ICAO AIM RBIS AIXM PROJECT

Regulatory Requirements for Aeronautical Information Exchange Model (AIXM)

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APPROVAL SHEET

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REVISION INDEX SHEET

Version	Revision	Date	Reason for Change	Pages Affected
1	0	xx/xx/20xx	Initial Document	All

1. Purpose and scope

This document lays down the requirements for the provision of a standard aeronautical information conceptual model and standard aeronautical information exchange model to enable the storage and global digital exchange of aeronautical data and aeronautical information by aeronautical information services providers (AISP) established within the territory of the Republic of [Name of State]

2. References

The requirements contained in this Regulation are based on the following ICAO reference documents:
- Annex 4 - Aeronautical Charts – 11th Edition.
- Annex 15 - Aeronautical Information Services – 16th Edition.
- Document 10066 (Procedure for air navigation services aeronautical information management) – 1st Edition.
- Doc 8126, Aeronautical Information Services Manual – 7th Edition.

3. Defintions

When the following terms are used in this regulation, they have the following meanings:

Aeronautical data. A representation of aeronautical facts, concepts or instructions in a formalized manner suitable for communication, interpretation or processing.

Aeronautical information. Information resulting from the assembly, analysis and formatting of aeronautical data.

Aeronautical information management (AIM). The dynamic, integrated management of aeronautical information services — safely, economically and efficiently — through the provision and exchange of quality-assured digital aeronautical data in collaboration with all parties.

Database. A usually large collection of data stored in structured digital format so that appropriate applications may quickly retrieve and update it.

Note.— This primarily refers to digital data (accessed by computers) rather than files of physical records.

Data set. Identifiable collection of related digital data.

Digital. Involving or relating to the use of computer technology or digital communications.

Information management (IM). The processes defined to ensure the collection, utilization and transmission of quality data that are tailored to the needs of each component of the air traffic management system.

Interoperability. The capacity for diverse systems and organizations to exchange information by transferring data and requesting remote services in a manner that requires the client system to have little or no knowledge of the unique characteristics of the server system.

Note.— This is usually achieved by common understanding of the semantics, the syntax and the protocols for the exchange of data.

Metadata. A structured description of the content, quality, condition or other characteristics of data.

NOTAM. A notice distributed by means of telecommunication containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations.

4.   AIXM Requirements

4.1   General requirements

4.1.1   Automation shall be applied in order to ensure the quality, efficiency and cost-effectiveness of aeronautical information services.

4.1.2   Due consideration to the integrity of data and information shall be given when automated processes are implemented and mitigating steps taken where risks are identified.

4.1.3   Automation shall enable digital aeronautical data exchange between the parties involved in the data processing chain, in order to meet data quality requirements.

4.1.4   The ISO 19100 series of standards shall be used as a reference framework for the exchange of geographic information as digital data sets between data providers and data users.

4.1.5   Digital data sets shall be provided together with a description of the data product specifications, on which basis air navigation users will be able to evaluate the products and determine whether they fulfil the requirements for their intended use.

4.1.6   The content and structure of digital data sets shall be defined in terms of an application schema and a feature catalogue.

4.1.7   The aeronautical information model used for the provision of digital data sets should encompass the aeronautical data and aeronautical information to be exchanged.

4.2   The Aeronautical information model to be used shall:

4.2.1   use Unified Modelling Language (UML) to describe the aeronautical information features and their properties, associations and data types.

4.2.2   include data value constraints and data verification rules.

4.2.3   include provisions for metadata as specified in 4.4; and.

4.2.4   include a temporality model to enable capturing the evolution of the properties of an aeronautical information feature during its life cycle.

4.3   The Aeronautical information exchange models and data exchange models used shall:

4.3.1   except for terrain data :

   a) enable the exchange of data for both individual features and feature collections;
   b) enable the exchange of baseline information as a result of permanent changes;
   c) be structured in accordance with the subjects and properties of the aeronautical data   catalogue, and be documented through a mapping between the exchange format and the aeronautical data catalogue.

4.3.2   apply a commonly used data encoding format such as extensible markup language (XML), geography markup language (GML) and JavaScript object notation (JSON) to ensure interoperability of aeronautical data exchange between agencies and organizations involved in the data processing chain.

4.3.3   cover all the classes, attributes, data types and associations of the aeronautical information model detailed in 4.2; and.

4.3.4   provide an extension mechanism by which groups of users can extend the properties of existing features and add new features which do not adversely affect global standardization.

4.4   Metadata Requirements:

4.4.1   Data origination shall be accompanied with the following metadata, as a minimum:

   a) the names of the organizations or entities performing any action of originating, transmitting or manipulating the data;
   b) the action performed; and
   c) date and time the action was performed.

4.4.2   Each data set shall provided shall include the following set of metadata, as a minimum:

   a) the names of the organization or entities providing the data set;
   b) the date and time when the data set was provided;
   c) period of validity of the data set; and
   d) any limitations with regard to the use of the data set.

4.5.   Training and Competency

The AISP shall implement a process to ensure that the personnel are trained and competent to perform their duties in a safe, efficient, continuous and sustainable manner. In this context, the service provider shall establish policies for the recruitments and training, which shall :

a) determine the necessary competence for personnel performing activities supporting services provision;

b) where applicable, provide training or take other actions to achieve the necessary competence;

c) evaluate the effectiveness of the actions taken;

d) ensure that personnel are aware of the relevance and importance of their activities and how they contribute to the achievement of the objectives; and

e) maintain appropriate records of education, training, skills and experience.

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