

GLOBAL TRANSITION FROM AIS TO AIM

SUMMARY

This paper discusses the evolution of requirements for the global transition from Aeronautical Information Services (AIS) to Aeronautical Information Management (AIM) and provides guidance to States to enable that transition.

1. INTRODUCTION

1.1 Present and future navigation systems, and other air traffic management (ATM) systems are data dependent, and all require access to global, broad-based aeronautical information of a considerably higher quality and timeliness than is generally available today. The provision of aeronautical information is a core process that underpins all elements of ATM. To satisfy new requirements arising from the ATM operational concept (operational concept), aeronautical information services (AIS) must transition to a broader concept of aeronautical information management (AIM), with a different method of information provision and management given its data centric nature as opposed to the product centric nature of AIS. This paper discusses the evolution of requirements for the transition from AIS to AIM.

2. DISCUSSION

2.1 Evolution of requirements for the transition from AIS to AIM

2.1.1 The 11th Air Navigation Conference (AN-Conf/11), held in Montreal in 2003, endorsed the operational concept and recognized that, in the global ATM system environment envisioned by the operational concept, AIS would become one of the most valuable and important enabling services. As the global ATM system foreseen in the operational concept was based on a collaborative decision-making (CDM) environment, the timely availability from authorized sources of high-quality electronic aeronautical, meteorological (MET), airspace and flow management information would be necessary.

2.1.2 The Conference developed Recommendation 1/8 which called upon ICAO to: define requirements for safe and efficient global aeronautical information management; adopt a common aeronautical information exchange model; and develop new specifications for Annex 4 — *Aeronautical Charts* and Annex 15 — *Aeronautical Information Services* that would govern the electronic availability of aeronautical information and charts.

2.1.3 In June 2006, a Global AIS Congress was held in Madrid, Spain. The event was facilitated by the European Organization for Safety of Air Navigation (EUROCONTROL) in partnership with ICAO and considered the essential role of AIS in the evolving world of ATM. The Congress

supported Recommendation 1/8 of the AN-Conf/11 and began to define a future high-level view as to the shape, nature and content of a strategy for the evolution of AIS to AIM.

2.1.4 Realizing the safety-critical nature of aeronautical information, the Congress agreed that, in order to prevent diverging developments in the future it was considered essential that ICAO take the lead at the global level with regard to the transition from AIS to AIM. Accordingly, the Congress developed ten recommendations calling for ICAO action or support from States and international organizations. The recommendations of the Congress are available at: http://www.eurocontrol.int/aim/public/standard_page/globalais_recommendations.html.

2.1.5 In September 2007, the 36th Session of the Assembly recognized the need for the Secretariat to support the recommendations of the Congress together with the need for further coordination and transparency (A36-WP/321 refers).

2.2 ICAO Work programme to enable the transition from AIS to AIM

2.2.1 The subsequent paragraphs provide details of work to be carried out by the Secretariat to enable the transition from AIS to AIM. This effort is provided for in the Business Plan.

2.2.2 It will be necessary to first develop a global strategy/road map document to plan, manage and facilitate the global transition from AIS to AIM. The road map will recognize that not all States or regions can make the transition immediately to AIM, and that implementation will be evolutionary, based on regional needs. The transition should be supported by the Global Air Navigation Plan, regional plans and State implementation plans, which would also describe the progressive intermediate steps. The plans of all States and regions need to be aligned to ensure, to the greatest extent possible, that solutions are internationally harmonized and integrated and do not unnecessarily impose multiple equipment carriage requirements in the air components of the ATM system, or multiple systems on the ground.

2.2.3 Annex 4 and Annex 15 provisions, and associated guidance material, will need to provide for standard aeronautical information conceptual and exchange models to enable the global exchange of data in digital, open-architecture formats. It is intended that these models be largely based upon the established and widely used standard aeronautical information conceptual model/standard aeronautical information exchange model (AICM/AIXM) developed by EUROCONTROL and the United States. A review of the airport mapping exchange model (AMXM) will also be undertaken to determine how it may be integrated. Additionally, global mechanisms to allow the further evolution of these models in a managed and supportable manner will be defined.

2.2.4 Annex 4, Annex 15 and associated guidance material will also require amendments to support new digital requirements and an appropriate presentation of aeronautical information to the end user. This should include electronic aeronautical information publications (eAIP), electronic charts and the use of Geographic Information System (GIS) technology within the context of AIM. The development of these requirements should take into account that, though the transition from a product-centric (i.e. current AIS) to a data-centric (i.e. AIM) service is essential, it is foreseen that AIM must still cater for the provision of traditional AIS products during the transition phase. Nevertheless, the quality, consistency, availability and timeliness of data must meet stringent new digital requirements, substantially exceeding those currently considered acceptable.

2.2.5 As a pre-requisite for the transition to AIM, States that have not yet done so should give high priority to the implementation of existing Standards and Recommended Practices (SARPs) in Annex 15 and, in particular, those related to the World Geodetic System — 1984, the quality management system and automation. In this regard, there is a need to further update the *Aeronautical Information*

Services Manual (Doc 8126) and the *World Geodetic System — 1984 (WGS-84) Manual* (Doc 9674), and provide a new manual on the quality management system for AIM.

2.2.6 It will be necessary to define the human resource activities necessary to realize the future AIM. This will involve identification of the basic future personnel skills required, mechanisms for validating competency, and the development of supporting guidance and training material.

2.2.7 A number of legal and institutional issues may restrict the evolution of AIM. In this regard, the ICAO Worldwide Symposium on Enabling the Net-Centric Information Environment, held in Montreal from 2 to 4 June 2008, addressed the legal and institutional issues related to the transition from AIS to AIM. On the basis of experience gained at the Symposium, a work plan will be developed to consider the resolution of key issues.

2.3 **Establishment of new ICAO study group to address AIM transition**

2.3.1 In view of the complexity of the issues involved in the transition from AIS to AIM, a new study group named as the Aeronautical Information Services-Aeronautical Information Management Study Group (AIS-AIMSG) has been established to indicate its involvement with the transition from AIS to AIM and also not to cause confusion with the Accident Investigation Methodology Study Group (AIMSG). Consequently, the Aeronautical Information and Charts Study Group (AISMAPSG) and the Aeronautical Data Modelling Study Group (ADMSG) of ICAO have been disbanded.

2.3.2 In line with the work programme discussed in paragraph 2.2, the AIS-AIMSG will be tasked with assisting the Secretariat with the development of a global strategy/roadmap for the transition from AIS to AIM and to prepare new AIM related SARPs and guidance material. Details of expected outputs are provided in the appendix hereto. Initially, the AIS-AIMSG would be considering proposals for AIM-related SARPs and guidance material forwarded through the regional planning groups. However, to prevent diverging developments, it is intended that the Secretariat, supported by the study group, will take the lead in development of SARPs. On-going activities at the regional level will be integrated with that of the study group to ensure harmonization at the global level.

2.3.3 As regards the provision of MET information within the operational concept, the requirements for its availability in real-time through a seamless interchange between parties in an interoperable, flexible, adaptable and scalable manner are fully valid. Therefore, the transition to AIM should encompass further developments in the MET field to address these requirements and ensure the inclusion of the MET information as integral part of AIM. It is envisaged that MET issues, including the review of existing provisions in Annex 3 — *Meteorological Service for International Air Navigation*, and the development of new provisions and associated guidance material, will be included in the future work of the study group as the transition from AIS to AIM develops.

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APPENDIX

**EXPECTED OUTPUTS OF ICAO WORK PROGRAMME
FOR TRANSITION FROM AIS TO AIM**

D2-INF-AIM – Aeronautical Information Management

<i>ID</i>	<i>Expected output</i>	<i>Source</i>	<i>Final results</i>	<i>Completed</i>
1.	Global strategy/roadmap for the transition from AIS to AIM.	A36-WP/321	State letter/Guidance material	2008 (Draft)
2.	SARPs and guidance material related to the provision of a standard aeronautical information conceptual model and standard aeronautical information exchange model to enable the global exchange of data in digital format. Definition of a means to allow the further evolution of these models in a managed and supportable manner.	A36-WP/321	Amendments 36/37 to Annex 15 Amendments 56/57 to Annex 4 New manual and amendment Defined means to allow the further evolution of the models	2010/13 2010/13 2010/13 2010
3.	SARPs and guidance material related to an appropriate presentation of digital aeronautical information to the end user, including eAIP, electronic charts and use of GIS within the context of AIM.	A36-WP/321	Amendments 36/37 to Annex 15 Amendments 56/57 to Annex 4 Amendments to Doc 8126 Amendments to Doc 8697	2010/13 2010/13 2010/13 2010/13
4.	Guidance material and further development of SARPs related to the quality system to support AIM.	A36-WP/321	New AIM quality system manual Amendment 36 to Annex 15	2010 2010
5.	Review of SARPs and guidance material related to electronic terrain and obstacle data to determine if refinement of SARPs or additional guidance material is necessary.	EANPG Conc. 49/39	Amendment 36 to Annex 15 Amendment to Doc 9881	2010 2010
6.	Guidance and training material related to staffing and training for the transition from AIS to AIM.	A36-WP/321	New AIM training manual Amendment to Doc 8697	2010 2010
7.	Development of a proposed work plan to consider key legal and institutional issues raised during the Worldwide Symposium on Enabling the Net-Centric Information Environment (Montreal, 2 to 4 June 2008)	A36-WP/321	AN-WP	2009