**AIR TRAFFIC AND NAVIGATION SERVICES SOC. LTD**

**REPUBLIC OF SOUTH AFRICA**



**APPOINTMENT OF A SERVICE PROVIDER FOR SUPPLY, DELIVERY, INSTALLATION, TESTING AND COMMISSIONING OF AN AERONAUTICAL INFORMATION MANAGEMENT (AIM) SYSTEM**

**ATNS/TPQ/RFP047/FY22.23/AIM SYSTEM REPLACEMENT**

**VOLUME 2**

**TECHNICAL REQUIREMENTS**

**OCTOBER 2022**

**The information contained within this document is confidential to ATNS in all respects and it is hereby acknowledged that the information as provided shall only be used for the preparation of a response to this document. The information furnished will not be used for any other purpose than stated and that the information will not directly or indirectly, by agent, employee or representative, be disclosed either in whole or in part, to any other third party without the express written consent by the Company or its representative**

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# GENERAL INSTRUCTIONS TO BIDDERS

The Bidder shall submit all responses, diagrams, project management documentation and drawings according to the GENERAL INFORMATION AND INSTRUCTIONS TO BIDDERS document and in the English language.

**ALL RESPONSES TO THE REQUIREMENTS IN THIS DOCUMENT SHALL BE PROVIDED AS FOLLOWS:**

BIDDERS SHALL RESPOND IN FULL TO EACH ITEM IN THE FORMAT PROVIDED AND REFERENCES (CHAPTER, SECTION, PAGE NUMBER, PARAGRAPH NUMBER) TO DOCUMENTS AND RELEVANT INFORMATION SUPPORTING THE RESPONSES SHALL BE INDICATED IN THE SPACE PROVIDED. THIS INFORMATION WILL BE THE **ONLY RESPONSE USED FOR THE EVALUATION AND ASSESSMENT**.

Responses, provided in the space allowed, that are not clear or inadequate or the lack thereof shall be interpreted as **“Non Compliant”** even though the compliance column is declared as “Comply” and/or the Bidder’s offer meets the requirement. Bidders shall ensure that each response correctly addresses the requirement stated. Responses not addressing the requirement of the specific paragraph shall be interpreted as **“Non Compliant”**.

Bidders shall declare compliance to each and every paragraph of this document in the column labelled “Compliance” as follows:

C: Fully Compliant = 2 points;

PC: Partially Compliant = 1 point;

NC: Non Compliant = 0 points.

Bidders shall, for paragraphs declared “PC” or “NC”, include a statement as to the nature of the variation and should additionally supply supporting information in the space provided or an indexed reference to demonstrate how the proposal meets the requirements of ATNS.

1. **Introduction**
	1. **Document Purpose**

This document serves to capture the approach that was taken to address the project requirements and document the design of a feasible solution.

* 1. **Project Purpose**

The current Aeronautical Information Management (AIM) service is provided from two independent systems namely, the dynamic and static component (ANAIS) Aeronautical Automated Information System, and static component (CAD) Centralised Aeronautical Database. The Aeronautical Automated Information System (ANAIS) was installed and implemented in 2000 financial year as part of the MOTSETA project which also included the Aeronautical Message Switching System (AMSS) and the Aeronautical E-solution Service (AES) commonly known as File2Fly.

A major upgrade on the MOTSETA system was performed in the 2009/2010 financial year.

The ANAIS has reached its end of design life in the 2020/2021 financial year. The key components of the system have become obsolete, making the system challenging to maintain. Provision was made in the 2017 permission plan to replace the system.

The current Centralised Aeronautical Database (CAD) system was installed in the 2011/2012 financial year and will reach the end of its design life during the 2026/2027 financial year. The main objective of the CAD is to establish a platform for a single aeronautical information repository for the various operational systems within ATNS and facilitate ATNS to play a leadership role in the ICAO establishment of an African Centralised Aeronautical database (AFI-CAD).

* 1. **Scope of Work**

The anticipated goal is to implement an AIM system that complies with the requirements to migrate from AIS to AIM in preparation for SWIM operations. The system shall have the following capabilities:

[a] Flight Plans [FPL];

[b] Associated ATS Messages;

[c] Notice to Airmen [NOTAM];

[d] Meteorological Information [MET];

[e] Pre-Flight Information Bulletin [PIB]

[f] Static Database Management;

[g] Aeronautical Charting Production;

[h] Internet Briefing System [IBS];

[i] Aeronautical Information Product Authoring and Management; and

[j] Electronic Terrain and Obstacle Data [eTOD].

This system shall also cater for seamless interfacing to the Aeronautical Message Switch System [AMSS] including interfacing with other ATNS ATM systems like the following:

[a] Air Traffic Flow Management [ATFM] with its subs-systems (e.g. SCORE, AFT etc);

[b] ATM System [TOPSKY];

[c] AFTN/AMHS; and

[d] ASMGCS.

1. **System Analysis**
	1. **Objectives**

ATNS plans to procure and implement an AIM system that shall support the collection, validation and management of aeronautical data and information and the preparation and publication of aeronautical information products as defined in the relevant regulations.

The objectives of the implementation of an AIM system are to:

* Enhance the quality of aeronautical data and information by reducing human interaction with aeronautical data;
* Ensure traceability by establishing a digital dataflow from origination to provision of aeronautical data and information;
* Increase efficiency by automating manual processes;
* Achieve compliance with international and national regulations;
* Enable ATNS to autonomously produce and update the aeronautical information products;
* The AIM system should follow the process as defined in the Figures 1,3 and 4 (or similar); and
* Improve the timeliness, quality, efficiency, and cost-effectiveness of aeronautical information services.
1. **System Overview**
	1. **System Context**



Figure 1. Required Deployment Configuration



Figure 2. Current Deployment Configuration

 

Figure 3. Conceptual Architecture



Figure 4. Infrastructure Configuration

* 1. **Standards and Regulations**

The following standards, regulations and recommended practises shall be considered in the detailed technical design and technical specifications:

* + - 1. ICAO Annex 2, Rules of the AIR
			2. ICAO Annex 3 Meteorological Service for International Air Navigation (Latest Edition)
			3. ICAO Annex 4, Aeronautical Charts (Latest Edition)
			4. ICAO Annex 10 Volume II/III (Latest Edition)
			5. ICAO Annex 11, Air Traffic Services (Latest Edition)
			6. ICAO Annex 15 to the Convention of Civil Aviation (Latest Edition)
			7. EUROCONTROL Specification for the Electronic Aeronautical Information Publication (eAIP) Version 2.1
			8. ICAO DOC 4444, PANS ATM (Latest Edition)
			9. ICAO DOC 10066, PANS, AIM
			10. ICAO DOC 10039, SWIM
			11. ICAO DOC 9965, Manual on Flight and Flow — Information for a Collaborative Environment
			12. ICAO DOC 7910, Location Indicators (Latest Edition)
			13. ICAO DOC 8126 Aeronautical Information Services Manual (Latest Edition)
			14. ICAO Doc 8585 Designators for Aircraft Operating Agencies (Latest Edition)
			15. ICAO Doc 9880-AN/466 Manual on Detailed Specifications of the Aeronautical Telecommunications Network (ATN) using ISO/OSI Standards (Latest Edition).
			16. ISO 19107:2003 Spatial Schema (Latest Edition)
			17. ISO 19108:2002 Temporal Schema (Latest Edition)
			18. ISO 19115:2001 Metadata (Latest Edition)
			19. ISO/IEC 19501:2005 Universal Modelling Language (UML) (Latest Edition)
			20. Extensible Markup Language (XML) (Latest Edition)
			21. ISO 19136:2007 Geography Markup Language (GML) (Latest Edition)
			22. ISO 19139:2007 Metadata XML Schema Implementation (Latest Edition)
	1. **Concept of Operations**

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| **Users** |

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| Internal Users |
| AIM OfficersDocumentation OfficersCartographersObstacle EvaluatorsDatabase ManagersData Integrity SpecialistInternal Data Users |

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| External Users |
| MET OfficersAirlinesPilotsGeneral AviationAirportsInternational AIS/AIM UsersRegulator (SACAA) |

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| **Services** |

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| **Briefing Service** |

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| **Charting Service** |

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| **Publishing Service** |

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| **Messaging Service** |

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| **Self-Service Briefing** |

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| **Self-Service FPL Submission** |

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| **Static Data Management Service** |

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| **NOF Service** |

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| **MET Service** |

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| **ARO Service** |

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| **Technologies** |

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| **SOA/SWIM** |

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| **Web Services** |

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| **AIXM v5.1** |

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| **AMHS AFTN** |

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| **HTTP** |

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| **GIS** |

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| **RDBMS** |

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| **High Availability** |

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| **Information** |

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| **Flight Information** |

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| **Static Data** |

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| **NOTAMs** |

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| **OPMETs** |

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| **Charts** |

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| **AIP** |

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| **Aircraft Information** |

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| **Terrain** |
| **Obstacle** |

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1. **Requirements**
	1. **Business Requirements**

The AIS system shall:

* + 1. Support ATNS in the collection, validation, storage and management of aeronautical data and information;
		2. Enable ATNS to approve changes of data sets;
		3. Support the process of collection, validation, authorization of aeronautical data and information and the production of aeronautical information products with workflow management capability;
		4. Enforce logical and semantic consistency
		5. Provide a component to create, update and publish an eAIP from the aeronautical information database;
		6. Provide a component to create and update aeronautical charts from the aeronautical information database; and
		7. Support ATNS in providing and managing aeronautical information products and services on behalf of international Clients/States
	1. **Major Functions for AIS Automation**

The system shall be an integrated computer network, based on the AICM/AIXM concepts, to assist and support the workflow of Aeronautical Information Management using a common database from which the data can be exploited, to produce automated document outputs such as the AIP and its amendments and supplements, aeronautical maps and charts, Aeronautical Information Circulars, NOTAM.

The central database of the system hosts all information common to civil aviation. All concerned units will access these databases through their connected workstation using specific application tools that foresees desired functional requirements of the respective units. The system shall be developed in accordance with ICAO recommendations. The AIS system consists of two major functions:

* AIS Management function; and
* AIS Database function

The major functions should be as follows:

* + 1. **Aeronautical Data Management:**

To allow management of aeronautical data through an AIXM 5.1 (or later) compliant database and extensible by the system manager to support data manipulation including collect/validate/insert/extract/update information and aeronautical spatial features (with their attributes).

* + 1. **AIP production/publication Management:**

An authoring tool that temporally extracts information from central database and automatically generates and publishes ICAO aeronautical information products such as an AIP, AIP Amendments and Supplements based on pre-defined rules and document templates. Charts or other graphic objects inclusion should also be automatically created. The module shall be capable of producing HTML or XML output to obtain a web-based AIP or an eAIP version. The software system shall be provided with ICAO Annex 15 compliant AIP templates and allow for the creation of new templates based on existing ones. The module should also be capable of storing and cataloguing all the produced documents, charts, and templates for operational needs.

* + 1. **Flight Plan (FPL) Processing:**

This module provides functions for Processing, Validation, Distribution and Retrieval Management Functions such as:

* + - 1. FPL Acquisition: Acquires FPL messages via the Aeronautical Communication Layer (AFTN, AMHS) or by interacting with the NOTAM Web Interface.
			2. FPL Registration: Users may register Flight Plans or Flight Plan Proposals directly within the system using the GUI. ICAO structured web-forms ensure that FPLs are registered using the proper format and syntax. The GUI conducts front-end syntax and semantic validation of user entries with all errors clearly reported to the user. Only upon successful validation, the FPL is stored within the system as a Flight Object.
			3. FPL Analysis: All FPLs, which are acquired by the system, are immediately analysed to verify their syntax and semantics according to defined validation rules embedded within the system. The application of these validation rules is configurable to permit per-system customization of the error tolerance.
			4. FPLs, which are found to be consistent with the validation rules, are stored within the system as valid FPLs.
			5. FPLs which are found to be inconsistent with the validation rules and were received by the AFTN/AMHS interface are stored within a Reject Inbox for manual processing.
			6. FPLs which are found to be inconsistent with the validation rules and were registered via the GUI are immediately rejected and an error containing the reasoning for its rejection is presented to the user
			7. FPL Lifecycle Management: FPLs that are stored within the system have a validity period and are automatically set to “Active” or “Inactive” according to temporality. A FPL that has been registered via the GUI or received from the AFTN/AMHS interfaces for a flight-taking place in the future is marked as having the validity of “Active”. Once a FPL has expired its validity is marked as “Inactive”. Each FPL also is marked with a status of either “Pending”, “Approved”, “Foreign”, or “Sent”.
			8. FPL Proposal: A FPL (with or without Item 19) that has been registered by external users via the GUI that is marked as having the status of “draft”, for the first verification by Operators. “Pending” FPLs must be manually approved by and authorized user before the status is marked as “Approved” or “Rejected”. It shall be possible to configure the system to skip the manual approval step and have all domestic registered and received FPLs marked as “Approved” immediately. When a FPL has been disseminated by the system, the status of the FPL is changed from “Approved” to “Filed”.
			9. Before its own promulgation, an FPL message can be subject to various status changes:
				1. From draft to pending
				2. From pending to approved
				3. From pending to rejected (with the reason of rejection sent out also via e-mail to the FPL Proposal originator)
			10. Each status change can be mapped into actions performed by different Users accounted to different Organizations, or FPL Offices, or Functions groups. Usually, the FPL workflow involves several users that can be grouped into the following:

**Originators**: users belonging to this group have access to FPL Proposal functions to query proposals related only to their pertaining office and to create (or correct) proposals to be submitted to Verifiers.

**Verifiers**: these users have access to proposals created by Originators and can approve / reject the ones (in “pending” status). At the approval of the proposals, a FPL message is promulgated and distributed through the AFTN/AMHS network.

* + - 1. FF-ICE/R1 (Minimum capability), contains a total of six FF-ICE services, structured and designed to be implemented independently.
				1. The implementation of Filing Service and Flight Data Request Service would replace the current FPL2012 flight planning services and would be enough to support the end of FPL2012. Bidders shall propose systems that will support this transition.
				2. The other four services (i.e. Planning Service, Trial Service, FF-ICE Data Publication Service and Notification Service) shall be implemented incrementally as part of system evolution and depending on the needs of ATNS. The incremental implementation should ease transition and lower the risks of operational and system issues.
		1. **Aeronautical Chart Maintenance:**

This tool provides automatic extraction and charts symbolization according to the release cycles by retrieving aeronautical data stored in the central database using the GIS engine. The module supports true temporality while capturing all Meta-data regarding the changes that user worked on the data. Rollbacks and producing of charts according to past releases are also achieved through this tool.

* + 1. **MET Data Processing and Management:**

To process received meteorological data from the South African Weather Service (SAWS) and will distribute meteorological bulletins according to a pre-defined schedule.

* + 1. **NOTAM Operation and Data Management Function:**

The NOTAM Subsystem will manage the receipt, initiation and dissemination of all types of NOTAM by users with adequate authorization, i.e. NOTAM database.

* 1. **System Requirements**
		1. The requirement is for an Aeronautical Information Management (AIM) System.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The proposed AIM System shall adopt a client/server architecture, which shall support the continuity of service of the system for the failure of one server component.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
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| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. AIS Database and Management Server is central to AIS equipment. The system shall consist of dual sever based system running in Main/Standby configuration, storage, and processing all concerned AIS data.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
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| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. System Management subsystem shall provide system supervision, set-up, database maintenance and system monitoring such as parameterization. The system monitoring will also allow a quick overview of the current health of the system and application, as well as the status of the system resources at any required time.

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* + 1. Web access: The system shall allow for access to users via a web portal for the submission of flight plans, the preparation of pre-flight information bulletins and the access to the State eAIP. Each user shall be identified via access credentials, which shall be categorized under specific user rights/roles to be configured by the system administrator.

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| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system design shall include a state-of-the-art web application with a firewall which shall enable secure access by external users (e.g. Pilot Portal for briefing and flight planning on eAIP website).

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* + 1. AIP subsystem shall allow for the creation, presentation and updating of AIP database as defined in ICAO Annex 4, Doc 8216 (AIS Manual), Doc 8697 (Aeronautical Chart Manual). The subsystem should handle automatic updating in line with the AIRAC publication cycle. The software system shall be provided with ICAO Annex 15 compliant templates and allow creation of new templates based on existing ones.

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| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. Aeronautical Chart / Map Maintenance.

The system shall support all ICAO charts as defined in ICAO Annex 4. It shall produce and update aeronautical charts as listed in Annex 15 5.2.5.1, 5.2.5.2 and 5.2.5.3. It shall allow creation, presentation and update based on specification provided in ICAO Annex 4 and ICAO Doc 8697 such as automatic generation of symbols, management of base map data, map frames, etc. it shall be linked to the database to allow automatic update and maintenance of the charts. It shall enable manual edits of the generated data. The system shall be based on Geographic Information System (GIS) that complies with aeronautical requirements. The system shall allow for the reviewing, updating, and managing of the database driven charting and mapping applications; symbology, labelling and maintenance; customizable ICAO complaint templates.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
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* + 1. The MET subsystem shall process received meteorological data from SAWS and shall distribute meteorological bulletins according to pre-defined schedules. The system shall manage the OPMET database by the operator as the following:
1. Check and validate messages.
2. Correct message text fields.
3. Delete and modify stored METAR message (original message is not modified).
4. Print out messages.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
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* + 1. The AIM Terminal shall allow users to access eAIP, NOTAM, AIP, AIP Supplements, AIC’s, Charts, and Meteorological data.

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* + 1. The system shall support AIXM5.1 (or later) version and manage basic data related to NOF and NOTAM codes to issue NOTAM.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
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* + 1. The system shall refer to NOTAM information via Web and search for Geographical Area (such as Polygon drawn on a Web Map), Validity period and NOTAM code by arbitrary character string.

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| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall also be developed in accordance with the latest recommendations from ICAO and others, including all the latest amendments.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall be modular designed and by using industry standard components provide a flexible and expandable combination of components, enabling upward growth.

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| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The Work-Flow Management, Publishing and NOTAM components of the system shall be based on the latest WEB application technology.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
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* + 1. The system application shall include a Work-Flow Management System, which can manage all data management functions and internal quality processes.

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| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The AIM System shall be synchronized with the GPS master clock system.

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| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall be interfaced to the AFTN/AMHS system in use at OR Tambo International Airport (FAOR) and shall also have integration capability with various other sites. Interface Control Document (ICD) must be provided by the tenderer.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The database completeness, coherence and consistency shall be granted by query functions. Manually or automatically basic queries shall be permitted. (RQN, RQL, RQO, RQA).

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. All incoming NOTAM shall be syntactically and semantically verified in accordance with the provision contained in ICAO Doc 8126 and the published Aeronautical Data and Aeronautical Information.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. **General Technical Requirements**
		1. The equipment shall be compact, fully solid state, highly reliable and adopt state of the art technology. The design and selection of equipment shall be consistent with the requirements for long-term operation with highest degree of reliability and maintainability.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. AIS Automation shall support in meeting the requirement for integrity, resolution accuracy as specified in PANS-AIM Document 10066.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. All equipment shall be constructed to operate safely without undue heating, vibration, wear, corrosion, electromagnetic interference, or similar problems.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. Safety and protection of personnel during normal operation and maintenance or during malfunctioning of any equipment shall be provided as integrated feature of design, manufacture, and installation. Adequate protection shall be included for ensuring safety of personnel from any possible hazards, including EMI radiation, high voltages etc. The bidder shall furnish the details of EMI and Safety Standards met by his equipment's and safety features built in.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The equipment shall be constructed on a modular basis throughout, using plug-in type components to the maximum practical content. Parts subject to failure, wear, corrosion or other deteriorations or requiring occasional inspection, adjustment or replacement shall be made accessible and capable of convenient removal. Preferably, all plug-in units and modules shall fit on slide rails and shall be removable from front of cabinet. Connectors shall be keyed to prevent insertions of units in the wrong way or into a wrong slot.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. Input/output termination cable shall be properly labelled to permit ready identification of the incoming/outgoing wiring. All interconnecting cables shall also be appropriately labelled to facilitate convenient interconnection and minimize chances of incorrect connection.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. All interconnecting cables required to connect the equipment shall be supplied. All cables shall be fully assembled, connector pre-terminated and factory tested as part of overall system check.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system components shall be installed in 19” 42 U rack enclosures. The bidder shall equip these racks with solid side panels, a vented roof and floor, locking front and rear doors, cable management, and power strips. Each system rack shall use an LCD rack-mount monitor, pull-out keyboard, and at least 8 ports KVM switch to operate all the servers. Each system rack shall be provided two AC power lines.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
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| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall provide dedicated terminal applications suitable for the AIMU.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The AIP/eAIP, Dynamic Management, Obstacle Evaluation and Charting systems shall be fully integrated with AIXM 5.1 Database.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system supervision, set-up, database maintenance and system monitoring shall be provided by System Administration Terminal.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The number and locations of operator positions and system administration positions shall not be limited by the system.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. **Interfaces**
		1. The system shall provide an interface to send NOTAM over the AFTN/AMHS network based on distribution list.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall receive messages through the AFTN/AMHS network from external partners.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall distribute domestic messages through the AFTN/AMHS network.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall be capable of connecting to an AFTN/AMHS system using asynchronous AFTN/AMHS interface or AFTN over IP.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall be SWIM-ready through an XML interface for future expandability.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall have the capability to exchange aeronautical data with external systems in AIXM (5.1 or higher) data format.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

1. **System Architecture**
	1. The system shall be developed based on a proven technology and must be in use at other international airports.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. The center equipment of the system shall be functionally separated into different modules. The design of the system shall be such that failure of units shall never cause a complete outage of the total system.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. The core hardware of the system shall be compatible with COTS hardware available from different computer manufacturers.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. The system application software shall be designed and developed using proven software engineering methodology e.g. object-oriented design and popular structured high-level language, such as C and Java etc. and it shall be well annotated in English to facilitate ease of future modification and development to meet the evolving ICAO requirements.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. The system shall be based on client-server architecture.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. The number of terminals/users shall be easily upgraded, e.g., by simply importing a new system license.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. The system shall be modular in nature and by using industry standard components, provide a flexible and expandable combination of components, enabling upward growth.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. The system application software shall be modular and structured such that incorporation of future requirements shall be achieved by the addition of new modules to the software, with minimum impact to other software modules.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. The user terminals/users shall be linked to the system via TCP/IP-based LANs, WANs, and the Internet.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. The system shall allow the internet user to access the system via the Internet by using the Internet Gateway.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. The system shall allow the www subscriber to access the system by using popular web browsers such as Microsoft Edge, Chrome, and Firefox.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. The system shall be easily integrated into the following systems without adaptations and modifications:
1. Message handling system for AFTN/AMHS message exchange; and
2. Monitoring system for central monitoring

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. The system shall easily integrate into the existing network infrastructure (i.e., TCP/IP via all communications channels) without adaptations and modifications.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. The complete system shall be used with Oracle, Windows, or Linux operating system software capable of providing full networking functionality for real-time applications and supporting multi-user and multi-tasking operations with full software program and data protection in a network environment.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. The bidder shall categorize all modules of the software in the tender proposal as follows:
		1. Standard system software e.g., Oracle, Windows or Linux operating system, database management system, and network interface card (NIC) driver.

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* + 1. Customized system software e.g., operating system and NIC driver modified by the Contractor to meet the requirements of this specification.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

1. **Specification**
	1. **Administration and Supervision**
		1. System Administration Terminal shall provide the system supervision, set-up, database maintenance and system monitoring.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The number and locations of operator positions and system administration position shall not be limited by the system.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. System Administration Position and Application Terminal Software shall be provided with license.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. Application Terminal Software with license shall be included with AIM User terminal licenses of AIM system for performing the functions of the system as described in this specification.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. **General Requirements**
		1. The supplier shall establish and maintain a Quality Assurance program in accordance with ISO 9001, 9002, ISO 14001 and ISO 27001 (Information Security Management System) certified, and a copy of the certification shall be submitted together with the bid.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
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* + 1. The Quality Assurance program shall ensure control of all related parts, materials, processes, fabrication, assembly, and test of the manufactured products.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The Quality Assurance program shall also provide provisions and controls to ensure software/firmware products are virus free when shipped.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The manufacturer of the AIM System software must provide at least 2 (two) verifiable references for AIS-to-AIM operational projects of a comparable size (or larger) than that requested in this project; such references must specifically establish compliance with the AIXM 5.1 specification of the corresponding deliverables.

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| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall be setup to work as a hub at OR Tambo International Airport (FAOR) which shall be extended to various South African international airports, and all operational regional airports and expandable to neighbouring states. The bidder shall therefore provide at least one reference for an operational hub system they have deployed.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. System environment and interface
1. The system shall be composed of a centralized database in which all aeronautical and terrain data are stored. All the workstations shall be connected to the centralized database through the local area network on an Ethernet TCP/IP standard.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

1. The database management software and the data structure shall be well known, proven, and widely used in other Air Navigation Service Providers, Civil Aviation Authorities and/or Administrations. The Relational Database Management System (RDBMS) shall be supplied by the tenderer as part of the Aeronautical Information Management Database (AIMDB) package.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

1. The tenderer shall deliver as part of the AIM system the necessary Workstations (LINUX and WINDOWS) including original licenses for the operating systems.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

1. All the system components shall store the information in an aeronautical database supporting the AICM/AIXM 5.1(or later) structure and temporal model.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

1. The proposed system shall be a Commercial Off the Shelf system: no custom development is requested.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

1. The software should run on commercial off-the-shelf hardware platforms.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

1. The minimum requirements for the hardware to be supplied are mentioned in Section 6.19 and 6.20.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. **Performance Requirements**
		1. All applications and software shall operate in an interactive environment. All functions shall have reasonable response times, compatible with the on-line work of the operators.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The software shall be modular and capable of running on positions different from the initial ones for contingency operations. It shall be possible to re-host the software licenses on different compatible hardware during the maintenance phase.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. **Expandability Requirements**
		1. The proposed system shall be expandable in the future according to needs in order to include the following functionalities:
			1. The capabilities to execute numerical analysis in order to assess the expected performances of CNS equipment with respect to the ICAO Annex 10 requirements. This functionality shall be plugged to the same AIM central database (as per 6.2.6) used by the other system components.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. The capability to assess the human factors related to the new instrument procedure design via the use of a cockpit simulator connected to the same AIM central database used by the other system components. The cockpit simulator shall load the procedure data directly from the instrument flight procedure tool.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. The capability to use AIM System data to assess the human factors related to new instrument procedure design utlising a tower simulator.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. **Data Collection**
		1. The System shall provide a web portal for authorities, airport operators and other authorised parties to input and submit their change requests of aeronautical data or applications for obstacle evaluation.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. When submitting a change request the authorised originator shall see the current version of the data and shall be able to propose change to those data elements they are responsible for.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall provide the possibility for the user to enter the changes in a form or to upload and import the changes in a file.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall import / upload aeronautical data and information in AIXM 5.1, ARINC and CSV format.

|  |  |
| --- | --- |
| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall provide features to enter and edit all unstructured AIP data (text).

|  |  |
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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The user shall be able to enter all required metadata.

|  |  |
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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall be able the import / upload all additional documentary material for change request or an obstacle application.

|  |  |
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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall be capable to accept the geographic locations in WGS-84 reference system.

|  |  |
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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall be able to import obstacles and surfaces / areas data (eTOD, OLS etc) from other systems (CSV and workflow).

|  |  |
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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall allow multiple concurrent users for origination and collection of aeronautical data.

|  |  |
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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. **Data Visualization and Validation**
		1. The System shall be able to check the data against business rules.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall provide 2-D visualization of georeferenced aeronautical data and information on top of geographical maps, orthophotos or satellite imagery.

|  |  |
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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall provide the coordinate systems for presentation of geographical data in WGS-84 Latitude and Longitude.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall provide coordinate referencing of raster cartographic data and its superposition with vectorised geographical information.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall be capable of displaying background maps from a Web Map Service (WMS).

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall be capable of displaying background maps from a Web Map Tile Service (WMTS).

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall be capable of displaying data from a Web Feature Service (WFS).

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System‘s web mapping application shall provide features to:
1. Pan and zoom;
2. Show and hide information layers; and
3. Measure / calculate distances.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall provide 3-D visualization of aeronautical data and information together with geographic information (aerial/satellite imagery, DTM, etc.).

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall be able to show a previous version of data and the new version for comparison.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall be based on Geographical Information System (GIS) that is in compliance with aeronautical requirements.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall be capable of Geodetic Transformations and Geodesic calculations such as point intersection (bearing/distance, bearing/bearing, distance/distance etc.) and calculating true and magnetic bearing and distances between known points.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The geodesic calculator shall have a high interactivity with the graphics, i.e., shall be able to type in coordinates or read the coordinates directly from graphic objects selected via mouse click or read coordinates.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall compute the magnetic variation / declination based on the standard models such as IGRF, WMM at a given date (dd/mm/yyyy) or user defined values. Calculations in true bearings shall be also possible.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The GIS environment shall be able to import maps on different projections without manipulating projection and datum.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The GIS environment shall be able to import Terrain Models (DTM/DSM or DEM) including (but not limited to) USGS DEM, DTED, BT, SRTM.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The GIS environment shall be flexible to utilize digital terrain data (contour and other topographical features) relevant to procedures design, in at least the following datum and projections: WGS-84, UTM and Lambert projection.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. Terrain database management shall be included (vector, digital terrain models and raster).

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. **Data Import / Export and Data Sets**
		1. The System shall be able to download aeronautical data as XML files.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. Exported metadata shall only contain user-IDs and no usernames.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall provide functionality to select, extract and format aeronautical data in AIXM 5.1 (the new ICAO data catalogue) structure and format.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall support the provision of the AIP data set with a minimum scope specified in PANS-AIM 5.3.3.1.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall support the provision of the obstacle data sets as specified in PANS-AIM 5.3.3.2.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System should provide web services for obstacles, procedures, and airspaces to export geodata portals.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall be capable of importing and exporting AIXM 5.1 files.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall be capable of importing and exporting CSV files.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall be capable of importing and exporting CSV files with a user defined mapping to the database content maintaining the quality assurance procedures.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall be capable of importing/exporting snapshots and updates in the following format: AIXM 4.5, AIXM 5.1, ARINC 424;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. **User and Workflow Management**
		1. The System access shall be controlled by the use of individual usernames and passwords.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall provide a permission-based access model for the administration of rights.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. It shall be possible to configure or request configuration of individual user's access levels at the following levels:
			1. Access to particular modules and menus.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Restriction of individual menu items.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Access to specific functions/screens.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Access to specific data records.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall provide workflow management to control and automate the processes collection and processing of aeronautical data and information.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. User management shall be possible by an authorised user.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall provide task assignment on role level.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall provide workflows for the evaluation and approval of change requests of aeronautical data and obstacle applications.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall provide functionality to create / configure the workflows by a trained user.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall include a Workflow Management Module fully integrated with all the other system modules.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The Workflow Management (WFM) module shall allow the authorized user to define and customize the workflow from a graphical interface.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The WFM module shall support multiple workflows to be associated to different types of data change requests.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The WFM module shall automatically assign tasks to users according to the workflow and the user roles.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The WFM module shall automatically notify task assignees via email.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The WFM module shall be fully integrated with the data originators interfaces for the collection of data change requests.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The WFM module shall be fully integrated with the data management applications allowing for automatic data storage, and change requests collected from data originators.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall allow users to retrieve the history of each data change in terms of:
			1. Data Originator;
			2. Reason for the change; and
			3. Analysis and Validation process.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The WFM module shall include a Web GIS interface allowing previewing data and data changes impact on a map.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The WFM module shall provide fully configurable statistical reporting functions allowing for report retrieval on workflow performances such as:
			1. Error Rate;
			2. Recurring Errors; and
			3. Average Processes Duration.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The WFM module shall be based on such Software (SW) architecture that shall ease the system scalability and increase the system resilience.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. **NOTAM Management**
		1. The international standard NOTAM format contained in ICAO Annex 15 shall be the reference format for the system NOTAM and forms the base on which the system shall be developed.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. Authorized users with access to the system shall be able to originate NOTAM messages.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall process at least the following NOTAM message types:
1. NOTAM N - New NOTAM;
2. NOTAM R - Replacement NOTAM;
3. NOTAM C - Cancel NOTAM;
4. RQN - Request for NOTAM;
5. RQL - Request for checklist;
6. SNOWTAM - SNOWTAM Message;
7. ASHTAM - ASHTAM Message; and
8. NOTAM Messages in the FAA NOTAM format.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall support upcoming NOTAM classification changes put forth by ICAO. This includes support for 5-digit sequence numbers.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. Operators shall file NOTAM messages by using the NOTAM messages template of the system terminal. The template shall provide syntactic as semantic fields checks. These facilities shall be specified in detail in the tenderer proposal.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. Users shall be prevented from sending erroneous or incomplete messages.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The NOTAM shall be displayed with error description if one or more checks have failed. In this case, the NOTAM operator shall have the option to send an appropriate deny or query message to the originator, in order to correct the NOTAM or to delete it.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall automatically assign the serial number for domestic NOTAM. Series supported include all alphabet letters except “S” which is reserved for SNOWTAM. A distribution list containing addressee indicators shall be defined for each NOTAM series letter in use.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The coordinate fields of Item Q shall be automatically set by the system according to the given Aerodrome entry in Item A and the system‘s static database entries. A default value for radius shall be also filled up.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. All mandatory data items shall be entered in the system as NOTAM template according to the selected NOTAM type (N, R, C). These facilities shall be specified in detail in the tender proposal;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Incoming NOTAM messages shall be validated and automatically processed by the system when they are received.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Incoming NOTAM messages shall update the NOTAM database automatically.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. The system shall process NOTAM messages in ICAO standards.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. The NOTAM series number shall be automatically allocated and assigned when a NOTAM message is originated by a system user.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - * 1. Multi-part NOTAM shall be produced in the case where the text of field E is longer than normally considered acceptable for insertion of the NOTAM in an AFTN message, i.e. the total length of the NOTAM exceeds 1800 characters. When a NOTAM C is received, the referring NOTAM shall be cancelled accordingly (field B =issuing time).

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - * 1. A NOTAMR shall replace exactly one NOTAM. Both NOTAMs shall belong to the same NOTAM series.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - * 1. The original NOTAM shall be cancelled accordingly at the reception of the NOTAM R (field B = issuing time), with the NOTAM R having its own validity.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - * 1. NOTAMC shall not cause the immediate deletion of the NOTAM in the database. Instead, the NOTAM shall be logically tagged as cancelled and is therefore not an active NOTAM anymore.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. NOTAM which become invalid before the given end of validity or which do not have a defined end of validity ("EST" in field C), shall be replaced, or cancelled at any time by authorized users. The System shall indicate the existence of NOTAM Message about to expire, with a configuration variable indicating the number of days in advance a NOTAM Operator shall be alerted.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. If an incoming NOTAM was lost, i.e. if the system detects a discrepancy in the message series number, the system shall automatically request the missing NOTAM(s).

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. The checklists shall be issued as a NOTAM in the series they refer to. A separate Checklist shall be issued for each NOTAM series.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. The system shall automatically generate and distribute checklists on request for a specific NOTAM series.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. The system shall support the manual and automatic generation of NOTAM summaries. A NOTAM summary shall be a plain language list of the NOTAM currently in force, selected by Aerodrome(s), NOF(s), or FIR(s).

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. Authorized operators shall interrogate the NOTAM database. The items should be referenced in a custom query. These facilities shall be specified in detail in the tender proposal.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The data items shall be logically associated, allowing the creation of complex retrieve filters. Once a retrieve has been specified, it shall be stored by the operator for later recall.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The result of a database query results in a list of NOTAM messages shall match the specified filter criteria (details in the tender proposal).

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. AFTN/AMHS operators shall request NOTAM messages by sending a RQN message. The message shall be automatically processed by the system.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. NOTAM Subsystem shall manage and allow receipt, initiation, and dissemination of all types of NOTAM by users with adequate authorization, NOTAM database shall store National NOTAM, International NOTAM, International SNOWTAM, International ASHTAM and NOTAM processing shall have the following capabilities:
1. Check and Validate NOTAM;
2. Correct NOTAM text fields;
3. Send message to the originator of a NOTAM asking for clarification, abnormal functioning, and NOTAM rejection notification;
4. Delete and modify stored NOTAM (Original message is not modified);
5. Create or modify lists of addressee indicators to NOTAM series letters for distribution; and
6. Print out NOTAM.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The NOTAM Subsystem shall embed a Digital NOTAM platform interacting with NOTAM Processing Function.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. Non-Functional requirements for NOTAM sub-system
1. The System definition shall follow the paradigm of an internal intranet architecture hosting the main functionality and the database centrally. The internal intranet Architecture shall be designed with modularity and expandability to allow future additions of modules. The GUI shall be designed considering the criteria to minimize the possibility of human errors and optimizing time for data insertion.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

1. The System shall make use of a central aeronautical database that is AIXM 5.1 (or later) compliant.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

1. The System shall guarantee a future-proof solution in terms of interoperability with external systems and adaptability to new trends or regulations adopting state of the art frameworks, technologies, and standards.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

1. The System programming language shall be platform independent to ensure portability to different hardware platforms.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

1. The Human Machine Interface (HMI) shall be Internal Intranet based, so that it can be used even from remote stations.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

1. The System shall incorporate an automated Flight Planning System that complies with ICAO Doc 4444 PANS- ATM / 501 Appendix 2 - Flight Plan, and Appendix 3 - Air Traffic Services Messages in handling the preparation, validation, storage, and distribution of flight plan messages, including filed Flight Plan (FPL) and ATS update messages.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

1. The System shall incorporate an automated NOTAM Subsystem that complies with the NOTAM function as defined in ICAO Annex 15.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

1. The System should incorporate an automated METEO Subsystem that complies with the WMO specification as defined in:
	1. ICAO Annex 3 – Chapter 7, Chapter 9, Chap. 10, Chapter 11; and
	2. WMO 306 Vol II and WMO 386 Vol I.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

1. The System shall be developed and maintained satisfying the objectives identified in EUROCAE, ED-153.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

1. In the event of failure of the master, the System shall automatically switch from master active server to the slave passive server. If there is a failure in the system that cannot be automatically recovered, one of the slaves shall be promoted to be the new master.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

1. All invalid or expired Aeronautical Data shall be kept accessible in the system for a configurable amount of time. A System administrator shall be allowed to change this retention time (by default 3 months) parameter to any positive value.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. **AIP/eAIP Publishing**

The following requirements are for the production of Aeronautical Publications:

* + 1. The System shall allow the production and maintenance of all the sections of the standard ICAO AIP (including AIP Amendments, AIP Supplements and AIC) according to the PANS-AIM.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall be a web-based solution.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall allow to extend the structure of the AIP by:
			1. Defining sections not included in the default AIP; and
			2. Excluding sections included in the default AIP.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. Modify the structure of sections included in the default AIP.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall extract from the Aeronautical Database the structured data to be published in the AIP.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall allow for maintaining the textual information, images and formats in a XML based environment, word processor environment.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall automatically incorporate Aeronautical Charts (e.g. in PDF format) in the produced AIP.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall control configuration of all the AIP documents and templates by:
			1. Applying version control;
			2. Maintaining multiple effective versions at multiple effective dates;
			3. Avoiding concurrent access to documents (Check In, Check Out); and
			4. Maintaining the history of all the changes.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall automatically produce, at each publication cycle:
			1. AIRAC and non AIRAC Amendments;
			2. Supplements;
			3. Cover Page (list of pages to add and to delete);
			4. Checklist; and
			5. T.O.C. Table of contents.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall allow users to produce the AIP in multiple formats including:
			1. MS Word
			2. PDF
			3. HTML

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall automatically generate a full searchable eAIP (Electronic AIP) in accordance with Eurocontrol eAIP specifications (v 3.0) including:
			1. AIP Amendments
			2. AIP Supplements
			3. Aeronautical Circulars (AIC)

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall allow to define and assign tasks to be executed integrated to a workflow management system.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall control access to the publishing functions according to:
			1. User Rights
			2. Workflow Definition
			3. Tasks Assignment

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall be based on such Software (SW) architecture that shall ease the system scalability and increase the system resilience.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. **Aeronautical Charting**

The following requirements are for producing charting (graphical) products such as the en-route Charts:

* + 1. General System Characteristics
			1. The System shall be based on Geographical Information System (GIS) that follows aeronautical requirements. All these GIS systems shall be compatible with **ESRI ArcGIS** currently used by ATNS.
			2. The System shall import data of the following data formats including:
				1. AIXM 5.1 (or later)
				2. Shape files SHP
				3. DGN, DWG/DXF
				4. KML
				5. Georeferenced Image (ex. GeoTIFF)
			3. The System shall archive and maintain charts and configuration files in a Shared Repository.
		2. Chart management
			1. The System shall allow to create a new template from a product series specification (e.g. ERC);
			2. The System shall allow the creation of a new template as a copy of an existing template.
			3. The System shall allow the creation of a new Chart from a predefined Template.
			4. The System shall allow the creation of a new Chart as a copy of an existing Chart.
			5. The System shall highlight the list of charts that need to be updated for a defined production cycle, due to incoming data changes.
			6. The System shall visualize in a graphical view the data changes that impact on a selected chart,
			7. The System shall visualize in a tabular view the data changes that impact a selected chart, having the capability to export the report of the data changes.
			8. The System shall highlight the list of charts that need to be updated due to Template changes (ex. Template symbol changes).
			9. The System shall remember the manual edit performed to finalize previous version of the charts
		3. Symbology: This requirement specification categorizes symbology into three groups:
* Point;
* Line (including complex line patterns containing point symbology);
* Area infill (crosshatch patterned, symbol infilled and specified tints);
	+ - 1. The symbology tools shall have the following attributes:
1. Symbology colour selection shall be accurately selectable and repeatable.
2. Symbology shall be specified as a nominated percentage tint of the solid colour.
3. Symbology shall support prioritization effects for both on screen display and for output.
	* + 1. POINT symbol representation
4. The APS shall represent point symbology in two alignment modes depending on its application and on which product is being displayed or output. The following symbology options are required to be available for selection:
	1. Sheetline horizontal alignment.
	2. Graticule.
5. The point symbology height and line thickness values specified in millimetres accurate to two decimal places shall be fully selectable.
6. Point symbology design and construction shall be developed using a toolkit which is capable of constructing features with:
	1. Symbols
	2. Cell files
	3. TT Font
7. Many point symbols may be required within one symbol.
	* + 1. Line symbol representation
8. Basic line symbology shall be portrayed in a selectable line thickness specified in millimetres and accurate to two decimal places
	1. Round-ended or square-ended lines shall be selectable.
9. Line symbology shall represent complex line patterns, containing the following attributes:
	1. The system shall support pecked lines with peck and gap lengths specified in millimetres accurate to two decimal places.
	2. The system shall support more than one-peck length within a line pattern.
	3. The system shall support more than one gap length within a line pattern
	4. The system shall support multiple instances of varied length pecks and gaps within a line pattern.
	5. The system shall support line patterns containing single and multiple point symbols.
	6. The system shall support combinations of lines, pecked lines, gaps and symbols.
	7. The system shall support line patterns containing symbols.
	8. The system shall support the specification of symbol alignment.
		* 1. Area Infill representation
10. The system shall support the following area infill symbology requirements:
11. A solid infill of a specified colour.
12. A selectable infill outline of a specified colour.
13. A linear crosshatch of selectable line thickness, spacing and angle measured in degrees (0-359).
14. An infill consisting of a symbol pattern.
15. A selectable specified outline shall be available.
	1. The System shall support coastal vignetting to highlight the coastline.
	2. The vignetting process shall provide flexibility with respect to:
		1. Its assigned width;
		2. Number of bands;
		3. Applied percentage tints.
		4. Labelling
			1. The system shall support fonts configuration supporting:
16. Normal;
17. Bold;
18. Italic;
19. Condensed format
20. Underline format;
21. Selectable point/mm sizes.
22. TT Font
23. Morse code
	* + 1. The system shall support complex related area features in close proximity to each other sharing one text block feature, which shall contain reference and height information for all area features.
			2. The system shall support complex label defined with text, symbols, boxes
			3. The system shall allow defining opened boxes with Text overlapping the box lines.
			4. The system shall allow to automatically adapting the label boxes to the label content.
			5. The system shall allow defining boxes with a defined shadow (ex. Navaids Label)
			6. The system shall allow to automatically placing the labels avoiding any label conflict.
			7. The system shall allow to automatically placing the labels avoiding conflict with selectable symbols.
			8. The system shall allow to automatically placing all the labels, inside the defined map boundary avoiding to place the label outside the map boundary in case of feature overlap (ex. Airspace in overlap with the map boundary)
			9. The system shall allow to normalize attribute information for labeling purposes (ex. Feature coordinates in the proper format)
			10. The system shall allow to define the following deconflicting rules for Areal Features:
				1. Place completely inside the polygon
				2. Place completely outside the polygon
				3. Define a rotation (horizontal, fixed value, oriented to the graticule)
				4. Along the boundary (above, below, on the line)
				5. Repeat along the boundary
				6. Boundary offset
			11. The system shall allow to define the following deconflicting rules for linear Features:
				1. Along the line (above, below, on the line)
				2. Repeat along the line
				3. Line offset
				4. Start, Center, End point of the Line
			12. The system shall allow to define the following deconflicting rules for point Features:
				1. Place around the point (with a priority selection)
				2. Point offset
				3. Define a rotation (horizontal, fixed value, oriented to the graticule)
			13. The system shall allow defining alternative placement strategy in case of placement failure.
			14. The system shall allow defining alternative label specification in case of placement failure.
			15. The system shall allow defining Label with an associated Leader Line. It shall be possible to configure:
				1. Leader Line defined as line
				2. Leader Line defined as a shape (ex. triangle)
		1. Lay outing and printing
			1. The System should be capable to automatically produce all the chart types described in ICAO Annex 4. The preferable capability is the production of En-route Charts.
			2. The System shall produce output files in the following selectable output formats
				1. PDF
				2. TIFF
				3. GeoTIFF
				4. JPEG
				5. PNG
				6. BMP
				7. KML
				8. DWG/ DXF
				9. SHP
			3. The AIS shall produce output files in both RGB and CMYK colour definition
			4. The system shall allow generating isogonal lines (lines of equal magnetic declination) for any date during the lifetime of the current World Magnetic Model.
			5. The system shall allow to define dynamic Graticule for multiple maps in the same chart in order to configure:
				1. Lines specification
				2. Ticks specification
				3. Label Specification
			6. The system shall allow to define, for the dynamic Graticule, the following Label settings:
				1. Text colour
				2. Text size
				3. Text font
				4. Parallel/perpendicular placement on the map border
				5. Inside/outside placement respect to de map border
				6. Repeat the Label inside the map oriented to the latitude/longitude line
			7. The system shall allow defining, for the dynamic Graticule, more than one tick specification depending from the coordinate interval.
			8. The system shall allow defining chart layout containing:
				1. Different maps at different scale
				2. Different maps at different projection
				3. Static content (line, text, symbols)
				4. Dynamic content (feature information coming from extracted data. Ex list of waypoints)
				5. Chart Legend
		2. Chart editing
			1. The system shall allow to apply masking effect between linear features and symbols
			2. The system shall allow to apply masking effect between linear features and Labels
			3. The system shall allow to edit a Label in order to:
				1. Change the Label position
				2. Change the rotation angle
				3. Change the Label size
				4. Duplicate a Label
				5. Hide a Label
				6. Restore a Hidden Label
				7. Change the specification of a Label (change the Labelled information)
			4. The system shall allow to automatically update the Leader Line defined for a Label in case of Label position update
	1. **Dynamic Data Management**
		1. The system shall support different user profiles. The user profiles shall be set up and maintained by the system administrator.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The users shall be assigned one or more roles, such as some users can have full access rights, while others are only some applications.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. All messages generated on the system shall be sent to the AMHS system in order to be forwarded to the messages' destinations addresses.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The database system shall provide redundant database solution ensuring a high operational availability and high data safety for operational critical dynamic data.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The database shall provide fast write operations in order to have a maximum traffic throughput.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The database system shall be open source and shall have capability to be used by more than 300 users.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall manage a Location list, which shall contain lists of Airports or FIR to be used in FPL, NOTAM and PIB validation.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall backup the current database and configuration for troubleshooting and investigation purposes.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. **Static Data Management**

The following requirements are for Static Data Management:

* + 1. The system shall include an Aeronautical Database where all Structured Aeronautical Data shall be maintained.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall cover the data scope defined in the aeronautical data catalogue in PANS-AIM (Appendix 1).

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The Aeronautical Database shall support temporality. Multiple effective versions of the same data shall be available at multiple effective dates.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall support validation levels. Multiple versions of the same data shall be available at multiple validation levels.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall allow to extend the structure of the Aeronautical Database by:
			- 1. Adding new features
				2. Adding attributes in existing features
				3. Adding relations between features

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall allow access to Aeronautical Data for different users according to the defined user rights.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall allow access to the Aeronautical Database via alphanumerical data entry forms.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall allow access to the geographical information stored in the Aeronautical Database via a GIS based geographical interface (Map View)

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. All the changes to the Aeronautical Database structure shall be automatically reflected into the data entry forms.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall allow entering (add\edit\archive) aeronautical data at different effective.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall provide dedicated interfaces for editing complex aeronautical features (e.g. Navaids, Airspace, Routes, Declared Distances)

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall allow to import digital data in the following formats:
			- 1. AIXM 4.5
				2. AIXM 5.1
				3. ARINC 424

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall track all the changes done on the Aeronautical Data stored in the Aeronautical Database.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall allow to query for each data change the following information:
			- 1. Effective Data
				2. Action Date
				3. User
				4. Reason for the Change
				5. Data Originator
				6. Process executed to validate the change

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall support data validation by:
			- 1. Performing data entry validation on the data entry forms according to:
1. Type of data;
2. Range constraints; and
3. Allowed values (codelist).
	* + - 1. Performing Validation via Business Rules

Schematron shall be supported by the business rule framework;

Jython shall be supported by the business rule framework; and

BPM shall be supported by the business rule framework.

* + - * 1. Independent re-entry of the same data by another user (blind re-key)

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall support AIXM 5.1 Business Rules

The system shall allow extending the business rules set by:

* + - * 1. Defining Custom Rules
				2. Modifying Default rules
				3. Deactivating Default Rules (inactive rules won‘t be used in the validation)

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall allow exporting digital data in the following formats:
			- 1. AIXM 4.5
				2. AIXM 5.1
				3. ARINC 424

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall allow defining and extracting custom data reports in the following formats:
			- 1. XLS
				2. CSV
				3. HTML
				4. XML

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall allow defining and extracting map reports from the geographical interface in the following formats:
			- 1. JPG
				2. PNG
				3. PDF
				4. TIF
				5. GEOTIFF
				6. SHAPE

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall have a geodesic calculator allowing geodesic computations in terms of:
			- 1. True and magnetic bearings
				2. Distances
				3. Radial/radial intersection
				4. Radial/arc intersection
				5. Magnetic Variation
				6. Geographic Coordinates (e.g. WGS 84)

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall control access to the data maintenance functions according to:
			- 1. User Rights
				2. Workflow Definition
				3. Tasks Assignment

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. All modifications to the database shall be archived and a logging capability shall be provided to show why, when and by whom the update has taken place.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The data should be accessible by different users according to a specific security policy (user rights management).

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall be able to work in an operational workflow following the AIRAC cycle. The data shall have information relevant to the temporality (effective date) and the source for further track changes.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system administrator shall be capable of defining and controlling the rules for extracting the data from the database for different purposes (flight procedures design, charting, AIP production, digital data distribution) and in different custom formats. Procedure Design, Charting and AIP production will retrieve data from the AIXMDB and/or from the Charting Database automatically, no manual rules should be applied. For digital data distribution, digital data sets distributed as recommended by ICAO and published in PANS-AIM Doc 10066

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The users shall be capable of navigating through the aeronautical data by means of a flexible graphic user interface. There must be at least two options for editing/maintaining the data.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. A standard alphanumerical menu driven interface to edit/insert/update/validate values. This interface shall reflect the database structure also when it is customized by the end user. All features in the database can be edited by means of this interface.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. A GIS based database interface specially designed for the maintenance of complex features like for instance airways and bounded airspaces. This GIS based interface shall also have capabilities of validating the data by computing the basic geodesic information (like true and magnetic bearings, geodesic distances etc.) and shall be able to check published data against calculated data.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall be able to handle aeronautical data of multiple authorities or organizations and provide mechanisms for a clear separation and isolation of their responsibilities.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The aeronautical database shall be a native AIXM 5.1 database model not an upgrade from the AIXM 4.5 database model.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall support the bidirectional retrieving of referenced features.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. A human readable identification shall be available for all AIXM 5.1 data. The definition and evaluation of this identification shall be configurable for each feature type as part of the system customization.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. To ensure the interoperability with other systems, it shall be possible to pre-process AIXM 5.1 data to be imported.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. To ensure the interoperability with other systems, it shall be possible to post process exported AIXM 5.1 data.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. External systems shall be able to subscribe and unsubscribe for the notification on data changes. Thereby a filter on the AIXM data shall be definable that restricts the data sets for which notifications are to be send.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. All forms for viewing and editing data shall be capable of handling additional data in the format of AIXM 5.1 extensions and application schemas. The UI shall support the additional proprietary information that are defined by the system and that are not part of the AIXM 5.1 standard.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. For the semantically grouping of AIXM 5.1 data a hierarchy shall be defined on top of the AIXM 5.1 data types that reflects the associations and links between them. This hierarchy shall contain certain data types that define the entry points for searching for associated data or data types.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The user interface shall allow editing XHTML properties (of type "aixm:XHTMLType") in a WYSYWYG editor.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. It shall be possible to customize the forms for AIXM 5 data (grouping, hiding, rearranging, and properties). The default configuration shall reflect the AIXM 5.1 model as it is including the annotations. It shall be possible to customize the forms for AIXM 5 data depending on user profiles.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. **Electronic Terrain Obstacle Database**
		1. The contractor shall supply an integrated, COTS system for:
1. Aerodrome terrain and obstacles survey data management;
2. 3D aerodrome/Annex 4,14 and 15 model creation and processing; and
3. Natural and Artificial obstructions DB storage and management;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The eTOD system shall support ICAO Type A & B Obstacle charts automatic construction and maintenance.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The eTOD system shall be designed to collect, validate, process and maintain the terrain and obstacle data required by ICAO Annex 4, 14 and 15 (latest amendment) requirements and in accordance with PANS-AIM Doc 10066.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The eTOD system design concept and functional requirements should have been endorsed by ICAO and either FAA or Eurocontrol.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The eTOD system shall be COTS software, that has been in commercial use for more than one year and used to create and manage eTOD data for a minimum of five (5) international airports.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The eTOD system shall functionally enable:
			1. Airport Areas Modelling; and

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. DTM and Orthophoto Production

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The integrated eTOD system shall be COTS-based software and shall have been in commercial use for more than one year. Any offer requiring the development of the eTOD system shall be deemed non-compliant.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall interoperate seamlessly with the Instrument flight procedures system for the support and automation of design and projecting of aeronautical procedures design. The eTOD systems and Instrument flight procedures system must employ the same technology and a common user environment. The eTOD system shall manage the data exchange from the eTOD and Instrument flight procedures applications (including threshold, runway end, navaid data, etc).

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system should support other air navigation applications including, but not limited to, the following:
			1. Data provision for Ground proximity warning system with forward looking terrain avoidance function and minimum safe altitude warning (MSAW) system;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Instrument procedure design;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Determination of en-route “drift-down” procedure and en-route emergency landing location;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
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| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Advanced Surface Movement Guidance and Control System;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Aeronautical chart production; and

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Aerodrome obstacle restriction and removal.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall validate data in order to assure its quality and integrity. In particular, the system shall verify the presence of all ICAO required attributes, CRC and data range validity;
1. If all ICAO data attributes are present in the data set;
2. If data set is in the area for which it has been required;
3. If all auxiliary documents required are present in the data set;
4. If data syntax and format are observed;
5. If data accuracy is observed;
6. If the associated CRC is correct; and
7. If the data are in a range of values set by the user.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall manage different type of import methodologies. It shall import new data, update or overwrite old data. It shall resolve data conflict during import. It shall also import different data formats.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall store all survey results. Specifically, all data shall be divided into a “family” structure. The System shall manage all documents, digital photos, orthophoto and so on and their metadata. It shall produce a report on data history and manage document versioning.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall employ a database design that divides data into three categories:
1. Aerodrome data (threshold, runway end, holding points, stand points, centerline points, start TORA (or declared distances) points);
2. Navaid data; and
3. Obstacle data.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall produce, for all data types, reports on data history and users who have modified data.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The System shall have the capability to produce on-line data sketches. This type of sketch has to display object photos stored in the DB.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall be capable of automatically detecting and resolving conflicts in terrain and obstacle information during the import process when two different data objects with the same or very close geographic positions are detected.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall allow the user to associate imported terrain and obstacle information to an ICAO Annex 15 Area.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall store all imported terrain and obstacle files within the aeronautical database with associated metadata.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall be capable of visualizing terrain and obstacle data along with Aeronautical Data within both a GIS and Computer Aided Design environment in 2D and 3D.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall be capable of exporting terrain and obstacle data in the following formats:
1. OGC compliant formats;
2. AIXM v5.1;
3. KML; and
4. Configurable ASCII files.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. **Airport & Obstacle Design & Analysis**
		1. The Airport & Obstacle Analysis functions shall be available on the Electronic Terrain and Obstacle Database.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall allow the user to create individual projects for obstacle analyses using data from the Aeronautical Database.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. Terrain and obstacle data shall be capable of being loaded into the project.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The following aeronautical data shall be capable of being loaded into the project**:** Runways; Helipads; Taxiways; Aprons; Vertical Structures; Construction Areas; Survey Control Points; NAVAIDS; etc.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The user shall be able to select the temporal validity period for the data to be loaded so as to perform analysis on the published data or using future data.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. Multiple versions of each project each with their own data parameters shall be supported.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall provide automated tools for the user to design the obstacle limiting surface of Annex 14.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall allow the user to modify the standard parameters of the Annex 14 surfaces in order to create customized surfaces included curved ones.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The user shall be able to perform an obstacle (man-made or not) assessment against the obstacle limiting surfaces of Annex 14.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The user shall be able to produce and save in the Aeronautical Database a report of an assessment against the obstacle limiting surfaces of Annex 14.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall provide automated tools for the user to design data collection surfaces (ICAO Areas) of Annex 15.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The system shall allow the user to modify the standard parameters of the Annex 15 surfaces in order to create customized surfaces.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The user shall be able to perform an obstacle (man-made or not) assessment against the Annex 15 data collection surfaces.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The user shall be able to produce and save in DB a report of an assessment against the Annex 15 data collection surfaces.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. **Instrument Flight Procedure Design**
		1. Background

The software package tool shall provide an interactive environment for three-dimensional aeronautical visual and instrument flight procedures design, airspace management, and air navigation, using conventional Navigation Aids, PBN concept in accordance with ICAO DOC 8168-PANS-OPS, ICAO DOC 9905, ICAO DOC 9906 standard criteria. ATNS is looking for a tenderer who is going to establish the AIS to AIM system which can have compatibility and data interchangeability with the existing FPD tool at ATNS and suggest any additional FPD software(s), if required, in conformity with specification as mention in subsection 6.16.3 to 6.16.12.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. Flight Procedure Design Software used by ATNS: IDS FPDAM

Flight Procedure Design (FPD) Software FPDAM has been designed and developed by IDS for conventional and RNAV procedures. The software is currently installed at ATNS. FPDAM conforms to the International Civil Aviation Organization (ICAO) Performance Based Navigation (PBN) concept as well as PANS-OPS criteria as detailed in ICAO Doc.8168. FPDAM provides a high degree of usability with a user-friendly interface: Complete procedure design from the initial approach segment through to the missed approach segment. Provide capabilities of “what-if” scenarios for procedure design. Enables users to re-draw protection areas. FPDAM implements a high level of automation using advanced algorithms, allowing for: Automated complex calculations for RNAV and Conventional procedure designs. The design of protection areas and obstacle assessment with minimum input.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. General system Requirements for FPD

Design, validation and maintenance of instrument flight procedures shall be based on ICAO PANS-OPS criteria; the design environment must be a three-dimensional Computer Aided Design (CAD) environment able to use geo-referenced information and work with geodesic and geographic data. The Computer Aided Design (CAD) and GIS environment must be compatible with the existing ATNS environment. The aeronautical data must be extracted from an AIXM 4.5 and 5.1 based database and the result of the procedures design shall be stored in the same database for publication purposes. Flight procedures shall be encoded using the ARINC 424 format including path & terminators to be finally stored into the central database.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. Specific requirements

The subsystem shall:

* + - 1. Allow the user to customize and structure the reports as per user needs and for submission to the SACAA.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Be capable of sharing common data with the central aeronautical AIXM database, i.e. incorporating static aeronautical data (including existing flight procedures) directly from the aeronautical database, and of writing new/updated procedure data back to the aeronautical database including the ARINC path & terminators.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Be capable of protection manipulation of the data using the CRCV at 32 digits. The CRCV shall be computed on the database features and on working and reference files used by the procedures designers.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Be capable of incorporating magnetic variation/declination data directly from the aeronautical database and/or compute the magnetic variation based on the standard IGRF, WMM models or user defined values.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
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| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Be capable of Geodetic Transformations and Geodesic calculations such as point intersection (bearing/distance, bearing/bearing, distance/distance, etc.) and calculating true and magnetic bearing and distances between known points. The geodesic calculator must have a high interactivity with the graphics, i.e. shall be able to type in coordinates or read the coordinates directly from graphic objects selected via mouse click or read coordinates and identifiers by browsing the database.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Develop the SID and STAR procedures in a three-dimensional CAD environment, taking into account the digital terrain models and obstructions as primary input for the calculations and the evaluation of the minima.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Be capable of 3D visualization at all stages of design (including “fly-through” simulation), and of superimposing procedures onto a 3D aeronautical chart and the digital terrain model for ground validation of the procedure.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Use as graphic support for the flight procedures design data and charts for compatibility with the current environment.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Allow the visualization of all the aeronautical and terrain data contained in the database as a background graphic layer for the procedure designers as well as for the automatic computations.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Be capable of developing the design in accordance with the following standard regulations:
				1. ICAO PANS-OPS Doc. 8168, ICAO doc. 9905 (for RNP AR procedures); and
				2. ICAO Annex 4/14.

The system must be updated up to the latest available amendment to ICAO PANS-OPS.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Present to the user the default design parameters according to the set of criteria in use. The user shall be able to modify such parameters according to the needs.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Make use of the aeronautical obstruction database besides the terrain information for the relevant computations.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Allow a flexible design workflow as the one followed by the procedure designers. The workflow must therefore be completely free in terms of the sequence of the designed segments.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Store the designed flight procedures and relevant projects in the database for further maintenance. The user shall be able to select the flight procedure to work on (for edit/view/review) from the flight procedures archive.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Be capable of supporting airspace design and maintenance (airways, bounded airspaces, MSA, Minimum Radar Vectoring Charts (MRVA)) using geodesic calculation.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Be capable of interactive creation and modification of 3D flight procedures and other 3D airspace elements that meet the reference criteria including but not limited to the following features:
				1. STARs
				2. Full Approach Procedures.
				3. MSA/TAA/Radar Terrain Chart/Holding/Reversals
				4. SIDs
				5. Obstacle protection areas and trapezoids associated with the above components.
				6. Minimum Obstacle Clearance, PDG and minima calculations.
				7. Query, locate, and view/visualize obstacle penetration information.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Be capable of fully supporting the design of Conventional, RNAV, GBAS, APV I and II, RNP AR, PINS flight procedures in a 3D scenario; the system shall further allow:
				1. The creation of MSA, holding patterns, base turns, racetracks, procedures turns, DF turns, circling and the associated protection areas;
				2. Designing of obstruction clearance areas of the radio instrument protection areas (VOR, NDB, VOR/DME, LOC, LOC/DME);
				3. Designing of ILS OAS surfaces (obstacle assessment surfaces) and the BASIC ILS surfaces;
				4. Designing the Obstacle Limitation Surfaces (OLS), as defined in the ICAO Annex 14;
				5. Construction of Visual Surface Segment (VSS) and Obstacle Clearance Surface (OCS).
				6. Designing the departure procedures (straight with and without guidance and turning with and without guidance), in terms of segments and relevant protection areas and clearance surfaces;
				7. Drawing the procedure components (segments and protection areas) in a 3-D environment;
				8. Calculating the ICAO CRM (Collision Risk Model) as stated in the ICAO CRM manual to analyze the minima and the associated risk for ILS approaches;
				9. Visualizing the penalizing obstructions in each segment of the flight. The penalizing obstacles (and/or terrain points) must be ordered by some specific criteria (OCA/H for final and missed approach segments, procedure design gradient for departure areas, minimum flight altitude for intermediate segments, initial segments, arrival segments and en-route segments);
				10. Computing the minimum holding altitude by highlighting the penalty obstructions;
				11. Computing the procedure design gradient (PDG) for departures (SIDs);
				12. Producing the approach/departure procedures based on VOR/DME RNAV criteria;
				13. Computing the cross track and along track tolerances for waypoint;
				14. Computing and designing the operational utilization areas for RNAV navigation for 2 or more DME;
				15. Producing RNAV approach procedures for aircraft equipped with basic GNSS receivers;
				16. Producing GBAS approach procedures;
				17. Producing the FAS data block for GBAS approaches as stated in the ICAO Annex 10;
				18. Producing RNP AR approach procedures as stated in the ICAO doc 9905;
				19. Producing APV (cat I & II) approach procedures;
				20. Computing Baro-VNAV minima for RNAV approach procedures;
				21. Computing the minimum flight levels for the airways;
				22. Encoding according to ARINC 424 specification the instrument aircraft flight procedures segments (holding, approach, missed approach, fixed points, SIDs and STARs);
				23. Checking the compliancy of the reference criteria rules during the final identification and storage of the instrument procedure;
				24. Recording the instrument procedures in the database for maintenance and /or charting purposes;
				25. Be capable of generating a request for approval “submission form’ by collecting automatically all the data previously assembled in the design phase with the relevant information of the procedure including coding and relevant obstacles;
				26. Designing standard arrival procedures (STAR) for conventional and RNAV;
				27. Allowing superimposing the default parameters of the procedures design and the obstacle calculation criteria, by setting different values from those given by the reference criteria whenever considered necessary by operational needs;
				28. Accessing, use and search all data related to Air Navigation, i.e., airports, airways, radio instruments, obstacles, etc. Logical searching functionalities shall be available in the graphic environment also, i.e. the graphic window shall pan and zoom on the position of a searched aeronautical feature (like Airports, Navaids etc);
				29. Designing the “take off flight path area”, as defined in the ICAO Annex 4; and
				30. Allowing the manual modification of the computed protection area and surfaces using the standard components of the CAD graphic environment. Such modification shall not affect the assessment capabilities of the design system.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Computing the geometry of the bounded airspaces (restricted, dangerous, prohibited, etc) starting from the graphic.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Supporting the design of minimum radar vectoring areas.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Producing the route segment protection areas depending on the Navaids used.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Producing the protection areas for turns in the route phase as stated in the ICAO Annex 11.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Designing a whole route from the graphic environment and store it into the database.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. The System must be validated by the Vendor in accordance with the ICAO 9906 Document vol. III in terms of level of coverage against the reference criteria (ICAO) and test cases.
				1. The software will be used for design of new SID, STAR, non-precision and precision approaches (NDB, VOR, VOR/DME, ILS, RNAV (VOR/DME, GNSS), SBAS, RNP AR, GBAS, APV I & II), holding, circling and en route. Also, software will be used for analyzing what if analysis of new (not yet stored in any database) obstacles, and review of existing IFP‘s using the reference criteria.
				2. Results of IFP design will be used for publication of aeronautical charts in AIP or other publications.
				3. The design system shall support the safety assessment evaluations with production of textual reports containing a summary of the procedures.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. Geographical Information System (GIS) Requirements
			1. The System shall be based on Geographical Information System (GIS) that is in compliance with aeronautical requirements. The GIS environment module should be able to import maps on different formats from different system (RDBMS, etc.), import Data Terrain Models (DTM) models including NIMA formats, and create DTM starting from contour lines on 3-D format. The 3-D function will be used for checking designed procedures in fly through mode (simulator flight).

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. The GIS environment shall be flexible to utilize digital terrain data (contour and other topographical features) relevant to procedures design, in WGS-84, UTM and Lambert projection.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Terrain database management shall be included (vector, digital terrain models and raster).

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. Obstacles Analysis
			1. The System shall be flexible by allowing the designer to manually input obstacles data (such as WGS-84 coordinates and elevation) and AD information in WGS-84 format and UTM.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. During segment construction, the system shall perform obstacles check. The controlling obstacles should be highlighted and the minima (OCA/OCH, DA/DH, MDA/MDH) should be calculated. This should not be limited to segment, but to all procedures.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. The system shall allow the usage of vegetation and define the amount of vegetation to be applied.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. The system shall present for each segment of flight/surface under analysis a list of obstacles and terrain points ordered by criteria (for instance OCA /OCH for final approach segments, PDG for departures, etc). By selection of a specific obstacle there should automatically zoom and fit providing information of penetrating or not obstacles by color coding (Red/Green). From the same list of obstructions, the system shall allow placing in the working environment the relevant obstacle data (elevation, OCA/penetration value, type, etc.).

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. Design and System Environment
			1. The System should be flexible as the manual process, while at the same time ensuring, through automation, strict adherence to the design procedures in accordance with the reference criteria.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. The System should to be flexible to use SI and Non-SI Units systems.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. The System should be helpful to the designer in choosing parameters for procedure design to enable to achieve the optimal procedure, and or provide the optimal solution for safe flight procedure; however, in strict adherence with the reference criteria.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. The System should be able to provide the designer the allowance for quality control with providing a detailed print out of all steps and calculations performed by designer and system itself along with the capacity for database storage (procedure name, date, username, calculations and steps, criteria used (PANS OPS). The design printouts should be in a format that procedure calculation can be presented to other authorities for further validation and endorsement.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. The System should be able to create all approach segments to the final segment, including missed approach; starting from en-route structure, holding to approach; departure procedure should be also connected to en-route structure. All geometric flight trajectory of each segment shall be joint and represent as one procedure taking into account all controlling obstacles for each segment.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. The System should be able to inform the designer every time he uses parameters, which are not in accordance with the reference criteria, because this may lead to conflict and unsafe procedure design. The usage of parameters not in accordance to the reference criteria is anyway strictly mandatory.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. The system shall allow the user to configure the font, the color of the reference ATS geography text (ICAO Identifiers) and of the text automatically place by the system.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. Calculation and Geodesic Functions
			1. Geodesic tool and calculation shall be in accordance with ICAO requirements of accuracy, integrity and precision (geodesic arc and radial creation; intersection between geodesic radials, arcs, lines parallels and meridians); geodesic distances to radials, arcs, geodesic lines, parallel and meridians, fixes and waypoints).

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Geodesic and geographic tools (magnetic deviation, bearings and distance measurement, true and magnetic north) shall be included.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. The system shall be capable of generating a textual summary of the procedure containing (but not limited to) the following data:
				1. Aerodrome and runway data
				2. Navaids data
				3. List of fix/waypoint related to the procedure
				4. List of the segments of the procedure with the related controlling obstacle
				5. Minima for the procedure
				6. Free text fields to insert comments from the designer.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. Charting Module
			1. The design system shall be able to generate SID, STAR, and Approach charts. The appearance of the charts shall be configurable by the users in a graphic environment. Different chart types (precision non precision, conventional and RNAV) shall be configurable and made available in a graphic environment.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. ARINC 424 coding
			1. The design system shall be able to guide the designer in the process of ARINC 424 coding of the SID, STAR, and Approaches.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. The SID, STAR, Approach data shall be saved in the AIXM based database. The system shall to be able to be extended in order to export the above-mentioned data in AIXM and ARINC formats and to be connected to the European Aeronautical Database (EAD).

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. **Airspace Design**

The following requirements apply:

* + 1. The tool shall provide airspace data integration fully 3-D and visualization, and the ability to interactively modify airspace/route design components to assess impacts of design modifications.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The tool shall provide two working roles/environments for the tool users:
			1. A data management role/environment, where the user can organize their own project(s), putting the desired document inside it (categorized into GRID, RASTER, DGN, etc), changing its characteristics according to his needs and potentially cooperating with other users able to access to that project.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. An airspace and route design role/environment, in which the user shall effectively design airspaces and routes providing a central integrated display for multiple data sources.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The tool shall allow the users to be subdivided in two categories:
			1. The administrator who shall be able to manage account creation/removal, common repository area management, project creation/ removal, rights assignment, project creation/removal.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. The operators who shall have access to all the design functions.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The tool design activities shall be organized in working project each one characterized by:
			1. Some remarks information;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. a project effective date;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. a project creation date;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. a project geographic area of applicability (bounding box);

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. the geodesic model: the projection algorithm, the geodesic datum and the zone, calculated according to the seed file currently associated to the project; and

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. the magnetic variation model.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. To each project the user shall have the possibility to associate one or more documents which shall be managed by a document repository tool, which shall manage:
			1. the icon associated to the document file;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. the name of the document file;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. the document status, split into document content status and document properties status, used to inform the user about the current status of the document;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. the document revision number, which identifies a specific revision of the document in the repository;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. the checksum value; and

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. the author of the last change.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The tool shall allow in a GIS environment to access at least to the following design utilities:
			1. Placement of a Geodesic Line;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Placement of a Geodesic Point;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Placement of a Geodesic Arc;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Creation of Line Buffers;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Creation of Parallel Tracks;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Creation of Abeam Positions;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Placement of Circles Tangents;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Creation of Lines Intersections;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Placement of Geolines Intersections;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Placement of Point in Geoline;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Tangent of Point and Circle; and

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Computation of Spatial Intersections to perform intersections between any existing items.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The tool shall manage at least the following Geo-referenced Images data files:
			1. GeoTIFF;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. ArcInfo Grid Images;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. GeoPDF;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. ASCII Grid Images;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. DEM Images; and

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Erdas Wavelets Images.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The tool shall manage at least the following terrain data files:
			1. ESRI ASCII Grid;

|  |  |
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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. ESRI Grid;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. DTED Elevation;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. USGS ASCII DEM; and

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Binary Terrains (BT).

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The tool shall allow:
			1. the definition of airways;

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| --- | --- |
| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. the computation of conventional/RNAV protection areas; and

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. the obstacle assessment related to their subparts.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The tool shall allow the computation of intersecting points between buffered airspaces and airways with their protection areas, or procedures and airspaces.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The tool shall allow the import of existing airway from the same DB used to store the data for the instrument flight procedure.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The definition of the airways shall be possible through manual insertion via selection of graphics elements on the GIS view.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. Whenever there is a “turn” between two consecutive segments, the tool shall automatically compute and display most of the turn parameters and ask for the input of others.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The computation of the obstacle assessment shall be done considering at least the terrain.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. At the end of the obstacle assessment the number of obstacles that have been found intersecting the protection areas of the segment; and the resulting obstacle list shall be displayed.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. By clicking on an obstacle raw in this list, the SW shall indicate it automatically on the GIS with a red star icon.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The user shall be able to export the intersecting obstacle list to an excel file, and/or to print it to any available printer.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The tool shall be able to compute the interference points between airways, airspaces and procedures, and the verification of “separation” (both horizontal and vertical) between them.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The tool shall interactively allow the user to configure which aeronautical feature shall be visualized and which shall be their graphic attributes

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The tool shall allow the definition of a new airspace defining the following features:
			1. Name;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Type via a proposed list box;

|  |  |
| --- | --- |
| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. ICAO Code from a proposed list box;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Classification from a proposed list box;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Remark text;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. All the relevant information directly associated with the airspace (Lower limit and its units of measure, upper limit and its units of measure etc); and

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Vertices list (and their coordinates) of the currently edited/created airspace.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The tool shall allow to:
			1. Add a new vertex after the currently selected one;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Get the coordinates of the point accepted in the geographic window;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Delete the currently selected vertex;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Manage the arcs segments in the airspace definition;

|  |  |
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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Manage a country border lines segments in the airspace definition;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Add a new navigation aid; and

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Add a new waypoint.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The tool shall support two different types of borders:
			1. Areas: the airspace geometry is an area delimited by the vertexes; and

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Corridors: the shape of the airspace shall be defined by centerline and width, rather than with border points; the vertexes define the centerline points. The resulting geometry shall be a buffer area along the centerline.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The tool shall make available for every feature a report of the edited feature

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The tool shall make available the following type of queries:
			1. Attribute Query; and

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Spatial Query.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The tool shall make available the following utilities:
			1. Computation of Bearing and Distance between Points;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Fix from Bearing and Distance;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Distance Measuring Equipment (DME) Fix;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Track Fix;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Radial Fix;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Cross Fix;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Long-Range Bearing and Distance;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Segment‘s Latitude at a Given Longitude;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Segment‘s Longitude on a Given Latitude;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Perpendicular Fix;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Setting the Magnetic Variation Date using at least the following magnetic models: IGRF, CGRF, WMM; and

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. Calculating the Approach Fix.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The tool shall allow the construction of geometries based on sectors.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The tool shall allow the import of geometries already implemented into DGN files.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The tool shall allow the export of geometries to DGN files.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The tool shall allow to export aeronautical features in KML file format.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The tool shall give a graphical representation of the vertical profile of a selected route.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The tool shall evaluate differences existing, at the graphical level, in the data related to the same feature at different effective dates.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The tool shall interoperate with external applications providing the following functionalities:
			1. Airspace Coordination management; and

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. The fast time simulation of airspace/airspaces traffic.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. **Instrument Flight Procedure Ground Validation**

The following requirements apply:

* + 1. The Flight Validation tool shall be available on a commercial-off-the shelf desktop/laptop computer.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The Flight Validation tool shall use the same input data (terrain, ATS data, obstacle data, images, etc) used by the tool used for the design of the instrument flight procedure.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The flight validation tools shall be able to add other data not used by the flight procedure design system.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The instrument flight procedure to be ground validated shall be ingested in the Flight Validation tool without any human manipulation. It is preferable that the Flight Validation tool were able to read the same output format for the instrument flight procedure which is used by the design tool for exporting the IFP data.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. It shall be possible to crosscheck that Instrument Flight Procedures are designed taking into account different factors such as:
			1. the separation against obstructions as human made obstacles and orography;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. the influence of the designer philosophy and of the standards and quality procedures;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. the ATS geography and its constraints; and

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. the operational needs and constraints;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The Flight Validation tool shall be capable to manage the following parameters which can affect the flyability of the procedure such as:
			1. the coding in accordance with the general requirements of the ARINC 424 document;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. the weather conditions (wind speed, direction at least);

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. the flight management system (FMS) installed on board of the aircraft;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. the aircraft model and its performances;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. the aircraft parameters variations (instantaneous mass for instance); and

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. the combination of the aircraft and the FMS installed.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The tool shall be a simulation tool implementing models of FMS and autopilots and able to “fly” the procedure reading the ARINC coding from an aeronautical database or from a formatted input file containing the list of the waypoint and the main segment parameters.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The simulation tool shall take into account the nominal path generation for the following parameters:
1. Wind speed and direction
2. Temperature (ISA Var.)
3. Aircraft category
4. Aircraft type
5. Aircraft mass
6. FMS model
7. ARINC coding

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. After the completion of the simulation of the IFP, a series of summary tables and graphs shall be created describing the analysis findings.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The simulation tool shall take into account three kind of input in order to simulate a flight:
			1. the behaviour of the on-board flight management system (FMS), guaranteed by an embedded flight path builder;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
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* + - 1. the aircraft performances in sense of technical/performance characteristics guaranteed by the implementation of Eurocontrol Base of Aircraft DATA (BADA); and

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + - 1. the realistic weather conditions in terms of wind (models, speed, direction and vertical gradient).

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The simulation tool shall be able to reconstruct and show the computed aircraft trajectory according to the flight planning and guidance functions of a generic FMS.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The simulation tool shall allow comparing the reference/intended path (as loaded from the flight procedure design system) and the computed/simulated one according to the parameters listed above.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The simulation tool shall be able to use the following coefficients during the computation of the trajectory:
			1. Thrust;
			2. Drag;
			3. Fuel consumption;
			4. Nominal cruise;
			5. Climb/descent speed; and
			6. Climb/descent gradient.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The encoding tool shall read from the aeronautical database the flight procedure to be verified and shall translate it in a format that can be read by the flight path builder.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The simulation tool shall implement the equations describing the atmospheric proprieties as function of the sea level temperature and altitude, and the various guidance mode in vertical and horizontal plane.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. To calculate the vertical profile, the simulation tool shall follow the principle of “Climb as early as possible and descent as late as possible”.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The user shall be able to modify the environment conditions by setting:
1. Wind model: linear (h + 47 kt as per ICAO Doc. 8168), pseudo-linear (ICAO Doc. 9905), custom;

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
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1. Wind direction (with vertical gradient);

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
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1. Wind speed; and

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

1. Temperature at MSL.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The simulation tool output shall define the path and the associated RNP tunnel.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. Moreover, the simulation tool shall compute the references for the autopilot and the autopilot controller's activation logics.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The output of the simulation tool shall be used to generate the effective aircraft trajectory, using a flight dynamics simulator.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The Flight Procedure data produced by the IFP Design tool shall be used by the simulation tool to compute lateral navigation steering command and shall be encoded using the Path and Terminations (P&T) specific for the RNAV/PBN navigation.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The simulation tool shall be able to assess the fulfilment of the ICAO Required Navigation Performances (RNP) on a given GPS flight procedure, highlighting the outage time intervals. This verification shall be done in accordance with the following logical steps:
1. Flight procedure definition, flight path generation and sampling;
2. Visible SVs and DOP computation along the trajectory - accuracy assessment(95th percentile of the position error);
3. Evaluation of RAIM FD availability (by means of geometric screening), recollection of RAIM FD outages - integrity assessment(probability of fault MD);
4. Definition of an exploration period, namely a set of trajectories (POPs) to be flown statistical elaboration;
5. Availability assessment (total time percentage of accuracy and integrity fulfilment);
6. Continuity assessment(total POP percentage where accuracy and integrity are fulfilled);
7. Possible evaluation of RAIM FDE availability; and
8. Eventually, deeper (Monte Carlo) investigation of critical RAIM outages.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The simulation tool shall be able to assess the fulfilment of the DME/DME navigation requirements in terms of:
1. Number of DME in radio coverage;
2. Number of DME couples achieving the radio coverage and the angle (30°-150°) requirements; and
3. Number of critical DMEs.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
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* + 1. The assessment of the DME/DME navigation requirements shall be done taking into account geometric calculation, the same terrain model and the same DME data used for the IFP design.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The simulation tool shall be able to provide a 2D and 3D view of the simulated flight path.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The simulation tools shall be able to produce “fly-through” movies of the simulation.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The simulation tools shall be able to be started on a specific environment via batch mode.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The simulation tool shall be able to simulate the GNSS performances at a given location (Latitude, Longitude and elevation).

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
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* + 1. The simulation tool shall be able to automatically detect and download the best almanac available for a given period of simulation.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The simulation tool shall be able to automatically detect and download the best satellite status information for the GNSS performances analysis.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. **Equipment / Components Requirements**

The AIS Automation System should consist of but not limited to the following major components:

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| --- |
| **Type of system** |
| Redundant Static AIM Database and Management Server Systems (N+1) |
| Redundant Dynamic AIS Database and Management Server Systems (N+1) |
| Aeronautical Information Product Subsystems |
| NOTAM Subsystem |
| MET Workstations |
| Aeronautical Information Management Subsystem (Static Data Management) |
| Aeronautical Charting & Aerodrome Mapping Subsystem (Charting) |
| System Administrator Management Workstation |
| eTOD Management Subsystem |
| KVM Switches, Network Routers and Ethernet LAN |
| GPS Clock |
| Flight Procedure Design Terminals WS |

* 1. **Hardware Requirements**
		1. Minimum requirements for the Hardware

The hardware requirements listed below shall be considered as the minimum acceptable. The hardware market being flexible, and the hardware available frequently updated by the different vendors, the bidder must propose and recommend the configuration which will match the quantity and specifications as described below and additionally which will be most suitable for the solution the bidder is proposing.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. List and Specification of Hardware

This section provides information on the hardware recommended for the project.

|  |
| --- |
| **Item** |
| Rack |
| TFT Display/Keyboard/Touchpad Drawer |
| KVM Switch |
| Server |
| Security Appliance |
| Firewall |
| System LAN Switch |
| Working Position PC |
| Working Position PC for Procedure Design |
| 23” TFT Display for Working Position |

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| **Airport** | **Location** | **Quantity** |
| Bloemfontein Airport | Air Traffic Control Tower | 1x UWS |
| Cape Town International Airport | Air Traffic Control Tower | 1x UWS |
| King Phalo Airport | Air Traffic Control Tower | 1x UWS |
| George Airport | Air Traffic Control Tower | 1x UWS |
| Germiston Rand Airport | Air Traffic Control Tower | 1x UWS |
| Grand Central Airport | Air Traffic Control Tower | 1x UWS |
| Head Office [Bruma] | Air Traffic Control Tower | 1x UWS |
| Head Office [Bruma] | Air Traffic Control Tower | 1x UWS |
| Kimberley Airport | Air Traffic Control Tower | 1x UWS |
| King Shaka International Airport | Air Traffic Control Tower | 1x UWS |
| Lanseria International Airport | Air Traffic Control Tower | 1x UWS |
| Mafikeng Airport | Air Traffic Control Tower | 1x UWS |
| O.R Tambo International Airport | Air Traffic Control Tower | 1x UWS |
| Aeronautical Reporting Office | 10x UWS |
| Aeronautical Rescue Coordination Centre | 1x UWS |
| Central Airspace Management Unit | 1x UWS |
| Flight Data Operator | 1x UWS |
| Disaster & Recovery System | FAOR Emergency Tower | 1x UWS |
| SSS | 4x UWS |
| Pietermaritzburg Airport | Air Traffic Control Tower | 1x UWS |
| Pilanesburg Airport | Air Traffic Control Tower | 1x UWS |
| Polokwane Airport | Air Traffic Control Tower | 1x UWS |
| Chief David Stuurman Airport | Air Traffic Control Tower | 1x UWS |
| Richards Bay Airport | Air Traffic Control Tower | 1x UWS |
| Umthatha Airport | Air Traffic Control Tower | 1x UWS |
| Upington Airport | Air Traffic Control Tower | 1x UWS |
| Virgina Airport | Air Traffic Control Tower | 1x UWS |
| Wonderboom Airport | Air Traffic Control Tower | 1x UWS |
| ATNS Training Academy | Training & Evaluation System | 9x UWS |

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| **Airport** | **Location** | **Quantity** |
| O.R Tambo International Airport | Aeronautical Telecommunication Network | 3 x OWS |
| Technical Support [Maintenance] | 3x OWS |
| Disaster & Recover System | Technical Support SSS Building | 1x OWS |
| SSS Building | 2x OWS |
| ATNS Training Academy | Training & Evaluation System | 2x OWS |

* + - 1. Rack

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| Parameters | Description |
| Requirements | Rack Infrastructure should support redundant or backup power supplies and security devices. |

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|  | Standard Rack Power Distribution Unit (PDU) (Vertical)- with minimum 15 sockets (12 IEC Ca3 and 3 IEC C19) for each rack with minimum 2 meter power cord (each rack having two PDU‘s) |
|  | 19” rack mount Power output device with necessary breakers mounted in rack and should not consume more that 3U rack space. |
|  | IP based monitoring facility of all the passive parameters inside racks must beprovided with email alerts. |
|  | 42U: min (1950 x 800 x 1000) mm (h x w x d) |
| Basic frame | Rack frame must be scalable and modular with safe load carrying capacity of minimum 1200kg on enclosure frame and minimum 1000kg on 19” mounting angle. |
| Doors: | Front glass door for complete 42U height front and rear plane; door with stiffener for strength. |
| Cable entry: | Standard, from the top and bottom. |

* + - 1. TFT Display/Keyboard/Touchpad Drawer

Type: 19” TFT drawer

Resolution: Maximum 1280 x 1024 pixels

Keyboard: US International-Layout

Pointing device: Touchpad

Onscreen display: Editable

Mounting: 19” mounting on telescopic ball bearing sliders

* + - 1. KVM Switch

The KVM switch connects the servers to the TFT/keyboard drawer and allows a remote operation via the keyboard. The KVM switch can handle up to 16 servers by connection to one single operator console.

Type: 19" rack mountable, 1 U

Console connection: One local system connection; HDB15, PS/2

System connections: 16x RJ45; via remote KVM extender module KA7570 Resolution: Up to 1600x1200/60Hz up to 40m

* + - 1. Server

Operating System: LINUX and eventually WINDOWS for charting

Type: 19" rack mountable, 1 U, Telescopic bars for easy replacement

Processor: One Intel 6-core Xeon (E5-2620v3) 2.4 GHz

RAM: 16 GB DDR4-2133

Graphic: Graphic system: minimum 1 GB RAM Graphic Card, supporting OpenGL 2.0 or newer versions (dating back to 2006 or later, NVIDIA Quadro series recommended)

Cache Memory: 15 MB, Level 3

Video: Integrated Matrox G200 video standard 1280 x 1024 (32 bpp) 1920 x 1200 (16 bpp)

RAID Controller: Smart Array P440ar/2GB FBWC

Storage: 3 x 600GB 6G(SAS), RAID5, hot-swap, 10k RPM, SFF

Optical drive: DVD/CD RW SATA

LAN: Four RJ45 10/100/1000 BaseTx ports on-board

Power Supply: Redundant, 2x 500W, hot-swappable

USB 3.0 ports: 1 front, 2 rear, 2 internal

PCI: 2x PCI Express

* + - 1. Security Appliance

Interfaces: 6x Gigabit Ethernet

Features: Network Firewall, NAT, Native Windows Remote Access IPSec/SSL, ATP, VPN, Intrusion Protection, DoS Protection

Additional Licenses: Webserver Protection, Network Protection

* + - 1. Firewall

Interfaces: 6x Gigabit Ethernet

Features: Stateful inspection, VPN, Data Encryption, Instrusion Protection

* + - 1. System LAN Switch

48x 10/100 BaseTx Ports

Four SFP-based Gigabit Ethernet ports Auto-negotiation, manageable, SNMP

* + - 1. Working Position PC

Operating System: Microsoft Windows 10 or above

Processor: Intel Core i3-7100, 3.9 GHz

Memory: 8 GB DDR RAM (16 GB recommended in case of 64 bits)

Graphic: Graphic system: minimum 1 GB RAM Graphic Card, supporting OpenGL 2.0 or newer versions.

Storage: 2 x 500 GB Hard Disk SATA DVD: DVD/CD +/- RW SATA

LAN: 1 x Ethernet 10/100/1000 Base Tx, on-board 1 x Ethernet 10/100/1000 Base Tx, PCIe-based

Sound: On-board

USB: 2.0, 3.0

Keyboard: USB, International-Layout

Mouse: USB, Optical Scroll Mouse

* + - 1. Working Position PC for Procedure Design

Processor: Intel Xeon W5580

Memory: 8 GB DDR RAM

Storage: 1.5 TB (configured as RAID 1) Graphic Controller: NVIDIA Quadro 4000

DVD: DVD/CD +/- RW

Keyboard: USB, International-Layout

Mouse: USB, Optical Scroll Mouse Remark: USB must be deactivated because of safety concerns.

* + - 1. TFT Display for Working Position

Type: 23” IPS w/LED backlight

Aspect ratio: 16:9

Resolution: 1920x1080

Contrast ratio: 1000:1

Response time: grey to grey 7 ms

Brightness: 250 cd/m²

Colour depth: 16.7 Million colours (24 bit)

Input: 1x VGA, 1x HDMI, 1x DisplayPort

Viewing angle: 178°/178° (horizontally/vertically)

* 1. **Main Power Supply**
		1. All equipment shall operate with an AC power varying from 220-230 Volts (±15%) single phase 50 Hz ± 5%. Reliable over voltage and over current protection circuits shall be provided in the power supply units.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The power supply units shall be self-protecting, and protect connected equipment against conducted interference, noise, voltage dips and surges & impulses. Mains Power Supplies used should be rugged enough to withstand above stated variation in mains voltage and frequency over a long period of time so that the failures in the equipment due to power supply are minimized.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. **Environmental Conditions**

The systems shall be able to operate properly under the following temperature and relative humidity:

Temperature: -5oC to +45oC

Relative Humidity: up to 90%

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. **Data Migration**
		1. The Tenderer shall support ATNS in migrating the current ATNS data to the new aeronautical database.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The Tenderer shall include as part of their offer a service to migrate the existing aeronautical data which resides in the Aeronautical Information Products into the Aeronautical Database.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The Tenderer shall include as part of their offer a service to implement the current look and feel, styles, formats, and structure of the existing Aeronautical Information Products into the new AIM System so that the Publications produced by ATNS shall be identical.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The Tenderer shall include as part of their offer a service to implement the current look and feel, styles, formats, and structure of the existing Aeronautical Charts into the new AIM system so that the Aeronautical Charts produced by ATNS shall be identical.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The Tenderer shall include as part of their offer a service to customize the workflow and process management system to conform to the workflows and processes currently in use at ATNS.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. **Training and Training Platform**
		1. The Tenderer shall include as part of their offer a training course on Transition from AIS to AIM.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The Tenderer shall include as part of their offer a training course on Aeronautical Information Management.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The Tenderer shall include as part of their offer a training course on management of AIXM 5.1 or higher.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The Tenderer shall include as part of their offer a product technical training course.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The Tenderer shall include as part of their offer a product training course on Aeronautical Data Management.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The Tenderer shall include as part of their offer a product training course on Dynamic Data Management.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The Tenderer shall include as part of their offer a product training course on Aeronautical Publications.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The Tenderer shall include as part of their offer a product training course on Electronic Terrain and Obstacle Management.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The Tenderer shall include as part of their offer a product-training course on AIM Workflow & Process Management.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The Tenderer shall include as part of their offer a product training course on Instrument Flight Procedure Design, Charting of different charts, Instrument Flight Procedure Design and Airspace Design.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The Tenderer shall include as part of their offer a system administration-training course.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. The Tenderer shall include as part of their offer a training platform or environment to achieve the above training objectives without interfering with the operational system.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. A training platform shall be proposed to ensure that staff are able to operate and provide continued maintenance of the equipment, and that they are fully trained in situations where automated functions need to be taken over after a failure. This training platform shall not only be available in the initial phases of introduction but shall be available for continuous training to maintain staff competency.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. A training platform mimicking all components of an actual operational system shall be provided to facilitate training.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* + 1. Changes and use of the training platform shall in no way impact on the performance of the operational system.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. **System Support Suite (SSS)**
		1. The system and equipment that will be used for disaster recovery, test and evaluation (software and external sources integration evaluation) shall be installed in the System Support Suites (SSS) at FAOR. This system shall interface with the main system.

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| **COMPLIANCE (C/PC/NC/Noted)***Responding with C/PC/NC without substantiation will not be accepted.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT INDEXED REFERENCE TO ADDITIONAL INFORMATION HERE]* |