



AFI AIM TF/2 - DP/4
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INTERNATIONAL CIVIL AVIATION ORGANIZATION

SECOND MEETING OF THE AFI REGION AIM IMPLEMENTATION TASK FORCE

(Nairobi, Kenya, 17 – 19 December 2012)

Agenda Item 4 : Review of the Draft Amendment of the AFI Basic ANP and FASID to reflect the transition from AIS to AIM.

PROPOSED AMENDMENT TO AFI ANP/FASID DOC 7474 VOL. I AND II, ON NEW AIM TABLES TO BE INTRODUCED IN THE E-ANP

(Presented by the Secretariat)

SUMMARY

This WP Presents the Proposed Amendment to the AFI ANP/FASID Doc. 7474 Vol.I and Vol. II with major changes in comparison to the previous versions and include the following :

- a) The opportunity has been taken to change the title of this Part from AIS to AIM to reflect the future direction on the provision of aeronautical information in the context of the Global ATM Operational Concept and associated System Wide Information Management.
- b) The key elements that States should provide in the provision of aeronautical information are detailed.
- c) An overview of the Transition to AIM is provided.
- d) The requirement for States to develop national plans for transition to AIM is reflected. Details are to be shown in the AFI FASID.

Further action to be taken:

1. FASID Tables that were endorsed by APIRG/18 Meeting (March 2012) are to be populated and included in a Proposal for Amendment.

1. INTRODUCTION

Regional AIS/AIM Planning

1.1 The part of the African Region Basic Air Navigation Plan (AFI-ANP) contains basic planning principles, operational requirements, planning criteria and implementation guidelines related to Aeronautical Information Services and Charts (AIS/MAP) considered being the minimum necessary for effective planning of AIS and MAP facilities and services in the AFI Region. It contains also the developing transition path to achieve AFI Region Aeronautical Information Management (AIM) based on the *ATM Operational Concept (Doc 9854)* and the *Global Air Navigation Plan (Doc 9750)*.

1.2 The dynamic material constituted by the AIS/AIM facilities and services required for international air navigation is contained in the AFI ANP Volume 2 - Facilities and Services

Implementation Document (FASID). The FASID includes appropriate additional guidance, particularly with regard to implementation, to complement the material contained in the Basic ANP.

1.3 During the transition to and pending full implementation of AIM, it is expected that the existing requirements will be gradually replaced/complemented by new AIM related requirements. Subsequently, it is expected that the ANP will be subject to regular review and amendment, to reflect progression in the transition towards full implementation of AIM.

1.4 **Standards, Recommended Practices and Procedures**

1.5 The Standards, Recommended Practices and Procedures and related guidance material applicable to the provision of AIS and ultimately AIM are contained in the following ICAO documentation:

- a) Annex 4 – Aeronautical Charts;
- b) Annex 15 – Aeronautical Information Services;
- c) Doc 7030 – Regional Supplementary Procedures, AFI Region;
- d) Doc 7383 – Aeronautical Information Services Provided by States;
- e) Doc 7910 – Location Indicators;
- f) Doc 8126 – Aeronautical Information Services Manual;
- g) Doc 8168 – Aircraft Operations Volume 2 – Construction of Visual and Instrument Flight Procedures;
- h) Doc 8400 – ICAO Abbreviations and Codes (PANS-ABC);
- i) Doc 8697 – Aeronautical Charts Manual;
- j) Doc 9377 – Manual on Coordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services;
- k) Doc 9674 – World Geodetic System (1984) Manual;
- l) Doc 9855 – Guidelines on the Use of the Public Internet for Aeronautical Applications; and
- m) Doc 9881– Guidelines for Electronic Terrain, Obstacle and Aerodrome Mapping Information.
- n) Doc 9906 (Volume I) – Flight Procedure Design Quality Assurance System.

2. **DISCUSSION : GENERAL PROCEDURES/REQUIREMENTS**

AFI Region Responsibilities

- 2.1 The ICAO AFI Regional Offices in Dakar and Nairobi will, through the APIRG :
- i) process endorsed proposals for amendment to ICAO AIS/AIM related documents;
 - ii) support the AFI AIM Implementation Task Force, which is responsible for the monitoring of AIS/AIM activities in the entire Part of the AFI Region; and
 - iii) co-ordinate with AFI Region national and international aviation agencies such as EUROCONTROL – Aeronautical Information Management and System Wide Information Management (AIM/SWIM) Team, AIM developments for the AFCAC area of the AFI Region.

State Responsibilities

2.2 Each Contracting State is responsible for the aeronautical information/data published by its aeronautical information service or by another State or a non-governmental agency on its behalf.

2.3 Aeronautical information published for and on behalf of a State should clearly indicate that it is published under the authority of that State.

2.4 An example of multi-State cooperation is the European AIS Database (EAD) Service, which has been established by EUROCONTROL Member States in order to provide a reference, centralised facility for access to the high quality aeronautical information published by the Participating States. Details concerning the operation of EAD are contained in **Doc 7030** and the **EUR ANP Volume 2 – FASID**.

2.5 Concomitant with the (EAD), APIRG/17 endorsed the AFI-CAD Business Plan (*APIRG/17 Appendix 3.6I refers*). In its review, the Air Navigation Commission on 8 March 2011 (ANC 186-6 refers) noted that the transition in the AFI Region will benefit if a robust communication infrastructure exist. The Commission further called upon the Secretariat to support/monitor the transition of AIS to AIM through regional mechanism. The concept of the AFI-CAD when implemented, will offer all AIM related tasks including even the classic AIM services to reduce the ANSPs efforts and timeliness needed by the States on their way to the AIS/AIM Transition process.

2.6 Each Contracting State should take all necessary measures to ensure that the aeronautical information/data it provides relating to its own territory, as well as areas in which the State is responsible for providing air traffic services outside its territory, is adequate, of required quality and timely. This should include arrangements for the timely provision of required information/data to the aeronautical information service by each of the State services associated with aircraft operations.

2.7 International NOTAM Offices (NOF) and their areas of responsibility should be established so as to ensure maximum efficiency in the provision of AIS and in the dissemination of aeronautical information.

2.8 The designated International NOTAM Offices for the AFI Region are listed in the **AFI ANP Volume 2 - FASID Table AIM-1**.

2.9 Coordination/liaison on a permanent basis should be established between AIS/AIM and other technical services responsible for planning and operating air navigation facilities and services.

2.10 Technical services responsible for origination of the raw aeronautical information should be acquainted with the requirements for promulgation and advance notification of changes that are operationally significant as established in Annexes 11 and 14 and other relevant ICAO documentation. They should take due account of the time needed by AIS/AIM for the preparation, production and issue of the relevant material.

2.11 Appropriate AIS/AIM personnel should be included in the air navigation planning processes. This should ensure the timely preparation of appropriate AIS documentation and that the effective dates for changes to the air navigation system and procedures are satisfied.

2.12 Whilst Annex 4 and Annex 15 detail the SARPs for the provision of charts and AIS respectively, the following State responsibilities are highlighted:

Each Contracting State should:

- a) Arrange for the implementation of a quality management system for aeronautical information and chart services. The quality management system should include the necessary policies, processes and procedures, including those for the use of metadata, to ensure and verify that aeronautical data is traceable throughout the aeronautical information data chain from origin to distribution to the next intended user. As part of the quality management system, arrangements should be made for the signature of letters of agreement with data originators to manage the aeronautical information data chain;
- b) Ensure Human Factors are considered;
- c) Ensure adherence to the AIRAC System;

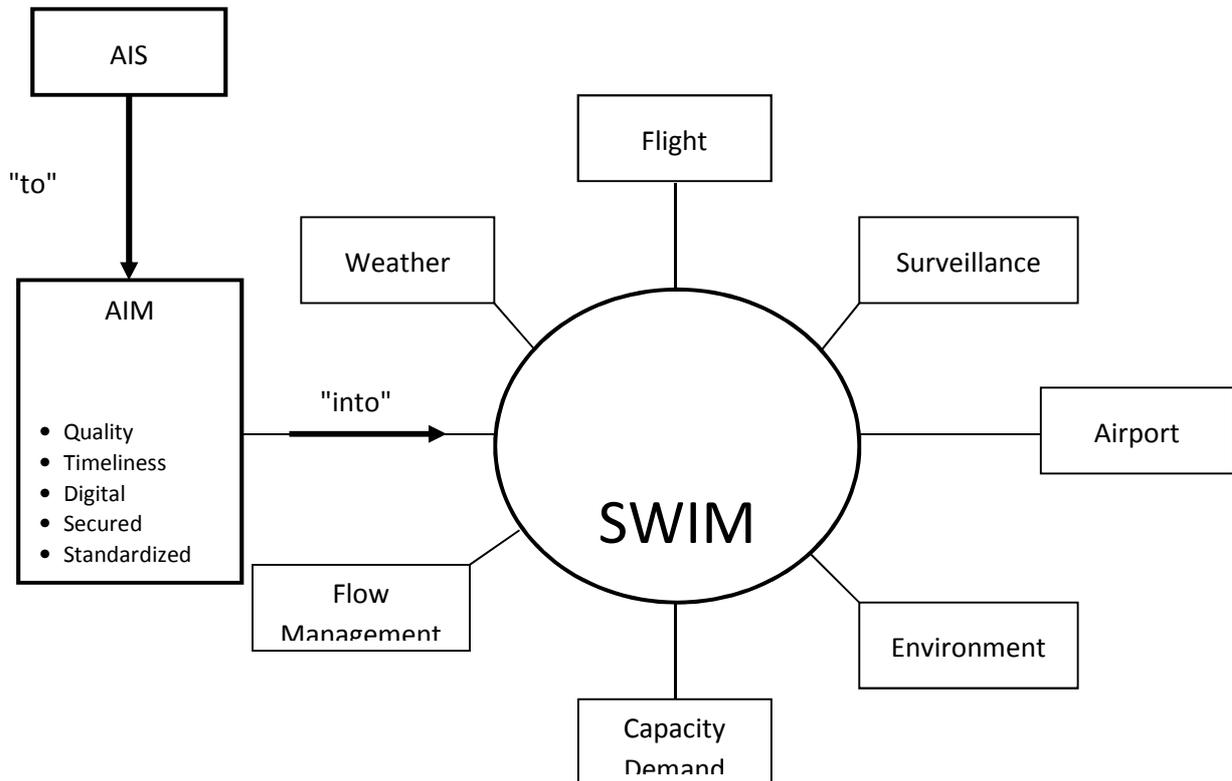
- d) Ensure that the aeronautical information/data to be exchanged with States is published as an Integrated Aeronautical Information Package (i.e. Aeronautical Information Publication (AIP), including amendment service, AIP Supplements, NOTAM, pre-flight information bulletins (PIB), Aeronautical Information Circulars (AIC), checklists and list of valid NOTAM) in accordance with the requirements of Annex 15;
- e) Arrange for the provision of an electronic AIP (eAIP) in accordance with the requirements of Annex 15;
- f) Comply with WGS 84 requirements;
- g) Introduce automation enabling digital data exchange with the objective of improving the speed, accuracy, efficiency and cost-effectiveness of aeronautical information services;
- h) Ensure that pre-flight information is provided at all aerodromes/heliports normally used for international air operation, in accordance with the requirements of Annex 15, using Automated pre-flight information systems for the supply of aeronautical information/data for self-briefing, flight planning and flight information service;
- i) Arrange for the provision of post-flight information;
- j) Arrange for the provision of required electronic Terrain and Obstacle Data (eTOD), in accordance with the requirements of Annex 15; and
- k) Arrange for the production and publication of necessary aeronautical charts in accordance with Annex 4 provisions and regional agreements.

3 AERONAUTICAL INFORMATION MANAGEMENT

3.1. The Global Air Traffic Management Operational Concept presented in ICAO Doc 9854 depends upon a system wide information management (SWIM). The management, utilization and transmission of data and information are vital to the proper functioning of the ATM system and are at the core of air navigation services.

3.2. As part of SWIM, AIM is required to support evolving requirements for, inter alia, collaborative decision making (CDM), performance-based navigation (PBN), ATM system interoperability, network-centred information exchange, and to take advantage of improved aircraft capabilities.

3.3. The scope of information management includes all types of information and in particular aeronautical information. The relationship diagram below shows a number of the core elements of SWIM:



Definition of AIM :

Aeronautical Information Management (AIM) is considered to be the dynamic, integrated management of aeronautical information services — safely, economically and efficiently — through the provision and exchange of quality-assured digital aeronautical data in collaboration with all parties.

TRANSITION TO AIM

3.4. The transition to AIM requires that all aeronautical information, including that currently held in AIP be stored as individual digital standardized data sets to be accessed by user applications. The distribution of these data sets will both enhance the quality of output and ultimately provide a platform for new applications. This will constitute the future integrated aeronautical information package that will contain the minimum regulatory requirement to ensure the flow of information necessary for the safety, regularity and efficiency of international air navigation. (GPI-18 refers).

Guiding Principles for the Transition to AIM

3.5. The transition from AIS to AIM will have to:

- a) support or facilitate the generation and distribution of aeronautical information which serves to improve the safe and cost-effective accessibility of air traffic services in the world;
- b) provide a foundation for measuring performance and outcomes linked to the distribution of quality assured aeronautical information and a better understanding of the determinants of ATM, safety and effectiveness not related to the distribution of the information;
- c) assist States in making informed choices about their aeronautical information services and the future of AIM;

- d) build upon developments in States, international organizations and industry and acknowledge that the transition to AIM is a natural evolution rather than a revolution;
- e) provide over-arching and mature Standards that apply to a wide range of aeronautical information products, services and technologies;
- f) be guided by the *Global Air Navigation Plan* (Doc 9750) and ensure that all development is aimed at achieving the ATM system envisaged in the *Global Air Traffic Management Operational Concept* (Doc 9854); and
- g) ensure, to the greatest extent possible, that solutions are internationally harmonized and integrated and do not unnecessarily impose multiple equipment carriage requirements for aircraft or multiple systems on the ground.

The Roadmap to AIM

Source Document: ICAO Road Map for the Transition from AIS to AIM

3.6. The purpose of the roadmap is to develop the AIM concept and associated performance requirements by providing a basis upon which to manage and facilitate, on a worldwide basis, the transition from AIS to AIM. The roadmap is based on what is known today and has been developed with sufficient flexibility to facilitate the new concepts that will emerge from future research.

3.7. Three phases of action are envisaged for States and ICAO to complete the transition to AIM:

Phase 1 — Consolidation

3.8. During Phase 1, steps will be taken to establish a solid base by enhancing the quality of the existing products and improving the status of implementation of current Annex 4 and Annex 15 provisions. This is a pre-requisite before Phase 2 can be achieved.

Phase 2 — Going digital

3.9. Phase 2 of the transition to AIM will mainly focus on the establishment of data-driven processes for the production of the current products in all States. States that have not yet done so will be encouraged “to go digital” by using computer technology or digital communications and through introducing structured digital data from databases into their production processes. The emphasis will, therefore, not be on the introduction of new products or services but will be on the introduction of highly structured databases and tools such as geographic information systems.

Phase 3 — Information management

3.10. Phase 3 will introduce steps to enable future AIM functions in States to address the new requirements that will be needed to implement the Global Air Traffic Management Operational Concept in a net centric information environment. The digital databases introduced in Phase 2 will be used for the transfer of information in the form of digital data. This will require the adoption of a Standard for an aeronautical data exchange model to ensure interoperability between all systems not only for the exchange of full aeronautical data sets, but also for short-term notification of changes.

National Plans for the transition to AIM

3.11. States should be planning for the transition from AIS to AIM. The national plans for the transition from AIS to AIM should be based on the ICAO Roadmap for the transition from AIS to AIM, identifying clearly the associated performance goals and achievable milestones with a view to

satisfy the requirements arising from the Global ATM Operational Concept, in particular the management of a seamless information flow ensuring interoperability between the different CNS/ATM systems.

AIM Implementation

3.12. The following provisions/regulatory requirements complement those contained in ICAO Annex 4 and Annex 15 with a view to expedite AIM implementation in the African (AFI) Region in a harmonized manner. They represent the basis for a number of provisions contained in the FASID tables.

Integrated Aeronautical Information Database (IAID) *(FASID Table AIM-2)*

3.13. FASID Table AIM-2 sets out the requirements for the Provision of AIM products and services based on the Integrated Aeronautical Information Database (IAID).

3.14. States should designate and implement an authoritative Integrated Aeronautical Information Database (IAID). The designation of authoritative databases should be clearly stated in States' AIPs.

Electronic Terrain and Obstacle Data and Aerodrome Mapping Data Bases (AMDB) *(FASID Table AIM-3)*

3.15. FASID Table AIM-3 sets out the requirements for the provision of Terrain and Obstacles Datasets and Aerodrome Mapping Data Bases (AMDB).

3.16. States should take the necessary measures for the provision of required electronic Terrain and Obstacle Data (eTOD), in accordance with Annex 15 provisions.

3.17. States should manage the eTOD implementation as a national programme supported by the necessary resources and detailed planning including priorities and timelines for implementation.

3.18. The implementation of eTOD should involve different Administrations within and outside of the Civil Aviation Authority i.e.: AIS, Aerodromes, Military, National Geographic and Topographic Administrations/Agencies, procedure design services, etc.

3.19. States, while maintaining the responsibility for data quality and availability, should consider to which extent the provision of electronic terrain and obstacle data could be delegated to other approved data providers.

3.20. States should establish formal arrangements to address cross-border issues, to ensure harmonization and more efficient implementation of eTOD.

3.21. States should take the necessary measures to ensure that the obstacle dataset is maintained up-to-date.

3.22. States should endeavour to integrate the acquisition of eTOD and AMDB data to realize efficiency gains and to take into account the complementary nature of AMDB and eTOD datasets.

Aeronautical Data Quality *(FASID Table AIM-4)*

- 3.23. FASID Table AIM-4 sets out the requirements for aeronautical data quality.
- 3.24. States should take the necessary measures to ensure that aeronautical information/data it provides meet the regulatory Aeronautical Data quality requirements.
- 3.25. The Quality Management System in AIM should define procedures to meet the safety and security management objectives.
- 3.26. Recognizing the need to maintain or enhance existing safety levels of operations, States should ensure that any changes to the existing systems or the introduction of new systems used for processing aeronautical data/information are preceded by a safety assessment including hazard identification, risk assessment and mitigation.
- 3.27. States should ensure that the Critical, Essential and Routine aeronautical data/information, as specified in Annexes 4 and 15, is transferred by the data originators to the AIM service provider through direct electronic connection, in accordance with the agreed data exchange format.

AIM Certification
(FASID Table AIM-9)

- 3.28. FASID Table AIM-9 sets out the requirements for AIM Certification.
- 3.29. States should take necessary measures to ensure that AIM Services are provided by Certified AIM Service Provider(s).
- 3.30. The Certification of AIM Service Provider(s) should be based on the compliance with all regulatory and ICAO requirements related to the provision of AIM services.

4. Action by the meeting

- 4.1 The meeting is invited to :
- a) Review the proposed amendments as reflected in the FASID Tables AIM-1 AIM -9 to this paper.
 - b) Ensure that the required data is populated in the new FASID AIM Tables for the development of Regional e-ANPs to be made available through GIS website at ICAO HQ as presented.
 - c) Request APIRG, following reviews by all parties concerned, to undertake the necessary amendment to Doc 7474 Vol.I and II, in order to maintain the currency of the information contained within the document.
