



International Civil Aviation Organization

MID Region AIS Database Study Group

First Meeting (MIDAD SG*/1)
(Cairo, Egypt, 20 – 22 February 2012)

Agenda Item 4: MIDAD Purpose and Scope

DEVELOPMENTS IN THE WORLD AND MIDAD REQUIREMENTS

(Presented by MIDAD Support Team)

SUMMARY

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

Action by the meeting is at paragraph 3.

REFERENCES

- AIS/MAP TF/6 Report
- ATM/SAR/AIS SG/12 Report
- DGCA-MID/1 Report
- ICAO Aviation Systems Block Upgrades B0-30
- ICAO Strategic objective "Safety (A2)" and "Environment ..." (C31)"

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 The required data integrity classification of Annex 15, Appendix 7 and 8, and Annex 4, Appendix 6, is not achieved yet; re-entry or manual transfer of data is one of the major factors for data integrity loss and missing verification processes cause data corruptions.

1.4 Consequently MIDANPIRG and its subgroups have addressed this and DGCA-MID/1 Meeting concluded that measures shall be undertaken to pave the way for a sub regional activity in the MID Region to enhance aeronautical data quality across the region. The Conclusion 1/5 – (MID Region AIS Databases – MIDAD) of DGCA-MID/1 states inter alia: “*Jordan and Bahrain take the lead in carrying out a study/business case pertaining to the establishment of a MID Region AIS Database (MIDAD), in close cooperation with ICAO, ... and present the outcome of the study to the appropriate MIDANPIRG subsidiary bodies (AIS/MAP TF and ATM/SAR/AIS SG)*”.

1.5 It is assumed that the MIDAD Study/Business Case is undertaken by the MIDAD Study Group (MIDADSG), which is under the leadership of Jordan and Bahrain.

1.6 This working paper aims to provide a summary of thoughts, considerations, and requirements taking account of the European AIS Database (EAD) experience, the plans for the AFI Region Centralized Database (AFI-CAD) and the related development in the AIS to AIM Roadmap of ICAO.

2 DISCUSSION

2.1 European AIS Database (EAD)

2.1.1 EAD History

2.1.1.1 The release of the call for tender (CfT) for the European AIS Database (EAD) by the European Organisation for the Safety of Air Navigation (Eurocontrol) end of 1997 marked the finalisation of long year’s of discussions about the establishment of four Regional AIS System Centres (RASC) in the ICAO EUR Region. This CfT was finally published because the European countries could not reach an agreement where the RASCs should be located and the general understanding was that the communication costs (X.25 backbone) are too high to communicate between the potential RASC locations at that time.

2.1.1.2 The intension of the original CfT was that Eurocontrol should run the EAD System and Service on behalf of its member states by Eurocontrol Agency staff, like the Central Flow Management Units (CFMU) Service.

2.1.1.3 Interested member states of the European Civil Aviation Conference (ECAC) were invited to join under the umbrella of the European Air Traffic Control Harmonisation and Implementation Programme (EATCHIP). However, the Eurocontrol member states did finally not want that Eurocontrol is operating a new service by the Eurocontrol Agency itself. The only way forward was to give an option to the various industry bidders to offer an optional service provision together with the system offer. The legal form of the service provision was not fixed. Seven bidding teams did offer a system and a service in autumn 1998.

2.1.2 EAD Timeline

2.1.2.1 The history of the EAD tendering, implementation and operation phase until today is as follows:

Date	Activity
1993	Feasibility Study about EAD, contracted from Eurocontrol to CAP Debis, Germany
End 1997	Call for tender (public procurement)
Spring 1998	Public clarification meeting
08.06.1998	Offer closing date (offers received from seven consortia)
14.07.1998	First set of clarification questions to bidders
03.08.1998	Clarification meeting with two short listed bidders (separate)
18.08.1998	Second set of clarification questions to short listed bidders
17.09.1998	Third set of clarification questions to short listed bidders
28.12.1998	Provisional last and final
14.01.1998	Clarification meeting with two short listed bidders (separate)
11.02.1999	Definitive last and final offer
05.03.1999	Eurocontrol internal decision about the selected bidder
12.04.1999	Endorsement by ATM Consultancy Group (ACG) ¹
21.04.1999	Endorsement by Provisional Council (PC) ²
17.06.1999	Begin of contract negotiations
06.07.1999	End of contract negotiations
07.07.1999	Contract signature ³ Systems Contract with FREQUENTIS Network Systems GmbH (Prime Contractor) – TeamEAD
26.05.2000	Final Service Provision Offer (Avitech GmbH, DFS Deutsche Flugsicherung GmbH, Aeropuertos Españoles y Navegación Aérea (AENA)).
10.07.2001	Contract signature Service Contract (GroupEAD – FREQUENTIS GmbH, DFS Deutsche Flugsicherung GmbH, Aeropuertos Españoles y Navegación Aérea (AENA)).
06.06.2003	EAD System went in operation (1st Service Provision Contract for 5 years, 2003-2008).
Mid 2008	2 nd Service Provision Contract for 5 years, 2008-2013.
2012/2013	Call for tender for 3 rd Service Provision Contract expected

Table 2-1: EAD Timeline

2.1.2.2 This schedule shows that it took basically 3 years and a half (end 1997 to mid 2001) to award the EAD systems and service contract based on a study from 1993.

¹ CAA and ANSP representatives

² Member states representatives

³ EAD Service Provision was an option in the Systems Contract.

2.1.3 EAD Contractual Relations

2.1.3.1 The contractual situation of the EAD is shown in Figure 2-1 for information and reference.

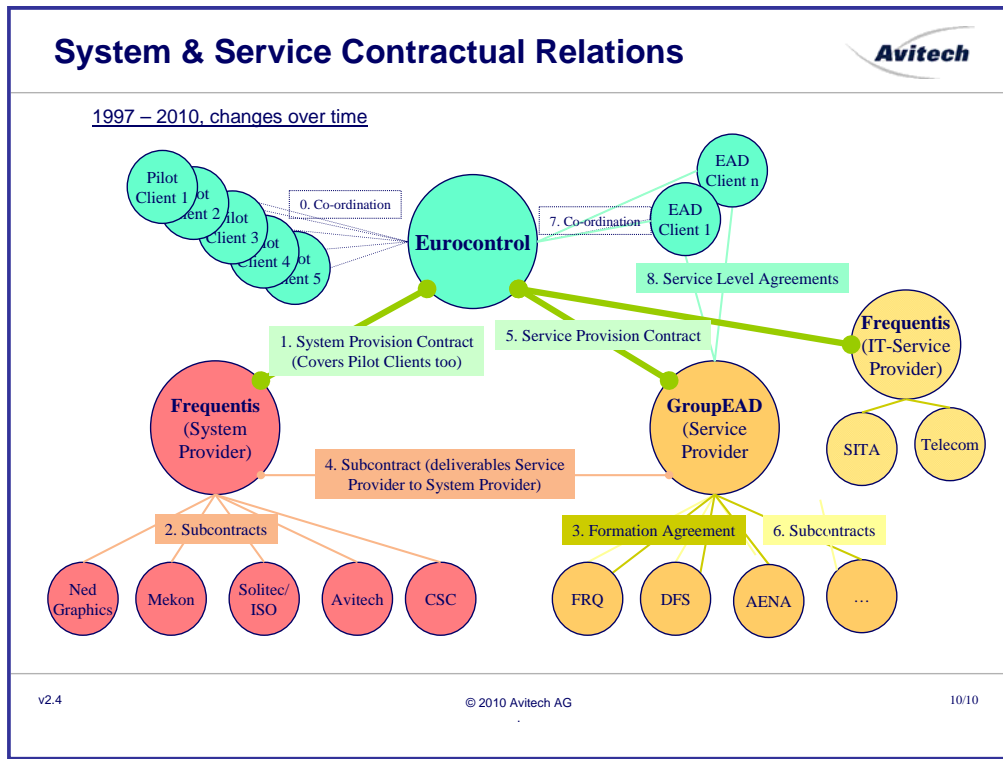


Figure 2-1: EAD Contractual Relations On the day of the EAD System Contract signature (07.07.1999) Eurocontrol had 28 member states⁴, today there are 39⁵, for ECAC there were 37⁶ members in 1999 and today 44⁷.

⁴ Belgium, France, Germany, Luxembourg, Netherlands, United Kingdom, Ireland, Portugal, Greece, Turkey, Cyprus, Malta, Hungary, Switzerland, Austria, Norway, Denmark, Slovenia, Sweden, Czech Republic, Italy, Romania, Slovak Republic, Spain, Croatia, Bulgaria, Monaco, FYROM (in sequence of getting membership).

⁵ In addition to footnote⁴: Moldova, Finland, Albania, Bosnia & Herzegovina, Ukraine, Poland, Serbia, Armenia, Lithuania, Montenegro, Latvia (in sequence of getting membership).

⁶ Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Luxembourg, Netherlands, Norway, Portugal, United Kingdom, Spain, Sweden, Switzerland, Turkey, Cyprus, Malta, Monaco, Hungary, Poland, Czech Republic, Bulgaria, Romania, Slovakia, Croatia, Lithuania, Slovenia, Italy, Latvia, Estonia, Armenia, Moldova, FYROM, Albania (in sequence of getting membership).

⁷ In addition to footnote⁶: Ukraine, Azerbaijan, Bosnia and Herzegovina, Serbia, Georgia, Montenegro, San Marino (in sequence of getting membership).

2.1.3.2 It should be noted that the EAD System is owned by the Eurocontrol Organisation (not Agency), which means finally by its member states, and maintained and enhanced by the System Provider. The operation of the system, which means staffing and doing the work, is contracted to a Service Provider. The Service Provider contract is an outsourcing contract based on a concession for five years. After five years the outsourcing will be re-tendered under the competitive public procurement rules of Eurocontrol. The existing Service Provider, GroupEAD Europe S.L., is a legal privat limited liable entity based on Spanish law. The owners/shareholders of that company are Frequentis AG - 28%, DFS Deutsche Flugsicherung GmbH - 36%, the German Air Navigation Service Provider, and Aeropuertos Españoles y Navegación Aérea (AENA) – 36%, the Spanish Air Navigation Service Provider. GroupEAD Europe S.L. is open for further shareholders.

2.1.4 EAD Lessons Learned

2.1.4.1 The process shown in Table 2-1 in item 2.1.1.1 was very efficient and target driven. The written questions and written answers accompanied by clarification meetings and demonstrations brought a good understanding of the Eurocontrol Team (EAD Team) and the industry team (Team EAD).

2.1.4.2 The CfT contained the following documents, which have been addressed by individually requirements numbers in the offer:

1. Introduction to the project execution principles,
2. Description of the EAD Concept,
3. Operational Requirements,
4. Technical Requirements,
5. Managerial Requirements (contract execution, safety and security requirements),
6. Requirements of the EAD Service Provision (basis for the Service Contract),
7. Glossary and acronyms.

2.1.4.3 This should be considered as the minimum set of documents which are needed to make an offer for such kind of system and service. Important is that all requirements of any kind got an individual unambiguous number which allowed to offer with references to those numbers and to allow further traceability of all requirements. Those numbers did form the basis for testing and acceptance of the system and service.

2.1.5 EAD Issues

2.1.5.1 Today there are some unsolved issues around the usage of EAD which could be taken into consideration when studying MIDAD.

1. The system to system connection between EAD and other system through the EAD System Interface (ESI) and Network Adapter Box (ENA Box) and the AIXM XML 4.5 needs careful planning and coordination with required resources. This is for Static Data, NOTAM and AIP download/upload. The effort can easily be underestimated.
2. Testing of the system to system connection is not really possible as no defined set of test data is available, only snapshots of an operational database which makes it very hard to write test cases and do testing.
3. States provide only a minimum set of static data to EAD.
4. States hesitating to provide full static data set to EAD.

5. Data extensions for specific needs like military specific data are not covered by AIXM (4.5, 5.1) and therefore cannot be handled by EAD. This will not change with AIXM 5.2 which will possibly be used in about 3 to 5 years from now. AIXM 5.1 has also a rule how to implement extension. Until that time extensions need to be handled very carefully in states systems which shall be connected to EAD or to MIDAD.
6. The interface implementation cost of an interface to EAD, testing time and coordination effort was underestimated and needs quite a lot of time. A full cost calculation would show more cost as when using conventional systems, however, the advantage is the better quality, consistency and referential integrity of cross border data of the European countries, more or less common rules over data and a single access point for those data. No cost saving, but a higher cost should be expected, which is the price to be paid for better data quality.
7. EAD does not cover the upstream data area and an electronic interface to raw data. However, this is an overall unsolved issue and might be addressed later in the Road map from AIS to AIM (AIS-AIMSG).

2.2 African Region Centralised AIS Database (AFI-CAD)

2.2.1 The AFI-CAD initiative is a combined activity of the Eastern and Southern African (ESAF) Office, Nairobi, Kenya, and Western and Central African (WACAF) Office, Dakar, Senegal, for all 53 African Countries. A study group was established in November 2006 which holds four meetings until end of 2010. 36 of the 53 African Countries made contributions to the study group. The group developed the following documents support by a Special Implementation Project (SIP):

1. AFI-CAD Framework (AFI-CAD Doc 002).
2. AFI-CAD Guidance Material/Recommendations (AFI-CAD Doc 006).
3. AFI-CAD Business/Financial Plan (AFI-CAD Doc 007).
4. AFI-CAD User Requirements – Basis (AFI-CAD Doc 008).

2.2.2 In parallel to the work, the study group informed the AFI Region Regional Planning Group (APIRG) and its subsidiary bodies: ATS/AIS/SAR SG and AIS/MAP TF. The intermediate results were also presented on the SP AFI RAN Meeting in 2008.

2.2.3 The APIRG/17 Meeting, Ouagadougou, Burkina Faso, 2 – 6 August 2010, endorsed the AFI-CAD Business Plan (WP/9B⁸).

2.2.4 AFI-CAD is planned to consist of the following:

1. Three training centres taking the language provenience into account (Arabic, English, French).
2. Four databases, distributed on the African continent.

2.2.5 The AFI-CAD guidelines, procedures, planning, questionnaires, the assessed legal frameworks and other material could be taken into account by the MIDADSG.

⁸ <http://www.icao.int/wacaf/apirg/apirg17/>

2.3 AIS-AIM Study Group

2.3.1 The ICAO Study Group AIS to AIM (AIS-AIMSG) is currently developing the Roadmap from AIS to AIM especially through Amendment No. 37 and 38 to Annex 15 and Amendment No. 57 and 58 to Annex 4. In addition a *Procedures to Air Navigation Services – AIM (PANS-AIM)* shall be introduced.

2.3.2 The AIS-AIMSG will present major outlines of their plans to the 12th Air Navigation Conference (AN Conf/12) 19 – 30 November 2012 and subsequently to the AIM/MET Divisional Meeting 2014. Dates of applicability are November 2013 and November 2016.

2.3.3 Taking the possible MIDAD schedule into account, the plans and outcome of new SARPs for 2013 and 2016 shall be taken into consideration by MIDAD planning.

3 ACTION BY THE MEETING

3.1 The MIDADSG is invited to:

- a) note the content of this paper and take it into account when defining the MIDAD Requirements/scope; and
- b) agree on the way forward for the development of the MIDAD scope and requirements.

– END –