

INTERNATIONAL CIVIL AVIATION ORGANIZATION



**A REPORT OF THE THIRD MEETING OF THE AFI REGION STUDY GROUP ON THE  
ESTABLISHMENT OF A CENTRALIZED AFI REGION AIS DATA BASE (AFI –  
CAD/STUDY GROUP/3)**

**(Dakar, Senegal, 7-9 OCTOBER 2008)**

**Prepared by the Secretary of the AFI – CAD/Study Group  
October 2008**

**Conclusion 15/43 of the APIRG/15 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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- Agenda Item 4:** Any Other Business.

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# REPORT

## PART I - HISTORY OF THE MEETING

### 1. Organization/Duration

AFI Regional Study Group on the Establishment of a Centralized AFI Region AIS Data Base (AFI – CAD) held in Dakar, Senegal, 7-9 October 2008.

### 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, served as the Secretary of the meeting.

2.2 Mr. Peter Rudolph the ICAO designated consultant from Germany also acted as chairperson and Rapporteur of the meeting.

2.3 The meeting was opened by Mr. A. O. Guitteye Regional Director ICAO WACAF Office. He highlighted that this meeting is a follow-up to the adoption of the framework and guidance material for the AFI-CAD by the APIRG 16th meeting (APIRG Conc. 16/41 refers), the main objective of this technical meeting is to provide the required forum for the AFI-CAD study Group members to work and provide guidance to the ICAO designated specialist and financial analyst-expert tasked with the development of the AFI-CAD business/financial model and the URS. The Study Group, in collaboration with these Experts, is expected to submit the results of the project to the APIRG/17 Meeting for consideration endorsement.

2.4 Nevertheless, the AFI-RAN Meeting will be informed about the results of this meeting.

### 3. Attendance

3.1 The meeting was attended by 38 participants from 12 States and 6 International Organizations namely; ASECNA, IATA, GROUP EAD, AVITECH AG, FREQUENTIS AG and ROBERTS FIR. The list of participants is given at **Appendix B** to this draft meeting report.

### 4. Working Language

4.1 The meeting was conducted in the English language and documentation was issued in the same language.

### 5. Agenda

5.1 The meeting adopted the following Agenda :

**Agenda Item 1:** Review of the Proposal for the development of the AFI-CAD User Requirement Specifications (URS) derived from the EUROCONTROL EAD (URS) as per APIRG Conc. 16/44.

**Agenda Item 2:** Review of the Proposal for the development of the AFI-CAD Business/Financial Model based on the elements listed in Recommendation 10 of the adopted AFI-CAD Guidance Material for a Business/Financial Plan.

**Agenda Item 3:** The elaboration of timelines and Quality Management Systems (QMS) for the development and implementation of the AFI-CAD System and Services.

**Agenda Item 4:** Any Other Business.

## **PART II      REPORT ON AGENDA ITEMS**

### **1. Report on Agenda Item 1**

1.1            Under this Agenda Item, the meeting reviewed DP/2, DP/3, DP/4 DP/5 and DP/6 in relation to Agenda Item 1. The meeting noted that Conc.16/44 of the APIRG/16 adopted the Eurocontrol EAD URS on a basis for the AFI CAD URS taking into account the AFI Requirements.

1.2            The meeting also noted that User Requirements Documents may become an Appendix to the Business Plan. The meeting then agreed that the AFI-CAD Guidance Material be amended to include APIRG/16 Conc. 16/44 as follows:

***That the Eurocontrol EAD URS be adopted as a basis for AFI-CAD URS taking into account the AFI requirements as per APIRG//16 Conc.16/44.***

1.3            The meeting then concluded as follows :

#### **Conclusion 3/1- Compilation of the URS Document :**

That it is therefore necessary to compile the user and other requirements in one document based on the input from:

- *the Framework and Guidance Material of the AFI-CAD, as per Appendix H of the APIRG/16 Report,*
- *the EUROCONTROL URS Documents (General, Common Services, Static Data, NOTAM, AIP, Charting),*
- *the AFI States based on a filled Questionnaires (cf. DP/04) to include further AFI Requirements.*

1.4            The meeting then noted that the AFI-CAD initiative is a very advance approach to fulfil the airspace user needs in aeronautical data , aeronautical obstacle and terrain data requirements. It will build to a large extent, the basis for and assist the implementation and usage of the Global Satellite Navigation System technology on the African continent. Therefore the ICAO ATM Operational Concept Doc. 9854-AN/458 1<sup>st</sup> Edition 2005 and ICAO Global Air Navigation Plan Doc. 9750-AN/963 3<sup>rd</sup> Edition 2007 should be taken into account.

1.5            The meeting then noted that for its far reaching influence, the AFI-CAD URS needs to take into account that the ICAO ATM Operational Concept, Doc. 9854 views aeronautical information with its temporality, intelligent information management, with unlimited access, limited bandwidth, and optimized transfer of information with fully electronic and network environment with printouts used only as needed for reference, temporarily memorization and visualization support to human operators. Doc. 9854 para . 2.9.12-2.9.16

1.6            The meeting then noted that the AFI CAD URS shall also take into account that the ICAO ATM Operational Concept views the seven ATM concept components as follows :

- a)      Airspace organization and management (AOM),
- b)      Demand/capacity balancing (DCB),
- c)      Aerodrome operation (AO),
- d)      Traffic synchronization (TS),
- e)      Conflict management (CM),

- f)       Airspace user operations (AUO),
- g)       ATM service delivery management (ATM SDM).

1.7           The AFI-CAD will contribute to all of these new components which show that the aeronautical information in the form of aeronautical data, aeronautical obstacle data, terrain data and others (e.g. NOTAM) is a key enabler for the new ATM concept. It should be carefully analyzed during the preparation of the Requirements Document that the new requirements stemming from this concept are reflected in the Requirements Document.

1.8           The ICAO Global Plan Initiatives (GPIs) of the 3rd Edition of the Global Air Navigation Plan Doc. 9750 shall also be taken into account namely: GPI-18 “Aeronautical Information”, GPI-20 “WGS-84” GPI- 5, “Performance based navigation” , GPI- 9 “Standard awareness” , GPI-11 “RNP RNAV SIDs and STARs” and GPI- 21 “Navigation systems” to ensure that the scope of all the above-mentioned GPIs “are made available in real-time quality assured electronic information (aeronautical, terrain and obstacle) by all States”.

1.9           It is noted that GPIs 18 and 20 address also the quality of aeronautical information as made available by data originators and to be maintained during its process through national AIS in the AFI Region and AFI CAD to end users. Therefore the whole electronic uninterrupted aeronautical data chain shall be addressed in the Requirements Document for the AFI CAD. The meeting noted that GPI-18 “Aeronautical Information” is the only GPI which provides input to all seven ATM concept components, and this underlines the importance of Aeronautical Information and the set-up of the AFI CAD project.

1.10          The meeting noted that all requirements need to be gathered , as user requirements are only one part of the requirements. It was suggested that the requirements collected are finally put together into an Appendix to the AFI-CAD Business Plan . The meeting was then informed that in order to identify the specific AFI Requirements to be taken in to account, when compiling URS , a questionnaire shall be utilized to gather input from the AFI States. The meeting then reviewed and endorsed the outline of an AFI-CAD Requirements Document listed in Appendix-C with an understanding that the Requirements Document would become an Attachment to the Business Plan.

1.11          In order to take account of the AFI Requirements within the adopted Eurocontrol EAD, URS as per APIRG/16 Conc.16/44, the meeting reviewed and endorsed the draft questionnaire outlined under Appendix-D to this report. It was noted that the ICAO Regional Offices of Dakar and Nairobi, will gather additional AFI Requirements by distributing the questionnaires to AFI States and user organizations. However, Senegal submitted an update for the draft questionnaire to be distributed to States as requested under DP/4 of Third AFI-CAD meeting.

## 2. Report on Agenda Item 2

### - Review of the Proposal for the development of the AFI-CAD Business/Financial Model based on the elements listed in Recommendation 10 of the adopted AFI-CAD Guidance material for the Business/Financial Plan..

2.1 In this Agenda Item, the meeting reviewed DP/7, DP/8, DP/9, DP/10, DP/11, DP/12 and DP/14. The meeting noted that the Business/Financial Plan Model should be based on the elements listed in Recommendation 10 of the adopted AFI-CAD Guidance material for a Business /Financial Plan. The AFI-CAD framework and Guidance material may also be integrated in the Business Plan as one sample comprehensive Business/Financial plan.

2.2 The meeting noted that all AFI Region States will benefit from the establishment of the AFI-CAD and supported the establishment of a Supervisory Management board to oversee the system. In order to ensure that the AFI-CAD is efficiently and effectively operated, it is critical to have adequate technical and operational personnel with appropriate skills and knowledge achieved through a clearly defined training program within the development and implementation phases.

2.3 In order to prepare a Business/Financial plan based on the elements in the Guidance material, the meeting noted that it is necessary to:

- collect the existing cost data from the AFI States as input;
- collect the existing personal and infrastructure data from the AFI States as input.

2.4 The meeting agreed that this would be done through a questionnaire addressed to States. Following a thorough review of DP/7 on the above Agenda, the meeting agreed that the ICAO designated consultant develops a comprehensive Business plan in accordance with criteria listed in Recommendation 10 of the AFI-CAD Guidance material for a Business Plan as follows.

#### a) **Business Plan:**

- i) **Setup Capital:** The business plan to be adopted must define the total set-up cost and where this capital will be obtained (e.g. 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 e.g. 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 Providers:** The resources that the service provider will bring to the project must be defined and enforced in the service provider's contract. It should not be the sole responsibility of the member states or the Agency to fund this project as it should base on the user/beneficiary principle.

#### b) **Financial Plans:** The financial model for AFI CAD as discussed above also needs to address the following operational consideration.

- i) **Continuous Operational Cost Recovery:** Continuous operational list recovery must be endorsed 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 needs to be assessed to ensure organizational structuring to take advantage of these future benefits.

2.5 During discussions on Institutional issues concerning the above, the meeting noted that all AFI States will benefit from the establishment of the AFI-CAD, and therefore, all State Air Navigation Service Providers should take the leading role with the assistance of the African Union (AU) and coordinated by ICAO.

2.6 The meeting then agreed to add the following Recommendations in the AFI-CAD Guidance Material titled Institutional Framework.

**Institutional Framework:**

- a. *Establishment of a supervisory management board composed of Technical Representatives appointed by the Civil Aviation Directors. They should also be empowered to make decisions.*
- b. *Appoint a Technical team competitively, to participate in the project processes from its initiation stage to completion, so that all members gain an understanding of the project tasks and objectives*
- c. *Appoint Service Provider competitively to develop, implement and manage the AFI-CAD. The Service Provider may also take responsibility for Hardware and Software maintenance.*

2.7 The meeting then adopted the following Recommendation regarding the Procurement Processes to be integrated in the AFI-CAD Framework.

**Rec. 3/1- Procurement Process:**

- *That the Business plan includes the development of procurement procedures acceptable to participating member states.*
- *That the Business Plan includes the development of a logical acquisition system, which would include an efficient and transparent procurement process for implementation of the AFI-CAD*
- *That participating states should ensure that the procurement is done in a transparent manner acceptable to the participating states.*

**Rec. 3/2- Location of AFI-CAD**

*That the Technical Board should determine the centre and sub-centers location subject to the agreed set criteria. There is need to take into account the geographical locations and requisite infrastructure currently available.*

2.8 The meeting then adopted the following Conclusion

**Conclusion 3/2**

*That in order to realize the maximum benefits of the AFI Region centralized AIS Database all AFI Region states need to fully participate in its development, implementation and operations.*

2.9 During the review of the DP/9 presented by the Consultant, the meeting noted that the Business Plan shall be based on the elements listed in Recommendation 10 of the adopted AFI-CAD Guidance Material and noted that it is therefore necessary to :

- a) agree the cost structure for the Business Case Evaluation,
- b) agree on the format of the Business and Financial Plan,



- c) collect the existing cost data from the AFI States as input,
- d) collect the existing personal and infrastructure data from the AFI States as input,
- e) anticipate the future cost data.

2.10 In determination of the cost structure, the meeting agreed that in the first estimation of cost, it is suggested to use the cost structure of the ICAO CNS-ATM Business Case Analysis Tool, which can be extended for use in the transition from AIS to AIM based on Equipment Categories, Equipment types, Equipment cost, and General Additional cost like staffing, Training etc. It was then noted that a more detailed breakdown, of the cost would be done in the second estimation of the cost.

2.11 The meeting then reviewed and endorsed the outline of a Business and Financial Plan under **Appendix-E**.

2.12 During its review of DP/11, on the above subject, presented by the Consultant, the meeting noted that the AFI-CAD, project relates to the ICAO strategic objectives Safety (A2) and Efficiency (D1).

2.13 The meeting noted the need to collect and compile AFI AIS Systems and operations cost from States by means of a Questionnaire. The Questionnaire would be distributed by ICAO Regional Offices to States in order to collect the current AFI AIS Systems and Operations cost.

2.14 The meeting then reviewed and endorsed the Questionnaire listed under **Appendix-F** in order to collect the necessary data on cost of AIS Systems and System Operations from States.

2.15 Following a review of DP/12 presented by Tunisia, the meeting agreed that necessary action should be taken in relation to the implementation of SMS when developing and implementing the AFI-CAD System and Services.

### Report on Agenda Item 3

#### **Elaboration of timelines and Quality Management Systems (QMS) for the development and implementation of the AFI-CAD System and Services.**

3.1 Under this Agenda Item, the meeting reviewed DP/12, DP/13 and 14. The meeting noted that ICAO would synchronize the most suitable timelines for the development and implementation of the AFI-CAD based on the evolution of events.

3.2 The meeting also agreed and supported the decision of the Consultant to integrate elements of QMS Requirements within the Business Plan of the AFI-CAD. The meeting reviewed DP/13 and noted that the AFI-CAD Project, relates to ICAO Strategic objectives 3 Safety (A2) and Efficiency (D1). The meeting noted that the AFI-CAD Framework and Guidance material also covers a Timeline and schedule for setting up and implementing the AFI-CAD as well as processes and phases to establish a proper quality management system during the whole set-up and implementation. It was noted that a careful planning should be undertaken due to the complex legal, organizational, technical, and political nature of the AFI-CAD.

3.3 The Timeline and schedule need to be divided into phases which contain well defined and clear working packages each with clear.

- a) pre-requisites (required input)
- b) terms of reference (statement of work)
- c) requested output (result).

3.4 The meeting noted that it is important to set-up a technical team competitively, to participate in the project processes from its initiation stage to completion, with an understanding of the process from initial schedule, applicable documentation planning, making work plans including initial procurement, and call for tender preparations.

#### **Set of Documents and structure**

3.5 The meeting noted that prior to the AFI-CAD program, a set of documents needs to be compiled as required by the ICAO planning process.

<b>N°</b>	<b>Doc. Group</b>	<b>Doc. Title</b>	<b>Audience</b>
001	AFI-CAD 001	AFI-CAD /1 Meeting Report	States, ICAO, Users
002	AFI-CAD 002	The AFI-CAD Framework	States, ICAO, Users
003	AFI-CAD 003	The AFI-CAD Guidance Material	States, ICAO, Users
004	AFI-CAD 004	AFI-CAD/2 Meeting Report	States, ICAO, Users
005	AFI-CAD 005	AFI-CAD/3 Meeting Report	States, ICAO, Users
006	AFI-CAD 006	Revision 1 of the AFI-CAD Guidance Material	States, ICAO, Users
007	AFI-CAD 007	AFI-CAD Business/Financial Plan	States, ICAO, Users
008	AFI-CAD 008	AFI-CAD Requirements Document	States, ICAO, Users
009	AFI-CAD 009	AFI-CAD/4 Meeting Report	States, ICAO, Users
010	AFI-CAD 010	AFI ANP/FASID Amendment Request for inclusion of AFI-CAD	States, ICAO, Users

3.6 The meeting noted that these documents are important to further establish the AFI-CAD undertakings in the overall ICAO planning processes. The meeting noted that the AFI-CAD program needs a proper project set-up due to its size, and complexity.

3.7 The minimum set of project documents could be viewed as follows:

No	Doc Group	Doc Title	Audience	Priority
1.1	Planning and Control	Program Manual	Internal	-
1.2		Program Plan	Internal	High
2.1	Requirements and Analyses	Program Proposal	Internal	High
2.2		Legal Framework of the operation of the AFI CAD	Internal	High
2.3		Operational Concept	External	High
2.4		Requirements Specification Overall Project	External	High
2.5		Requirements Evaluation	External	-
2.6		Service Provision Requirements	External	High
3.1	Acquisition and Contracting	RFP Concept	Internal	High
3.2		Criteria Catalogue for Assessment of Offers	Internal	-
3.3		Request for Proposal	External	-
3.4		Offer Assessment	Internal	-
3.5		Contract	External	-
3.6		Contract Addendum	External	-
3.7		Statement of Acceptance	External	-
4.1	Configuration and Change Management	Problem Report - Change Request	External	-
4.2		Change Status List	Internal	-
4.3		Problem Change Evaluation	Internal	-
4.4		Change Decision	External	-

3.10 The documents marked in the Audience Column as “Internal” are important for setting up the internal process of the procurement team, the documents marked “External” need to be sent to the potential bidders during the tender process or to be used during program execution process. The documents marked in the Priority Column as “High” shall be developed in parallel to the Requirements Specification.

3.11 The documents with no priority shall be developed when the process for the set-up of the AFI CAD is more settled.

3.12 The Timeline and Schedule can be separated in ten principle Phases:

- a) Preparation Phase
- b) Set-Up Phase
- c) Call for Tender Preparation Phase
- d) Call for Tender Phase
- e) Contract Negotiation Phase
- f) System Implementation Phase:
  - i) Each Area/Centre (North, East, South, West) can follow a separate Implementation Plan,
  - ii) Those Phases can move in parallel.
- g) Service Implementation Phase
  - i) Each Area/Centre (North, East, South, West) can follow a separate Implementation Plan in conjunction with the system implementation,
  - ii) Those Phases can move in parallel.
- h) Service Migration Phase
- i) Operation Phase (System and Service)
- j) Maintenance and Enhancement Phase.

3.13 The phase will need to be executed basically in sequence where the work result of one phase is the prerequisite for beginning the next phase.

3.14 The contents of the phases can be initially described as follows:

No	Phase	Contents	Result/Deliverable
1	<i>Preparation Phase</i>	<ul style="list-style-type: none"> <li>• Program Plan</li> <li>• Schedule</li> <li>• Gather interest by State</li> <li>• Document Concept</li> </ul>	<ul style="list-style-type: none"> <li>• AFI CAD Study Group presents work result to APIRG/17</li> <li>• APIRG/17 inaugurates Permanent AFI CAD Working Group (CADWG)</li> </ul>
2	<i>Set-Up Phase</i>	<ul style="list-style-type: none"> <li>• AFCAC/ICAO plans AFI CAD meeting</li> <li>• Discussions with AFDB about financing</li> <li>• States deciding about financing</li> <li>• AFI/8 RAN Meeting gets agenda item for AFI CAD</li> <li>• CADWG finalises documentation concept</li> <li>• Legal establishment of AFI CAD Company (Service Provider Company - SPE).</li> </ul>	<ul style="list-style-type: none"> <li>• State Groupings (North, East, South, West) are fixed</li> <li>• Legal frame are finalised</li> <li>• Service Provider Entity (SPE) are founded</li> <li>• CADWG gets part of the Service Provider Entity</li> <li>• Financing agreed with AFDB.</li> </ul>
3	<i>Call for Tender Preparation Phase</i>	<ul style="list-style-type: none"> <li>• SPE prepares Call for Tender based on the CADWG documentation</li> <li>• SPE develops pre-qualification criteria</li> <li>• Call for pre-qualification</li> <li>• Assessment companies/consortia which have interest to be pre-qualified</li> </ul>	<ul style="list-style-type: none"> <li>• Call for Tender finalised</li> <li>• Publication of Call for Pre-Qualification</li> <li>• Decision on list of pre-qualified companies/consortia</li> <li>• International Call for Tender published (either by SPE or AFDB)</li> </ul>
4	<i>Call for Tender Phase</i>	<ul style="list-style-type: none"> <li>• Call for Tender</li> <li>• Public clarification meeting with interested bidders</li> <li>• Tender Closing</li> <li>• Development of the list of short listed bidders</li> <li>• Individual clarification with short listed bidders</li> <li>• Call for provisional final offer from short listed bidders</li> <li>• Decision about preferred final bidder</li> <li>• Call for definitive final offer from preferred bidder</li> </ul>	<ul style="list-style-type: none"> <li>• Decision about preferred bidder (company/consortia)</li> </ul>
5	<i>Contract Negotiation Phase</i>	<ul style="list-style-type: none"> <li>• Negotiation of system and service contract</li> </ul>	<ul style="list-style-type: none"> <li>• Signed System Contract</li> <li>• Signed Service Contract</li> </ul>
6	<i>System Implementation Phase</i>	<ul style="list-style-type: none"> <li>• Area/Centre 1 implementation</li> <li>• Area/Centre 2 implementation</li> <li>• Area/Centre 3 implementation</li> <li>• Area/Centre 4 implementation</li> <li>• System Training and Training Centres implementation</li> </ul>	<ul style="list-style-type: none"> <li>• Each Area/Centre (North, East, South, West) separate implementation schedule acceptance</li> </ul>
7	<i>Service Implementation Phase</i>	<ul style="list-style-type: none"> <li>• Service implementation Area/Centre 1</li> <li>• Service implementation Area/Centre 2</li> <li>• Service implementation Area/Centre 3</li> <li>• Service implementation Area/Centre 4</li> <li>• Service Training</li> </ul>	<ul style="list-style-type: none"> <li>• Each Area/Centre (North, East, South, West) separate service acceptance</li> </ul>
8	<i>Service Migration</i>	<ul style="list-style-type: none"> <li>• Service migration Area/Centre 1</li> <li>• Service migration Area/Centre 2</li> <li>• Service migration Area/Centre 3</li> <li>• Service migration Area/Centre 4</li> </ul>	<ul style="list-style-type: none"> <li>• Operational usage (cut over) separate for each Area/Centre</li> </ul>

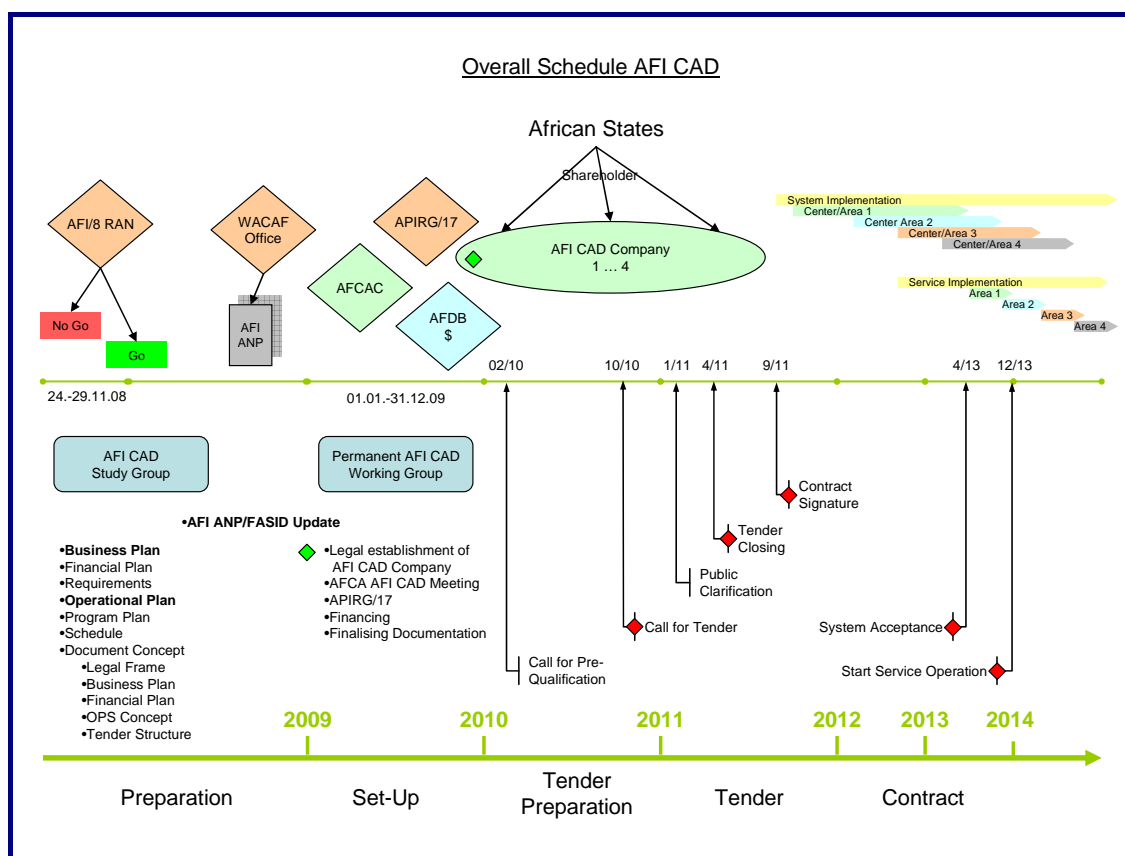
9	<b>Operation Phase and (System Service)</b>	<ul style="list-style-type: none"> <li>• Operation of the System and delivering the service</li> </ul>	<ul style="list-style-type: none"> <li>• AIS Services</li> </ul>
10	<b>Maintenance and Enhancement Phase</b>	<ul style="list-style-type: none"> <li>• Identification of changes</li> <li>• Decision about changes</li> <li>• Implementation of changes</li> </ul>	<ul style="list-style-type: none"> <li>• Acceptance of System and Service changes</li> </ul>

3.15 The contents description of the Phases needs continuous reassessment.

### Timeline

3.16 The rough Timeline covers about the next four years 2009 to 2013 until the first Centre/Area could move into operational use. The figure under Paragraph 3.17 , gives an overview.

3.17 It is noted that the timeline culminates with the implementation of phase 2 of the Roadmap of the transition from AIS to AIM on migration to digital databases which calls for establishment of database driven processes for the production of the current products in all States.



3.18 To meet the Timeline depends mostly on the agreement about the AFI CAD Entity (Service Provider Entity) and the financing.

## Report on Agenda Item 4

### Any other Business

4.1 The AFI-CAD/3 meeting reviewed DP/14 on the draft proposal for development of a QMS within the AFI – CAD. The meeting noted that the role of AIM is one of the foundation building blocks for the successful transition to a Global ATM system. At the core of this building block, lies the QMS that will provide quality and timely information to the aviation community.

The meeting noted that the timeliness and integrity of quality aeronautical information/data is a significant enabling activity for the globalization of ATM. Amendment 29 to Annex 15, introduced the requirements for the implementation of a Quality Management System within the aeronautical information services as of 1 January 1998 as follows:

“Each contracting State shall take all necessary measures to introduce a properly organized quality system containing procedures, process and resources necessary to implement quality management at each function stage. The execution of such quality management shall be made demonstrable for each function stage when required” (Annex 15, Chapter 3 paragraph 3.2.1 refers)”.

4.3 The AFI-CAD/3 meeting endorsed the under-mentioned recommendation emanating from the AFI-CAD/2 Meeting Report for AFI member States joining the AFI CAD system.

**Recommendation 5:** *That each contracting AFI – CAD Member State shall take all necessary measures to introduce a properly organized QMS containing procedures, processes and resources necessary to implement the quality management at each function stage. The execution of such quality management shall be in accordance with Annex 15, Chapter 3 paragraph 3.2.1.*

4.4 The meeting also noted that in order to develop a QMS within the AFI-CAD, paragraph 3.2.2 of Annex 15, recommends that the QMS established should be in conformity with the International Organization for Standardization (ISO) 9001 Series and certified by an recognized organization. These international standards specify the requirements for a QMS where an organization needs:

- to demonstrate its ability to consequently provide products that meets customer and applicable regulatory requirements, and
- to address customer satisfaction through the effective application of the systems, including processes for continual improvement and the prevention of non-conformity.

4.5 The meeting noted the action taken by Appendix K to APIRG/15 Report as a measurement tool for evaluation of services in order to provide room for improvement and the prevention of non-conformity.

4.6 The AFI-CAD/3 meeting then endorsed the under-mentioned recommendations emanating from the AFI-CAD/2 Meeting Report for AFI member States joining the AFI CAD system.

**Recommendation 6a:** *That Appendix K to APIRG/15 report as per Attachment A to AFI-CAD/2 DP/7 be adopted by AFI States as a measurement tool for evaluation of services in order to provide room for improvement and the preventions of non-conformity.*

**Recommendation 6b:** *The meeting then reviewed Attachment B concerning the Guidance material for the development of a QMS within the AFI - CAD and endorsed*

*the template for a project proposal in Appendix to this document as a framework to be adopted by AFI – CAD Member States.*

**Recommendation 7:** *That AFI – CAD members States adopt the template for a project proposal in Appendix XX to Attachment A of DP/7 as a framework for development of the QMS in terms of defining scope, assessing the potential benefits, continuing the program, determining the roles and responsibilities of those involved in the development and implementation of the QMS, and specifying deliverables, target dates and the resources needed.*

**Recommendation 8:** *That ICAO would synchronize the most suitable timelines for the development and implementation of the AFI – CAD based on the evolution of events.*

The meeting then agreed that the AFI-CAD adopted Guidance material should be amended to integrate the following Recommendations emanating from the AFI-CAD/2 Report:

**Rec. 2** of the AFI-CAD/2 meeting concerning evaluation criteria for identification of the AFI-CAD operating Centres;

**Rec. 5** concerning introduction of QMS by AFI-CAD States;

**Rec. 6** concerning measurement tool for evaluation of AIS services;

**Rec. 7** concerning framework for development of the QMS;

**Rec. 8** concerning timeliness for the development and implement action of the AFI-CAD;

**Rec.9** concerning development of the required training modules and

**Rec.10** concerning development of the required format of a services level agreement. See **Appendix A**.

4.7 The meeting finally endorsed the revised timeline as presented in the **Appendix G** on (overall) schedule of AFI-CAD which should take into account the following:

- a) the short time frame available;
  - b) analysis of responses received from questionnaires sent to States and user organizations;
  - c) outcome of the Fourth AFI-CAD meeting;
  - d) the final deliveries to APIRG/17 and the Council.
-





APPENDIX-A**LIST OF DRAFT RECOMMENDATIONS OF AFI-CAD/2**

Number	Title
<b>Recommendation 2:</b>	<p><b>Evaluation criteria for the identification of the AFI-CAD Operating Centers:</b></p> <ol style="list-style-type: none"> <li>1. Geographical Location</li> <li>2. Communication Infrastructure</li> <li>3. Sustainability of Economy</li> <li>4. Political Stability</li> <li>5. Information Technology – currently available and sustainable</li> <li>6. Provision of training – Training ability / infrastructure</li> <li>7. Power supply : <ul style="list-style-type: none"> <li>- availability</li> <li>- reliability</li> <li>- sustainability</li> </ul> </li> <li>8. Human Resource availability: <ol style="list-style-type: none"> <li>i) AIM</li> <li>ii) Management</li> <li>iii) Project Management</li> <li>iv) Information Technology</li> <li>v) Training</li> </ol> </li> <li>9. Financial availability / sustainability</li> <li>10. Previous experience – Track record</li> <li>11. Common consensus</li> <li>12. Infrastructure – Buildings</li> <li>13. Evaluation to be conducted by an International Organization with a proven track record of successfully completing similar evaluations (e.g. ICAO/ United Nations/ EUROCONTROL, etc.)</li> </ol>
<b>Recommendation 5:</b>	<p><b>Introduction of QMS by AFI-CAD States</b></p> <p>That each contracting AFI – CAD Member State shall take all necessary measures to introduce a properly organized QMS containing procedures, processes and resources necessary to implement the quality management at each function stage. The execution of such quality management shall be in accordance with Annex 15, Chapter 3 paragraph 3.2.1.</p>
<b>Recommendation 6:</b>	<p><b>Measurement tool for evaluation of AIS Services</b></p> <p>That Appendix K to APIRG/15 report as per Attachment A to DP/7 be adopted by AFI States as a measurement tool for evaluation of services in order to provide room for improvement and the prevention of non-conformity.</p>
<b>Recommendation 7:</b>	<p><b>Framework for development of the QMS</b></p> <p>That AFI – CAD member States adopt the template for a project proposal in Appendix xx to Attachment A of AFI-CAD/2 DP/7 as a framework for development of the QMS in terms of defining scope, assessing the potential benefits, continuing the program, determining the roles and responsibilities of those involved in the development and implementation of the QMS, and specifying deliverables, target dates and the resources needed.</p>
<b>Recommendation 8:</b>	<p><b>Timelines for the development and implementation of the AFI – CAD</b></p> <p>That ICAO would synchronize the most suitable timelines for the development and implementation of the AFI – CAD based on the evolution of events.</p>

<b>Recommendation 9:</b>	<b>Development of the required training modules</b> That AFI – CAD through the cooperation with GroupEAD develops the required training modules for AFI-CAD member States.
<b>Recommendation 10:</b>	<b>Development of the required format of a service level agreement</b> That AFI – CAD through the cooperation with GroupEAD develops the required format of a service level agreement for the AFI – CAD member States.

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**APPENDIX-B**

**INTERNATIONAL CIVIL AVIATION ORGANIZATION**  
**Third meeting of the AFI Region Study Group on the Establishment of a**  
**Centralized AFI Region AIS Data Base**  
 (Dakar, Senegal, 7-9 October 2008)

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**- Requirements and Analyses: Requirements Specification Overall Project -**

**ICAO Centralised AFI Region AIS Data Base**

**Version: 0.1**

Name of Project	AFI CAD	
Project Leader	<Project Leader>	
Responsible	<Responsible Person>	Requirements Engineer (Acquirer)
Created on	<Creation Date>	
Last changed	05.05.2009 14:54	
Processing status	X	in Process submitted completed
Document File	\\Wappli\wacafdata\2009\ROS\AIS\AFI-CAD-3 Report preparations\FINAL.RPT AFICAD Groupe.3.REV.05.05.09.doc	
V-Modell Version	Version 1.2.1 English	

### Further Product Information

Participating	[not involved] [not involved] [not involved]	User Executive Project Leader
Creation		

### Change Listing

Change			Changed Chapters	Description of the Change	Author	State
No	Date	Version				
1		1.1	All	Initial Product creation		

### Test Listing

The following table shows an overview of all tests – both self-tests as well as tests by independent quality assurance – for the present document.

Date	Tested Version	Notes	Inspector	New Product Status



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## **Introduction**

The Product Requirements Specification Overall Project includes all mandatory requirements posed on the system to be developed, which describe the overall project in a complete and consistent manner. It is basis for the subdivision into sub-projects.

All relevant system requirements will be determined and documented by the supplier. The core of the Requirements Specification Overall Project comprises the functional and non-functional system requirements and an outline of the overall system design. The design considers the future environment and infrastructure for the system and provides guidelines for technological decisions. The outline of the overall system architecture is the decisive basis for subdividing the overall project into sub-projects.

In addition, the system life cycle phases to be supported will be identified and incorporated as logistic requirements. The delivery terms and acceptance criteria are also part of the requirements.

The functional and non-functional requirements are not only intended as development specifications, but also as basis for the tracing of requirements and the change management. The requirements should be prepared in such a way that traceability and a suitable change management are possible for the entire system life cycle.

The acquirer alone is responsible for the preparation and quality of the Requirements Specification. If required, he may task a third party with the preparation. Generally, the Requirements Specification should not specify technical solutions in order to ensure that architects and developers are not restricted in their search for optimum technical solutions.

[...insert text here...](#)

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### **Initial Situation and Objectives**

This subject illustrates the initial situation and the reasons for executing the project. It describes which deficiencies or problems of existing systems or the current situation have lead to the decision to execute the project and which advantages are expected from the use of the new system.

In addition, all relevant stakeholders of the projects will be appointed and the technical and professional integration of the system to be developed will be outlined. Moreover, the first framework conditions for the development will be identified and described. Framework conditions may include, e.g., technical specifications or safety and security specifications.

...insert text here ...

---

## **Functional Requirements**

Functional requirements describe the system capabilities required by a user for solving a functional problem. The requirements will be derived from the supported business processes and the flow description for using the system.

The functional requirements are defined, e.g., by use cases. A use case describes a concrete, functionally self-contained sub-process. The entirety of the use cases defines the system behaviour. A use case may be described in a simple text format. However, organization-specific patterns for the description are frequently available. In order to determine the functional requirements of data-centred systems, a first functional Data Model will be developed, which is the basis for the later Database Design. The functional data model of the system will be derived from the entities of the domain model.

The functional requirements are the central system development specifications. They will be integrated into the Overall System Specification and concretized as required.

...insert text here ...

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## **Non-Functional Requirements**

Non-functional requirements are system requirements which are not of a functional nature, but contribute decisively to the applicability of the system. They define, e.g., quality requirements, safety and security requirements or performance requirements.

Non-functional requirements define fundamental characteristics of a system which must be taken into account in the architecture design. They may be used for estimating the development costs and should be described as measurably as possible.

In order to structure the requirements as simply as possible, requirements which are not clearly defined as functional requirements will be assigned to the non-functional requirements.

...insert text here ...

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## **Outline of the Life Cycle and the Overall System Architecture**

The specification of user requirements without consideration of possible solutions entails the great risk of defining unrealistic user requirements. It is useful to specify a coordination frame for the integration, systematization, categorization and prioritization of user requirements, in order to facilitate their visualization.

This may be achieved by an overall system architecture which represents the point of view of the user and not the technical point of view of the system analyst or System Architect. This means a functional system architecture embedded in the functional flow of adjacent systems should be prepared. At this early stage, it is hardly possible to develop a technical system architecture.

In case of an Evaluation of Off-the-Shelf Products, the future system components should be identified and specified in the overall system architecture when the Requirements Specification are revised.

In addition, the particular characteristics of the operational environment of the new system shall be described in order to be able to consider primarily the system safety and security requirements. The developer of user requirements should prepare a concept showing which life cycle sections should be covered by the project.

...insert text here ...

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**Data**

Data to be stored and data formats or principles (like AICM) need to be described here.

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## **Interfaces**

Interfaces between the centres of the AFI CAD, and between the AFI CAD and other systems (like AIXM or DAFIF) need to be described here. Also the interfaces between humans and the AFI CAD need to be described here.



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**Data and Messages**

Message related data like NOTAM, SNOWTAM etc. need to be described here.

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### **Scope of Delivery Overall Project**

All items and services to be delivered by the supplier to the acquirer during the project or at its completion shall be listed. Every Delivery requires an acceptance evaluation. The scope of delivery may include the system, system components, an Enabling System, enabling system components, documents, and agreed services.

...insert text here ...

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## **Acceptance Criteria**

Acceptance criteria specify the criteria to be fulfilled by the Delivery in order to meet the requirements. They should be specified in a measurable way. From a contractual point of view, the acceptance criteria describe the conditions for the decision as to whether the final product fulfils the requirements or not. Acceptance criteria refer to functional and non-functional requirements.

Until the contract is awarded, the acceptance criteria can only be indicated in a general form, e.g., as KO criteria. These criteria define, e.g., that at least 90 % of all evaluation cases must be completed successfully in order to achieve a successful acceptance. These general acceptance criteria should also include the requirement that the supplier must prepare acceptance criteria, the structure and number of which shall be outlined by the acquirer. The acceptance criteria should be structured in accordance with their three decisive components - initial situation, action(s) and expected result. In any case, the expected results of the acceptance must be specified for each acceptance criterion.

The acceptance test is based on the acceptance criteria which are included as requirements in the Evaluation Specification Delivery.

...insert text here ...

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**List of Abbreviations**

Abbreviation	Explanation

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## List of Literature

---

**List of Figures**

*End of document*

---

## Guidelines for checking the documents

The Content and formal directives to the project are to be taken from part 5: V-Model reference products of the V-Model-XT and if necessary from an associated evaluation specification document. For checking the product regarding its content consistency related to the already finished products, the following product dependencies are to be checked.

Consistency between Sub-Project Requirements and the Requirements Specification Overall Project

### Affected Products:

- Requirements Specification Overall Project
- Requirements Specification

### Description:

The Requirements Specifications of sub-projects shall be consistent with the requirements of the Requirements Specification Overall Project.

Project Proposal and Requirements Specification

### Affected Products:

- Requirements Specification Overall Project
- Requirements Specification
- Project Proposal

### Description:

In the product Requirements Specification or Requirements Specification Overall Project, the information from the Project Proposal concerning framework conditions, system idea and realization plan have to be taken into account.

Project proposal and requirements

### Affected Products:

- Requirements Specification Overall Project
- Requirements Specification
- Project Proposal

### Description:

The product Requirements Specification or Requirements Specification Overall Project shall take into account the information on general conditions, system idea and realization plan, which is included in the Project Proposal.

Evaluation of the Overall Project Requirements Specification

### Affected Products:

- Requirements Specification Overall Project
- Evaluation of the Overall Project Requirements Specification

### Description:

The Assessment of the Overall Project Requirements Specification will be based on the requirements (see Overall Project Requirements Specification). Its result will be integrated into an updated version of the requirements. The Assessment of the Overall Project Requirements Specification examines the affordability, economic efficiency and necessity of all requirements.

**APPENDIX-D**

ATTACHMENT to State letter T2/8.1- 0303 dated 15 April 2009

**QUESTIONNAIRE ABOUT ADDITIONAL AFI REQUIREMENTS FOR THE AFI  
CENTRALIZED AERONAUTICAL DATABASE**

Name of State/Organization: .....

Have your AIS Expert(s) attended the AFI-CAD Study Group meeting(s)  if applicable please tick - ✓  
Kindly include your suggestions on new ideas or requirements. If necessary, please add additional pages.

1. Additional AFI User Requirements:

.....  
.....  
.....  
.....  
.....

2. Additional AFI Technical Requirements:

.....  
.....  
.....  
.....  
.....

3. Additional AFI Other Requirements:

.....  
.....  
.....  
.....  
.....

4. Comments and additional information

.....  
.....  
.....  
.....  
.....

- END -





**- Business and Financial Plan -**

**ICAO Centralised AFI Region AIS Data Base**

**Version: 0.1**

***Draft Outline***

Name of Project	AFI CAD	
Project Leader	<Project Leader>	
Responsible	<Responsible Person>	Requirements Engineer (Acquirer)
Created on	<Creation Date>	
Last changed	05.05.2009 14:54	
Processing status	X	in Process submitted completed
Document File	\\Wappli\wacafdata\2009\ROS\AIS\AFI-CAD-3 Report preparations\FINAL.RPT AFICAD Groupe.3.REV.05.05.09.doc	
V-Modell Version	Version 1.2.1 English	

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### Further Product Information

Participating	[not involved] [not involved] [not involved]	User Executive Project Leader
Creation		

### Change Listing

Change			Changed Chapters	Description of the Change	Author	State
No	Date	Version				
1		1.1	All	Initial Product creation		

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## CHAPTER 1

### INTRODUCTION

#### **Background**

Components of the Business Plan

Strategic Objectives and Vision and Mission Statement

Strategic Profile

High-level Indicators

Action Plan

Operational Plan

---

## CHAPTER 2

### VISION AND MISSION STATEMENT AND STRATEGIC OBJECTIVES

#### **Vision And Mission**

Mission

Strategic Objectives

---

## CHAPTER 3

### AFI CAD STRATEGIC PROFILE

**Strategic Profile**

***Basis for Strategic Profile***

***Strategic Positioning***

***Current tactical positions to defend***

***Future tactical positions to be achieved***

***Operational Focus***

***Scope of Programmes / Services / Products***

***Scope of Customers / Users / Partners***

***Public Information***

***e-Strategy***

***Strategic skills for successful implementation of the Business Plan***

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## CHAPTER 4

### MANAGEMENT AND ORGANIZATIONAL TEAM

#### **Organisation**

Major Milestones

Organisational Options

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**CHAPTER 5**  
**FINANCIAL PLAN**

**Financial Plan**

Capitalisation  
Set-Up Capital  
Financial Sustainability  
Cost Recovery  
Cost Benefit Analysis  
Future Cost Benefits  
Financial Review



---

## CHAPTER 6

### BENEFITS AND DISADVANTAGES

#### **Benefits and Disadvantages**

Description how the new AFI CAD will provide additional services to the region and community at large.

Description of obstacles, potential negative impact and problems associated with implementation of the AFI CAD.

Discussion of potential investment risks as well as potential political and legal complications.

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**CHAPTER 7**

**ACTION PLAN SHEETS**

**Actions**

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## CHAPTER 8

### SUMMARY AND CONCLUSION

#### Summary and Conclusion

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## APPENDIX

### List of Abbreviations

Abbreviation	Explanation

### List of Literature

### List of Figures

*End of document*

ATTACHMENT to State letter T2/8.1-309 dated 21 April 2009

**QUESTIONNAIRE ABOUT EXISTING COST AND INFRASTRUCTURE FOR THE AFI  
CENTRALIZED AERONAUTICAL DATABASE BUSINESS AND FINANCIAL PLAN**

Name of State/Organization: .....

Have your AIS Expert(s) attended the AFI CAD Study Group meeting(s)  if applicable please tick - ✓ -  
Kindly include your inputs on existing cost and infrastructure data. If necessary, please add additional pages.

5. Existing AIS Cost:

- 1. Purchase Cost ..... USD
- 2. Installation Cost ..... USD
- 3. Maintenance and Inspection Cost ..... USD
- 4. Annual Communication Cost ..... USD
- 5. Refurbishment Cost ..... USD
- 6. Decommissioning Cost ..... USD
- 7. Life Cycle ..... Years

6. General Additional AIS Cost:

- 2.1 Communication ..... USD
- 2.2 Training ..... USD
- 2.3 Restructuring ..... USD
- 2.4 Staffing ..... USD
- 2.5 Others ..... USD

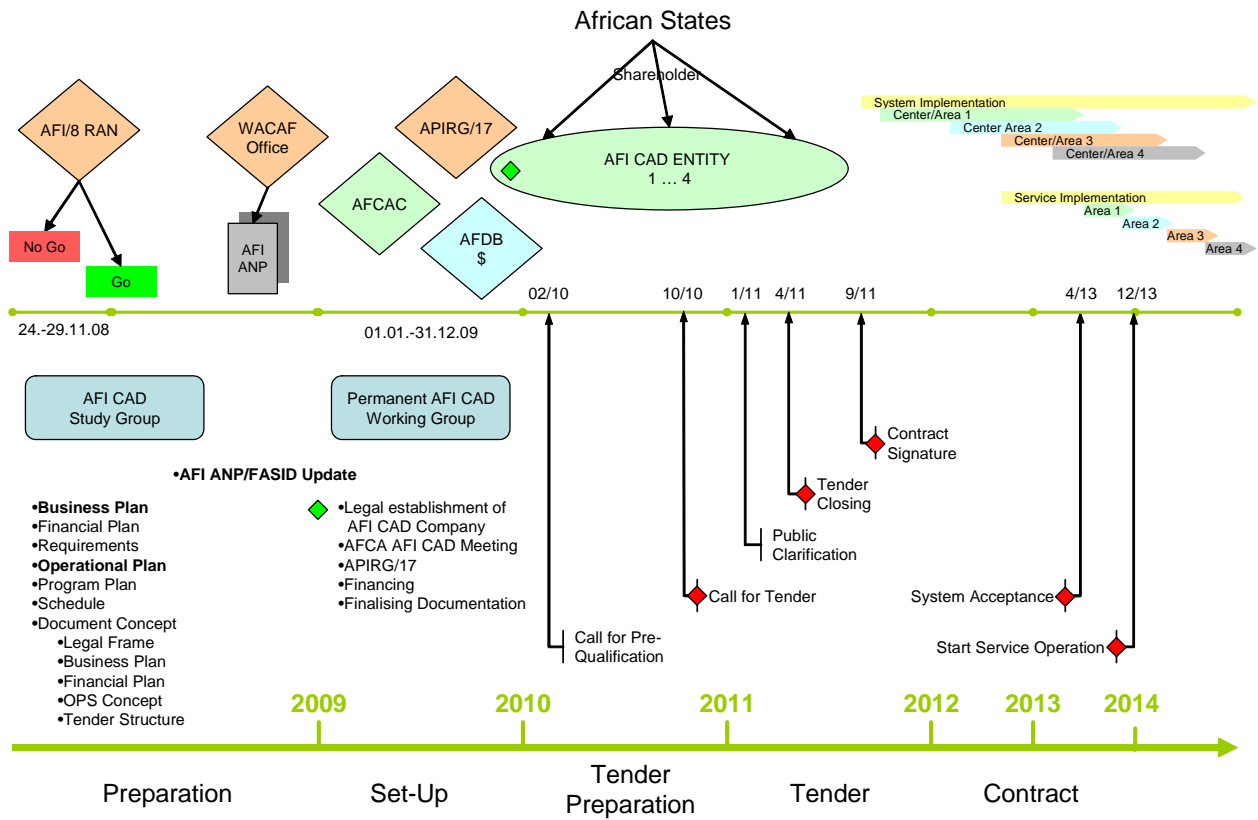
7. AIS Infrastructure:

- 1. Number of Personnel .....
- 2. Number of Servers .....
- 3. Number of Working Positions .....
- 4. AIS Centres Served .....
- 5. Aerodrome AROs Served .....

8. Comments and additional information

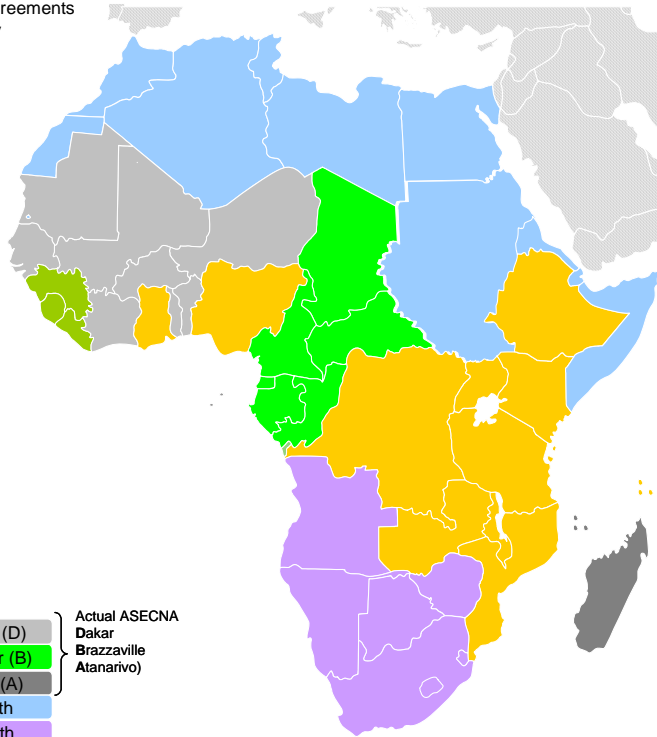
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Overall Schedule AFI CAD



# AFI CAD Intial ideas about regions

- Principles
- Language
  - Existing agreements
  - Geography



DB 1	West (D)	Actual ASECNA Dakar Brazzaville Atananrivo
	Center (B)	
	East (A)	
DB 2	North	
DB 3	South	
DB 4	Center	Actual Roberts
	West (R)	

v0.2 – 9/2007

1	Mauritania
2	Senegal
3	Gambia
4	Guinea Bissau
5	Mali
6	Coate d'Ivoire
7	Burkina Faso
8	Togo
9	Benin
10	Niger
11	Cameroon
12	Equatoria Guinea
13	Gabon
14	Congo
15	Central African Republic
16	Chad
17	Angola
18	Namibia
19	Botswana
20	Zimbabwe
21	Swaziland
22	Lesotho
23	South Africa

24	Guinea
25	Sierra Leone
26	Liberia
27	Ghana
28	Nigeria
29	Democratic Rep Congo
30	Uganda
31	Kenya
32	Ethiopia
33	Tanzania
34	Burundi
35	Malawi
36	Mozambique
37	Rwanda
38	Sychelles
39	Zambia
40	Comores
41	La Reunion *
42	Madagascar
43	Eritrea
44	Sudan
45	Egypt
46	Somalia

47	Tunesia
48	Algeria
49	Morocco *
50	Sahrawi
51	Lybia
52	Djibouti
53	Cape Verde

\* Not OAU members?