ICAO Data Quality Requirements

Federal Aviation Administration

Presented to: SAM Region Seminar on PANS-AIM
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Date: November 2018

Data Quality Specifications

Annex 15, Amendment 40

- Accuracy
- Resolution
- Integrity
- Traceability
- Timeliness
- Completeness
- Format

Data Quality Evolution

- ~~apply~~ Based on the applicable integrity classifications~~,~~, the validation and verification procedures shall:

- ~~critical data, integrity level 1×10^{-8}: there is a high probability when using corrupted critical data that the continued safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe; (3.2.10 a))~~

- ~~essential data, integrity level 1×10^{-5}: there is a low probability when using corrupted essential data that the continued safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe; and (3.2.10 b))~~

- ~~routine data, integrity level 1×10^{-3}: there is a very low probability when using corrupted routine data that the continued safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe. (3.2.10 c))~~

Data Quality Evolution

- for routine data: avoid corruption **throughout the processing of the data;**

- for essential data: assure corruption does not occur at any stage of the entire process and **include additional processes as needed to address potential risks in the overall system** architecture to further assure data integrity at this level; and

- for critical data: assure corruption does not occur at any stage of the entire process and **include additional integrity assurance processes to fully mitigate the effects of faults** identified by thorough analysis of the overall system architecture as potential data integrity risks.

Data Quality Evolution

Data Quality Specifications

Data quality

A degree or level of confidence that the data provided meet the **requirements of the data user** in terms of **accuracy, resolution, integrity** (or equivalent assurance level), **traceability, timeliness, completeness and format**.

Accuracy

Annex 15

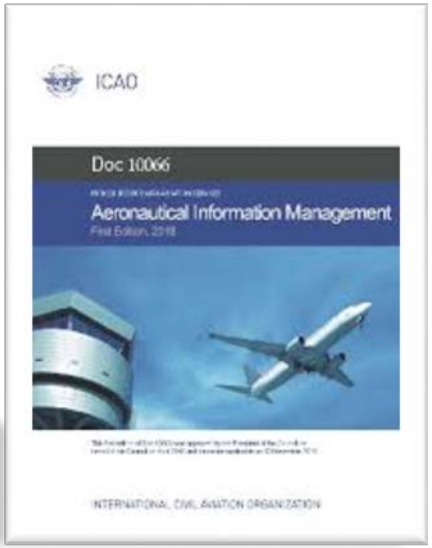
Data accuracy. A degree of conformance between the estimated or measured value and the true value.

The order of accuracy for aeronautical data shall be in accordance with its intended **use**.

Accuracy

PANS-AIM

Note.— Specifications concerning the order of accuracy (including confidence level) for aeronautical data are contained in the Procedures for Air Navigation Services — *Aeronautical Information Management (PANS-AIM, Doc 10066), Appendix 1.*



APPENDIX 1. AERONAUTICAL DATA CATALOGUE

Accuracy

DATA CATALOG

Type	Description	Note	Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
	All fixed (whether temporary or permanent) and mobile obstacles or parts thereof.						
Note 1)	Obstacles in Area 1		50 m	routine	surveyed	1 sec	as plotted
	Obstacles in Area 2 (including 2a, 2b, 2c, 2d, take-off flight path area and obstacle limitation surfaces)		5 m	essential	surveyed	1/10 sec	1/10 sec
	Obstacles in Area 3		0.5 m	essential	surveyed	1/10 sec	1/10 sec
	Obstacles in Area 4		2.5 m	essential	surveyed		
Note 2)	Obstacles in Area 1		30 m	routine	surveyed	1 m or 1 ft	3 m (10 ft)
	Obstacles in Area 2 (including 2a, 2b, 2c, 2d, take-off flight path area and obstacle limitation surfaces)		3 m	essential	surveyed	1 m or 1 ft	1 m or 1 ft
	Obstacles in Area 3		0.5 m	essential	surveyed	0.1 m or 0.1 ft 0.01 m	1m or 1 ft
	Obstacles in Area 4		1 m	essential	surveyed	0.1 m	

Resolution

Annex 15

Data resolution. A number of units or digits to which a measured or calculated value is expressed and **used**.

The order of resolution of aeronautical data shall be commensurate with the actual data accuracy.

Resolution

PANS-AIM

Note 1.— Specifications concerning the resolution of aeronautical data are contained in the PANS-AIM (Doc 10066), Appendix 1.

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Resolution

DATA CATALOG

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Integrity

Annex 15

Data integrity (assurance level). A degree of assurance that an aeronautical data and its value has not been lost or altered since the origination or authorized amendment.

The integrity of aeronautical data shall be maintained throughout the data chain from origination to distribution to the next intended **user**.

Integrity

PANS-AIM

Note.— Specifications concerning the integrity classification related to aeronautical data are contained in the PANS-AIM (Doc 10066), Appendix 1.

APPENDIX 1. AERONAUTICAL DATA CATALOGUE

Integrity

DATA CATALOG

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Note 1)	Obstacles in Area 1		50 m	routine	surveyed	1 sec	as plotted
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	Obstacles in Area 3		0.5 m	essential	surveyed	1/10 sec	1/10 sec
	Obstacles in Area 4		2.5 m	essential	surveyed		
Note 2)	Obstacles in Area 1		30 m	routine	surveyed	1 m or 1 ft	3 m (10 ft)
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Traceability

Annex 15

Data traceability. The degree that a system or a data product can provide a record of the changes made to that product and thereby enable an audit trail to be followed from the **end-user** to the originator.

Traceability of aeronautical data shall be ensured and retained as long as the data is in **use**.

Traceability

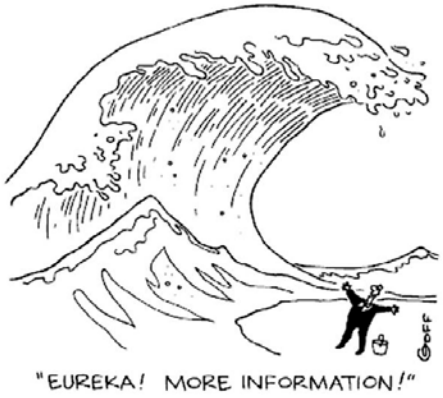
Annex 15

Metadata shall be collected for aeronautical data processes and exchange points.

Metadata collection shall be applied throughout the aeronautical information data chain, from origination to distribution to the next intended **user**.

Traceability

PANS-AIM



The metadata to be collected shall include, as a minimum:

- the name of the organizations or entities performing any action of originating, transmitting or manipulating the data;
- the action performed; and
- the date and time the action was performed.

Timeliness

Annex 15

Data timeliness. The degree of confidence that the data is applicable to the period of its intended **use**.

Timeliness of aeronautical data shall be ensured by including limits on the effective period of the data elements.

Timeliness

AIRAC Cycle Adherence

NOTAM (digital)

Completeness

Annex 15

Data completeness. The degree of confidence that all of the data needed to support the intended **use** is provided.

Completeness of aeronautical data shall be ensured in order to support its intended **use**.

Completeness

PANS-AIM

Quality Management System

Verification and Validation

Format

Annex 15

Data format. A structure of data elements, records and files arranged to meet standards, specifications or data quality requirements.

The format of delivered aeronautical data shall be adequate to ensure that the data is interpreted in a manner that is consistent with its intended **use**.

Format

PANS-AIM

The aeronautical data exchange model used should apply a commonly **used** data encoding format….

Note 1.— The intent of using a commonly used data encoding format is to ensure interoperability of aeronautical data exchange between agencies and organizations involved in the data processing chain.

Note 2.— Examples of commonly used data encoding formats include Extensible Markup Language (XML), Geography Markup Language (GML), and JavaScript Object Notation (JSON).

Gracias

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