techniques. In addition, the transition will produce global economic gains, improving the management of aeronautical information through a faster, more cost-effective and quality-controlled aeronautical data exchange.

3.12 It was emphasized that when talking about a data catalogue, the intent is to go more into detail of what the information and data in the AIP formats currently provide, for this purpose, simple formats will be available to manage with EXCEL, to collect, process and distribute where they would highlight:

- a) elements of the Data Catalogue
- b) use of the Data Catalogue
- c) data originator index
- d) formal arrangements
- e) content of the products
- f) national Extensions

3.13 The Aeronautical Data Catalogue takes into account the focus on processes and data chains, which considers that the data collected by AIS have sub-domains of information and their own structure, the type and description of the data (metadata) without forgetting the quality requirements.

3.14 The Meeting was informed that it is as important to consider the organization responsible for the origin of the data, as an issuing index, through formal arrangements or agreements that provide lists of data, and to code by type, valid coding known or expanded, in addition to the properties in cases of national extension, such as obstacles in airports.

3.15 The Meeting agreed on the new AIM trends:

- a) focus on the data
- b) data sets instead of AIP pages
- c) incentives for States
- d) 3 types of services
- e) data chains
- f) AIS origin to the next desired user
- g) new Annex 15 completely restructured
- h) new PANS-AIM (Doc 10066)/Data catalogue, and
- i) 4 volumes of AIS Manual (Doc 8126)

3.16 Finally, regarding the data catalogue, it was summarized that the main contributions to the AIM transition are:

- a) provide a description of the aeronautical data
- b) define the data quality requirements
- c) consolidate the aeronautical data that an AIS will collect and maintain
- d) facilitate formal arrangements
- e) allow national and regional extensions; and
- f) be, not only a ICAO SARP, but a tool to facilitate their work

Main changes and implications in States and Interested Parties

3.17 The Meeting noted the developments in SWIM that ICAO has had to date and the work that remains to be done to improve the efficiency and security of the aviation system, through the implementation of a globally harmonized information management leading to a uniform system. To that end, it is planned to establish a solid base of global recommended standards and best practices, together with explicit guidance material to ensure the interoperability of the systems and the harmonization of procedures in the exchange of information.

3.18 The Secretariat explained that it is recognized that SWIM's global approach is essential to ensure interoperability and harmonization in all domains of information, for which ICAO is about to release an advanced edition of the Manual on the SWIM concept (Doc 10039), in the ICAO secure Portal; that Manual defines the SWIM as a set of standards, infrastructure and government that allows the management of information related to ATM and its exchange between qualified parties through interoperable services.

3.19 On the other hand, it was said that there is a consensus among experts in information management that SWIM will become the global platform for the exchange of information and the provision of information services through the Internet Protocol (IP), which can be classified into four information domains, namely:

- a) aeronautical
- b) meteorological
- c) flight and flow
- d) surveillance/position

3.20 In addition to this part, the Meeting concluded that aviation systems are increasingly more interconnected and depend more on the information and data shared throughout the system to make collaborative decisions to meet the operational needs of all stakeholders and improve the overall system performance. SWIM is, therefore, a key enabler for aviation to achieve the expected benefits of current operations and more for future operations.

3.21 The discussion focused on the harmonization and possible integration of information and civil and military information exchange systems that can benefit all involved and can result in greater civil and military cooperation.

3.22 Finally, it was indicated by the Secretariat that the awareness and training activities will serve, not only to educate the community in the design and implementation of the SWIM information services, but also to share the concerns and the first specific experiences of each region or State. One of the objectives is to facilitate the smooth and rapid adoption of interoperable and harmonized SWIM solutions globally.

Agenda Item 4: ICAO NACC Aeronautical Information Management (AIM) Objectives

AIM Short Term Objectives

4.1 Agenda Item WP/04, which also included two Appendices (A and B), helped the Meeting to make a preliminary analysis, but it also helped during the entire development of the short, mid and long term objectives.

4.2 The Meeting analysed the definition of the short term purpose and objective that can be achieved when "Assessing the regional situation in terms of AIM transition"; in that regard, planners must define short-term goals related to other long-term objectives, considering the short-term goals to be met first.

4.3 In 2008, the document "Project of a strategy for the transition to aeronautical information management (AIM) in the CAR/SAM region" was published, in that document strategic objectives were proposed, which are listed in Appendix A of WP/03. Later on, in 2009, ICAO published the 1st edition of the "Roadmap for the transition from AIS to AIM", and in its preface the document states the following: "This roadmap aims specifically to address, and in greater detail, the guidelines contained in Doc 9750, on the future development of aeronautical information. The planned changes are of such magnitude that when referring to this evolution there is already talk of a transition from the aeronautical information services (AIS) to the management of aeronautical information (AIM)."

4.4 In the transition from AIS to AIM, the Secretariat indicated to consider the following as short-term objectives:

- a) understand that the concept of AIM is the essential and basic step for Air Traffic Management (ATM)
- b) study the new specifications to originate, maintain and exchange aeronautical electronic information, including Electronic Terrain and Obstacle Data (eTOD) with the precision, integrity, security and confidentiality necessary given its impact on flight safety
- c) define the training needs of the AIM Staff during the entire development of the short, mid and long term objectives

4.5 In addition, it was mentioned that for the establishment and determination of short, mid and long term objectives in AIM, it is always important to take into account additional aspects that involve the particular situation of each State, Territory or International Organizations in this area. However, all planning cannot be directly individualized, but it can be closely related to regional and global planning.

4.6 The Secretariat quoted the definition of a short-term purpose, which does not refer to a specific period, but the firsts to be completed. In other words, a short-term objective can be achieved (or not) in a day, week, month, year, etc. Quoting as an example; "Assess the regional situation regarding the AIM transition", planners usually define short-term goals in relation to long-term objectives, without forgetting that short-term goals are the first ones that must be met.

4.7 At the end of this part of the discussions, it was suggested to the Meeting to consider WP/03, to carry out an analysis of what, under its best criteria and experience, must be the new short-term Regional AIM objectives, which will also be taken into consideration for the update of the AIM Regional Implementation Plan.

AIM Mid Term Objectives

4.8 Regarding mid-term objectives, participants were also referred in part to the information included in Appendices (A and B) of WP/04, for a preliminary analysis, but also throughout the development of agenda item 4, on the subject of mid-term objectives.

4.9 The Meeting was reminded that mid-term objectives are those which realization is in the near future. These are objectives to be undertaken promptly. Some examples of mid-term from document "Project of a strategy for the transition to aeronautical information management (AIM) in the CAR/SAM Regions" were cited and are found in Appendix A of WP/04, which will be taken into consideration to be eliminated if they have been met and to be updated in the AIM Regional Implementation Plan.

4.10 The Secretariat clarified that, regarding mid-term objectives, are within the near future, but not as close as the short-term objectives, which could be in the months to come. These are mid-term objectives require a sustained effort over time, by the establishment of a sequence of short-term goals. In consequence, some proposals were commented and are as follows:

- a) Ensure the provision of updated and quality aeronautical information for all phases of the flight:

"Once the new specifications have been established to originate, maintain and exchange aeronautical electronic information, including information on field data and obstacles with punctuality, data resolution, accuracy, data integrity (level of assurance) and necessary confidentiality given its impact on flight safety."

- b) Transfer from the publication of aeronautical information products to the provision of each piece of information individually, of each of the elements of the aeronautical information in electronic format:

"As of November 2018, the aeronautical information supply is no longer based on the group of elements of the integrated AIS documentation (this definition of integrated documentation is no longer considered in PANS-AIM, giving way to the definition of Aeronautical information product), from which users manually extract (if not in digital format) the aspects that interest them. In the AIM strategy put forward several years ago, users are already able to extract their own parameters independently of the element (now data set), where it is published, and access, by automated means, the material that is relevant for their purposes, the main reference information together with the temporary changes are maintained electronically and updated within the element itself (digital data set) where it is published, which will minimize the potential for errors, even when the information is maintained digitally, printed information may be provided when required by the client."

c) Harmonize and integrate all civil-military aeronautical information:

"The harmonization and integration of civil-military aeronautical information is considered here as a mid-term objective, since it is related to aspects of operational safety, which are a priority, and which can be coordinated through the preparation of letters of agreement and collaboration in the provision of aeronautical information to be published."

AIM Long Term objectives

4.11 In this part of the discussion, it was also referred to the information included in the Appendices (A and B) of WP/04, which provided the Meeting with elements for a preliminary analysis of the development of the mid and long-term objectives.

4.12 During the presentation of this part of the Agenda, it was insisted on the planning aspects of objectives, where it is important to take into consideration that the classification will depend on the specific times and perspectives of the organisation as a whole, or as an individual, so that the same criterion cannot be applied to discern all the short, mid and long term goals in a general way.

4.13 The long-term objectives from the ICAO's roadmap for the transition from AIS to AIM were also studied, being a document that contemplates 3 development phases and 21 implementation steps, and having been proposed since 2009, they will be considered as well in their accomplishment, or else, updated in their due term, for the elaboration of the AIM Regional implementation plan.

4.14 Therefore, the long-term objectives are more distant in time and their achievement depends on the sustained fulfilment of the short and mid-term objectives. The meeting was informed of some long-term AIM objectives:

a) Adopt procedures, structures and contents of harmonized databases on a global basis in a fully digitalised aeronautical information environment

"To achieve an objective like this we can mention the need to adopt standard database models that guarantee the exchange of information globally."

b) Ensure accessibility to aeronautical information during all phases of the flight

"Although there is currently a large volume of information available, most of it is concentrated in the information service before the flight, it is necessary to have flexible access to this information in any of the phases of the flight."

- c) Resolve the intellectual property, financial, legal, organizational, and institutional aspects associated with the management of the AIM.

"Concerning aspects of intellectual property, such as those of a legal nature, include situations framed within national legislation and local trade, as well as others of international involvement, so they are not issues that can easily be elucidated in a short period of time. On the other hand, the organization and structure of AIM has been a widely documented subject, but its solution is particular to each Institution or Organization."

- d) Follow the guidelines of the Global Air Navigation Plan (Doc 9750) and ensure that any change be aimed at reaching the achievement of the AIM system provided in the Operational Concept of Global Air Traffic Management (Doc 9854).

"AIM regional planning should be closely related to the guidelines of the global air navigation plan and the update of the roadmap for the transition from AIS to AIM."

4.15 Under WP/10, Cuba spoke about the consideration of the proposal for amendment to Annex 1 - *Licensing of personnel* related to Aeronautical Information Services (AIS)/ Air traffic services reporting office (ARO) personnel, with reference to the ANI/WG/4 meeting and its Aeronautical Information Management Task Force (AIM/TF) Rapporteur WP/22 and WP/25, which included recommendations for the evaluation of the request of AIS/ARO personnel to become licensed personnel, in order to have trained and certified people to carry out the tasks of the Area with a better level.

4.16 Likewise, reference was made to linguistic competence, stating that the AIS/ARO personnel must demonstrate the ability to speak and understand the language used in radiotelephone communications at the level specified in the requirements related to linguistic competence, according to what is cited on Appendix 1 of Annex 1. However, the discussion was developed around the fact that AIS/ARO personnel does not use radiotelephone communications in the performance of its functions, as defined in Annex 15 Chapter 2, *Responsibilities and functions*.

4.17 Regarding the proposed amendment to Annex 1, Chapter 4, *Licences and Ratings for Personnel other than Flight Crew Members*, this proposal describes the inclusion of a section 4.9 *Personnel of the Aeronautical Information Service/ATS Notification Office Personnel (AIS/ARO)*, detailing the requirements for the issuance of the license such as age, knowledge, experience, abilities, educational level required and the privileges of the holder of the license and the conditions that must be observed in the exercise of such privileges, for which the knowledge required for said personnel are, among others, the following:

- a) operational procedures
- b) radiotelephony procedures; phraseology; telecommunications network
- c) minimum level of English proficiency 4
- d) telecommunication equipment
- e) principles, use and limitations of telecommunication equipment in an aeronautical station

4.18 The conclusion was reached that the inclusion in Annex 1 of the proposals described in ANI/WG/4 WP/22 and WP/25 would not be necessary. The Secretariat plans to take the discussion back to the AIM/TF to agree on a determination of these proposals to Annex 1.

4.19 Under P/05, various characteristics, functions, activities and challenges of the AIS/AIM were included as fundamental parts of the processes.

Agenda Item 5: CAR Region AIM prioritization

Development of the Regional implementation plan

5.1 With WP/07 reference was made to the ANI/WG/4 Meeting, held from 21 to 24 August 2018 and WP/14 was presented, which dealt with the status of the update to CAR RPBANIP, Ver 4.0, aligned with the ICAO Aviation System Block Improvement (ASBU) methodology, for the inclusion of comments received from the NAM/CAR States, and the proposal in the corresponding conclusion project. The RPBANIP is the reference document that serves as the basis for the implementation of air navigation projects in the CAR Region, reflecting regional and global priorities.

5.2 The Meeting was invited to know the available version 4.0 of the RPBANIP in English and Spanish, which can be accessed through the following link:

<https://www.icao.int/NACC/Documents/RPBANIP/DRAFT-RPBANIP-Ver4.pdf>

5.3 The meeting was informed that already having a Regional Performance-Based Implementation Plan (RPBANIP ver. 4.0) and oriented towards the purposes of the ASBU of Doc. 9750, it was suggested to the Meeting to update any document for the CAR Region as well, that allows the follow-up of the planning milestones of the AIM implementation, and it is also important to have as reference the WP/07 Appendix B, which contains the AIM Regional Performance Objectives (RPO).

5.4 The need for an analysis of the validity of the progress with respect to the transition roadmap from AIS to AIM by each State in the CAR Region was required.

5.5 In addition, an observation was made to the Meeting on the transition roadmap from AIS to AIM in force, which was published in 2009, although there are 3 different phases and 21 steps of its defined evolution, it was recommended to take actions for those steps that have had implementation difficulties by the States, Territories and Organizations, to determine where greater assistance or collaboration is required by ICAO, through the appropriate mechanisms of technical assistance.

5.6 The Secretariat requested the Meeting to reconsider the importance of updating the respective implementation plans for the transition from AIS to AIM, observing the Regional Performance Objectives (RPOs), as well as updating the milestones established for AIM tasks, in accordance with the new terms of validity of the NAM/CAR Regional Performance-Based Air Navigation Implementation Plan (RPBANIP). It was also requested to recall that States must send updated ICAO Transition Plans to the ICAO NACC Regional Office and their progress in the transition in each Phase defined in the ICAO Roadmap.

5.7 The suggested action for the Meeting is to contribute to the preparation of the first draft of the AIM Implementation Regional Plan, which complements the documentation already available.

5.8 Cuba presented IP/03 which included a description of the progress in the implementation of the ICAO roadmap for the transition from AIS to AIM in Cuba, based on a National Strategic Plan for the transition to AIM based on the ICAO Roadmap, which considers an action plan that allows the monitoring and progressive fulfilment of the steps defined for the different phases.

5.9 This National Plan consists of three fundamental phases for the transition, detailing the status of each of the phases:

- Phase 1: Completed.
- Phase 2: To be completed in 2019 (estimated date)
- Phase 3: To be completed in 2020 (estimated date)

5.10 It was concluded that the strategy for the gradual implementation of the AIM in Cuba was developed based on the objectives of identifying important requirements and components of an AIM capable and sufficient to support the operational demands that the systems of current navigation demand. This has been considered in the period of 2007 and up to 2020, which includes the development of human resources and investment planning as of vital importance for the future projection of the specialty in Cuba.

5.11 At the end of this part of the Agenda, a view was presented of what ICAO Headquarters is developing for a Global AIM implementation strategy, where it is requested to support the implementation of the AIM requirements (Annex 15, 16th edition, PANS-AIM and the new Doc 8126 den 4 Volumes), proposing the following actions:

- review and/or improve existing requirements (for example, in response to the 2017/22 State Letter)
- development of guidance material for AIM
- development of web-based guidance
- identification of specific training needs
- direct assistance to States for the transition to AIM
- development of new requirements for AIM
- development of an AIM operational concept and the corresponding provisions for the establishment of an information service that serves as a replacement for the information currently provided by NOTAM
- facilitation of the migration of existing aeronautical cartographic products on paper to the digital environment and identify the requirements for the graphic representation of aeronautical information in a SWIM environment
- facilitation on the provision of digital data sets through SWIM services
- identification and analysis of the aeronautical information requirements specific to Unmanned Aircraft Systems Traffic Management (UTM)
- any other AIM implementation support, as needed

Agenda Item 6: AIM Measuring and Monitoring

Measurement and monitoring in AIM

6.1 This section emphasized the importance of measuring and monitoring the status of the implementation of AIM and the elements of Block B0-DAIM of the Aviation System Block Upgrade (ASBU) in the CAR Region, and the importance of adopting a methodology that was presented in Appendix A, and the Monitoring formats of Appendices B and C.

6.2 It was specified that the B0-DAIM provides service improvements through the digital management of aeronautical information such as the initial introduction of digital processing and the management of data and information, with the use of the Aeronautical Information Exchange Model (AIXM), and the migration for eAIP and a better quality and availability of data. This involves monitoring the performance of the system and reporting if elements have been included in the RPBANIP, in this sense the Meeting considered the following recommendation:

RECOMMENDATION	
IAIM/2	WEB PAGE ON THE NACC WEBSITE TO FOLLOW-UP AIM IMPLEMENTATION
<p>What:</p> <p style="margin-left: 20px;">That ICAO creates a Web Page that tracks the AIM implementation, incorporating AIM documents, reports, status of Implementation for each CAR State and status for the 21 steps of the ICAO roadmap for the transition to AIM.</p>	<p>Expected Impact:</p> <p><input type="checkbox"/> Political/Global <input checked="" type="checkbox"/> Inter-regional <input type="checkbox"/> Economical <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Technical/Operational</p>
<p>Why:</p> <p style="margin-left: 20px;">Follow-up</p>	
<p>When: First semester of 2019</p>	<p>Status: <input checked="" type="checkbox"/> Valid/<input type="checkbox"/> Superseeded/<input type="checkbox"/> Finalized</p>
<p>Who: <input type="checkbox"/> States <input checked="" type="checkbox"/> ICAO <input type="checkbox"/> Other:</p>	

6.3 The Meeting referred to the fact that during the First and Second Meetings of the ANI/WG AIM/TF, AIM/TF/01 held in Tegucigalpa, Honduras in October 2017 and AIM/TF/02 held in Miami, United States in August 2018, the ANI/WG/04 meeting approved the Air Navigation Strategy of the CAR Region (RPBANIP ver. 4.0), as a framework for the regional priorities of air navigation, performance indicators and targets. The Strategy includes Tables for all the priorities of the ASBU Modules along with their associated elements, applicability, performance indicators, support metrics and performance objectives.

6.4 The Meeting also considered the monitoring of the implementation of the 4 steps of Phase I of the ICAO Roadmap for the transition from AIS to AIM (AIRAC, QMS, WGS84 and publication of differences), which for future reports of global air navigation and the necessary updates of the regional RPBANIP (future eANP Vol. III), the progress made in the transition from AIS to AIM that should cover not only Phase I, but also Phases II and III will be informed.

6.5 On the other hand, the need to know the metrics for AIM already established was discussed, and emphasis was placed on the importance of reporting the status and progress through the Air Navigation Report Formats (ANRF), for ICAO monitoring, which in the RPBANIP is indicated as the main information that ICAO needs to know is the status of each State in terms of the Regional Aviation System Improvements (RASI) and elements of the ASBU. This communication will be made through the electronic Air Navigation Plans (eANPs) and the ANRFs that are indicated in Appendix A to WP/08.

6.6 It should also be borne in mind that competent human resources (training) and financial issues are the most critical challenges faced by States in the transition from AIS to AIM. On the other hand, the Secretariat reminded the Meeting that the AIM Task Force (AIM/TF) is the main regional monitoring body for the collection of data related to the implementation of AIM in the CAR Region, and the main collection mechanism of data on the implementation would be through the eANP CAR Vol. III and the GREPECAS AIM Project, in this sense the Meeting considered the following recommendation:

RECOMMENDATION 1	
IAIM/3	FOLLOW UP TO THE TRANSITION TO THE AIM (21 STEPS)
What: That ICAO assigns a new task to the AIM/TF to monitor the implementation of the 21 steps of the transition to the AIM of the States.	Expected Impact: <input type="checkbox"/> Political / Global <input checked="" type="checkbox"/> Inter-regional <input type="checkbox"/> Economical <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Technical/Operational
Why: Follow-up	
When: Start in 2019	Status: <input checked="" type="checkbox"/> Valid / <input type="checkbox"/> Superseded / <input type="checkbox"/> Finalized
Who: <input type="checkbox"/> States <input checked="" type="checkbox"/> ICAO <input checked="" type="checkbox"/> Other:	AIM/TF

6.7 The indicators of performance/support metrics, the objectives of the B0-DAIM and the status of their implementation, as reviewed by the ANIWG/04 meeting are detailed in the corresponding report on the following website:

<https://www.icao.int/NACC/Pages/meetings-2018-aniwg4.aspx>

6.8 The Meeting clarified that Collaborative Decision-Making (CDM) processes ensure that all stakeholders agree with the requirements, tasks and deadlines. The implementation of the Regional Performance Objectives (RPOs) should address the air navigation requirements, based on appropriate evaluations and technical studies.

6.9 The RPOs will provide the elements that define the high-level tasks for the implementation of regional priorities, establishing the metrics for all measurements of progress, benefits and progress of implementation.

6.10 The RPOs are designed with the objective of achieving a higher degree of interoperability at the highest level and the results, deliverables and deadlines to be reported must be measured in numerical terms that represent the progress made to the ICAO Air Navigation Council and Commission, understanding that the reports must reach the ICAO Regional Office in Mexico for which the following recommendation was considered necessary:

RECOMMENDATION	
IAIM/4	SUBMISSION OF LETTERS TO THE STATES TO OBTAIN THE FEEDBACK OF AIM IMPLEMENTATION IN THE CAR REGION
<p>What:</p> <p>To formalize through letters to the States a request to inform ICAO the progress of implementation of the AIM based on the existing CAR/SAM Planning and Implementation Regional Group (GREPECAS) plans of 2019 and their respective monitoring formats.</p>	<p>Expected Impact:</p> <p><input type="checkbox"/> Political / Global <input checked="" type="checkbox"/> Inter-regional <input type="checkbox"/> Economical <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Technical/Operational</p>
<p>Why:</p> <p>To formally request the States to fill out the AIM implementation tracking forms</p>	
<p>When: January 2019</p>	<p>Status: <input checked="" type="checkbox"/> Valid / <input type="checkbox"/> Superseded / <input type="checkbox"/> Finalized</p>
<p>Who: <input checked="" type="checkbox"/> States <input checked="" type="checkbox"/> ICAO <input type="checkbox"/> Other:</p>	

Metrics and performance monitoring

6.11 The Secretariat mentioned that since the " Port of Spain Declaration", as one of the results of the Fifth Meeting of the North American, Central American and Caribbean Directors of Civil Aviation (NACC/DCA/5), held in Trinidad and Tobago in April 2014, a regional metric for the transition to Management of Aeronautical Information (AIM) was established:

"...100% of the required elements of the Roadmap - Phase 1 of the Aeronautical Information Services (AIS) to AIM implemented by the States no later than December 2016..."

6.12 This proposed metric at the highest level, although it does not contain a considerable amount of text, is sufficiently measurable in that if for the month of December 2016, 100% of Phase I was not implemented in the Region, It allows to know an approximation to where we can collaborate with the States that did not manage to fulfil it in the deadline, even up to the date of this Meeting, if it were the case.

6.13 The Meeting was invited to study the content of WP/09 and the necessary references in order to determine the most appropriate deadlines, the necessary metrics for the fulfilment of the three phases of transition from AIS to AIM, and the regional objectives of AIM performance, which could be used to prepare the AIM regional implementation plan.

6.14 Regarding the follow-up that the States must give to the AIM RPOs contained in the RPBANIP, and the progress of each one, the Meeting was reminded that this communication will be made through the eANPs and the ANRFs that were also shown Appendix A of WP/09.

Agenda Item 7: Other Business

Emerging issues: Commercial Space Transportation (CST)

7.1 In this last part of the Agenda, general description of emerging issues that may affect the global air navigation system was provided with details on a new type of operations, in a growing sector related to Commercial Space Transportation (CST) for civil use, which may be scheduled before the next complete revision of the Global Air Navigation Plan (GANP).

7.2 Since the Twelfth Air Navigation Conference (AN-Conf/12), ICAO has been studying and monitoring emerging issues that may affect the global air navigation system. That is, in this specific element of CST, there are different stages of maturity, from development to testing and operation (infrequently), which can become regular very soon.

7.3 The Meeting was informed that over sixty experts were nominated and are currently meeting regularly as the Suborbital Commercial Space Flight Learning Group, an informal group in charge of the Secretariat to study the subject. The scope of the group has been to carry out specific studies and subsequently to develop informal recommendations to facilitate the performance of SCS flight operations and their safe operation in the airspace and aerodromes and / or space-ports.

7.4 It will be necessary to consider and successful resolutions of the problems related to the CST involve both aviation and the space sectors. To that end, ICAO cooperates closely on this issue with the United Nations, specifically with its Office for Outer Space Affairs (UNOOSA). The main result of this collaboration has been a series of three aerospace symposiums held jointly. Information on the symposia considers observations for consideration by the United Nations Committee on the Peaceful Uses of Outer Space (COPUS), available at:

http://www.unoosa.org/oosa/oosadoc/data/documents/2018/aac.105/aac.1051155_0.html

7.5 It was also commented that in the work of the Learning Group there are possible problems that should be addressed to ensure the long-term sustainability of the CST sector. These include, but are not limited to:

- the challenges and risks posed by space debris and space weather for space flight and space operations, as well as for aviation
- the management and use of airspace, and the protection of space and aviation systems, taking into account the expected growth of both CST and aviation traffic
- effective management of security in the transition through the airspace, either to or from space
- Improved coordination at the intergovernmental level with the Committee on the Peaceful Uses of Outer Space on issues related to possible overlaps between aeronautical law and space law

- the possible future establishment of a space traffic management regime, which would have to be securely compatible with the existing global air traffic management system and support infrastructure
- consideration of performance-based standards to address the risks associated with the CST to enable future technological development flexibility, increased predictability and transparency, improved implementation and effective safety management
- recognition of the wide range of different "vehicles", both manned and unmanned, and the challenges they face with their proper classification as a space object, an aircraft, or possibly both

**APPENDIX
EXECUTIVE LIST OF RECOMMENDATIONS**

Number	Recommendation	Responsible for action	Deadline
1	FIRST PANS-AIM WORKSHOP 2019		
	ICAO carries out a PANS-AIM workshop in 2019	ICAO	Second Semester 2019
2	WEB PAGE ON THE NACC WEBSITE TO FOLLOW-UP AIM IMPLEMENTATION		
	That ICAO creates a Web Page that tracks the AIM implementation, incorporating AIM documents, reports, status of Implementation for each CAR State and status for the 21 steps of the ICAO roadmap for the transition to AIM.	ICAO	First semester 2019
3	FOLLOW UP TO THE TRANSITION TO THE AIM (21 STEPS)		
	That ICAO assigns a new task to the AIM/TF to monitor the implementation of the 21 steps of the transition to the AIM of the States.	AIM/TF, ICAO NACC RO	2019
4	SUBMISSION OF LETTERS TO THE STATES TO OBTAIN THE FEEDBACK OF AIM IMPLEMENTATION IN THE CAR REGION		
	To formalize through letters to the States a request to inform ICAO the progress of implementation of the AIM based on the existing CAR/SAM Planning and Implementation Regional Group (GREPECAS) plans of 2019 and their respective monitoring formats	States, ICAO NACC RO	January 2019