



TWELFTH AIR NAVIGATION CONFERENCE

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Agenda Item 3: Interoperability and data – through globally interoperable system-wide information management (SWIM)

3.3: Service improvement through digital AIM

SERVICE IMPROVEMENT THROUGH DIGITAL AIM AND ATM INFORMATION IN SOUTH AFRICA

(Presented by South Africa)

SUMMARY

New and future technologies in air navigation require the availability and timely exchange of accurate and quality assured digital Aeronautical Information within Air Traffic Systems. One of the ICAO requirements as defined in the International Civil Aviation Organisation (ICAO) AIS to AIM Roadmap is the creation of a centralised repository for Aeronautical Information.

This information paper (IP) describes the implementation of a Centralised Aeronautical Database (CAD) by South Africa and the benefits it holds for aviation in South Africa and on the African Continent.

1. INTRODUCTION

1.1 This paper provides information on the implementation of a Centralised Aeronautical Database for South Africa and the benefits it holds for the aviation community on the African continent.

1.2 The Eleventh Air Navigation Conference (AN-Conf/11) held in Montréal in September 2003 endorsed the operational concept and recognized that, in the global air traffic management (ATM) system environment envisaged by the operational concept, aeronautical information service (AIS) would become one of the most valuable and important enabling services.

1.3 ICAO specifies certain requirements to be met by contracting states for the transition from AIS to aeronautical information management (AIM). These requirements include the creation of a centralised repository of aeronautical information.

2. SERVICE IMPROVEMENT THROUGH DIGITAL AIM AND ATM INFORMATION

2.1 AIS to AIM Roadmap

2.1.1 A National AIS to AIM roadmap has been created and signed off by the South African Department of Transport (DOT), South African Civil Aviation Authority (SACAA) and Air Traffic and Navigation Service (ATNS) which contains the 21 steps in the AIS to AIM roadmap and also commits South Africa to achieving these steps in line with the agreed timelines.

2.1.2 This roadmap identifies the major strategic milestones recommended by ICAO and, in line with other South African strategies, to drive the continuing improvement of aeronautical information services

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in terms of quality, timeliness and the identification of new services and products to better serve aeronautical users. These strategies and other initiatives will place the future AIM in a position to better serve airspace users and ATM in terms of their information management requirements.

2.1.3 The evolution of traditional AIS to AIM and then to the future information management (IM) concept, will be achieved by embracing the concept of system-wide information management (SWIM) principles making it possible to exchange data via a standardised interface between all ATM stakeholders.

2.1.4 The SWIM architecture shall provide a foundation upon which data and services can be added as necessary to support ATM stakeholders' requirements. This would allow for the AIM to achieve its Strategic Objective: **“To achieve a uniform and efficient aeronautical information management structure, based on system wide information management, in support of all phases of flight.”**

2.2 Centralised Aeronautical Database

2.2.1 Aeronautical information services (AIS) has to transition from a general “paper-based” information sharing environment to a “digital” information sharing platform. South Africa has acquired a solution similar to the European AIS Database (EAD) currently used by Eurocontrol and the European ATM Community, to ensure that South Africa aligns itself with global initiatives and technologies.

2.2.2 The implementation of a Centralised Aeronautical Database (CAD) for South Africa will also incorporate some of the other 21 steps as defined in the ICAO AIS to AIM Roadmap to transition from AIS to AIM like:

- a) data quality monitoring;
- b) data integrity monitoring;
- c) AIRAC adherence monitoring;
- d) integrated aeronautical information database;
- e) aeronautical information conceptual model;
- f) aeronautical data exchange;
- g) electronic AIP;
- h) aeronautical information briefing;
- i) terrain;
- j) aerodrome mapping;
- k) quality; and
- l) electronic aeronautical charts.

2.2.3 The CAD system will provide different services and functionalities through various subsystems. The main subsystems are:

- a) CAD BASIC - Web-presence for Airline Operators, Pilots and the General Aviation Public);

- b) SDO – Static Data Operation (input and output of static information);
- c) GT - Graphical Tools (GIS visualisation of static and static/dynamic aeronautical information, airspace design);
- d) eAIP – electronic Aeronautical Information Publication (authorising of aeronautical documents);
- e) PAMS – Published AIP Management System (document management system for aeronautical documents and charts);
- f) eCharting – electronic Aeronautical Chart Production; and
- g) system to system Interfaces - allows users to integrate into the CAD system with existing or new systems.

2.2.4 The CAD system also contains various internal verifying and quality checking processes to ensure the data is entered in a standard format and is of the highest quality. Over and above the system quality checks, ISO standards will also be followed to ensure at least 98% quality and integrity level of data contained within the database.

2.2.5 Sharing of this information will not be confined to South African systems but can be defined to other aviation subsystems using the appropriate exchange model. The current exchange models developed and defined through combined international collaboration of Eurocontrol, FAA, etc., for the exchange of information are:

- a) aeronautical information exchange model (AIXM);
- b) airport mapping exchange model (AMXM);
- c) weather information exchange model (WXXM); and
- d) environmental information exchange model (ENXM).

2.2.6 These different exchange models will ensure that information is structured in a standard logical format able to be interpreted by a “Ground station” or a “Cockpit”, and ensure that current, accurate, quality assured digital data is available for the entire aviation ATM community.

3. CONCLUSION

3.1 The Centralised Aeronautical Database (CAD) is a vital asset and is essential for the role of AIS in the evolving world of ATM. Computer-based navigation systems, area navigation (RNAV), required navigation performance (RNP) and other ATM requirements necessitate the need for AIS to be able to provide and manage digital, quality assured information in a timely manner.

3.2 The meeting is invited to take note of the progress made by South Africa with implementation of the ICAO AIS to AIM roadmap and a Centralised Aeronautical Database (CAD).