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Annex 15, PANS-AIM

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Outline

- 15th Edition of Annex 15
- New PANS-AIM
- Summary



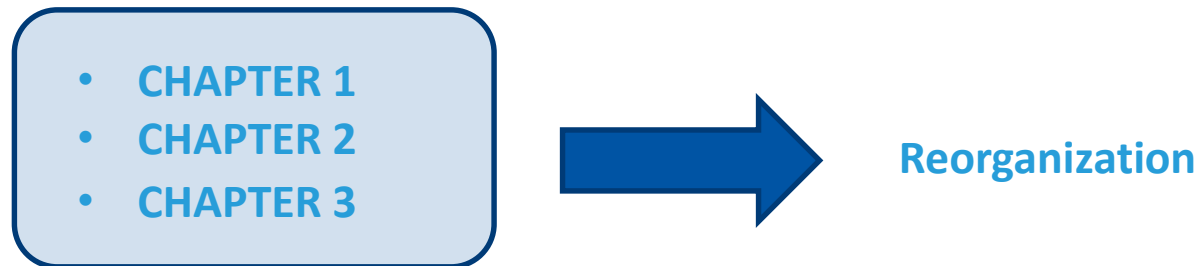
Annex vs PANS vs Guidance

Document	Function and Content	Primary Audience
Annex 15	Requirements and performance specifications	States
PANS-AIM	Procedures, processes, formats, technical specifications	States and service delivery organizations
AIS (AIM) Manual	Best practices; guidance on application and implementation	Service delivery organizations

- Specifications published as Procedures for Air Navigation Services (PANS) may provide a means to provide for increased harmonisation within the domain of AIS/AIM as well as provide a vehicle for the emerging technical requirements of AIM.
- PANS-AIM, spans the gap between the guidance contained in Doc 8126 and the SARPs embodied in Annex 15.

Annex 15 – evolutionary process

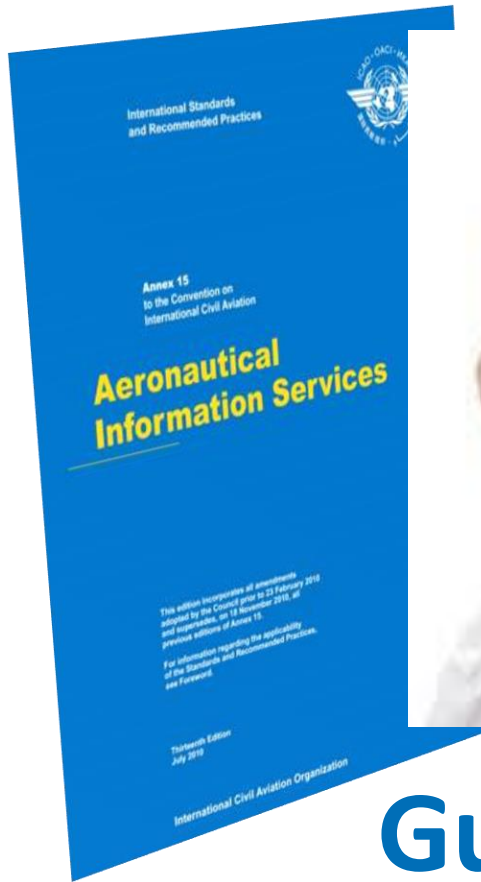
- To accomplish the global transition from AIS provision to AIM-enabled services, it was necessary to develop sequential and successive changes to Annex 15.
- AMD 37 had reorganized the first three chapters as an evolutionary step in this process. It was meant to facilitate a more complete incorporation of AIM-related provisions



Annex 15 restructuring

- AMD 40 brings major modifications to Annex 15
- Answering “ **the big questions** ”:
 - *Scope of AIM*
 - *Role of AIM*
 - *Functions of AIM*
 - *Products and services of AIM*
 - *Aeronautical information updates*
- Re-development of chapters 4 to 11 and the restructuring of the existing SARPS into three new chapters:
 - *Chapter 4 - Scope of Aeronautical Data and Information*
 - *Chapter 5- Aeronautical Information Products and Services*
 - *Chapter 6 – Aeronautical Information Updates.*

Annex 15 – Chapter 4



Guiding Principles

Annex 15 – Chapter 4

The guiding principles to *Chapter 4 – Scope of Aeronautical data and Aeronautical Information*:

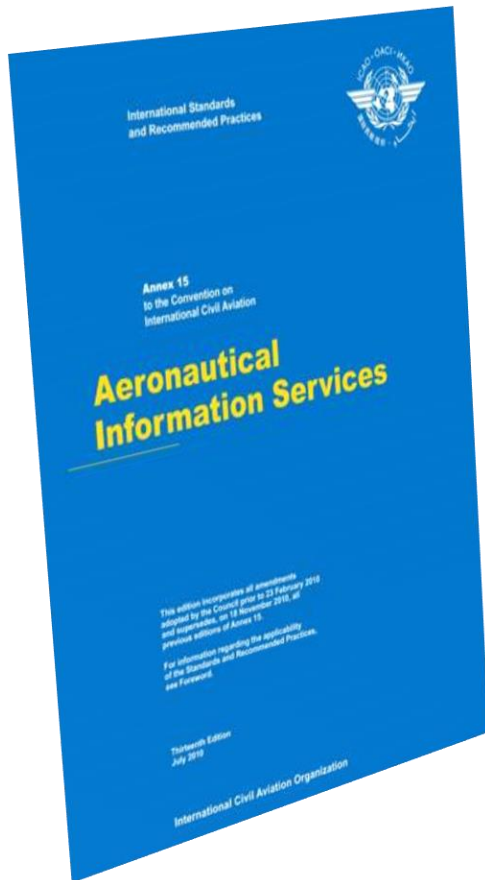
- to meet the need for a **minimum data set or scope** to support **digital data exchange** requirements
- to be the basis for the **scope of aeronautical information and data to be collected** and managed (Chapter 4 and Appendix 1 of Annex 15);
- information and data should be at least sufficient to assemble an AIP;
- To extend beyond current “publication requirements”
- focus on “what” is to be collected by the State, while those requirements which focus on “how to” collect will be addressed in the PANS-AIM;
- be used to guide the application of Annex 15 paragraph 2.1.5 *“Each Contracting State shall ensure that formal arrangements are established between originators of aeronautical data and aeronautical information and the aeronautical information service in relation to the timely and complete provision of aeronautical data and aeronautical information”*

Annex 15 – Chapter 4

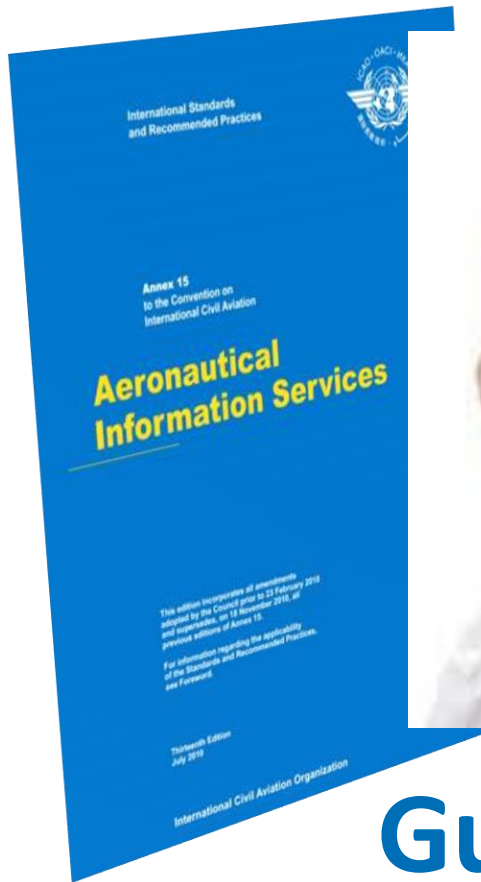
THE STRUCTURE

Scope of Aeronautical data and Aeronautical Information

- Origination of aeronautical data and aeronautical information
 - National regulations, rules and procedures;
 - Aerodromes and heliports;
 - Airspace;
 - ATS and other routes;
 - Instrument flight procedures;
 - Radio navigation aids/systems;
 - Obstacles; and
 - Geographic information
- Metadata requirements



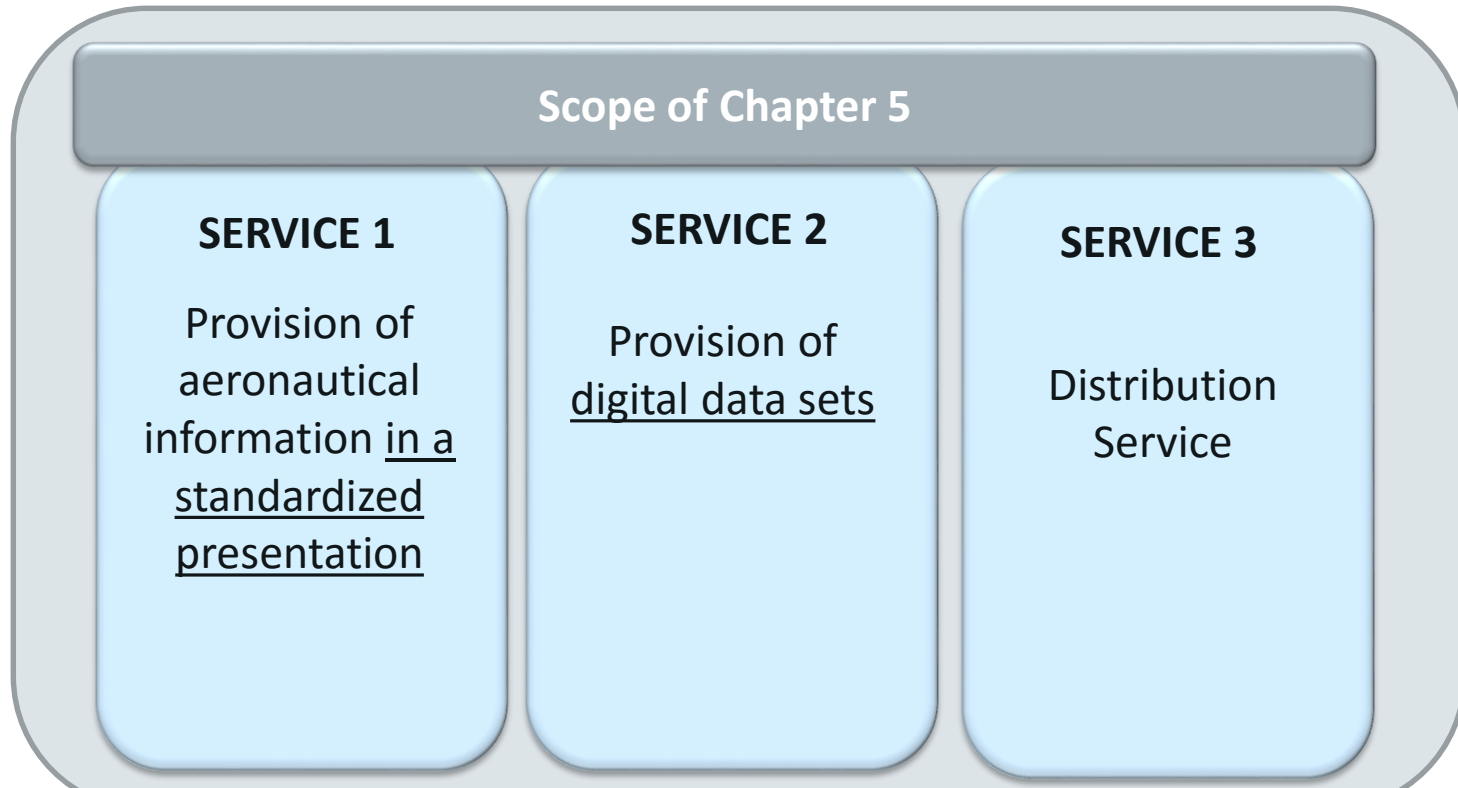
Annex 15 – Chapter 5



Guiding Principles

Annex 15 – Chapter 5

The guiding principles to *Chapter 5 – Aeronautical Information Products and Services*:



- **Split between Annex and PANS (“what” vs “how”)**
- **Continuity with previous amendments**
- **Consistency with Chapter 4 and 6**

Annex 15 – Chapter 5

SERVICE 1 = “legacy” (existing products)

- States shall provide the following aeronautical information products (PAPER):
 - AIP, AIP amendments, AIC and SUP
 - Aeronautical charts (as prescribed in Annex 4)
 - NOTAMs / SNOTAMs / ASHTAMs and summaries and checklists
- States should provide the following aeronautical information products (ELECTRONIC):
 - Aeronautical charts (as prescribed in Annex 4)
 - eAIP
 - Electronic aeronautical charts

Paper VS Electronic



Annex 15 – Chapter 5

SERVICE 2 = “data sets”

- The data included in Chapter 4 shall be provided through data services as thematic data sets
- When provided, digital data shall be in the form of the following data sets:
 - Aeronautical (AIP) data set
 - Terrain data set
 - Obstacle data set
 - Aerodrome mapping data set
 - Instrument flight procedure data set
- Each data set shall include the minimum set of metadata that needs to be provided to the next intended user.
- A checklist of valid data sets shall be regularly provided.



Annex 15 – Chapter 5

SERVICE 3 = “distribution service”

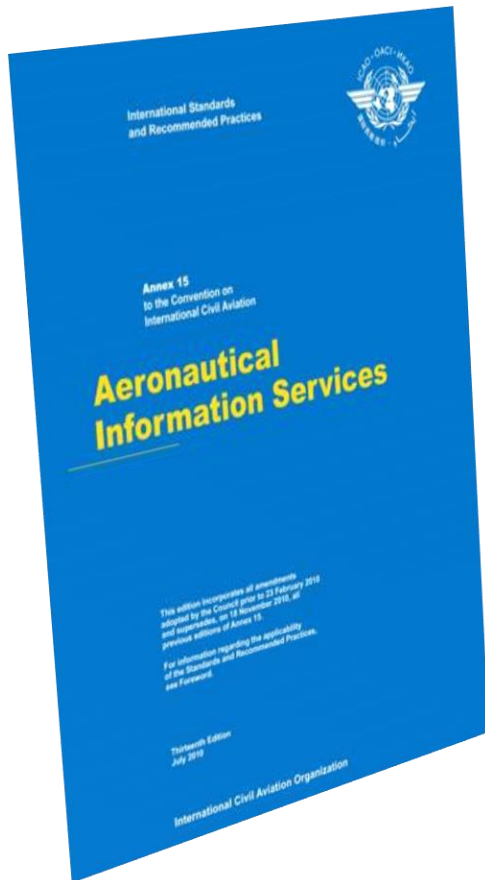
- NOTAM Distribution
- Pre-flight Information Service
- Post-flight Information Service

Highlights:

- Requirement to deliver complete and consistent NOTAM information (States obligations)
- Recognition of current and future communication capabilities and mechanisms (web-services)
- Recognition of global developments towards a revised system based on **Digital NOTAM**
- The provision of a PIB remains as an option (in a note)



Annex 15 – Chapter 5

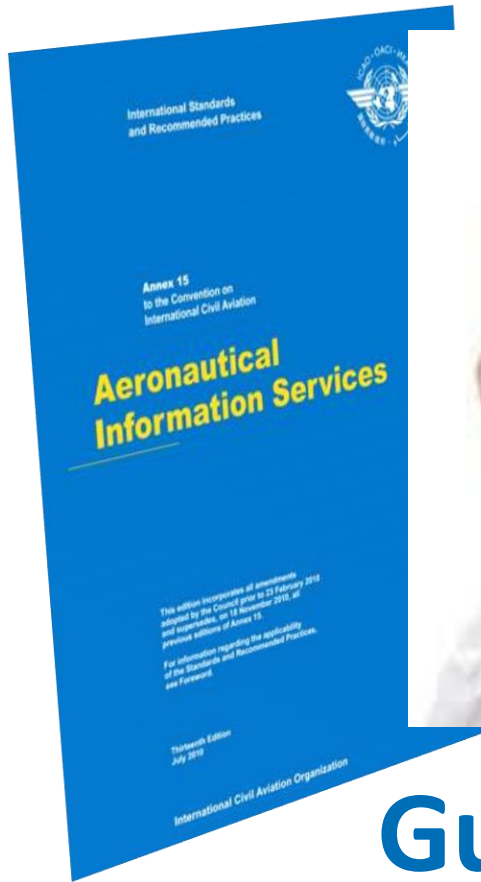


THE STRUCTURE

AIM Products and Services

- Provision of aeronautical information in a standardized presentation
 - Aeronautical Information Publication (AIP)
 - AIP Supplement
 - Aeronautical Information Circular
 - Aeronautical Charts
 - NOTAM
- Provision of digital data sets
 - Aeronautical (AIP) data set
 - Terrain data set
 - Obstacle data set
 - Aerodrome Mapping data sets
 - Instrument Flight procedure design
- Distribution service
 - NOTAM distribution
 - Pre-flight Information Service
 - Post-Flight Information Service

Annex 15 – Chapter 6



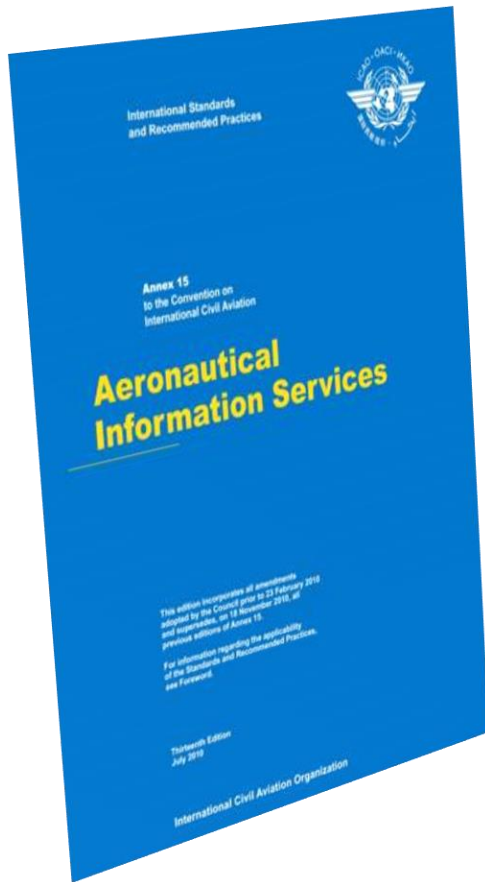
Guiding Principles

Annex 15 – Chapter 6

The guiding principles to compile *Chapter 6 –Aeronautical Information Updates*:

- Chapter 6 contains aeronautical information update, with the focus on products. This results in including the current AIRAC requirements and details on how to update each product/service;
 - **Specifications for AIP updates** : no changes to the provisions
 - **NOTAM**
 - **Digital data-set updates**: provisions developed for permanent changes and temporary changes.
 - **Permanent changes/temporary changes** to be provided as « Full data set » and/or « Delta data set »
 - **Current AIRAC provisions apply to data set**
 - AIRAC applicable to operationally significant changes
 - No data set in between AIRAC cycles (use NOTAM if necessary)

Annex 15 – Chapter 6



Aeronautical Information Updates

THE STRUCTURE

- Aeronautical Information Regulation and Control (AIRAC)
- Aeronautical Information Products Updates
 - AIP updates
 - NOTAM
 - Data set updates



Data Quality Requirements

- ICAO Annex 15: data quality , “a degree or level of confidence that the data provided meet the requirements of the data user in terms of accuracy, resolution and integrity”.
- EUROCAE ED76A / RTCA DO200B: data quality, “a degree or level of confidence that the data provided meet the requirements of the user. These requirements include levels of accuracy, resolution, assurance level, traceability, timeliness, completeness, and format”.
- The new Annex 15 edition resolves this inconsistency in the definition of the same term applicable to different parts of the data chain by updating the data quality definition in Annex 15.
- The four additional characteristics of data quality (traceability, timeliness, completeness and format) have been defined based on the definitions included in the Industry Standard.

Terminology

Further clarity to the introduction of “digital data” and what it means in relation to AIS/AIM provisions.

- “Aeronautical Information Product” → to compile all AI deliverables to be provided in either digital data sets or as a standardized presentation in paper or electronic media.
- “Aeronautical Data Catalogue” → to introduce a new concept which provides for a listing of data subjects within the scope of AIS.
- “Data completeness, Data timeliness, Data traceability and Data format” to address the quality characteristics pertaining to AIS data.
- “Originator, Origination”, to introduce and clarify an entity that is accountable for data origination, from which the AIS organisation receives aeronautical data and information.
- “Next Intended User”, to better specify the data chain
- The terms Validation and Verification have been updated.
- This amendment also introduces a more consistent use of “form, formats or media” and “printed” taking into consideration the differences between electronic, digital and printed requirements.

PANS- AIM



Guiding Principles

Characteristics of a PANS

Procedures for Air Navigation Services (PANS) for the most part comprise material:

- *which may eventually become Standards when it has achieved the maturity and stability necessary for adoption as such;*
- *considered too detailed for SARPs; and*
- *amplifying the basic principles contained in corresponding SARPs to assist in their application.*

PANS must be suitable for application on a worldwide basis, although the need to apply them in a particular area may be subject to regional agreement.

The PANS do not carry the status of the Standards and therefore do not come within the obligation imposed by Article 38 of the Convention concerning the notification to ICAO of differences in the event of non-implementation. However, in accordance with the provisions of Annex 15, States are expected to publish in their AIPs up-to-date lists of significant differences between their procedures and the related PANS.



Application to AIM

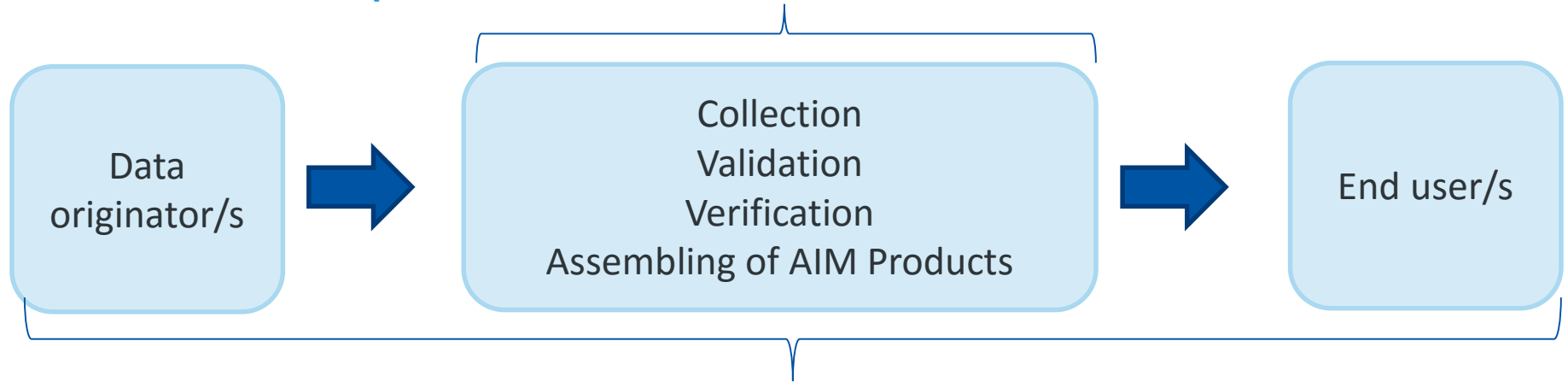
Since PANS primarily consist of material related to the standardization of how something is to be done material such as product specifications, standard procedures, and protocols are ideal material for promulgation as PANS.

- 1) Appendix 1 of Annex 15 concerning the formatting of an AIP;
- 2) Appendices 2, 3, 5, and 6 of Annex 15 and material from Doc 8126 concerning NOTAM, SNOWTAM, and ASHTAM; and
- 3) Material from Doc 8126 concerning AIP, AIP Supplements and AIC where it is desirable to elevate the material to a status beyond guidance.
- 4) Quality management practices and **data handling to achieve integrity requirements**

Additionally, PANS-AIM provides a vehicle for expanded and/or new specifications for eTOD and data exchange where it was found desirable to have a level of standardisation but the material was too detailed or not appropriate for inclusion in annex 15 as a SARP.

PANS-AIM Chapters 2, 3

Chapter 2: AERONAUTICAL INFORMATION MANAGEMENT



Chapter 3: QUALITY MANAGEMENT SYSTEM

Safety Management requirements 



PANS-AIM Chapters 4,5,6

Chapter 4

Data origination requirements

How data shall/should be collected (e.g. compliance with WGS84)

Metadata Requirements

Minimum metadata requirements (source, action performed, date)

Chapter 5

Aeronautical Information in a standardized presentation

Mostly text relocated from Annex 15

Digital data set

Automation Performance requirements; digital datasets detailed description

Distribution services

Mostly text relocated from Annex 15

Chapter 6

AIRAC

Same update applied to AIP Amendments, AIP data set and IFP data set

AI Products Updates

Trigger NOTAM.
Update interval for the AIP and IFP data set is specified in data product specification

Data Catalogue

- Description of the **AIM data scope**
- Move from product centric to **data centric**
- Reference for all provisions related to aeronautical data origination and publication
- A **common language** to facilitate the formal arrangements between data originators and the aeronautical information service.
- The data catalogue is the **single source of all data quality requirements.**
- **easier for long term maintenance** when requirements change to ensure that changes are consistent, for example between resolution and accuracy
- allow the **verification of correctness** of received data
- support **further electronic processing** without any future human intervention.

Table A1-1 Aerodrome/Heliport data

Subject	Property	Sub-Property	Type	Description	Note	Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
Aerodrome / Heliport	Designator			A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft.						
			ICAO location indicator	Text	The four letter ICAO location indicator of the aerodrome/heliport, as listed in ICAO DOC 7910 (Location Indicators).	if any				
			Designator IATA	Text	The identifier that is assigned to a location in accordance with rules (resolution 767) governed by the International Air Transport Association (IATA).	if any				
			Other	Text	A locally defined airport identifier, if other than an ICAO Location Indicator					
		Name		Text	The primary official name of an aerodrome as designated by an appropriate authority.					
		Served city		Text	The full name (free text) of the city or town the aerodrome/heliport is serving					
		Type of traffic permitted								
			International_national	Code list	Indication if international and/or national flights are permitted at the aerodrome/heliport					
			IFR_VFR	Code list	Indication if IFR and/or VFR flights are permitted at the aerodrome/heliport					
			Sched_nonsched	Code list	Indication if scheduled and/or nonscheduled flights are permitted at the aerodrome/heliport					
	Civil_military		Code list	Indication if civil commercial aviation and/or general aviation and/or military flights are permitted at the aerodrome/heliport						
		Restricted_use	Text	Indication if an aerodrome or heliport not open for the public (Only for the use of the owners).						

Data Catalogue

- The data catalogue is organised by information subdomains reflecting the different sources of information:
 - *National regulations, rules and procedures*
 - *Aerodrome and heliports*
 - *Airspace*
 - *ATS routes*
 - *Instrument flight procedures*
 - *Radio navigation aids/systems*
 - *Obstacles*
 - *Geographic information*
- Besides a detailed description of all subjects, properties and sub-properties and the data quality requirements the catalogue introduces the concept of a data type describing the nature of the property/sub-property and specifying the data elements which required to be collected.
- The data catalogue should be considered as a living document that may need to be updated frequently in the first years.

Summary

- The ICAO provisions for AIM have been reworked to provide a comprehensive set of requirements, practices, procedures and “best practice” guidance
- The revised provisions are grouped in such a way that they address the needs of defined groups (regulator, ais provider, originator, etc)
- It is intended that the PANS AIM will be the daily reference for AIM personnel
- Guidance material will be focused on how to improve or implement capabilities



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Mexico City
- South American (SAM) Office
Lima
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- Western and Central African (WACAF) Office
Dakar
- European and North Atlantic (EUR/NAT) Office
Paris
- Middle East (MID) Office
Cairo
- Eastern and Southern African (ESAF) Office
Nairobi
- Asia and Pacific (APAC) Office
Bangkok



Thank You