International Civil Aviation Organization

MIDANPIRG AIM Sub-Group

Sixth Meeting (AIM SG/6)
(Cairo, Egypt, 21-23 January 2020)

Agenda Item 3: Global/Regional Developments related to AIM

GLOBAL DEVELOPMENTS RELATED TO AIM

(Presented by the Secretariat)

SUMMARY

This working paper presents Global developments related to AIM.

Action by the meeting is at paragraph 3.

REFERENCES

- ICAO Assembly 40
- GANP – 6th Edition
- IMP/WG/9 SODs
- IMP/WG-A/2 SODs
- Global AIM Tunis 2019 Recommendations

1. INTRODUCTION

1.1 In accordance with its Terms of Reference (TORs), AIM Sub-Group is expected to monitor and address relevant Global and Regional developments. This Working Paper provides information on the ICAO Assembly 40, the 6th Edition of GANP as well as Information Management Panel (including the AIM Working Group) activities.

2. DISCUSSION

40th Session of the ICAO Assembly

2.1 The 40th Session of ICAO Assembly was held at the ICAO Headquarters in Montréal, Canada, from 24 September to 4 October 2019. The Assembly is the ICAO sovereign body, which meets at least once every three years.

2.2 The ICAO Assembly 40, through its plenary and committees reviewed the ICAO work programme in the technical, economic, legal and technical cooperation fields; and endorsed thirty four (34) Assembly Resolutions. The Assembly also elected its thirty six (36) members of the ICAO Council for three years. Egypt, Saudi Arabia, Sudan and UAE were elected from the MID Region.

2.3 The Assembly 40 documentation is available on the ICAO website at: https://www.icao.int/Meetings/a40/Pages/default.aspx

6th Edition of the Global Air Navigation Plan (ICAO DOC 7950)

2.4 Sixth Edition of the Global Air Navigation Plan – GANP (ICAO DOC 7950) was endorsed by the ICAO Assembly 40. The main goals of the 6th edition of GANP are:

- Evolution of the Global Air Navigation System
  - Promote investment in innovation through research and development activities and align Regional research and development programmes

- Support implementation > Global Technical Level
  - Ensure the pillars of the robust Air Navigation System – BBBs
  - Facilitate transformational change – ASBU framework
  - Optimize allocation and use of resources for air navigation – performance-based decision making method

2.5 The 6th Edition of GANP introduced the Multilayer Structure for the Global Air Navigation Planning:

- Global Strategic Level: includes GATMOC vision, Global performance ambitious and the conceptual roadmap

- Global Technical Level: includes the BBBs, ASBUs and the performance-based decision making method

- Regional Level: includes Regional Air Navigation Plans and the Regional R&D programmes

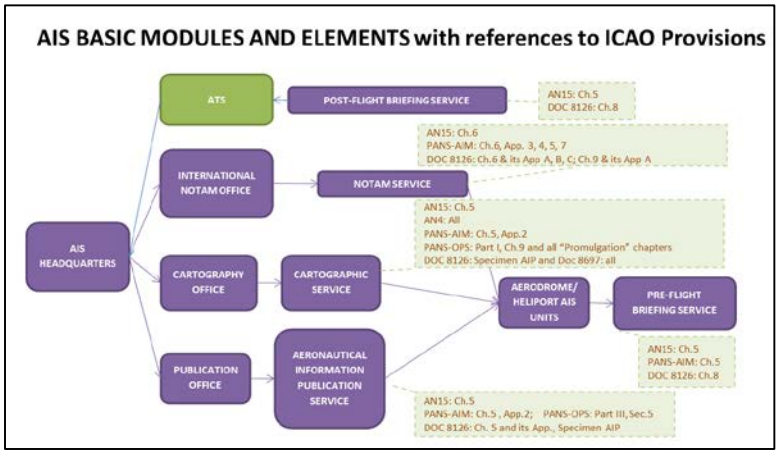
- National Level: includes National Plans and their deployment

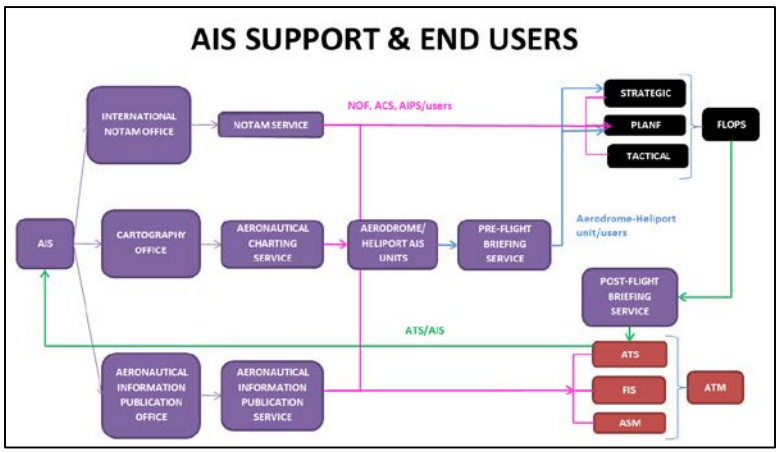
Basic Building Block (BBB) framework

2.6 At the Global Technical Level, the Basic Building Block (BBB) framework outlines the foundation of any robust air navigation system. It is nothing new but the identification of the essential services to be provided for international civil aviation in accordance with ICAO Standards. These essential services are defined in the areas of aerodromes, air traffic management, search and rescue, meteorology and information management. In addition to essential services, the BBB framework identifies the end users of these services as well as the assets (communications, navigation, and surveillance (CNS) infrastructure) that are necessary to provide them.

2.7 The BBB is considered an independent framework and not a block of the ASBU framework as they represent a baseline rather than an evolutionary step. This baseline is defined by essential services recognized by ICAO Member States as necessary for international civil aviation to develop in a safe and orderly manner. Once these essential services are provided, they constitute the baseline for any operational improvement.

2.8 BBBs provide two baseline framework for the Aeronautical Information Services:





ASBUs framework

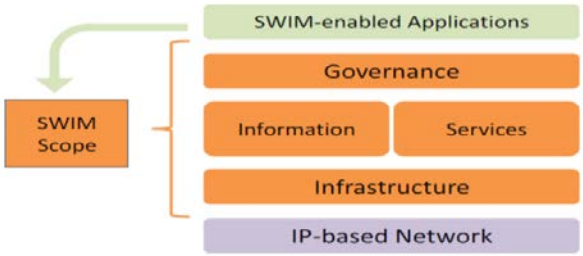
2.9 The following table outlines the changes of the ASBUs in the 6th Edition of GANP compared to its previous version. Details on the 6th Edition of the GANP and ASBU framework could be found at: https://www4.icao.int/ganpportal

	B0 2013-18	**B1 2019-24**	**B2 2025-30**	**B3 2031-36**	**B4 2036+ (New)**
ACAS Airborne Collision avoidance System		**X** (New)	**X** (New)		
	x (old)		x (old)		
ACDM Airport Collaborative Decision Making	**X** (New)	**X** (New)	**X** (New)	**X** (New)	
	x (old)	x (old)			
AMET Advance MET Information	**X** (New)	**X** (New)	**X** (New)	**X** (New)	**X** (New)
	x (old)	x (old)		x	
APTA Airport Accessibility	**X** (New)	**X** (New)	**X** (New)		
	x (old)	x (old)			
ASEP Airborne Separation					
	x (old)	x (old)	x (old)		
ASUR Alternative Surveillance	**X** (New)	**X** (New)	**X** (New)	**X** (New)	**X** (New)
	x (old)				
CCO Continuous Climb Operation					
	x (old)				
CDO Continuous Descent Operation					
	x (old)	x (old)	x (old)		
COMI COM Infrastructure	**X** (New)	**X** (New)	**X** (New)	**X** (New)	
COMS COM Services/systems	**X** (New)	**X** (New)	**X** (New)	**X** (New)	
CSEP Cooperative Separation		**X** (New)	**X** (New)	**X** (New)	**X** (New)

	B0 2013-18	B1 2019-24	B2 2025-30	B3 2031-36	B4 2036+ (New)
DAIM Digital Aeronautical Information Management		**X** (New)	**X** (New)		
	x (old)	x (old)			
FICE Flight & Flow in Collaborative Environment	**X** (New)		**X** (New)	**X** (New)	**X** (New)
	x (old)	x (old)	x (old)	x (old)	
FRTO Free Route Operations	**X** (New)	**X** (New)	**X** (New)		
	x (old)	x (old)			
GADS Global Aeronautical Distress & Safety Sys (GADSS)		**X** (New)	**X** (New)		
NAVS Navigation Systems	**X** (New)	**X** (New)	**X** (New)		
NOPS Network Operations	**X** (New)	**X** (New)	**X** (New)	**X** (New)	
	x (old)	x (old)	x (old)	x (old)	
OPFL Optimum Flight Levels	**X** (New)	**X** (New)			
	x (old)				
RATS Remote ATS		**X** (New)			
		x (old)			
RPAS Remotely Piloted Aircraft System					
		x (old)	x (old)	x (old)	
RSEQ Runway Sequencing	**X** (New)	**X** (New)	**X** (New)	**X** (New)	
	x (old)	x (old)	x (old)	x (old)	
SNET Ground-based Safety Nets	**X** (New)	**X** (New)			
	x (old)	x (old)			
SURF Surface Operations	**X** (New)	**X** (New)	**X** (New)	**X** (New)	
	x (old)	x (old)	x (old)		
SWIM System-Wide Information Management			**X** (New)	**X** (New)	
		x (old)	x (old)		
TBO Trajectory-based Operations	**X** (New)	**X** (New)	**X** (New)	**X** (New)	**X** (New)
	x (old)	x (old)		x (old)	
WAKE Wake Turbulence Separations			**X** (New)	**X** (New)	**X** (New)
		x (old)	x (old)	x (old)	

Update on IMP activities

2.10 SWIM consists of standards, infrastructure and governance enabling the management of ATM information and its exchange between qualified parties via interoperable services:



2.11 The Information Management Panel (IMP) was established in 2014 to develop a globally harmonized and interoperable approach and elaborate on necessary concepts to ensure effective management of information, including identifying the need for new information exchange formats, on a system-wide basis within the air navigation system. The objectives of IMP are:

- Lead (Develop and Propose to the Air Navigation Commission (ANC)) on provisions for SWIM
- Contribute (Develop and Propose to the ANC) to the evolution of the ICAO SWIM Concept
- Lead (Develop and Propose to the ANC) on the development of required (implementation) guidance on ICAO SWIM

2.12 IMP carries out its activities through the following structure:

- WG-I (Information Architecture & Management) – to describe information management concepts, functions and processes and the architectural information framework
- WG-S (Information Services under SWIM) – to develop a concept for information services, including a SWIM service description template
- WG-G (SWIM Governance) – to describe governance rules within the future SWIM
- WG-A (Aeronautical Information Management) – to address AIM-related tasks (implementation support, NOTAM, aeronautical charts, digital data sets, WGS-84)

Outcome of IMP/WG/9

2.13 The IMP/WG/9 meeting was held at the ICAO Headquarters in Montréal, Canada, from 21 to 25 October 2019. The meeting reviewed the draft material of the SWIM Provisions in the new *Procedures for Air Navigation Services – Information Management* (PANS-IM) and Volume II of the *SWIM Manual* (DOC 10039). The plan is that the new SWIM Provisions be available Q1-Q2 2020. The current IMP activities are as follows:

- SWIM Manual, Vol.I SWIM Concept
  – Draft delivered to Secretariat - editorial work in progress
  – Some chapters require additional work, e.g. SWIM governance
- SWIM Manual, Vol.II Implementation Guidance
  – Focus on guidance needed for the implementation of PANS-IM provisions
  – Building on operational use cases
  – Dedicated chapter on SWIM technical infrastructure
- Procedures for Air Navigation Services – Information Management (PANS-IM)
  – Alignment of terminology and structure of draft document with Vol.I and II
  – Foreseen to have several appendices to cover all information domains; requires extensive coordination to avoid duplication
  – To be delivered at IMP/2, 4-8 May 2020 (applicability Nov.2022)

Outcome of IMP/WG-A/2

2.14 The IMP/WG-A/2 meeting (AIM Working Group) was held at the ICAO Headquarters in Montréal, Canada, from 8 to 11 July 2019. IMP/WG-A has five (5) job cards on AIM Global Implementation Support, NOTAM, Aeronautical Charts, Digital Data sets and WGS-84 as well as 1 job card in coordination with other panels (Obstacle Limitation Surfaces Review). The following activities are currently conducted at the IMP/WG-A:

- QMS Manual: target completion date to Q4 2020 (work in progress)
- AIM Training Manual: target date of Q4 2020 (work in progress)
- AIM Roadmap: Initial ideas, work to be continued
- USOAP Protocol Questions for AIS
- NOTAM Revision: First action -> questionnaire (issued)
- NOTAM for Space Weather information: The meeting agreed to remove the requirements from Annex 3 and 15 for the issuance of a NOTAM for space weather advisory information
- 7 Days notice and FUA: ATM Ops Panel -> proposed to allow for exception from 7-day notice for activation of P/D/R when applying FUA; Agreed + common service definition for airspace activation/deactivation in the FUA context

- Aeronautical Charts: In preparation – Aeronautical Charting Questionnaires for AIS and for next intended users

- Digital Data Sets: Work in progress – AIS Manual Volume 4

- WGS-84: no evidence to date that onboard navigation systems require changing the geodetic reference systems provisions in Annex 15

- Revision of Obstacle Limitation Surfaces: Debrief from OLS Task Force; Intended applicability date in 2026 (publication in 2022)

- GNSS information in the AIP: Reviewed Proposal from Navigation Systems Panel; Recommended two separate tables in AD 2.19: one for conventional and one for space-based navaids.

Outcome of the Global AIM Conference 2019

2.15 IFAIMA Global AIM Conference 2019 was hosted by Tunisian Civil Aviation and Airports Authority (OACA) and the Tunisian AIS Association (ATGIA) in Tunis, Tunisia from 11 to 13 June 2019. More than 250 participants from 61 States, 6 International Organizations and 11 Industries attended the Conference. The main theme of the Conference was "**AIS to AIM 2.0**".

2.16 The Conference discussed the ways and means to transition AIM 2.0, rule-making and implementation issues, planning processes, AIM latest developments, NOTAM improvements, digitalization of aeronautical charts and digital data sets. With regard to AIM 2.0 (AIM as a SWIM-enabled service), the Conference agreed to the following:

- AIS to AIM 2.0 means yet better information (quality), increased qualified personnel as well as digitalization of information to be disseminated via SWIM;
- AIM 2.0 does not equal "SWIM implementation"; it is a pre-requisite as one of the information domains within SWIM;
- AIM 2.0 is about a more efficient delivery of service and the ability to select providers and integrators freely (there is the need to consider the service delivery context);
- AIM 2.0 is required to address the new entrants in our air navigation system, such as drones, high altitude flight etc.; and
- Before embarking the final stage of migration towards AIM 2.0, the implementation progress of AIM 1.0 globally should be strengthened, as there is still lack of investments for implementation, benefits of AIM as being the backbone for operational improvements, have not been clearly communicated to States and more awareness must be created among executives/decisions makers

2.17 The Summary of Discussions (Recommendations) of the Global AIM Conference 2019 is at **Appendix A**. The meeting may wish to note that the Global AIM Conference 2020 is scheduled to be held in Warsaw, Poland from 26 to 28 May 2020.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) consider the AIM-related developments in the Regional AIM planning; and

b) follow-up and keep abreast of the Global activities related to AIM.

Tunis 11-13 June 2019

Global AIM Tunis 2019 Recommendations

Fernando Lopes

Attendance

250+ registered participants

61 States, **6** Intl ORG

11 Industry Exhibitors

Organizing partners

IFAIMA / ICAO / Eurocontrol / OACA / ATGIA

8 sessions, 36 presentations

4 panel discussions + Q&A

Group Photo

Our hosts

Tunisia:

Tunisian Civil Aviation and *Airports Authority* - OACA

Tunisian AIS Association - ATGIA

Panel Session
Questions & Answers

Interaction Report
IFAIMA Global AIM Tunis 2019

Active users	**93**
Engagement score	150
Engagement per user	1.6

Questions	**91**
Likes / dislikes	65 / 0
Anonymous rate	36%

Poll votes	**134**
Polls created	3
Votes per poll	45

Analytics Report

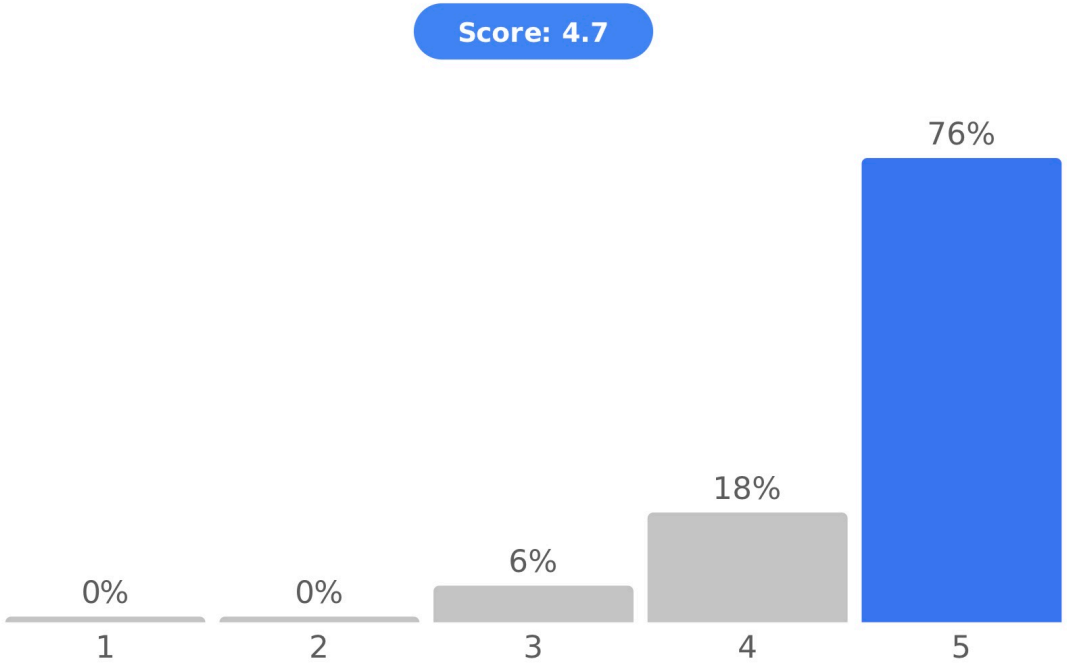
Topics

Poll - results

Rating poll

How likely are you to recommend this event to others?

0 3 3



sli.do

Poll - results

Multiple-choice poll

This years agenda format with more Panel Sessions and Q&A comparing with previous is...

0 3 4

Better

91 %

Same

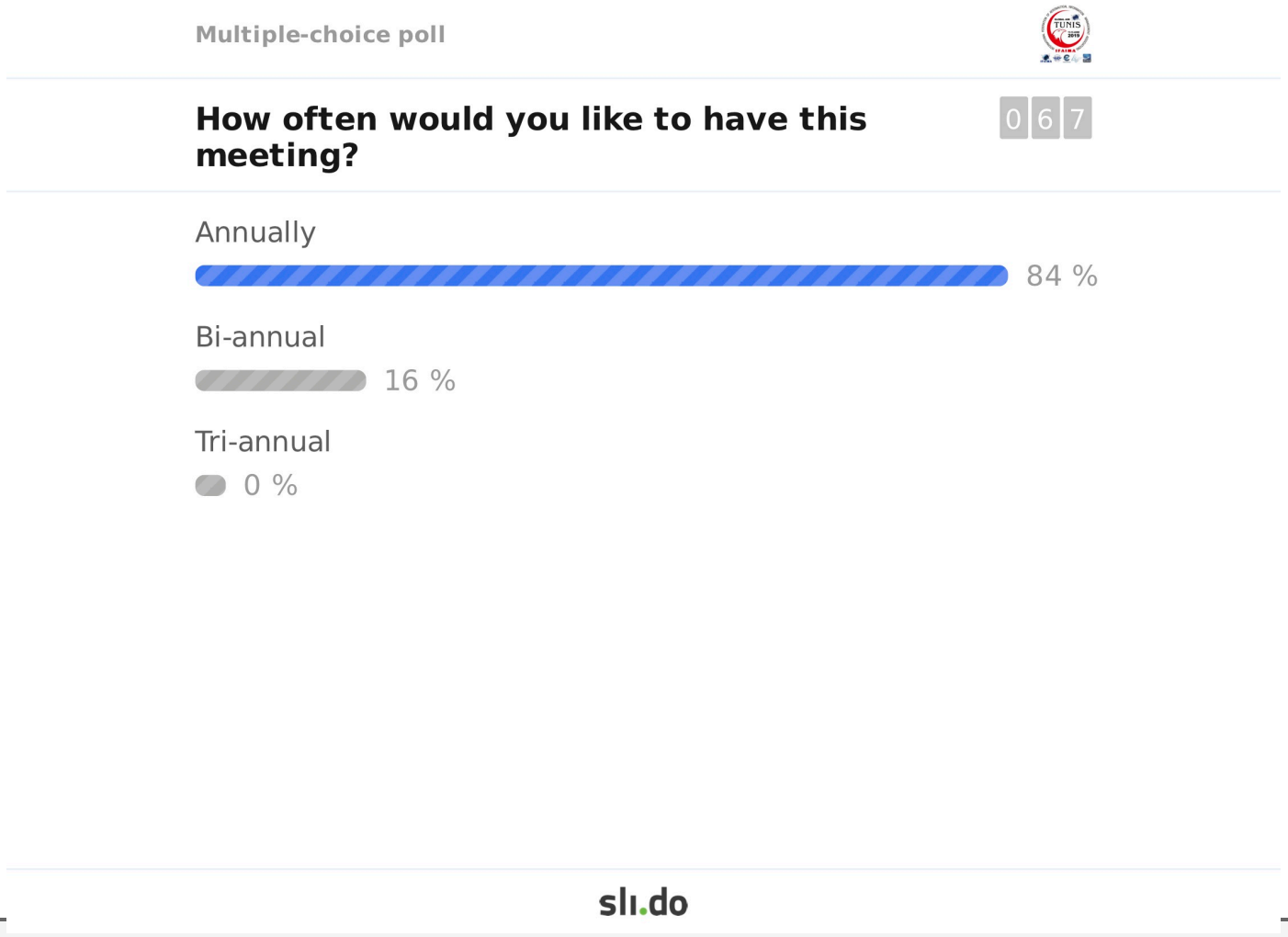
9 %

worst

0 %

sli.do

Poll - results



What we heard…

- AIS to AIM 2.0 Setting the scene
- Rule-making and implementation planning processes
- AIM latest developments
- NOTAM
- Digitalization of Aeronautical charts
- Digital data sets
- Future

The “Recommendations”

Session 2 (AIS to AIM 2.0, setting the scene):

- AIS to AIM 2.0 means yet better information (quality), increased qualified personnel as well as digitalization of information to be disseminated via SWIM;
- AIM 2.0 does not equal "SWIM implementation"; it is a pre-requisite as one of the information domains within SWIM;
- AIM 2.0 is about a more efficient delivery of service and the ability to select providers and integrators freely (there is the need to consider the service delivery context);
- AIM 2.0 is required to address the new entrants in our air navigation system, such as drones, high altitude flight etc.; and
- Before embarking the final stage of migration towards AIM 2.0, the implementation progress of AIM 1.0 globally should be strengthened, as there is still lack of investments for implementation, benefits of AIM as being the backbone for operational improvements, have not been clearly communicated to States and more awareness must be created among executives/decisions makers

Session 3: International Organizations rule-making and implementation processes

- States and industry were encouraged to leverage the ICAO mechanisms for implementation and actively participate in the ICAO implementation support activities, including the Go-Team visits
- States were encouraged to provide ICAO with feedback on how to improve those mechanisms to strive for an overall better performance.
- States and industry were encouraged to provide ICAO with suggestions for the development of training programmes supporting the transition to AIM (1.0 and 2.0)
- AIS organizations were encouraged to engage with the ICAO AIM Recognition of Compliance
- The importance of top Managers awareness about the changing AIM business and necessary resources and training was underlined
- The awareness, training and motivation of staff is key for a successful and expeditious implementation of AIM 1.0 and AIM 2.0
- States were encouraged to share experiences and best practices

Session 4: AIM Latest Developments

- Global Air Navigation plan portal – strategic and technical levels
- AIS in the BBBs
- IMP AIM Projects – Focus Groups
- DOC 8126 – 3 volumes to be released next August
- States and Regions to take actions to implement amendment 39 – SNOWTAM definition and format
- Interregional EUR/MID PANS-AIM workshop – implementation challenges identified
- The coding guidelines Focus Group – Dynamic Data-Digital NOTAM, Static Data and AIXM versions
- Go-Team
- Top Managers awareness
- Share experiences and best practices
- Staff informed & Trained
- Implement the data catalogue
- Implement it yourself or with the help using the ICAO data catalogue model and go along best practice

Session 5: NOTAM

- There are still contradictory/ divergent schools of thought regarding « how to fix the existing NOTAM issues »; some day more rigid rules are needed and that AIS officers should make decisions regarding the relevance of NOTAM while one of the notion of SWIM is flexibility and agility. Some say less codes and abbreviations are needed however, if future NOTAM are primarily read by machines then converted for humans, then presumably more codes/ abbreviations would be ok.
- There are assumptions regarding user requirements - more research is needed to truly understand them. Too many NOTAM are irrelevant within a PIB.
- There are risks associated with NOTAM due to the volume, complexity and poor quality (including being outdated)
- Although it is understood that a long-term solution is needed, the proposed timelines (I.e., applicable by end of 2028) dictate that immediate action should be taken to mitigate existing risks. This should be done with minimal effort in order to continue support of the long term solution.

Session 6: Digitalization of Aeronautical Charts

- Encourage everyone to participate in the aeronautical chart survey

Session 7: Digital Data sets

- AIS to give advanced information to their clients (plans, sample data, etc.) about their intention to provide the new digital AIS data sets and the eventual removal of AIP tables
- AIS to investigate the user needs for services/products which can benefit to specific user groups (such as VFR, drone pilots, etc.) and which can be quickly deployed by exploiting the digital data available in AIS
- AIS to work closer to procedure designers in order to make possible the provision of instrument flight procedure data sets
- AIS management to raise the awareness of AIS staff on SWIM concepts, such as Web-service technologies, data modelling
- AIS management to make arrangements inside the mother organisation (ANSP or CAA) for supporting the AIS with IT expertise in the transition towards SWIM
- ICAO to provide more detailed guidance for data set distribution services in the AIS Manual and eventually in the PANS-AIM

Session 8: Future

- Innovation should be sought in AIM, notably through inspiration from developments in other industries and promotion of R&D work and projects by AIM staff

- IFAIMA should monitor closely all developments related to aeronautical information (publication) for UAS so it can inform its members of this emerging domain of operations and the consequences it could have on AIS/AIM

Summary

- Before embarking the final stage of migration towards AIM 2.0, the implementation progress of AIM 1.0 globally should be strengthened, as there is still lack of investments for implementation, benefits of AIM as being the backbone for operational improvements, have not been clearly communicated to States and more awareness must be created among executives/decisions makers

- States and industry were encouraged to leverage the ICAO mechanisms for implementation and actively participate in the ICAO implementation support activities, including the Go-Team visits

- The importance of top Managers awareness about the changing AIM business and necessary resources and training was underlined

- The awareness, training and motivation of staff is key for a successful and expeditious implementation of AIM 1.0 and AIM 2.0

Summary

- IMP AIM Projects – Focus Groups
- States and Regions to take actions to implement amendment 39
- Implement the data catalogue
- Establish a public platform for sharing ideas, experiences and requirements for the future NOTAM system
- More research on user requirements is needed to truly understand current and anticipated future needs - open communication channels between airlines, AIM and notam originators
- Find a quick way with minimal effort to mitigate existing risks (with support from ICAO)

Summary

- Encourage everyone to participate in the aeronautical chart survey
- Going from digital to data-driven aeronautical charting requires new processes, skills, and tools. Appropriate training is essential
- AIS management to raise the awareness of AIS staff on SWIM concepts, such as Web-service technologies, data modelling
- ICAO to provide more detailed guidance for data set distribution services in the AIS Manual and eventually in the PANS-AIM
- IFAIMA should monitor closely all developments related to aeronautical information (publication) for UAS so it can inform its members of this emerging domain of operations and the consequences it could have on AIS/AIM

Thank You / Merci