

INTERNATIONAL CIVIL AVIATION ORGANIZATION
WESTERN AND CENTRAL AFRICAN OFFICE



REPORT OF THE FIRST MEETING OF THE AFI REGION STUDY GROUP
ON THE ESTABLISHMENT OF A CENTRALIZED AFI REGION AIS DATA BASE
(AFI-CAD/STUDY GROUP/1)

(Johannesburg, South Africa, 8 -10 November 2006)

Prepared by the Secretary of the AFI-CAD/Study Group

November 2007

Conclusion 8/22 of the ATS/AIS/SAR/SG/8 meeting, and Conclusion 15/43 of the APIRG/15th meeting states inter-alia, ***“that IATA, in cooperation with ICAO and Air Navigation Service Providers in the AFI Region, study the establishment of a centralized AFI AIS Data Base similar to the European Aeronautical database and forward it to the AFI AIS/MAP Task Force for its consideration,”***

AFI-CAD Study-Group is a Study-Group of the AFI Planning and Implementation Regional Group (APIRG). Its Reports are therefore submitted to APIRG for review and action.

The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of ICAO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

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PART I - HISTORY OF THE MEETING

1. Organization / Duration

1.1 The ICAO Regional Office Dakar in collaboration with the IATA Regional Office in South Africa, organized the first meeting of the AFI Regional Study Group on the Establishment of a Centralized AFI Region AIS Data base. The meeting was convened at the Sandown Convention Centre in Johannesburg, South Africa, from 8 to 10 November 2006.

2. Officers and Secretariat

2.1 Mr. G. Baldeh, the Secretary of the Study-Group and Regional Officer, Aeronautical Information Services and Map (RO/AIS/MAP) of the ICAO WACAF Office, acted as the Secretary of the meeting. He was assisted by Ms. Tanja Grobotek, IATA Manager, Safety Operations and Infrastructure .

2.2 The meeting was opened by Mr. Gaussou Konate, Acting Regional Director for IATA Africa Office, in Johannesburg, South Africa. He emphasized the need for the meeting to address the main objectives in order to provide guidance for the establishment of a Centralized AFI Region AIS Data base similar to the European Aeronautical database, in accordance with the requirements of the AFI Air Navigation Plan, for the improvement of overall speed, accuracy, efficiency and cost- effectiveness for the development of an integrated automated AIS System concept in order to obtain a general standardization of procedures, products and services to users, and to avoid potential divergences, incompatibilities and duplication of efforts in the AFI Region.

3. Attendance

3.1 The Study Group meeting was attended by 19 participants from 6 ICAO Contracting States from the AFI Region, (Kenya, Nigeria, Senegal, South Africa, Tanzania and Zimbabwe) 3 Aviation Multi-national Organizations (ASECNA, EUROCONTROL, and ROBERTS FIR), 4 Major Aviation Stake holders (ATNS South Africa, AVIATECH AG.Germany , Groupe EAD Europe S.L , and THALES Transportation Systems France and 2 Aviation International Organizations (ICAO and IATA).

The list of participants is given at **Appendix A.** to this report.

4. Working Languages

4.1 English was the working language of the meeting and the meeting documentation were also provided in the English language.

5. Agenda

5.1 The meeting adopted the following Agenda:

- | | | |
|--------------------|----------------|--|
| Agenda Item | 1 : | Introduction |
| | 1.1 : | Purpose and Scope |
| Agenda Item | 2 : | The current Situation |
| | 2.1 : | The existing modus operandi |
| Agenda Item | 3 : | The proposed Centralized AFI Region AIS Data Base Solution |
| | 3.1 : | The proposed System |
| | 3.1.1 : | The proposed System Services |
| Agenda Item | 3.2 : | The proposed Service |
| | 3.2.1 : | The proposed client services |
| Agenda Item | 4 : | Assumptions |
| Agenda Item | 5 : | The proposed Business Model |
| | 5.1 : | Information Flow |
| | 5.2 : | Additional Issues |
| Agenda Item | 6 : | Any other business |

6. Recommendations

- 6.1 The Study-Group recorded its action in the form of Recommendations.

6.2 List of Recommendations

Number	Title	Page
Recommendation 1.1 a)	The International NOTAM Operation (INO) providing facilities for world-wide NOTAM, SNOWTAM, ASHTAM, BIRDTAM and AFTN or equivalent message handling and for pre-flight Information Bulletins (PIB) generation.	
Recommendation 1.1 b)	The Static Data Operation (SDO) providing facilities for AFCAC STATIC Aeronautical Data/information handling and reporting. moreover, a minimum set of data is also maintained to allow the correct functioning of the INO system	
Recommendation 1.3 a)	The Data Providers are AIS Organisations providing aeronautical information to the Centralized AFI Database; The Centralised AFI AIS Database will make available and deliver this information to the data users.	
Recommendation 1.3 b)	The Data Users are the Air Transport Community and beyond.	
Recommendation 3.1	<p>The study group then recommended that the proposed System should be designed to provide the following:</p> <ul style="list-style-type: none"> a) a single repository for aeronautical information and IAIP elements of participating States, b) data questioning enhancement through multilevel consistent data checking processes, including cross border data verification; c) a secure channel/vehicle for timely and efficient electronic distribution of aeronautical information and IAIP elements; d) harmonisation and interoperability will be ensured by a common and standardised: <ul style="list-style-type: none"> - System interface and data exchange model (AIXM), - Static data model (AICM); 	
Recommendation 3.2	<p>That the proposed System Data Operations Services will then provide the Centralized AFI Database clients with the following system services:</p> <ul style="list-style-type: none"> a) support to edit and provide (to the system) aeronautical information, b) electronic access to and delivery of aeronautical information, c) browsing and downloading of participating State's aeronautical information; d) generation of reports; 	
Recommendation 3.3	<p>That the Data Operations System Services will be accessed by clients via direct electronic interface in one or more of the following three ways:</p> <ul style="list-style-type: none"> i) CIT: The Client Interface terminal. A terminal located at the client site, connected to the AFI CAD, and allowing download, modification (only by data providers) and reporting of aeronautical information as determined by the clients Service Level Agreement (SLA); ii) CI: The Client Interface. A technical toolkit allowing clients' own systems to access and interact with the AFI CAD to upload, download, modify (only for Data Providers) and report of aeronautical information as determined by the client's (SLA); iii) INTERNET: Access to the Centralized AFI AIS Data Base will also be allowed via the Internet. 	

Number	Title	Page
Recommendation 3.4	AFI AIS/MAP Task Force, with co-opted technical expertise, as required develop the user requirements specification (URS) for AFI CAD.	
Recommendation 3.5	<p>The meeting also recommended that :</p> <p>a) Regarding the Data operations service domains, the service provided shall ensure :</p> <ul style="list-style-type: none"> i) Co-ordination of the resolution of data conflicts detected by the system data checking processes ; ii) for non-participating States (world wide) : <ul style="list-style-type: none"> - NOTAM processing (verification, validation, translation, etc...) - entry of the statistic data required by the system NOTAM function. <p>b) As defined today, the service does not include the provision of AIS services on behalf of participating States, i.e the service shall not comprise the following activities :</p> <ul style="list-style-type: none"> i) creation of NOTAMs, ii) origination and publication of AIP, AIP, supplements, AIP amendments, AIC and charts . <p>c) As part of the provision of the service, the service provider will deliver to the centralized AFI Region AIS Data Base client the following client services :</p> <ul style="list-style-type: none"> i) 24 hour operational and technical help desk, ii) Client training, iii) Management and monitoring of the delivery of aeronautical information and AIP elements. 	
Recommendation 4.1	<p>The Recommended assumptions are that :</p> <p>a) The Centralized AFI Region AIS Base</p> <p>i-(System and Data Operations Services) shall enhance operational Safety by ensuring the quality of aeronautical information;</p> <p>ii-(System and Data Operations Service) shall facilitate the timely and efficient flow and provision of (electronic) aeronautical information/data necessary for the Safety, regularity and efficiency of international air navigation.</p> <p>iii-(System and Data Operations Service) shall be designed with the intention to meet the needs of the Air Transport Community;</p> <p>iv-(Data Operations Service) shall not be delegated by a State, the Authority for the provisions or execution of that States AIS .</p> <p>b) AFI Region (AFCAC) ICAO Contracting States shall:</p> <p>i) Entrust (the Agency to be set-up or endorsed by the AFI Region (AFCAC) ICAO contracting States) to develop, establish and operate the centralized AFI CAD with cooperating centres and the possibility of connection to the GLOBAL AIS Data base;</p>	

Number	Title	Page
	<p>ii) Commit to the timely provision of the required information to the AFI CAD (this shall not preclude them from providing the same data to other agents and/or entities);.</p> <p>iii) Continue to be responsible for providing an AIS singularly or jointly with one or more other States or by delegating the authority for the provision of the service to a non-governmental agency in accordance with Annex 15 of the Chicago Convention;</p> <p>iv) Remain responsible for the information published by AIS and provided to the AFI CAD, in accordance with Annex 15 of the Chicago Convention;</p> <p>v) Maintain the intellectual property rights for the data provided to the AFI CAD;</p> <p>vi) Shall cooperate in the promotion of the AFI CAD and of its inter-faces to be adopted as a standard or as a recommendation by ICAO;</p> <p>vii) Provide, collectively and/or individually, advice and other appropriate support to any administration outside the AFI Region (AFCAC) area considering the introduction of an aeronautical information database system compatible with the AFI CAD Standard;</p> <p>viii) Promote the use of the AFI CAD by taking active steps to provide appropriate information to the public on the services available from the centralized AFI Region AIS Data base and encourage the use of the service.</p> <p>c) The Agency to be set-up for providing the service of the AFI Region AIS CAD shall:</p> <p>i) Shall fund the provision of the core service through the budget of the Agency to be set-up”. Clients’ (States and Data Users) local system and connectivity costs shall be borne by the clients themselves at all times;</p> <p>ii) Seek the mandate of the AFI Region (AFCAC) ICAO Contracting States to determine the most effective and appropriate way of implementing and delivering the service by:</p> <ul style="list-style-type: none"> - subcontracting, if it is a service provider; - providing it itself from within the Agency; or - establish a joint Agency/Private/initiative service. <p>iii) Shall define a legal and financial framework to be applied to States participating in the AFI CAD, and non members of the AFI Region (AFCAC) States, Covering contribution to the funding of the data operations service provision;</p> <p>iv) Shall define a charging policy that:</p> <ul style="list-style-type: none"> - complies with the principle of free exchange of aeronautical information amongst States AIS, in accordance with Annex 15 of the Chicago Convention; - Continues to allow recovery by States of the costs incurred for the provision of AIS services; - Avoids double charging of the Data Users. 	

Number	Title	Page
Recommendation 4.2	<p><u>Assumptions</u> The meeting then recommended that :</p> <p>a) whether the service provision is subcontracted or not:</p> <p>i) The service shall at all time be a AFI Region AFI CAD and AFI Region (AFCAC) ICAO contracting States owned, service. The service provider shall ensure the service is at all time perceived and recognized as being a (PAN- AFRICAN) AFI Region (AFCAC) member States provided service.</p> <p>ii) The service provision shall be an activity of cost-recovery nature and shall not generate profit on its own behalf (bearing in mind that the AFI CAD facilitates the safety, regularity and efficiency of international air navigation);</p> <p>iii) the service provision shall be subjected to a “ trial phase” of operation at the end of which the service may be reviewed if there has been insufficient take-up by clients and/or if the service levels have not been met;</p> <p>iv) all clients’ service level agreement shall be between the client and the Set-up Agency entrusted by the AFI Region (AFCAC) ICAO Contracting States.</p> <p>v) shall not be allowed to sell, trade or commercialise the data and/or services of the AFI CAD on its own behalf and/or profit.</p>	
Recommendation 5.1	<p>The meeting then Recommended that :</p> <p>a) Initially the AFI Region (AFCAC) ICAO contracting States will seek funds for the provision of the AFI CAD through a multi – donor facility to support the implementation of the project in collaboration with ICAO, AFCAC and AFI Air Navigation Service Providers.</p> <p>b) That the AFI CAD be defined as a mechanism whereby States can publish their AIS information, and as AIS information is defined as being primarily for the use of Aeronautical users, it follows that all costs incurred in the production and distribution of this information should be recovered in accordance with the ICAO manual on air Navigation Service Economics. Therefore the cost for the provision of AFI CAD service will be recovered by the States, applying the user pay principle.</p>	
Recommendation 5.2	Roberts FIR and Senegal to be included in AFI AIS/MAP Task Force	

REPORT ON AGENDA ITEMS

PART I

First Meeting of the AFI Region Study Group on the Establishment of a Centralized AFI Region AIS Database

(Johannesburg, South Africa, 8 -10 November 2006)

Report on Agenda Item 1: Introduction

1.1 Purpose and Scope

1 The meeting noted that the development of the Centralized AFI Region AIS Database Programme will implement and initiate the operation of a reference database of quality assured aeronautical information from the African Civil Aviation Commission (AFCAC) Member State area for the benefit of the whole aviation community. Implementing the Centralized AFI Region AIS Database will remove service duplication and remedy current deficiencies. It will provide a reliable and cost effective service and will obviate the need for a number of national AIS investments.

1.1 The meeting reviewed the Systems Concept of the AFI CAD and recommended that two major services of the AFI CAD would consist of :

- Recommendation 1 a) The International NOTAM Operation (INO) providing facilities for world-wide NOTAM, SNOWTAM, ASHTAM, BIRDTAM and AFTN or equivalent message handling and for pre-flight Information Bulletins (PIB) generation.
- Recommendation 1 b) The Static Data Operation (SDO) providing facilities for AFCAC STATIC Aeronautical Data/information handling and reporting. moreover, a minimum set of data is also maintained to allow the correct functioning of the INO system

1.2 The meeting also noted that the Centralized AFI AIS Database is to be used additionally to produce AIP publication (AIP), AIP Amendment, Supplement and AIC) and charts (CHART), according to the data/ information stored in the database. These documents are to be stored in a document management systems (PAMS) allowing retrieval, viewing and downloading of documents.

1.3 The meeting reviewed the client concept and recommended that the Clients of the AFI AIS Database will be separated in two main Categories: Data Providers and Data Users:

-Recommendation 2 a) The Data Providers are AIS Organisations providing aeronautical information to the Centralized AFI Database; The Centralised AFI AIS Database will make available and deliver this information to the data users.

- Recommendation 2 b) The Data Users are Air Transport Community and beyond.

1.4 The clients can provide and/or retrieve information from the Centralized Database via the AFI Database client Interface terminal (CIT) that is a dedicated terminal, which contains a set of COTS products related to INO, SDO, CHART, AIP and PAMS or via a systems to systems interface (ESI).

1.5 A dedicated network has to be established, allowing these users to access the AFI CAD through the use of a virtual private connection (VPN).

1.6 It is also anticipated that the public users could be users of the Centralized AFI CAD via the internet for a limited number of functionality.

1.7 Additional information about the centralized AFI Database programme will be made available on the AFCAC website www.afcac-cafac.org

Report on Agenda Item 2: The Current Situation

2.1 The existing modus operandi

2.1 The meeting noted that within the African Civil Aviation Commission (AFCAC) member States, there are some 53 Contracting States of ICAO each of whom, in accordance with Article 28 of the Convention on international civil Aviation (Chicago Convention) and Annex 15 to this Convention, has responsibility for providing an Aeronautical Information Service (AIS) to ensure the flow of aeronautical efficiency of international air navigation within the area of responsibility of the State.

2.2 The Study Group noted that whether a State provides AIS itself, or jointly with one or more other States or by delegating the authority for the provision of the Service to a non-governmental agency, the State remains responsible and retains authority for the information/data published for and on behalf of the State itself. A State may however delegate the authority for publication and distribution of the information to a commercial agency.

2.3 The Study Group noted that the current operational structure bears several limitations and drawbacks when seen from an African perspective as deficiencies in the provision of AIS in the AFI Region as follows:

- no single African consolidated database of aeronautical information;
- lack of cross border aeronautical information coherence checking;
- inconsistent quality of data;
- duplicated, redundant and dispersed investments in the development and maintenance of systems by both Aeronautical Information services and the end users;
- high maintenance (costs) for each State and end users;
- lack of interoperability between systems;
- shortcomings in ensuring timely distribution of aeronautical information updates to all users, possibly compromising safety and/or efficiency of air navigation.

2.4 The Study Group recommended that the Establishment of a Centralized AFI CAD be planned in accordance with a short term , mid-term and long term solutions should be explored .

2.5 The meeting noted Eurocontrol offer, for AFI States to use the EAD as a possible short term solution .

Report on Agenda Item 3: The Proposed Centralized AFI Region AIS Data Base Solution

3.1 The proposed System

3.1.1 The proposed System Services

3.1 The meeting noted that on overall, the proposed Centralized AFI Region AIS Data Base solution can be defined as comprising of the AFI Region AIS Data Base System (the System) and the AFI Region AIS Data Operations and network provision.

Recommendation 3.1 The study group then recommended that the proposed System should be designed to provide the following:

- a) a single repository for aeronautical information and IAIP elements of participating States,
- b) data questioning enhancement through multilevel consistent data checking processes, including cross border data verification;
- c) a secure channel/vehicle for timely and efficient electronic distribution of aeronautical information and IAIP elements;
- d) harmonisation and interoperability will be ensured by common and standardised:
 - System interface and data exchange model (AIXM),
 - Static data model (AICM);

Recommendation 3.2 That the proposed System Data Operations Services will then provide the Centralized AFI Database clients with the following system services:

- a) support to edit and provide (to the system) aeronautical information
- b) electronic access to and delivery of aeronautical information,
- c) browsing and downloading of participating State's aeronautical information;
- d) generation of reports;

Recommendation 3.3 That the Data Operations System Services will be accessed by clients via direct electronic interface in one or more of the following three ways:

i) **CIT: The Client Interface terminal.** A terminal located at the client site, connected to the AFI CAD, and allowing download, modification (only by data providers) and reporting of aeronautical information as determined by the clients Service Level Agreement (SLA);

ii) **CI: The Client Interface.** A technical toolkit allowing clients' own systems to access and interact with the AFI CAD to upload, download, modify (only for Data Providers) and report of aeronautical information as determined by the client's (SLA);

iii) **INTERNET:** Access to the Centralized AFI AIS Data Base will also be allowed via the Internet.

Recommendation 3.4 AFI AIS/MAP Task Force, with co-opted technical expertise, as required develop user requirements specification (URS) for AFI CAD.

Report on Agenda Item 3.2 : The proposed Service

3.2.1 The Proposed client services

The meeting noted and recommended that provision of the centralized AFI CAD operations service should be designed to comprise the task and activities related to the following services domains :

3.2 -A

DATA OPERATIONS

CORE SERVICES

- INO
- SDO
- PAMS
- DATA QUALITY ASSURANCE

PRODUCTS

- PIB / NOTAM /
- AIP / CHARTING
- AIP LIBRARY
- QUALITY LEVEL MEASUREMENT
- OF: INO DB
- SDO DB
- PAMS DM

SUPPORT SERVICES

- HELPDESK
- DOCUMENT HANDLING

MANAGEMENT SERVICES

- QUALITY MANAGEMENT
- SAFETY & SECURITY MANAGEMENT
- CHANGE MANAGEMENT → EVOLUTION OF THE SYSTEM WITH USER REQUIREMENTS & TECHNOLOGIES
- INFRASTRUCTURE MANAGEMENT
- INTERNATIONAL REGULATION MANAGEMENT
- DOCUMENT CONFIGURATION MANAGEMENT

3.2-B

IT SERVICE PROVISION

→

- CORE** – IT SERVICES
- SUPPORT** – NETWORK MANAGEMENT
- CLIENT MIGRATION
- MANAGEMENT** -
- Infrastructure
- Configuration

3.2-C

NETWORK PROVISION

3.2-D

TRAINING

3.2-E

TESTING AND DEVELOPMENT

3.2.1 The Proposed server services

3.2.1.1 The meeting adopted the following proposed client services :

a- Four Operating Centres: North; West; East; South and Central if required

b- Three Training Centres for English; French and Arabic

c- IT Server on Line Centre – (number to be defined)

d- Research Centres where Technical Capabilities Exist

Recommendation 3.5 The meeting also recommended that :

- a) Regarding the Data operations service domains, the service provided shall ensure :
- i) Co-ordination of the resolution of data conflicts detected by the system data checking processes ;
 - ii) for non-participating States (world wide) :
 - NOTAM processing (verification, validation, translation, etc...)
 - entry of the statistic data required by the system NOTAM function.
- b) As defined today, the service does **not** include the provision of AIS services on behalf of participating States, i.e the service **shall not comprise** the following activities :
- i) creation of NOTAMs
 - ii) origination and publication of AIP, AIP supplements, AIP amendments, AIC and charts .
- c) As part of the provision of the service, the service provider will deliver to the centralized AFI Region AIS Data Base client the following client services :
- i) 24 hour operational and technical help desk
 - ii) Client training
 - iii) Management and monitoring of the delivery of aeronautical information and AIP elements.

Report on Agenda Item 4: Assumptions

4.1 The meeting noted that at the outset of the Service Creation certain fundamental assumptions are made and need to be already understood.

Recommendation 4.1

The Recommended assumptions are that :

a) The Centralized AFI Region AIS Base

i-(**System and Data Operations Services**) shall enhance operational Safety by ensuring the quality of aeronautical information;

ii-(**System and Data Operations Service**) shall facilitate the timely and efficient flow and provision of (electronic) aeronautical information/data necessary for the Safety, regularity and efficiency of international air navigation.

iii-(**System and Data Operations Service**) shall be designed with the intention to meet the needs of the Air Transport Community;

iv-(**Data Operations Service**) shall not be delegated by a State, the Authority for the provisions or execution of that States AIS .

b) AFI Region (AFCAC) ICAO Contracting States shall:

- i. Entrust (the Agency to be set-up or endorsed by the AFI Region (AFCAC) ICAO contracting States) to develop, establish and operate the centralized AFI CAD with cooperating centres and the possibility of connection to the GLOBAL AIS Data base;
- ii. Commit to the timely provision of the required information to the AFI CAD (this shall not preclude them from providing the same data to other agents and/or entities);.
- iii. Continue to be responsible for providing an AIS singularly or jointly with one or more other States or by delegating the authority for the provision of the service to a non-governmental agency in accordance with Annexe 15 of the Chicago Convention;
- iv. Remain responsible for the information published by AIS and provided to the AFI CAD, in accordance with Annex 15 of the Chicago Convention;
- v. Maintain the intellectual property rights for the data provided to the AFI CAD;
- vi. Shall cooperate in the promotion of the AFI CAD and of its inter-faces to be adopted as a standard or as a recommendation by ICAO;
- vii. Provide, collectively and/or individually, advice and other appropriate support to any administration outside the AFI Region (AFCAC) area considering the introduction of an aeronautical information database system compatible with the AFI CAD Standard;
- viii. Promote the use of the AFI CAD by taking active steps to provided appropriate information to the public on the services available from the centralized AFI Region AIS Data base and encourage the use of the service.

c) The Agency to be set-up for providing the service of the AFI Region AIS Centralized Aeronautical Database shall:

- i) Shall fund the provision of the core service through the budget of the Agency to be set-up”. Clients’ (States and Data Users) local system and connectivity costs shall be borne by the clients themselves at all times;
- ii) Seek the mandate of the AFI Region (AFCAC) ICAO Contracting States to determine the most effective and appropriate way of implementing and delivering the service by:
 - subcontracting, if it is a service provider;
 - providing it itself from within the Agency; or
 - establish a joint Agency/Private/initiative service.
- iii) Shall define a legal and financial framework to be applied to States participating in the AFI CAD, and non members of the AFI Region (AFCAC) States, Covering contribution to the funding of the data operations service provision;
- iv) Shall define a charging policy that:
 - complies with the principle of free exchange of aeronautical information amongst States AIS, in accordance with Annex 15 of the Chicago Convention;
 - Continues to allow recovery by States of the costs incurred for the provision of AIS services;
 - Avoids double charging of the Data Users.

Recommendation 4.2

The meeting then recommended that :

- a) whether the service provision is subcontracted or not:
 - i. The service shall at all time be a AFI Region AFI-CAD and AFI Region (AFCAC) ICAO contracting States owned, service. The service provider shall ensure the service is at all time perceived and recognized as being a (PAN-AFRICAN) AFI Region (AFCAC) member States provided service.
 - ii. The service provision shall be an activity of cost-recovery nature and shall not generate profit on its own behalf (bearing in mind that the AFI CAD facilitates the safety, regularity and efficiency of international air navigation);
 - iii. the service provision shall be subjected to a “ trial phase” of operation at the end of which the service may be reviewed it there has been insufficient take-up by clients and/or if the service levels have not been met;
 - iv. all clients’ service level agreement shall be between the client and the Set-up Agency entrusted by the AFI Region (AFCAC) ICAO Contracting States.
 - v. shall not be allowed to sell, trade or commercialise the data and/or services of the AFI CAD on its own behalf and/or profit.

Local system cost comprise all those cost incurred by the client to adopt, modify, renew and/or extend its local system in order to connect it to work with the Centralized AFI AIS DATA Base System. Connectivity costs comprise all those cost relating to the acquisition lease and/or use of telecommunication facilities (equipment, lines, etc.) necessary to connect the client system with the centralized AFI AIS Data base system.

Report on Agenda Item 5: The Proposed Business Model

- 5.1 Information Flow** (*Appropriate business model must be developed*)
5.2 Addition issues

5.1 The meeting noted that the implementation of the AFI CAD will improve the flow and delivery mechanisms of aeronautical information. The meeting also agreed that the appropriate business model must be developed.

5.2 The AIS of participating States will continue to be responsible for the production, maintenance and publication of aeronautical information which will be delivered and stored by them in the AFI CAD. The AFI CAD will then deliver and/or provide access to the aeronautical information.

5.3 The AFI CAD will thus act as a relay for aeronautical information, which will be delivered from the Data providers (to and from the AFI CAD to the Data users.

Recommendation 5.1

The meeting then Recommended that :

- a) Initially the AFI Region (AFCAC) ICAO contracting States will seek funds for the provision of the AFI CAD through a multi – donor facility to support the implementation of the project in collaboration with ICAO, AFCAC and AFI Air Navigation Service Providers.
- c) That the AFI CAD be defined as a mechanism whereby States can publish their AIS information, and as AIS information is defined as being primarily for the use of Aeronautical users, it follows that all costs incurred in the production and distribution of this information should be recovered in accordance with the ICAO manual on air Navigation Service Economics. Therefore the cost for the provision of AFI CAD service will be recovered by the States, applying the user pay principle.

5.4 During the discussion relating to additional issues, the meeting recommended the following :

Recommendation 5.2

That Roberts FIR and Senegal to be included in AFI AIS/MAP Task Force

Report on Agenda Item 6: The meeting was then presented with the following operational application of an AFI-CAD.

6.1 Operational Applications

- **International NOTAM Operation (INO)**
 - Maintenance
 - Message creation
 - *NOTAM, NOTAM Checklist, SNOWTAM, ASHTAM*
 - Basic data maintenance
 - *NOF series, AFTN Address list, Distribution list*
 - Reporting
 - Pre-flight Information Bulletin (PIB) inquiry
 - *Aerodrome, Area, Special area, Route, Narrow route*
 - *Profile management*
 - *Route management*
 - *PIB scheduling*
 - Graphical reporting
 - TAM subscription

6.2 Operational Applications

- **Static Data Operation (SDO)**
 - Maintenance
 - Private slot Management (create, update, check, close)
 - Static data update
 - Graphical validation facility
 - Upload (XML format)
 - Reporting
 - Generation of Predefined report
 - Creation of user-defined report
 - Graphical reporting facility
 - Download (XML or ARINC format)

6.3 Operational Applications

- **Published AIP Management System (PAMS)**
 - Maintenance
 - Publication of aeronautical documents and charts.
 - In PDF and optionally XML/HTML format
 - Meta data per document
 - Reporting
 - Search, view, download, print aeronautical documents and charts.
 - Document subscription

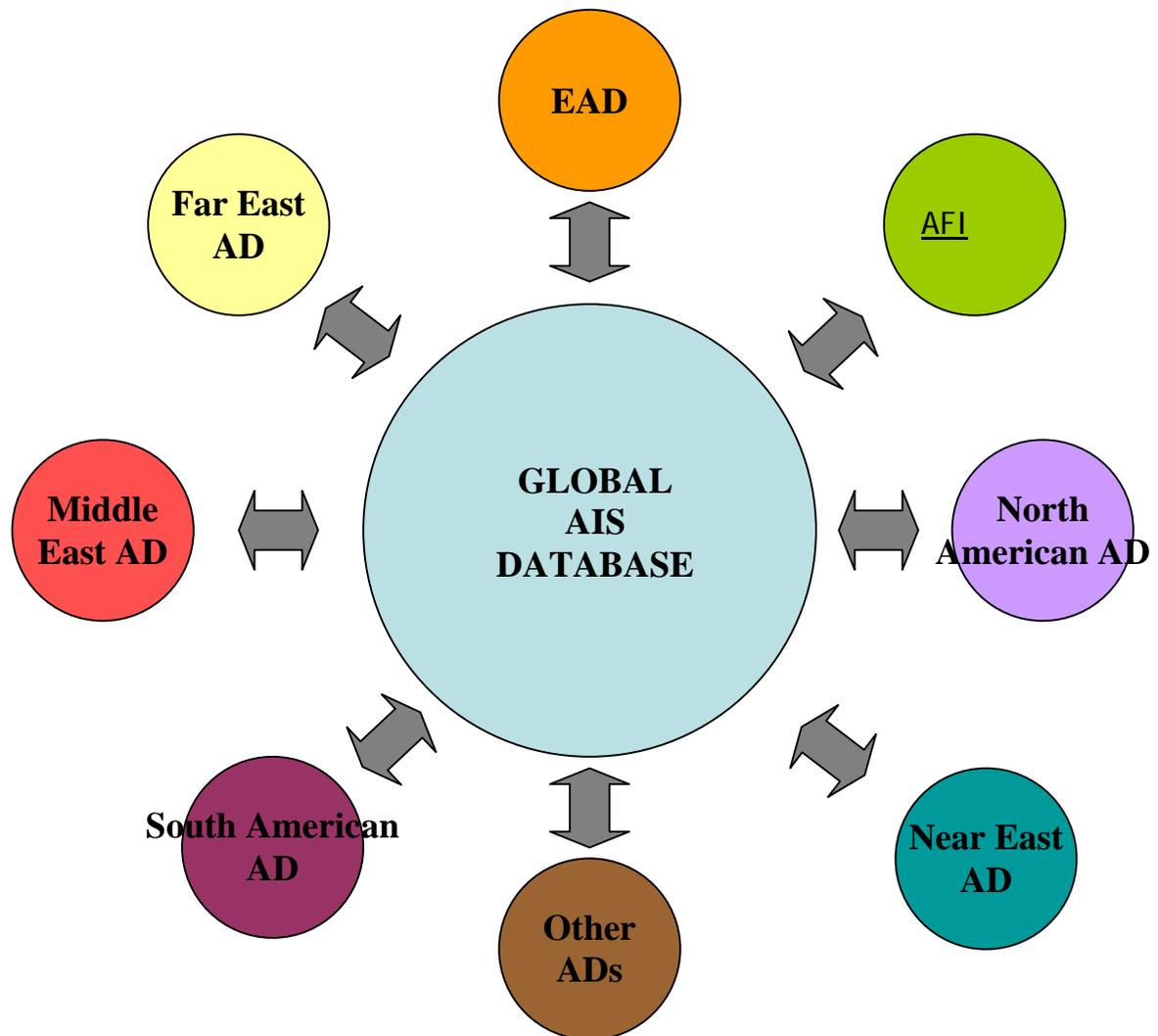
6.4 Additional Applications

- **AIP Production (AIP)**
 - Creation and update of AIP, supplements, circulars based on SDO database (data or table linkage):
 - Automatic generation of AIRAC or regular amendment,
 - Using unstructured or structured (eAIP) method,
 - Final documents in PDF or XML format
 - Direct publication in EAD document library (PAMS)
- **Chart Production (CHART)**
 - Creation and update of aeronautical charts based on SDO database (data link).

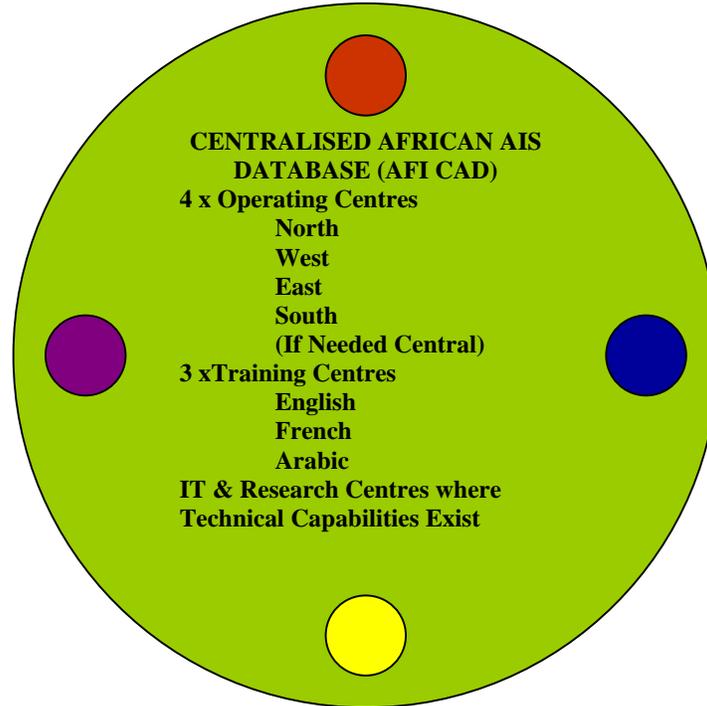
Centralized DB Products

**ADOPTED FRAMEWORK PROPOSAL FOR A CENTRALISED AFI REGION
AIS/MAP DATABASE**

1. Current Status of AIS
 - a. Infrastructure
 - b. Products
 - c. Human Resources
 - i. Skills, Competencies & Qualifications
 - d. Present ATM Community Requirements
2. Global Concept (Macro Overview)
 - a. Global AIS Database



b. African AIS Database



c. Operating Centres

- i. All Mirror Images of Each Other
- ii. All contain the full Centralised African AIS Database (AFI CAD)
- iii. Each Operating Centre can replace each other if needed.
- iv. The Operating Centres are in constant communication with each other updating the databases at each Operating Centre as it is changed by the Operating Centres (possibly using a form of best suitable available communications)
- v. Countries within a region provide their data to and access the AFI CAD via their Regional Operating Centre (local communication networks to be utilised)
- vi. Each Region Responsible for the Maintenance of their regions Data in the AFI CAD.
- vii. Why Four Regional Operating Centres?
 1. Geographical Distances
 2. Communication Networks

3. Common Infrastructure
4. Existing Working Agreements
5. Common Interests
6. Ability to provide assistance on a regional basis
7. Redundancy/Service Integrity

Note: A study needs to be performed to decide if the need exists for a Fifth Operating Centre for Central.

3. Management Issues

a. Legal Requirements

- i. Formal State Agreements (Institutional): Will the constitution of AFCAC allow sufficient legal coverage to allow AFCAC to perform the role as co-ordinating authority for AFI CAD? Legal Council needs to be consulted. If not then Formal Agreements between AFCAC and individual states and possibly consortiums of states will then need to be instituted.
- ii. Service Level Agreements: If the AFCAC constitution does provide for AFCAC to act as the co-ordinating authority for AFI CAD, then only a service level agreement will have to be instituted between states and consortiums of states.
- iii. Interstate Consortium Agreements: These will need to be instituted to ensure attainment of target levels of service provision within consortiums of states.
- iv. Service Provider Contract: The study group assumes AFCAC has legal authority to act as co-ordinating authority for AFI CAD, and utilises a Service Provider a contract determining the extent of and target levels performance needs to be instituted. If AFCAC does not have this legal authority, will its constitution need to be amended and new agreements established, a new body created or will the Service Provider conclude this agreement with each participating state?

b. State Responsibilities

- i. Enforceable: The agreements instituted for the participation in AFI CAD need to be enforceable to ensure target levels of source data integrity and service support is provided.

- ii. States which cannot Conform: A mechanism needs to be instituted whereby states that cannot conform to the required standards are encouraged partake in AFI CAD and are assisted to reach and maintain the required standards. This can either be via AFCAC, on a regional basis or via interstate agreements.
 - iii. Non-conforming States: Procedures to deal with states which have entered into this agreement to join AFI CAD and then refuse to comply with the standards will need to be established
 - iv. Financial: The financial contributions for the establishment, maintenance and advancement of AFI CAD need to be defined in all agreements to join AFI CAD. This commitment will need to be actively policed to ensure compliance by member states to ensure the future sustainability of AFI CAD
 - v. Human Resource: Target levels of service provision and its associated Human Resource requirements (Skills, Competencies and Qualifications) must be defined and be enforceable under these agreements.
 - vi. Infrastructure: Target levels of infrastructure service provision and its associated support by states (eg guarantees of security provision) must be defined and be enforceable under these agreements
- c. Service Provider: The manner in which a Service Provider is utilised in the provision of the AFI CAD service will need to be studied and various business models will need to be assessed to determine the safest, most cost-effective, reliable and sustainable model is adopted. These models must be assessed and the most appropriate one recommended for adoption. This must include at least the following models:
- i. AFCAC establishing a subsidiary to perform this service.
 - ii. Establishment of a Consortium owned by African member States possibly in co-operation with an external stakeholder (eg EAD)
 - iii. External Company as Service Provider (eg Group EAD)
- d. Data Provider Requirements
- i. Data Standards: Data standards, which are to be utilised in AFI CAD, need to be defined and accepted by all member states. These standards may be defined (as the Eurocontrol Standards for example) and must be enforceable under these agreement between AFCAC and member states or between AFI CAD Service Provider and states

- ii. State Data Requirements: The minimum data requirement for AFI CAD (eg IAIP) will need to be defined in agreements. Any additional state requirements (eg Obstacle, Terrain, etc) will also need to be accommodated possibly in phased implementation.
- iii. Required Data Not Available: If the required data is not available or not available in the required standard in a particular state, procedures will need to be established as to who will be responsible for the acquisition and maintenance of this data, how this will be conducted and who will then own this data.

e. Data User

- i. Internal (State/Consortium) User Requirements: Access to the data in AFI CAD must be free to contracting states and consortiums of states.
- ii. External Clients: The requirements of external clients must be addressed to encourage them to utilise and pay for the services provided by AFI CAD. These will include but not be limited to the ATM community:

f. Financial Model

Despite Financial Model not being part of the scope of this workgroup, the workgroup would like to make following suggestions:

- i. Setup Capital: The business plan to be adopted must define the total set-up costs and where this capital will be obtained (eg Loans, Donations/Aid, State Contributions). Each states responsibility in this regard must be defined and be enforceable in any AFI CAD membership agreement
 - ii. Financial Sustainability: The business plan to be adopted must also define how financial sustainability will be ensured (eg by State Contributions, fees to be charged for access by users, en-route charges, etc). This must also show how continuous improvement and safety monitoring systems will be maintained and funded.
 - iii. Service Provider: The resources that the Service Provider will bring to the project must be defined and enforced in the Service Providers contract. It should not be the sole responsibility of the member states or AFCAC to fund this project as it should based on the User/ Beneficiary Pays principle.
- g. Financial Plans: The financial model for AFI CAD as discussed above also needs to address the following operational considerations:

- i. Continuous Operational Cost Recovery: Continuous Operational Cost Recovery must be ensured as a minimum requirement. If this does not occur AFI CAD will not be a viable concern.
- ii. Cost Benefit Analysis: A Cost Benefit Analysis reflecting the advantages and disadvantages of all business models discussed above needs to be performed before a particular model can be recommended and accepted by AFI CAD member states.
- iii. Future Cost Benefits: To AFI CAD (eg via provision of services additional to what is presently being provided) will need to be assessed to ensure organisation structuring to take advantage of these future benefits

h. Technical Functionality

- i. Hardware and Facilities: The manner of provision of hardware and facilities either by states or Service Provider must be defined and contained in AFI CAD membership agreements. This will include but may not be limited to the following:
 1. Location
 2. Technical Support
 3. System/Network Interoperability
 4. Growth Plans/Capacity Expansion Plans
 5. Back-up facilities and hardware
- ii. Software: The software utilised by AFI CAD must be agreed upon by AFI CAD members and the Service Provider to ensure compatibility and commonality. This will include but not be limited to the following:
 1. Software System to be utilised (eg a UNIX system with Oracle or SQL database software along the lines of the EAD system)
 2. Exchange Models to be utilised (eg AIXM)
 3. Standardised State Software Interfaces (will converters be required and who will be responsible for their provision and funding?)
- iii. Human Resources: The Human Resources which each AFI CAD member state and the Service Provider will contribute must be

defined in membership agreements to ensure attainability of target levels of data standards. This will include but not be limited to the following:

1. Qualifications & Training
 2. Standards of Qualification and Training
 3. Availability of Skills
 4. Demonstrated Competencies
 5. Required Skills, Competencies and Qualifications for Posts
- iv. Infrastructure: The provision of infrastructure to ensure operational effectiveness of AFI CAD by member states and the Service Provider regarding but not limited to the following:
1. Communications
 2. Uninterrupted Power Supply
 3. Operational Technical Skills
 4. Technical Training Centres
 5. Security Guarantees (physical and financial)
 6. Technical Support
- i. AIS Operational Functionality:
- i. Implementation: Detailed planning as to how operationally the AFI CAD will be implemented including time scales, responsibilities and accountabilities must be defined in agreements between AFI CAD members and the Service Provider. These plans must take the following into account.
 1. Phased Implementation: Will pilot states/Operational Centres be used initially with additional member states/Operational Centres to be added continuously until all AFI states are members?
 2. Transition Plans: Plans must be defined on how state data will be incorporated into AFI CAD.
 - ii. State Data Standards/ Quality Assurance: The data standards and methodology to ensure Quality Assurance of state provided data

- iii. AIS Staff Training Development Plans
- iv. Target Levels of AIS Service Provision
- h. Future Development: Future Development of AFI CAD must be continuously researched and conducted to ensure compatibility with the following stakeholder drivers:
 - i. Research & Development
 - 1. Comply with future ICAO requirements
 - 2. Database Development
 - 3. Database Interoperability Requirements
 - 4. Future Technologies
 - 5. Future User Requirements
 - ii. Implementation
 - 1. Future Development Implementation & Transition Plans
 - 2. Future Cost Benefits

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AFI REGION STUDY GROUP ON THE ESTABLISHMENT OF A CENTRALIZED AFI REGION AIS DATA BASE

of the AIS Task Force of the AFI Planning and Implementation Regional Group (APIRG)

FIRST MEETING

(Johannesburg, 8 - 10 November 2006)

Agenda Item 3: The Proposed Centralised AFI Region AIS Data Base Solution

Considerations for the Study and Planning Phase

(Presented by Peter Rudolph, Avitech AG, Germany)

SUMMARY

This working paper tries to summarise some initial thoughts about the work of the study group and matters which should be addressed or solved.

The paper was written based on the experience the author could gather when setting up the European AIS Database.

(14 pages)

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Considerations for the Study and Planning Phase

1 Introduction

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.

The advent of Precision RNAV (P-RNAV) 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.

The required data integrity classification of 10^{-3} , 10^{-5} , and 10^{-8} 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.

Consequently ICAO adopted the APIRG/15 Conclusion 15/43 – (Centralised AFI AIS Database) which states inter alia: “that IATA, in cooperation with ICAO and air navigation services providers in the AFI Region, study the establishment of a centralised AFI AIS database similar to the European AIS Database (EAD) and forward it to the AIS/MAP Task Force for its consideration”.

This working paper aims a summary of thoughts, consideration, and requirements based on the authors involvement in the winning industry team (TeamEAD) which was awarded with the EAD System and Service Contract by Eurocontrol and takes into account some lessons learned as well as new developments in the AIS/AIM domain which might be useful to consider during the coming study period for the AFI Region Centralised Database. This database is in this working paper further called African AIS Database (AAD).

2 EAD History, Timeline, Lessons Learned, Issues

2.1 EAD History

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 end 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.

The intension of the original CfT was that Eurocontrol should run the EAD System and Service on behalf of its member states by Agency staff, like the Central Flow Management Units (CFMU). Interested member states of the European Civil Aviation Conference (ECAC) are 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 Agency itself. The only way forward was now 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.

2.2 EAD Timeline

As already mentioned in paragraph 1 the APIRG/15 Conclusion 15/43 makes reference to EAD. The history of the EAD tendering phase until contract signature was as follows:

Date	Activity
End 1997	Call for tender (public procurement)
Spring 1998	Public clarification meeting
08.06.98	Offer closing date (offers received from seven consortia)
14.07.98	First set of clarification questions to bidders
03.08.98	Clarification meeting with two short listed bidders (separate)
18.08.98	Second set of clarification questions to short listed bidders
17.09.98	Third set of clarification questions to short listed bidders
28.12.98	Provisional last and final
14.01.98	Clarification meeting with two short listed bidders (separate)
11.02.99	Definitive last and final offer
05.03.99	Eurocontrol internal decision about the selected bidder
12.04.99	Endorsement by ATM Consultancy Group (ACG) ¹
21.04.99	Endorsement by Provisional Council (PC) ²
17.06.99	Begin of contract negotiations
06.07.99	End of contract negotiations
07.07.99	Contract signature ³ Systems Contract with FREQUENTIS Network Systems GmbH (Prime Contractor) – TeamEAD.
26.05.00	Final Service Provision Offer (Avitech GmbH, DFS Deutsche Flugsicherung GmbH, Aeropuertos Españoles y Navegación Aérea (AENA)).
10.07.01	Contract signatura Service Contract (GroupEAD – FREQUENTIS GmbH, DFS Deutsche Flugsicherung GmbH, Aeropuertos Españoles y Navegación Aérea (AENA)).

This schedule is shown here to show that it took basically 3,5 years to award the EAD systems and service contract.

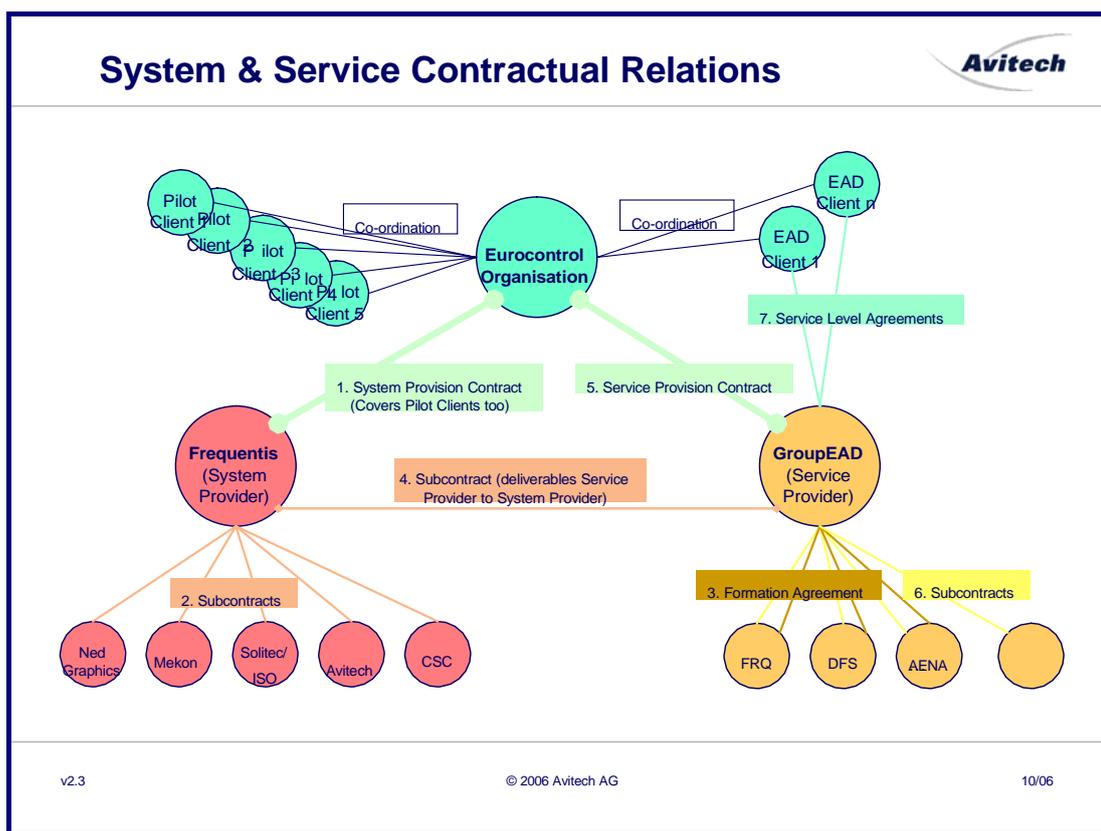
2.3 EAD Contractual Relationship

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

¹ CAA and ANSP representatives from member states.

² Member states representatives.

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



On the day of the EAD System Contract signature (07.07.1999) Eurocontrol had 28 member states⁴, today there are 37⁵, for ECAC there are 35⁶ in 1999 and today 41⁷.

It should be noted that the EAD System is owned by Eurocontrol, which means finally by there 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 is a legal privat entity based on Spanish law. The owners of that company are Frequentis GmbH, DFS Deutsche Flugsicherung GmbH, the German Air Navigation Service Provider, and Aeropuertos Españoles y Navegación Aérea (AENA), the Spanish Air Navigation Service Provider.

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 footnote 2: Moldova, Finland, Albania, Bosnia & Herzegovina, Ukraine, Poland, Serbia, Armenia, Lithuania (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 (in sequence of getting membership).

⁷ In addition to footnote 5: Albania, Ukraine, Azerbaijan, Bosnia and Herzegovina, Serbia, Georgia (in sequence of getting membership).

2.4 EAD Lessons Learned

The author of this working paper believes that the process shown in 2.2 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 (TeamEAD).

The CfT contained the following documents which have been addressed individually requirements number by requirements number 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 requirement and security requirements),
6. Requirements of the EAD Service Provision (basis for the Service Contract),
7. Glossary and acronyms.

The author of this working paper believes that this is the minimum set of documents which are needed to make an offer for such kind of system and service. Important was 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.

2.5 EAD Issues

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

1. The system to system connection between EAD and other system through the EAD System Interface Network Adapter Box (ENA Box) and the AIXM XML 3.3 is not easy to implement for Static Data, NOTAM is easier and AIP download/upload as well.
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 3.3, 4.0 and 4.5 and therefore can not be handled by EAD. This will not change with AIXM 5.0 which will possibly be used in about 3 to 5 years from now. AIXM 5.0 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 AAD.
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 the single access point for those data. No cost saving should be expected overall, 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.

The author of this working paper summaries these issues here, which are his personal opinions, because they could possible taken into account in the AAD discussions and study.

3 Requirements

Further development of the AIS domain has taken place since the EAD went into operational use and even the name of the domain starts changing from AIS to AIM showing the move from the product driven approach (AIP, MAP, NOTAM, PIB) to the data driven approach. Major new SARPs are introduced in Annex 15 with Amendment 33. Also the emerging version of AIXM 5.0 and the activities of RTCA/EUROCAE in the AIS area need to be considered. Studies for the AAD should not only look for a copy of the EAD solution for AAD. Such studies should consider the full new picture as outline on the 11th Air Navigation Conference held Montreal in 2003 concerning Operational Concepts and data models (AN-Conf/11-WP/190) and consider the Recommendations of the Global AIS Congress held Madrid in 2006.

3.1 User and Real User Requirements

The users and the real user requirements for the AFI Region aeronautical data to be made available by AAD need to be agreed upon, and will probably need a phased implementation plan. It should be recalled who are the users of AAD:

1. AIS Offices, NOTAM Offices, ARO Units,
2. AIP Production Departments, MAP Production Departments,
3. Procedures Design Departments,
4. NavData Integrator companies like Lido, Jeppesen, Navtech/EAG, Honeywell etc.,
5. ATM Systems (TWR, APP, ACC, FIC, FIS),
6. Airline Systems (Briefing, AOC),
7. Military Authorities (AIS, ARO, AIP/MAP, TWR, APP, FIS),
8. General Aviation (Briefing),
9. Others,.

So the question to be answered will be how far the AAD will respond to the different requirements of all those users.

3.2 Data

Based on the users and the real user requirements the data to be stored in AAD can be defined. Very likely they are chosen from the following list:

1. Aeronautical Static Data (AIXM 3.3, 4.0, 4.5, 5.0 scope, extensions),
2. Aeronautical Obstacle Data,
3. Aerodrome Mapping Data,
4. Digital Terrain Data,
5. Digital Service Models (man made, grown),
6. Topographic Data (rivers, cities, road, etc.),
7. NOTAM, SNOWTAM, ASHTAM, BIRDTAM,
8. OPMET Data, WAFS Data (later BUFR),
9. AIP according to ICAO Annex 15 and AIS Manual (Doc 8126),
10. MAPs and Charts according to ICAO Annex 4 and Aeronautical Chart Manual (Doc 8697).

Figure 3-1 shows all candidate applications, candidate data and candidate interface which form the basis for the requirements.

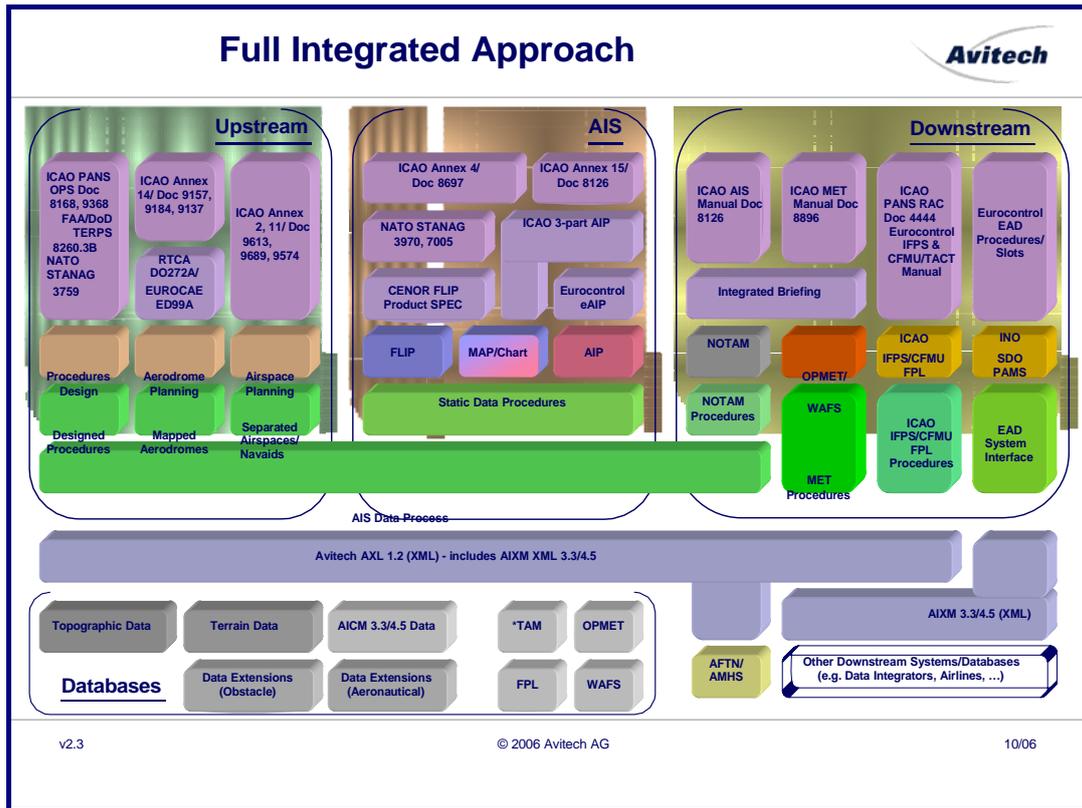


Figure 3-1: Full Integrated Approach

A phased implementation plan based on an agreed schedule with the users can reduce the complexity and risk of implementation and gives some time for the finalisation of the standardisation for those data which are not included in common models at the moment.

4 Concept of Operation

The Concept of Operation for the AAD is very important as a number of states AIS, ANSP AIS and other parties will probably have responsibilities for AAD. So a clear and documented Concept of Operation is the basis for all common work and shared responsibilities. The Concept of Operation shall be based on the target aeronautical data chain. The target aeronautical data chain shall be modelled by assessment of the existing data chain and the identification of the gaps based on the ICAO and Real User Requirements.

The target aeronautical data chain defines the responsibility of each actor related to the data in the data chain and is the basis for traceability.

The data modelling is an inventory:

- to identify mainly the **Aeronautical Data Ownership** in the existing chain,
- to identify data exchange points,
- to identify gaps.

The management of the target aeronautical data chain should consider to reach conformance to the RTCA/EUROCAE DO-201A/ED77 “Industry Requirements for Aeronautical Information” and DO-200A/ED76A “Processing of Aeronautical Data”.

This Concept of Operation and the Aeronautical Data Chain Modelling is essential for the definition of organisational structure, the staffing and the target system topology.

5 ICAO Issues, Organisational Structure, Staffing

When implementing a data driven concept rather than a product driven concept for AIM it should be noted that the organisation of the AIS or better the AIM will have working positions and responsibility which are not covered in the ICAO AIS Organisational Structure as described in the ICAO AIS Manual (Doc 8126-AN/872) Chapter 3.2 and Figure 3-2. Especially the function of aeronautical data and aeronautical obstacle data maintenance and the interface to procedures design is not covered. Figure 5-1 shows also the integration of Procedures Design, FPL Management, Help Desk and Training Management into AIS/AIM. The integration of civil and military AIS brings synergies, can cut costs and brings advantages for the organisation of training. Integration can mean full integration from the organisational structure point of view but can also mean to operate a joined office. In the later cases the integration is on data and/or product level. A possible enhanced organisational structure is shown in Figure 5-1.

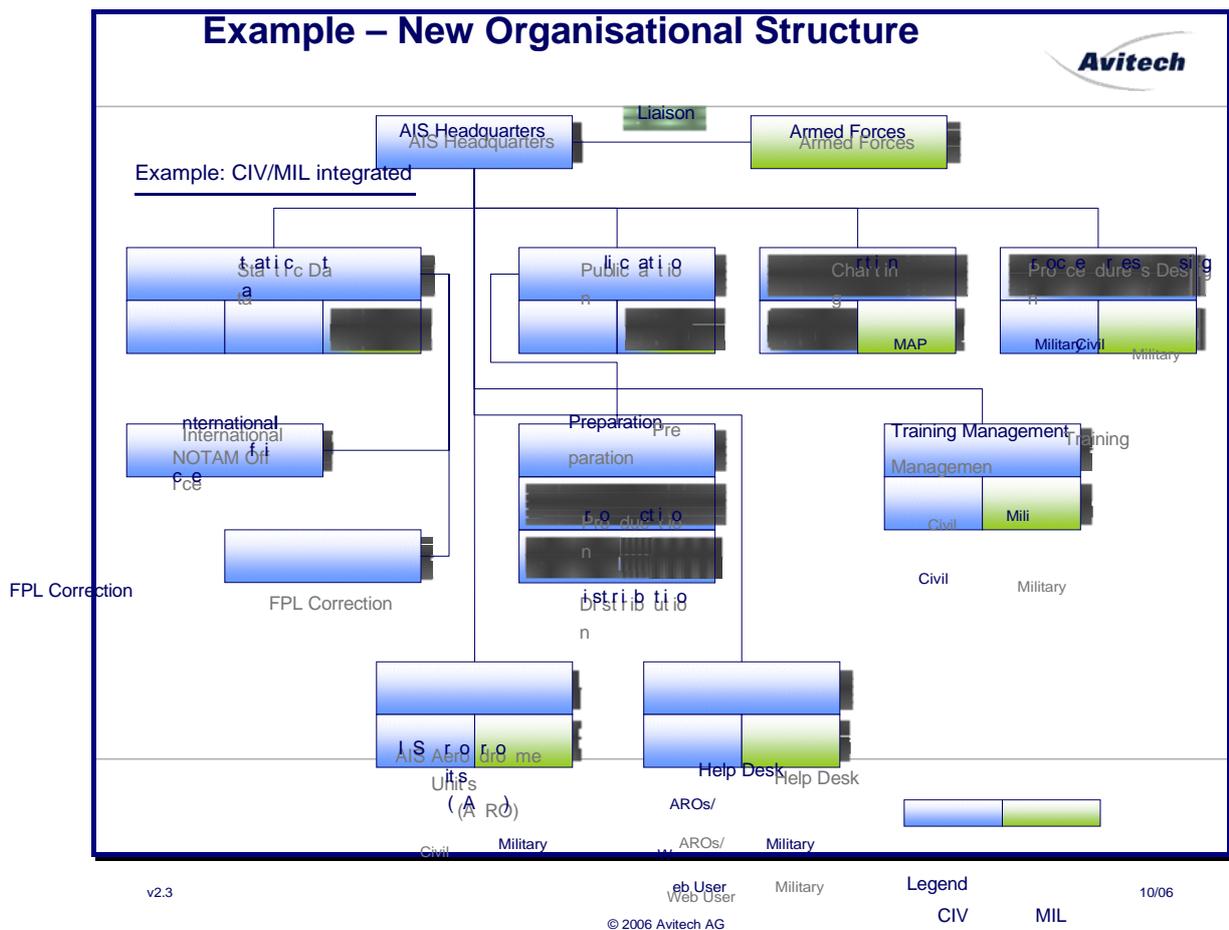


Figure 5-1: Example New Organisational Structure

It is not known at the moment whether ICAO considers an update of the AIS Manual (Doc 8126-AN/872) Chapter 3.2 and Figure 3-2 thereof.

6 System Topology Options

There are basically three different topologies existent for a regional ICAO database.

- Central solution,
- Replicated solution,
- Distributed solution.

All have advantages and disadvantages and all should be therefore compared and the best topology for implementing the operational concept shall be chosen.

It should be noted that this discussion is on a very high level. It should only show that there are different scenarios available. Without discussing the scenarios and choosing one scenario based on the requirements one can not make sure that the best scenario was chosen.

6.1 Central Solution

A central solution needs a responsible legal entity which manages the day to day operation of the central site in sense of:

1. Operation of the system,
2. Staffing,
3. IT infrastructure.

A central system might have more than one site for the operational offices. The servers and host computers do not necessarily need to be at the same location as the operational AAD Office(s). This means a centralised solution could have probably 1 to 4 different sites depending on the solution chosen. However, it can also be at one physical location.

A principle outline of such a solution is shown in Figure 6-1.

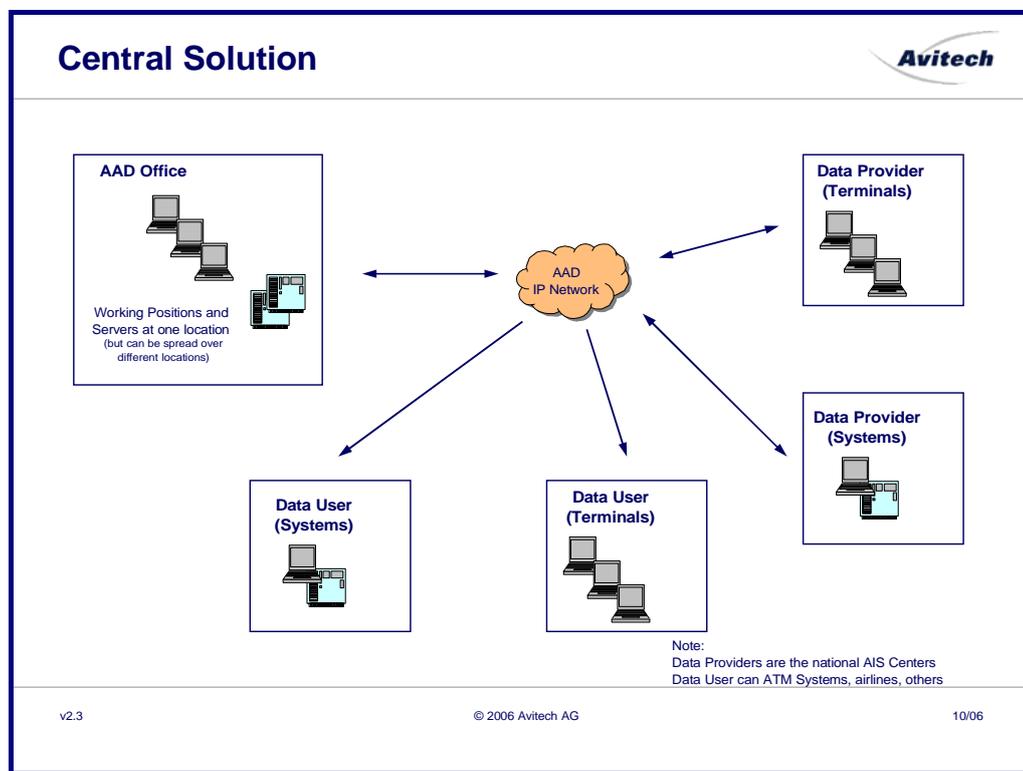


Figure 6-1: Central Solution

6.2 Replicated Solution

A replicated solution needs a responsible legal entity which manages a central server into which all Data Provider store there data (contents). The central server will then replicate all data to the Data Provider systems. At Data Provider systems Data User Terminals can be connected. Data User Systems can be connected at the central server and at the Data Provider server.

A principle outline of such a solution is shown in Figure 6-2.

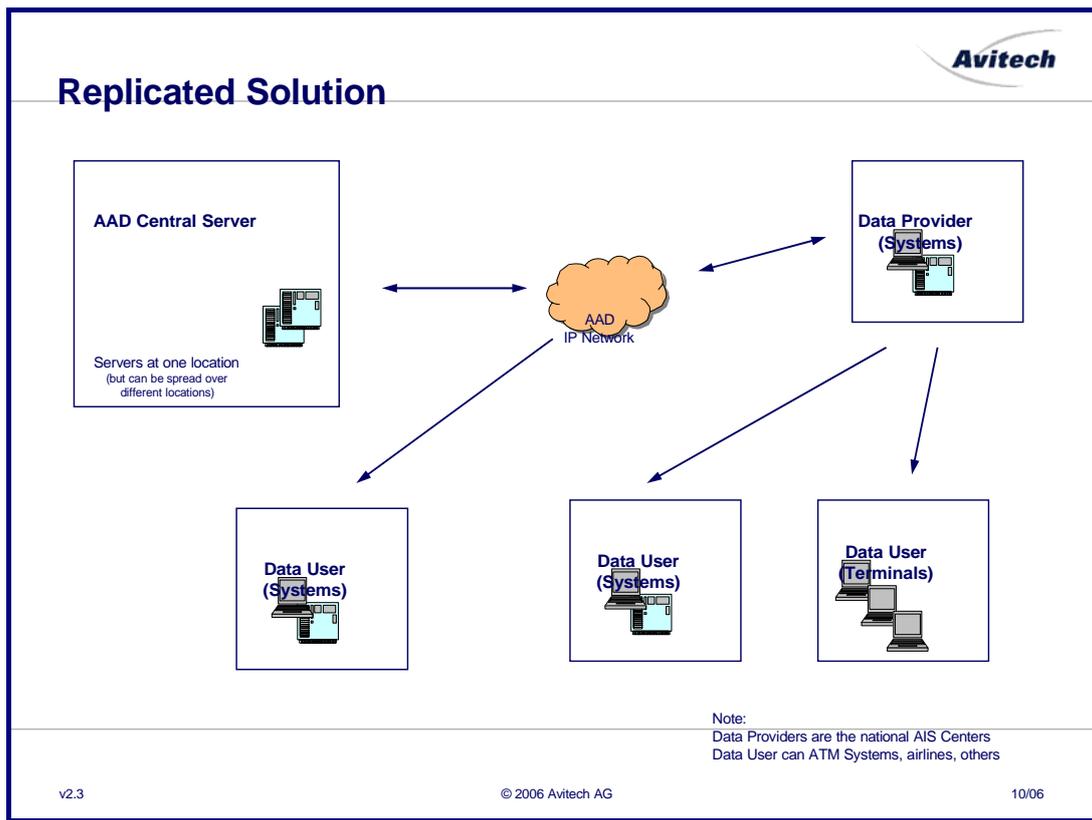


Figure 6-2: Replicated Solution

6.3 Distributed Solution

A distributed solution does not need a central system or service and therefore also not a legal entity to operate a new centre. All Data Provider systems exchange their data with each other data provider. This means that a complete database is available at all location of all Data Providers. This solution gives a high degree of availability.

A principle outline of such a solution is shown in Figure 2-1.

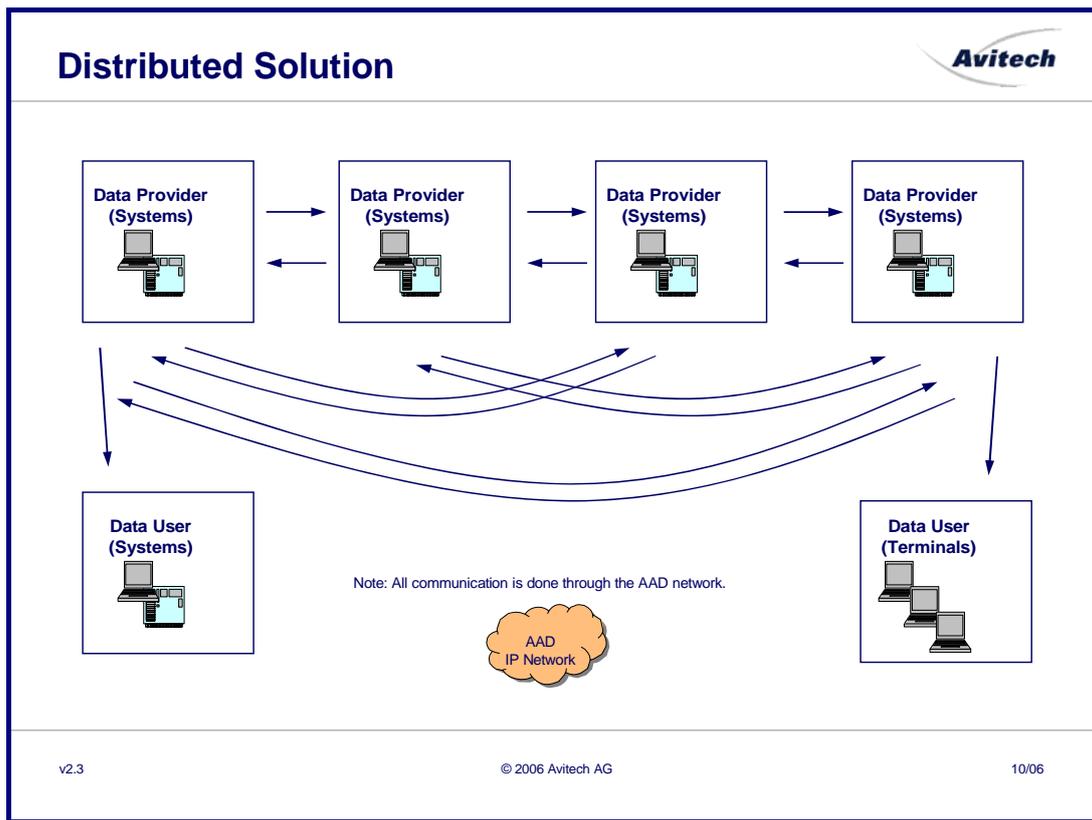


Figure 6-3: Distributed Solution

7 Interfaces

The internal and external interfaces of the AAD are critical areas as for each interface of each IT system because two different worlds interfacing each other. AIXM has more or less the data contents and data structure described but no error handling and no physical implementation. EAD has its own physical implementation which is not easy to handle for system to system connection. Therefore the internal and external interfaces of AAD shall be identified, the data contents and structure shall be agreed and physical implementation and error handling shall be explored. Possibly the following interfaces are candidate interfaces for AAD:

1. Man – Machine,
2. AAD Terminal – AAD System,
3. AAD System – AAD System,
4. AAD System – 3rd Party System.

8 Communication

Communication capabilities are the pre-requisite for any interoperability between national AIS systems, the AAD, AAD Terminals, and AIS databases in other ICAO Regions. The AFTN Network is not usable for the purpose of the AAD, except for NOTAM reception and distribution. Therefore the study group should consider exploring the capabilities of the AFISNET, CAFSAT, SADC, and NAFISAT.

9 Training

To have the right number of staff available which also has the right know-how and skills is the key for the whole undertaking of AAD. Therefore recruitment, staff selection, ab initio training, specialised training, and follow up-training in the following areas are essential:

Aeronautical Conceptual Model Data Contents,
Aeronautical Exchange Model principles and Contents,
Electronic AIP advantages and publication,
Electronic Charting advantages and publication,
Generic approaches to publish AIS products,
Difference between product centred approach and data centred approach,
Aeronautical Data Chain Modelling,
Operational Concept Description Methodology.

This list is not complete and shall only trigger the issue of training. Training needs to be stated well in advance before AAD is implemented.

10 Migration

The migration from the existing environment to the use of AAD shall also be studied and an outline concept needs to be part of the study. At least the following should be studied:

- Data conversion concepts,
- Data conversion plan and schedule,
- Data migration concepts,
- Data migration plan and schedule,
- Data migration in cases of version changes of the AIXM (backward compatibility).

11 Schedule

The author of this working paper believes that in principle three schedules exist:

1. The schedule for the study,
2. The schedule for the Call for Tender (if any) – until contract signature,
3. The schedule for implementation.

An overall schedule should be prepared by the study group as well. The basic mile stones until contract signature could be the ones as shown in Figure 11-1.

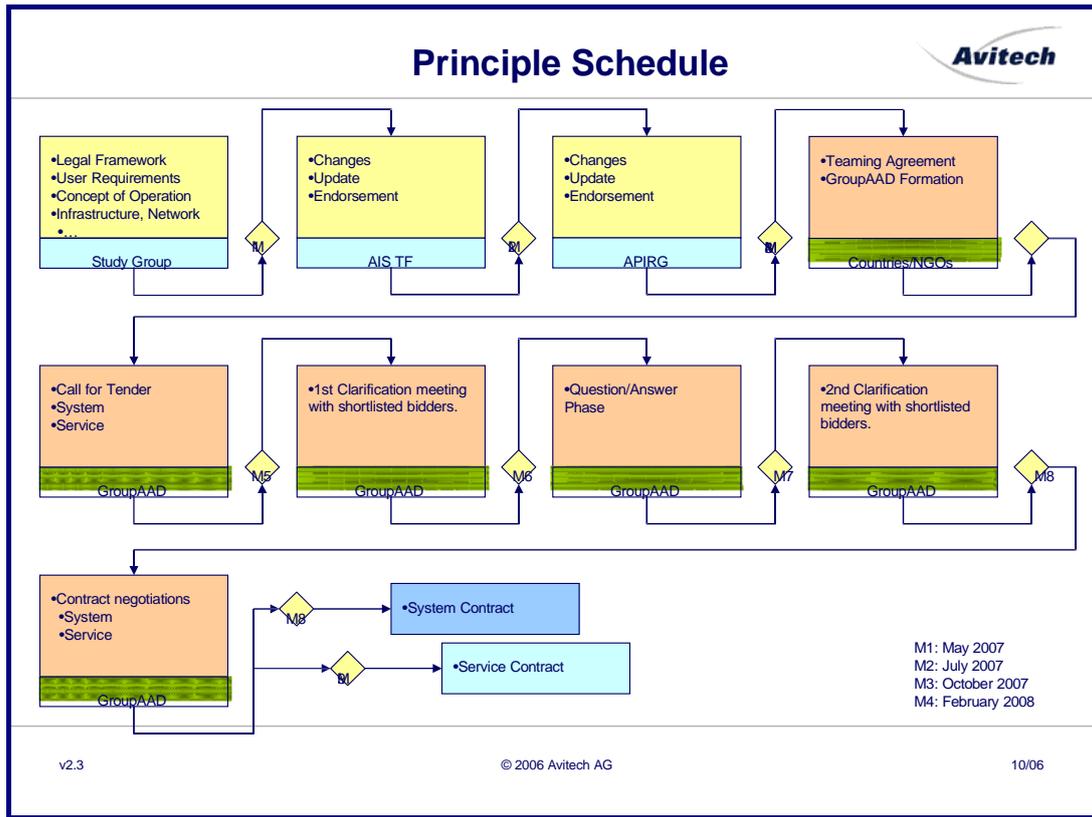


Figure 11-1: Principle Schedule

11.1 Study Schedule

It could be assumed that the study group needs about three to four meetings to finalise the study and to come up with one, two or three different solutions for the AAD implementation. The group should probably split related to the different areas which need to be explored. Those are:

1. Legal framework of the operation of AAD, rules for joining the operations group (working title GroupAAD),
2. Requirements (phases),
3. Operational Concept and Operation (including organisational structure, staffing and training),
4. Infrastructure and network.
5. Call for tender preparation rules.

The group members need close correspondence between the meetings and should collaborate through a common website.

11.2 Call for Tender Preparation and Call for Tender

The Call for Tender preparation needs to work with the following subjects. This is an indication only:

1. Gathering the applicable documentation and plans,
2. Gathering the real user requirements,
3. Writing the Concept of Operation (including organisational structure, staffing and training),
4. Writing the Project Execution Principles,
5. Description of the EAD Concept,

6. Defining the Operational Requirements,
7. Defining the Technical Requirements,
8. Defining the Managerial Requirements (contract execution, safety requirement and security requirements),
9. Defining the Requirements of the AAD Service Provision (basis for the Service Contract),

12 Budgets for Implementation

Ideally the implementation of the AAD would be done through financing from the overflight charges and the operation of the AAD done by service charges which the user pay to GroupAAD. This business model needs to be explored. Important is to identify what price would the users pay for a specific services.

13 Conclusions

This working paper covers some initial thought about the subject of the agenda item. The most important issue and the biggest difference what the author of this working paper sees is that a legal entity for AAD needs to be identified or formed. In Europe the Eurocontrol Organisation was fully functioning as legal entity and could make a Call for Tender for EAD.

14 Recommendation

The study group meeting is invited to note the information presented in this paper.

– END –

PRESENTED BY THE GROUP EAD

GroupEAD views for an AFI Region AIS Centralized DB

1. Background.

- In April 1.997 the EUROCONTROL Member States decided the setting up of an European AIS Database (EAD).
- In April 2.001 a Decision of EUROCONTROL Provisional Council was adopted for letting a contract for the EAD Service with GroupEAD Europe S.L.
- GroupEAD Europe S.L. is currently the Service Provider company providing the service of the European AIS DB (EAD) on behalf of EUROCONTROL being directly involved on its development phase and in charged of starting up its operations in 2003

- With such experience behind, it is a great pleasure for GroupEAD Europe S.L. to have the opportunity of proposing a realistic approach for an the AFI Region AIS Database.
- The proposals made are based in a real experience of the service provision on behalf of EUROCONTROL of a very similar approach already implemented and operating in Europe since 2003.
- The knowledge of the AFI Region of the shareholders of GroupEAD has been taken into account at the time of approaching this challenging AFI experience.

2. Who is GroupEAD Europe S.L.

- GroupEAD Europe S.L. is a multinational society that was **founded on 1 April 2001** as Sociedad Limitada (S.L.) in Madrid, Spain.
- Founding members:

- **Spanish** ANSP **Aena** (36%),
- **German** ANSP **DFS** (36%),
- **Austrian** industry **Frequentis** (28%).

GroupEAD Europe S.L. is a flexible Organization, working under the highest quality , safety and security standards with high recognition in the European aviation community.

3. The APIRG Recommendations

- Inconsistent aeronautical information inside of AFI region.
- Different levels of data quality depending on the states investment capabilities and resources.
- Lack of standardisation in procedures.
- Lack of interoperability between the different existing AIS systems.
- Shortcomings in timely distribution of information: possibly compromising safety and/or efficiency of air navigation.
- Duplicated processes and investments: high maintenance (costs) for all those involved and lack of a better use of the money invested.
- Lack of qualified AIS personnel.
- AIS Automation Strategy not completed.
- Need for AIS quality management system.

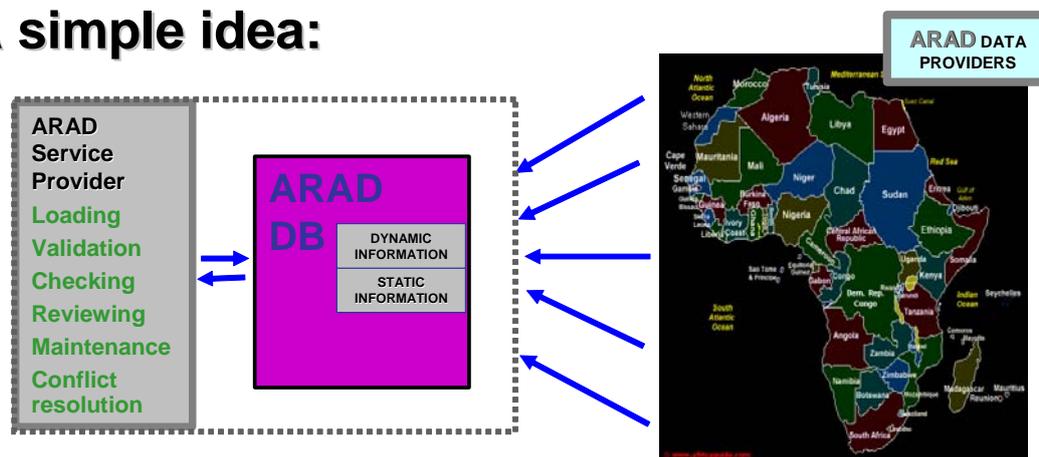
4. The concept for ARAD

.With the aim of improving and harmonising procedures and delivery of aeronautical data in Africa, APIRG Plan has recommended in their 2005 General Meeting to **establish one central AFI Region AIS database (ARAD)**.

- This centralised database should provide clients with **validated** dynamic and static aeronautical data through high level standards.
- The objective is the delivery of high-quality aeronautical information to the **African Aviation Community** and **their national Air Traffic Services Providers**.
- The ARAD must contribute to safety, economics, uniformity and quality with independence of the situation and means of each country.
- The ARAD must perform **coherence checking of the data** and then making a consistent view available to the Users of the Data.
- At all times, **every African State would maintain intellectual property rights** and would have control of the data for which they are responsible.
- The **ARAD must conform** to the ICAO and AFI Region **international standards** and must fully support the production of information following the AIRAC cycles.
- The ARAD must accommodate a **modular interface** to the database and related applications, **allowing clients to implement** those applications complementary to their functions (**non captive service provision**).

The concept for ARAD

A simple idea:



One container in which every National AIS Provider is able to load their own data. Until this would be feasible, the ARAD Service Provider could load the data on behalf of those non migrated countries.

The concept for ARAD

Soft transition from the current model:

A Migration Plan to be designed in order to allow every state to comply with their own interests, labour policies and strategic planning for AIS services.

No dramatic changes, allowing the countries to save money avoiding duplication of investments in systems, as well as on human resources but not with drastic reduction measures through the transformation of technical positions.

The concept for ARAD

Every country is welcome:

→ The more countries that share the same system and their Aeronautical Information Data the.....

- Quality and
- Safety will increase and the
- Cost per country will decrease

Therefore new participants will be always welcome !



DP ↓ ↑ DU



The concept for ARAD

Every country is welcome:

A Migration Plan to be designed in order to allow every state to comply with their own interests, labour policies and strategic planning for AIS services.

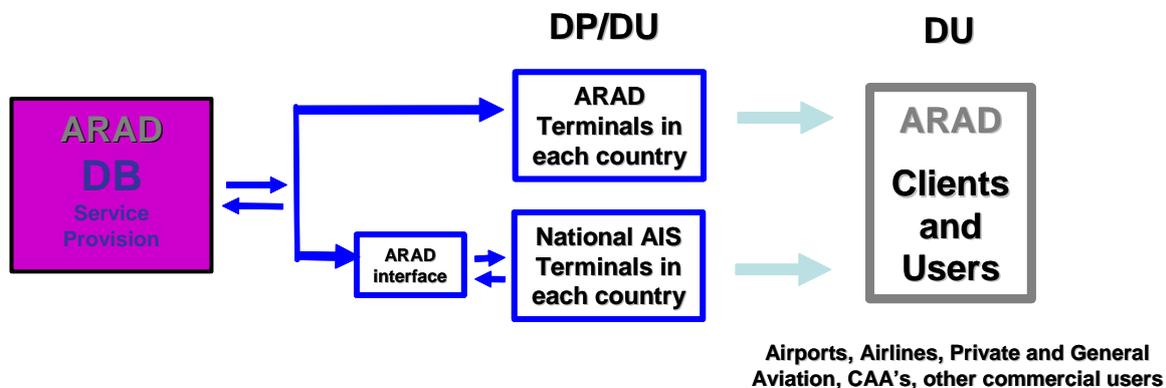
ARAD
implementation
on going

Every country is welcome to the ARAD project, but the migration of a country to such new project always would be done in the appropriate time and not before, but **without any distortion in the ARAD implementation** and service provision.

APPENDIX-C-5

The concept for ARAD

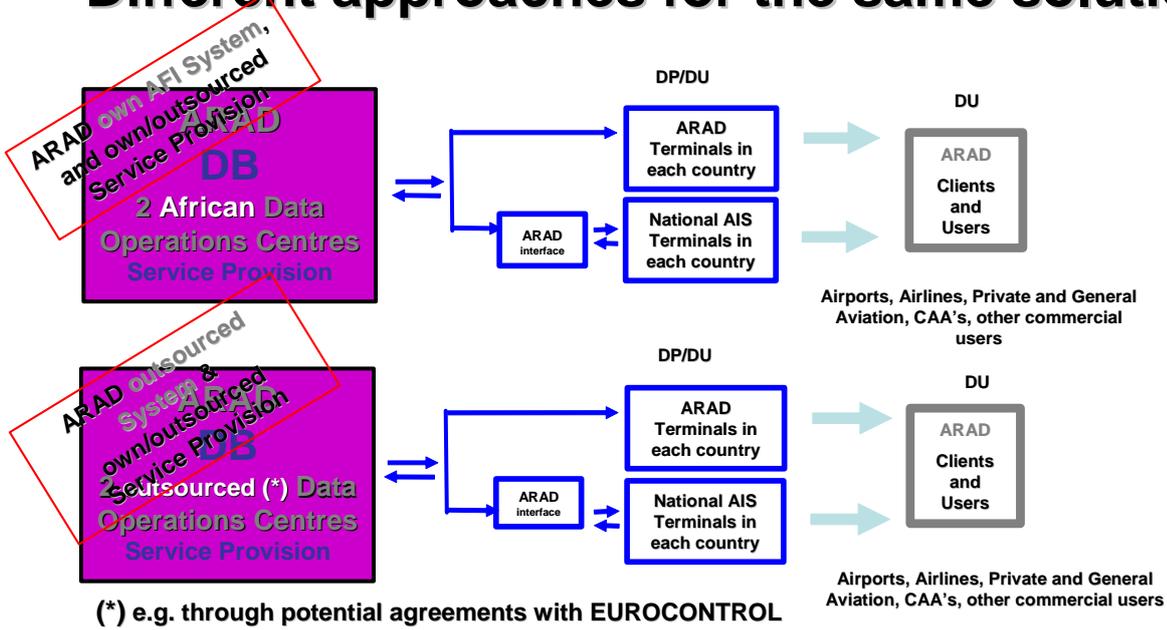
Different possibilities to be combined:



The ARAD implementation and service provision, can be done following different approaches and using the ARAD terminals and/or National AIS terminals (**full flexibility of the concept**) for DU and DP.

The concept for ARAD

Different approaches for the same solution:



The concept for ARAD

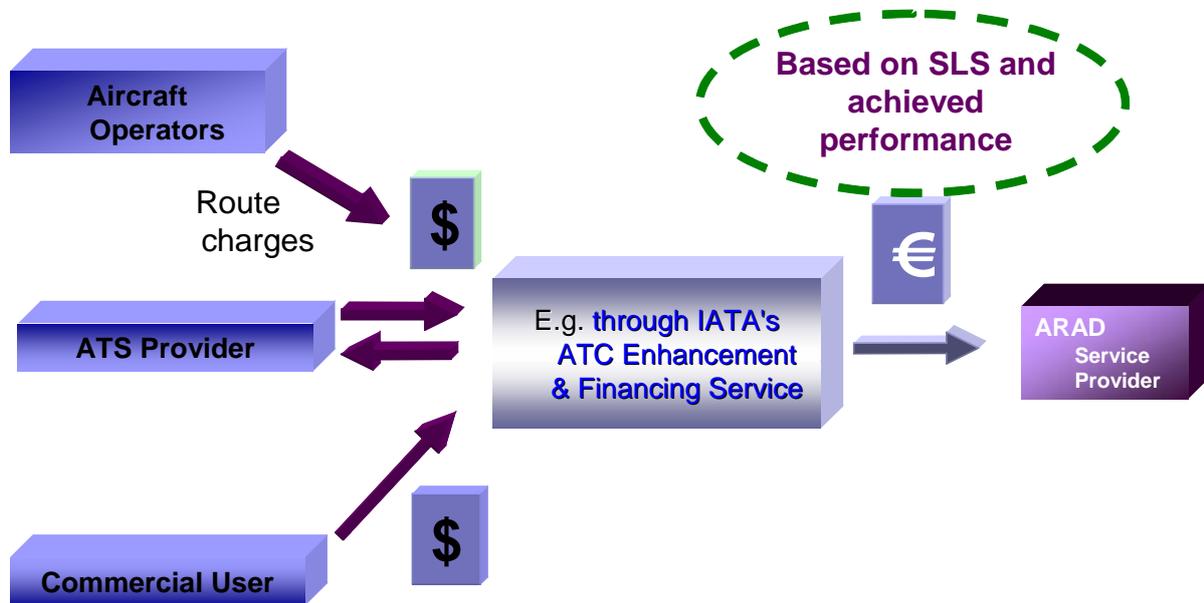
Conclusions:

- **Copy right and property of the Aeronautical data remains belonging to the AFI States.**
- **Full flexibility providing different design solutions:**
 - Centralized / decentralized solution up to APIRG Members
 - Own AFI Operation sites for the ARAD operation & own/outsourced Service Provision.
 - Operation in remote from Europe (e.g. through potential agreements with EUROCONTROL) using ARAD terminals by the different AFI ANSP's (for Data Users and Data Providers is also contemplated as a cheaper and faster way of implementation of the ARAD service).
- **Speed of migration not a constraint for an early implementation of the project:**
 - Speed of implementation not affected by the different investment capabilities of the states.
 - Data provider migration plan adapted to the different needs and capabilities of the different African states.
 - ARAD Service Provider acting on behalf of the states, while they are ready for migration or in the case that data provision should not be of the interest of the state.

APPENDIX-C-8

5. A possible financial model

The ARAD financial model suggested



6. Summary of conclusions: Benefits of ARAD concept

Benefits of using ARAD (1)

- Safety enhancement.
- Quality improvement.
- Harmonization on the safety, security and quality of the information provided with independence of the place in which the information is gathered (same for all AFI).
- Harmonization of AIS procedures in the AFI region.
- Cost reduction: Common investment, reducing the risks and avoiding duplication of expenses.
- Zero risk and uncertainty choosing this solution: reliable and tested solution successfully implemented by EUROCONTROL in the ECAC area.

Benefits of using ARAD (2)

- Data chain controlled.
- Data integrity improvement and assurance.
- Data validated against AIXM/SDO rules.
- Short time needed for implementation of the basics.
- Full flexibility in the model selected as well as in the speed of implementation providing direct benefits since the very early beginning.
- Common maintenance (reduction of costs).
- COTS products for AIP and Charting compatible for National AIP and charting production using ARAD

Benefits of using ARAD (3)

- **Early implementation: in order to reduce the initial set up costs, an early implementation of the ARAD project could be considered using the possibility of starting operations in remote from the EUROCONTROL EAD facilities (through potential agreements) and in a second step setting up all African infrastructures for the service, should be this the final idea selected.**
- **This would allow to minimize the impact of the ARAD implementation in the en/route charges, as well as the financial contributions.**
- **As it is a concept already tested and in full operations, it can be implemented in a short period of time.**

Thank you

"The AIM Strategy and the European AIS Database"***Agenda Item 2******The Current Situation****Jean-Michel GALAIS**Expert of Aeronautical Information Management (AIM)**EUROCONTROL*Passenger Context

- **Flight Cancelled ?**
- **Flight Delayed ?**
- **Long queues in airports ?**
- **Luggage do not arrive ?**

ATM in Europe

➔ **European Concept under development for more than a decade.**

➔ **Two driving forces:**

➔ **Harmonisation and standardisation**

➔ **Distribution of workload**

ATM Harmonisation in Europe

➔ **EUROCONTROL**

➔ **CRCO**

➔ **Maastricht UAC**

➔ **CFMU**

➔ **EATCHIP**

➔ **EATM**

➔ **EAD**

Distribution of workload

➔ **CDM**

➔ **Service Oriented Infrastructure**

➔ **SWIM**

➔ **Situational Awareness**

Aeronautical Information

For Air Traffic Management, the right Information must be available at the right time at the right location.

AISs are required to ensure the flow of aeronautical information necessary for the safety, regularity and efficiency of international air navigation within the area of responsibility of a State

safety, regularity and efficiency of

Network-centric approach

Three key activities .

SWIM

System-wide

Information

Management

OATA

Overall ATM/CNS Target Architecture

AIM

Aeronautical Information Management

One completed implemented programme

**EAD
European AIS Database**

The cost effectiveness of AIS operations, the quality of aeronautical data and the accessibility and availability of such data can be significantly improved through automation and centralisation.

Aeronautical Information

The cost effectiveness of AIS operations, the quality of aeronautical data and the accessibility and availability of such data can be significantly improved through automation and centralisation.



APPENDIX

EAD is for AIS Providers (43)

- **Creation of NOTAM (INO)**
- **NOTAM Distribution (via AFTN)**
- **Library of AIP, SUPP and Amendment (PAMS)**
- **Production of AIP (eAIP)**
- **CHARTS**

EAD is for AIS Data Users (19000)

- **Pre-Flight Information Bulletins (PIB)**
- **Consultation of CHARTS**
- **Consultation of Library of AIP, SUPP and Amendment (PAMS)**
- **Query of the Static Data Operation (SDO)**
- **Subscription to NOTAM**

Greatest challenge



Objective to develop & agree Universal rules for
“Intranet” of ATM

**AIM
Strategy**

Global cooperation clearly required

Global cooperation



There is recognition of need for common standards



To Note for this Workshop

- **Importance of XML**
- **Importance of standards (AIXM, AMXM,...)**
- **The three pillars for the EAD Service are**
 - **Operations**
 - **IT**
 - **Network**
- **Examples of Canada, Japan, Middle East**

"It isn't always easy, but collaboration is almost always worth the effort"

FIRST MEETING OF AFI REGION STUDY ON THE ESTABLISHMENT OF A CENTRALIZED AFI REGION AIS DATA BASE
(Johannesburg, South Africa, 08 -10 November 2006)

Title : ASECNA AERONAUTICAL DATA BASE PROJECT (17 AFI countries)

INFORMATION NOTE PRESENTED By ASECNA

Summary

This note has for object to make known to the International Community and particularly to our colleagues of the AFI Region, the ASECNA project to implement an Aeronautical Data Base (AADB) in order to improve the quality of his AIS supply.

I - INTRODUCTION

Taking in account the recommendations of several ICAO meetings (Rec1.1/1 AIS/MAP meeting in 1998 - Rec 1/8 of the eleventh Air Navigation Conference in 2003, etc.), ASECNA is planning in the short and medium terms to implement an Aeronautical Data base for the needs of its Aeronautical information service with the possibility to become an important pole for AFI region AIS data base.

This project is yet included in ASECNA transition plan 2007/2008 .

II - OBJECTIVES OF ASECNA AERONAUTICAL DATA BASE (AADB)

The main objectives of the AADB are the following ones:

1 - Have a real-time ***single, reliable, secure and operational*** data base for the users and suppliers of the aeronautical information supplied by ASECNA.

2 - Have ***a data base of reference placed upstream*** in the production of aeronautical information integrated system.

3 - Allow ***a coherent automation in aeronautical information integrated system providing.***

4 - ***Exchange suitably and formally with of the other AIS data bases.***

III - DESIGNING AND OPERATION

ASECNA Aeronautical Data Base is going to be made with AICM/AIXM model in order to cover all type of data and for international exchange.

Data are about :

- aerodromes and space aeronautical data in ASECNA area (17 AFI countries,
- all aeronautical data from FIR closer to ASECNA space published by concerned states .

The Data base will work in net work with AIS providers and users.

Some using rights will be defined according to the data base user to permit the different possible actions: data input, consultation, extraction, etc.

Data base head master will have all rights.

IV - DATA BASE AND AUTOMATION

Data base will be an instrument for a deeper automation of AIS.

Computer programs will allow the automation of all actions linking with AIS element generation and their providing to the users.

V - CONCLUSION

The meeting is invited to take information about ASECNA AIS data base project which could be opened to other AFI countries.

First meeting of AFI Study Group on the Establishment of a centralized AFI Region AIS Data Base

ASECNA AERONAUTICAL DATA BASE
(AADB)

PRESENTATION SCHEDULE

- I – ZOOM ON ASECNA
- II – OBJECTIVES OF ASECNA DATA BASE
- III – DESIGNING AND OPERATION
- IV – DATA BASE AND AUTOMATION
- V – OPERATING MAP
- VI – CONCLUSION

On behalf of state members , ASECNA provides :

- Air Traffic Control,
- Aeronautical meteorology
- Fire and rescue service
- Navigation Aids maintenance,
- Aeronautical Information Service ,etc.

In AIS domain ASECNA has :

- a single AIP in ICAO format for the 17 countries published in paper and available on the web (www.ais-asecna.org)
- 3 NOF (Dakar , Brazzaville and Antananarivo).

In order to improve its data reliability and to automate AIS activities, ASECNA decided to implement an aeronautical Data Base as it's recommended by ICAO meetings.

II – OBJECTIVES OF ASECNA DATA BASE

- The main objectives of the AADB are the following ones:
- 1 - Have a real-time *single, reliable, secure and operational* data base for the users and suppliers of the aeronautical information supplied by ASECNA.
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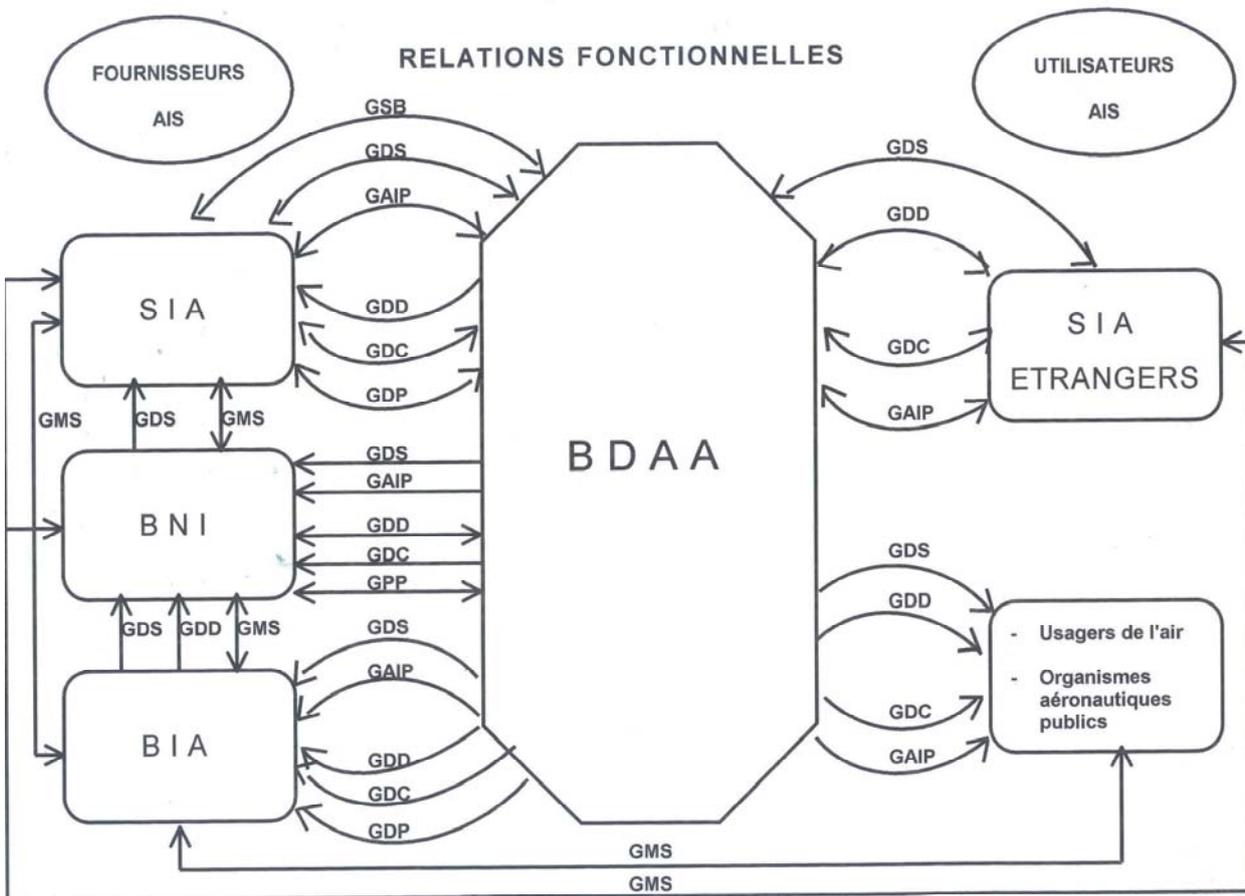
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V – OPERATING MAP



VI – CONCLUSION

The meeting is invited to take information about ASECNA AIS Data Base project which could be opened to other AFI countries.

ASECNA ALWAYS READY TO IMPROVE QUALITY OF SERVICE

THANK YOU FOR YOUR ATTENTION !!!

**KENYA PRESENTATION ON
THE AFI REGION
CENTRALIZED AIS DATABASE
INTRODUCTION**

In recognizing the global nature of Aeronautical Information provision and its exchange ICAO called for an active, coordinated global approach to the evolution of AIS, thus the ICAO 11th Air Navigation Conference held in 2003 in Montreal- Canada, recommended (Rec. 1/8 Global Aeronautical Information Management and data exchange model) that ICAO:

1. When developing ATM requirements, define corresponding requirements for safe and efficient global Aeronautical Information Management that would support a digital real- time, accredited and secure Aeronautical Information environment and;
2. Adopt a common Aeronautical Information Exchange model, taking into account operational systems or concepts of data interchange and their mutual interoperability.

Consequently the APIRG/15 meeting held in Nairobi, 26-30 Sept 2005 developed Conclusion 15/43 which states inter alia:-

“That IATA in Cooperation with ICAO and Air Navigation Services Providers in the AFI Region, study the establishment of a centralized AFI AIS Database similar to the European Aeronautical Database (EAD) and forward it to the AFI AIS/ MAP Task Force for its consideration.”

CURRENT SITUATION IN AFRICA

Currently, each AFI state processes its Aeronautical Data manually and mainly being paper-based, with a few exceptions having Automated AIS Systems.

Therefore for improved Aeronautical Data quality, there is need for standardized procedures and harmonized systems- to ensure Data Integrity, Accuracy, Timeliness and Availability.

KENYA PROPOSALS TO IMPROVE CURRENT SITUATION

Kenya Supports the ICAO /APIRG 15 Concept of an AFI Centralized AIS Database.

Objective of the AFI Region AIS Centralized Database:-

- To deliver high- quality Aeronautical Information to the Aviation Community.
- Reduce safety risks posed by the publication and Distribution of Aeronautical Information by improved data quality, increasing Availability and accessibility of AIS Data.
- Reduce cost of Aeronautical Information Services.

KENYA PROPOSALS TO IMPROVE CURRENT SITUATION

The concept paper should cover the following

KENYA PROPOSALS TO IMPROVE CURRENT SITUATION

1. Institutional Framework

- a. Air Navigation Service providers should take the leading role with the assistance of ICAO.
- b. All the AFI Region member states will be the participating states and their rights will be defined.
- c. Participating states to be involved in all stages of the implementation of the project and operation of the Database.
- d. Establish a Standing Committee composed of all DG's

KENYA PROPOSALS TO IMPROVE CURRENT SITUATION

1. Institutional Framework (Cont.)

- e. Empower the Task Force to manage the process from the beginning to the establishment of the Data Base.
- f. sourced from participating states to manage the Data-base.
- g. A contractor should be competitively sourced to establish the Database.
- h. Maintenance to be contracted out only when necessary.

KENYA PROPOSALS TO IMPROVE CURRENT SITUATION

2. Control and Ownership

The control and ownership should be vested to the participating states. Management level to be involved in the approval of every stage through the Standing Committee of the DG's or a Sub-Committee appointed by the DG's. The states AIS to be involved in the acceptance of the system and reviewing of the documents.

KENYA PROPOSALS TO IMPROVE CURRENT SITUATION

3. Financing

- a. Feasibility Study – Should be financed by participating states or through grant
- b. Project for establishment of DataBase – Should be financed by participating states or through borrowing.
- c. Maintenance and Operations –Financing through cost recovery by states,fees for access to data to those not paying ANS charges.

KENYA PROPOSALS TO IMPROVE CURRENT SITUATION

4. Procurement process

- a. The participating states should ensure that the procurement process is done in a transparent manner acceptable to the participating states.
- b. Develop procurement procedures acceptable to participating member states.
- c. Task force to procure, consultant to do the feasibility study, consultant to establish the data base and source competitively staff for the Technical Team from participating member states.

- d. The Technical Team will competitively source for the system maintenance.

KENYA PROPOSALS TO IMPROVE CURRENT SITUATION

5. Location

The Standing Committee to propose location subject to a criteria being set to determine location possibly on requisite infrastructure currently available.

KENYA PROPOSALS TO IMPROVE CURRENT SITUATION

6. Cost recovery

The component of cost of the AFI Regional AIS Data Base for each country should be incorporated in their ANSP charges. A fee to be applied for access to those who do not pay ANSP charges.

CONCLUSION

All AFI Region states be encouraged to fully participate in the Development, implementation and operations of the AFI Region Centralized AIS Data Base for maximum benefits to be realized.

END

Establishment of a harmonized, integrated and automated AIS Database(s) for AFI region

Presented by IATA

Most common problems AIS users experience:

- ↗ Data quality reflects on safety – published information is incorrect; text cannot be understood, updates are not available...;
- ↗ Information considered to be of operational significance is not published (lack of coordination between aeronautical information services and aerodrome authorities);
- ↗ Accessibility - user's unawareness of published information.
- ↗ One Global Aeronautical Information Service
- ↗ Requirements
 - ↗ Safety / Quality
 - ↗ Efficiency / Accessibility

Centralized AFI AIS data base

- First regional step towards GLOBAL eAIS

Defining the product

- ↗ E-AIP
- ↗ E-CHARTS
- ↗ E-INSTRUMENT AND APPROACH PROCEDURES
- ↗ ROUTES
- ↗ AIRSPACE
- ↗ USER SELECTABLE DATA BLOCKS

Required properties of the AFI Database

- ↗ Compatible with other Regions
- ↗ Common data exchange format
- ↗ Comprehensive, quality assured and up-to-date
- ↗ Searchable
- ↗ Variable output formats
- ↗ User friendly interfaces
- ↗ AFFORDABLE

“User-pays” principal !

The strongest drivers for change

- ↗ Increasing system capacity whereby safety will be improved through harmonization and de-fragmentation
- ↗ Ensuring system reliability via new technologies that will maximize the performance of the aircraft that in turn demand high quality data

APPENDIX-G-2

- Lowering cost per flight by utilizing new infrastructure tools, software and technology and share harmonized high quality data

Presented by ATNS

CENTRALISED AFI REGIONAL AIS DATA BASE

- Mandate.
- Purpose & Scope.
- Current Situation.
- ATM Community Requirements.
- Prerequisites for Automation.

PURPOSE:

Develop a cohesive air navigation plan concerning AIS automation in the AFI Region.

SCOPE:

“that IATA, in cooperation with ICAO and Air Navigation Service Providers in the AFI Region, Study the establishment of a centralized AFI AIS Data Base similar to the European Aeronautical database and forward it to the AFI AIS/MAP Task Force for its consideration.”

CURRENT SITUATION

- Automated.
- Semi-automated.
- Manual.
- ICAO GIS.
- ICAO AFI Aeronautical Database.
- AFI Facilities and Services Implementation Document (FASID).
- European Aeronautical Database.
- Databases operated by various States.

ATM COMMUNITY REQUIREMENTS

- Timely data/information.
- Quality assured data/information.
- Harmonisation and interoperability.
- Seamless data/information exchange.
- Single-point access to data/information.

PREREQUISITES FOR AUTOMATION

- Global aeronautical information conceptual model.
- Global aeronautical information exchange model.
- Agreement by States to support centralised database(s).
- Harmonisation and interoperability.
- Research the availability of IAIP.
- Requirement specification.