



*International Civil Aviation Organization*

**MID Region AIS Database Study Group**

**Second Meeting (MIDAD STG/2)  
(Cairo, Egypt, 1 – 3 July 2013)**

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**Agenda Item 4: MIDAD Project – Phase 2 (Detailed Study)**

**DEVELOPMENTS IN THE WORLD AND MIDAD REQUIREMENTS**

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**SUMMARY**

This working paper tries to summarise thoughts about developments in the world which should be taken into consideration when defining the purpose and scope of MIDAD and also during the subsequent requirements gathering and definition phase.

Action by the Study Group is at paragraph 3.

**REFERENCES**

- ANCONF/12 RECOMMENDATIONS 3/2 TO 3/9
- MIDANPIRG/13 CONCLUSION 13/19
- DGCA-MID/2 CONCLUSION 2/7
- ICAO Strategic objective “Safety (A2)” and “Environment ...” (C31)”
- ICAO Aviation Systems Block Upgrades B0-30 and B1-31

**1 INTRODUCTION**

1.1 The role and importance of aeronautical data has changed significantly with the implementation of Area Navigation (RNAV), Required Navigation Performance (RNP), and airborne computer- based navigation systems, including Global Navigation Satellite Systems (GNSS). These systems are all data-dependent, and in that respect aeronautical data have become the necessary critical components of the system. Consequently corrupt or erroneous aeronautical data can potentially affect the safety of air navigation.

1.2 The advent of RNP Authorisation Required (RNP AR) for terminal operations will enhance the requirements again. Therefore ICAO has established standards and recommended practices which require all contracting states to introduce a properly organised quality system. This quality system must provide users with the assurance and confidence that distributed aeronautical data satisfy defined operational requirements for data quality (accuracy, resolution and integrity) and timeliness.

1.3 Performance-Based Navigation (PBN) is ICAOs most important priority which MIDAD must support.

1.4 The 12th Air Navigation Conference (ANConf/12), Montreal, Canada, 19 – 30 November 2012, discussed under Agenda Item 3 the Interoperability and data through globally interoperable system-wide information management (SWIM). The subsequent Recommendations, ICAO and states actions will directly effect the requirements which need to be gathered and defined in the MIDAD Study Phase 2.

1.5 Based on DGCA-MID/2 Conclusion 2/7, this Working Paper contains thoughts and consideration to harmonize the planning and schedule for MIDAD Phase 2 and subsequent MIDAD Phases with the ICAO Global Air Navigation Capacity & Efficiency Plan (Doc 9750) and the Aviation System Block Upgrades 0 and 1 (Block 0 - 2013 to 2018, and Block 1 – 2018 to 2023) in conjunction with the Recommendations from ANConf/12, the Roadmap from AIS to AIM, and the outcome of the work of the AIS to AIM Study Group (AIS-AIMSG).

## 2 DISCUSSION

### 2.1 ANConf/12 and Doc 9750

2.1.1 ANConf/12 and Doc 9750 focusing inter-alia on development of a global system-wide information management (SWIM) based on ICAO provisions and supported by states and industry to assist the services and distribution of improved aeronautical information by aeronautical information management. This is summarised in ANConf/12 Agenda Item 3 Recommendations 3/2 to 3/9 and in Block Module B0-30 (2013-2018) and B1-31 (2018-2023).

2.1.2 The subsequent work by ICAO (Panels, Study Groups) must be watched and analysed careful to ensure that the MIDAD Planning is in line and harmonise with the latest development.

### 2.2 AIS-AIM STUDY GROUP

2.2.1 The work of the AIS-AIM Study Group, which has planned to finalise its work until end of 2016, is especially important for MIDAD. The Amendment 38 to Annex 15 will **change the AIS from a product driven services to a data centric management system**. The new SARPs will mainly described in:

Chapter 4 - Data and information scope

Chapter 5 - Temporality and distribution

Chapter 6 – Information services

2.2.2 The Study Group considered the need for a minimum data set or scope to support digital data exchange requirements such as in the use of the Aeronautical Information Exchange Model (AIXM). Additionally, in consideration of extensive textual information in the current Aeronautical Information Publications (AIP) such as for regulatory, procedural and restriction information the group determined the need to also define an information scope.

2.2.3 It was noted that the current Chapter 4 of Annex 15 would be revised to provide the required performance requirements for the AIM data and information scope and that a more detailed description would be provided in the PANS-AIM document.

2.2.4 The full move into the data centric environment with a data centric management system (AIM), as Amendment 38 to Annex 15 and PANS-AIM is planning to do will require the definition of the data and information scope for all data as follows:

- a) terrain data (terrain feature types),
- b) cultural data (cultural feature types),
- c) aeronautical data (aeronautical feature types), and
- d) obstacle data (obstacle feature types)

to make them available in form of (electronic or digital) structured data sets (features, attributes, domain values).

2.2.5 Data sets shall become the primary mean of data publication in order to allow verification of correctness of received data sets at the next intended user and to support further electronic processing without any future human intervention.

2.2.6 That verification of correctness of received data sets at the next intended user shall also be possible at AIS Offices to minimise the necessity of human intervention at AIS Offices. This is also necessary as the number of features and the level of detail of those data will increase. This requires provisions in Annex 15, Chapter 4, for data handling throughout the aeronautical data chain. Current provisions for Originators and Users are covered by various Annexes.

2.2.7 Those Annexes need to be identified and the relation between the contents of the changed Chapter 4 of Annex 15 must be updated as well. Figure 1 shows an initial approach in showing Annexes which are valid for Originators and how the new general process could look like when introducing electronic data sets as main mean of publication.

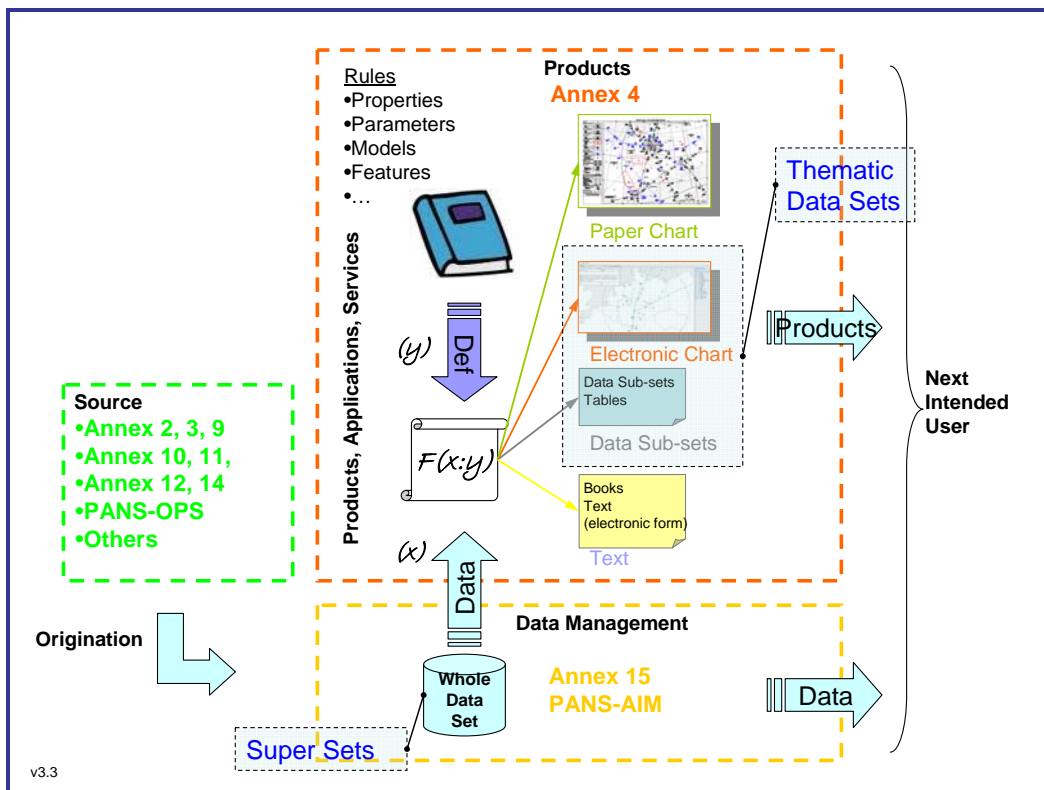


Figure 1: Data Centric Approach and Data Originator (Sources)

2.2.8 The introduction of a State AIS Office as AIM Authority in the AIM Operational Concept<sup>1</sup> includes also the clearer introduction of “Accredited Provider(s) of AIM Information” also referred to as “Originators” or “Sources”, and “Consumers of AIM Information” also referred to as “Users” or “User Organisations”. Figure 2 shows this process by introducing:

- a) Upstream for the part of the process which refers to the Data Originators,
- b) Processing for the part of the process which refers to AIS Offices (Single AIM Authoritative Source),
- c) Downstream for the part of the process which refers to the Users or User Organisations.

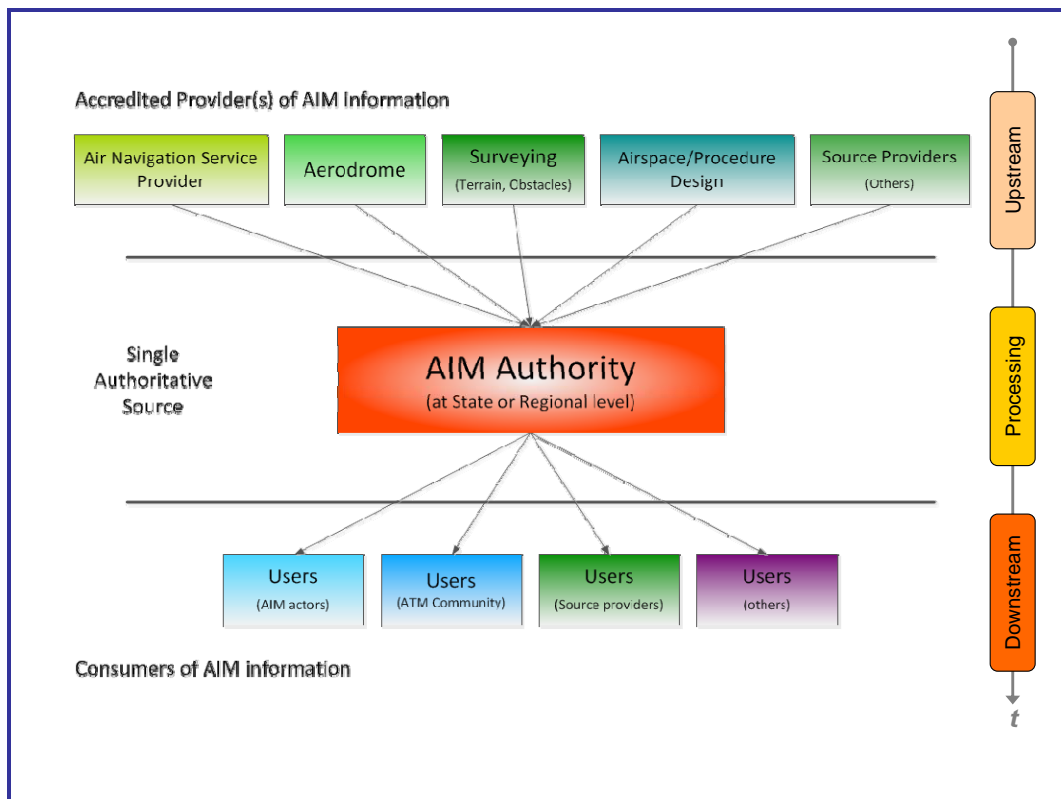


Figure 2: AIM Process

2.2.9 To raise the importance of Data Origination at Sources the different groups of Originators shall be mentioned in Annex 15, Chapter 4, by referencing into the Annexes which are applicable to Originators already. A good example is Annex 14, which contains basically all SARPs for Aerodromes which includes SARPs for aeronautical data publication. Important here is to show clearly the relation between “Originator Annexes” and Annex 15. The Originator Annex shall define the provision for an Originator and Annex 15, on high level, and PANS-AIM, on detailed level, describes the contents.

2.2.10 Initially the Data Originator Groups, called “Accredited Providers of AIM Information” in Figure 2 could be used. These are:

<sup>1</sup> As provided as Version 0.9 at the Ad-Hoc Meeting of AIM Development/8 in Brussels, 13 – 17.02.2012

- a) Air Navigation Services Providers (ANSPs),
- b) Aerodromes,
- c) Surveying (Terrain, Obstacle),
- d) Airspace Design,
- e) Procedure Design,
- f) Others.

2.2.11 MIDAD must find its identified and agreed place in this aeronautical data chain. It might be a AIM Authority on Regional Level. This must be discussed.

### **2.3 Summary**

2.3.1 The above considerations influencing the requirements definition for MIDAD and shall therefore be taken into consideration.

2.3.2 The main tentative planning dates:

- a) 2014 AIM industry meeting (GANIS Type or similar), to be confirmed,
- b) February 2015 AIM Divisional Meeting (tentatively),
- c) November 2016 date of applicability for Amendment 38 of Annex 15 and introduction of PANS AIM.

2.3.3 MIDAD planning shall be harmonised accordingly.

### **3 Action by the Meeting**

3.1 The MIDADSTG is invited to note the contents of this paper and should take the development in the world into account when defining the MIDAD Requirements.

3.2 The MIDADSTG are invited to ask further questions about this WP.