



AIS Manual Update (ICAO Doc 8126)

Volume 1 – Organisational Development

- AIS responsibilities and functions
- guidance for the organizational development of AIS including the transition to AIM

Volume 2 – Processing Aeronautical Data

- guidance for processing aeronautical data and information in a data centric environment

Volume 3 – Aeronautical Information in a Standardized Presentation

- guidance for the provision of aeronautical information in a standardized presentation

Volume 4 – Digital Products and Services

- guidance for providing digital products and services

Overview – Audience

Volume 1 – Organisational Development

- States' Regulators
- Management of Data Originators and Service Providers

Volume 2 – Processing Aeronautical Data

- Operational management
- AIS operational personnel

Volume 3 – Aeronautical Information in a Standardized Presentation

- Operational management
- AIS operational personnel

Volume 4 – Digital Products and Services

- Operational and technical management
- AIS operational and technical personnel
- AIM system manufacturers and service providers

VOLUME 1

AIM Organisational Development

Challenges for Volume 1

- ❑ The former Document 8126 was:
 - focussing more on external customer (e.g. pilots) with the available AIS products and services
 - covering AIS responsibilities and functions in a broader scope (e.g. from other Air Navigation Services like COM tasks or FPL handling)
 - applying a more task based approach for identifying the AIS competencies
 - not addressing the ongoing transition from AIS to AIM to evolve from a product centric to a data centric production environment
 - insufficiently addressing the value AIS is providing for improving the ATM efficiency and capacity
 - insufficiently addressing the value of AIS oversight for performance

Content of Volume 1

- ❑ Introduction
- ❑ AIS Responsibilities and Functions
- ❑ Aeronautical Information Management
- ❑ Organisation of an Aeronautical Information Service

AIS responsibilities and functions

- ❑ Purpose of the AIS
 - understand context of the ATM integration
- ❑ AIS responsibilities and functions
 - focussing on collection and management of data and provide authoritative information to ATM
- ❑ Aeronautical information products and services
 - addressing all performance aspects for ATM integration (safety, efficiency and capacity)
- ❑ AIS Competencies
 - explaining and applying the new ICAO competency framework for AIS,
 - identify specific competencies for the data and information driven environment (based on current knowledge)
 - AIS Competency Framework as Appendix to Volume 1

Structure of the ICAO Competency Framework

Table I-2-1. Structure of an ICAO competency framework

<i>ICAO competency</i>	<i>Description</i>	<i>Observable behaviour (OB)</i>
ICAO Competency 1	Description 1	OB 1
		OB 2
		OB x
ICAO Competency 2	Description 2	OB 1
		OB 2
		OB x
ICAO Competency x	Description x	OB 1
		OB 2
		OB x

Observable behaviour (OB). A single job-related behaviour that can be measured and/or observed.

Example for an AIM competency

An AIM competency not yet existent in the Repertory of ICAO Competencies

Nr	ICAO competency	Description	Observable behaviour (OB)
1	Information Awareness	Comprehends information requirements, monitors the information flow and detects anomalies and potential threats that can degrade the flow and the quality of information and affect its use.	<ol style="list-style-type: none">1. Maintains awareness of the information requirements of the different users concerning aeronautical information2. Verifies that aeronautical data is compliant with quality requirements (accuracy, resolution, completeness, format) on reception3. Monitors the quality of aeronautical information from origination to distribution to internal and external stakeholders (integrity, timeliness, traceability)4. Uses available tools to gather, monitor and comprehend the aeronautical information in its different status (collection, storage, processing, transfer)5. Manages the aeronautical information in the user's context6. Identifies and Manages potential threats that can cause degradation of aeronautical information flow or the quality (e.g. interruption of aeronautical data process)7. Develops effective contingency plans based upon potential threats

←

**REPERTORY OF ICAO
COMPETENCIES**

14 March 2017

Other AIM competencies are already contained in the Repertory of ICAO Competencies and are applied to AIM accordingly

AIS responsibilities and functions (continued)

- ❑ **Aeronautical Information Regulation and Control (AIRAC)**
 - focus will be on the aspects of production planning and control for timeliness (management responsibility)
- ❑ **Exchange of aeronautical data and aeronautical information**
 - addressing the management responsibilities in terms of planning and ensuring the implementation of automation for moving from a paper centric to a as well as application of standards when moving from publications specifications to aeronautical data exchange standards
- ❑ **Copyright and cost recovery**

Aeronautical Information Management

Focus in Aeronautical Information Management on the following aspects:

- ❑ The need to provide users with information they can trust (Quality Management System)
- ❑ More awareness of the information quality requirements of end-use applications (feedback mechanisms for the system to stay adaptive to changes)
- ❑ Aeronautical information is digitally represented (change way of working)
- ❑ Enhanced validation and verification procedures
- ❑ Cost-recovery aspects within AIM

Organisation of an Aeronautical Information Service

- ❑ Separation of regulatory functions and provisions of service
 - ensuring that appropriate oversight is set up in the State to monitor and oversee AIS performance
- ❑ Organisation of an AIS
 - addressing functional versus process orientation for setting up an AIS
- ❑ Change management considerations when transitioning to AIM
 - addressing the quality management and safety management aspects

Progress Status Volume 1

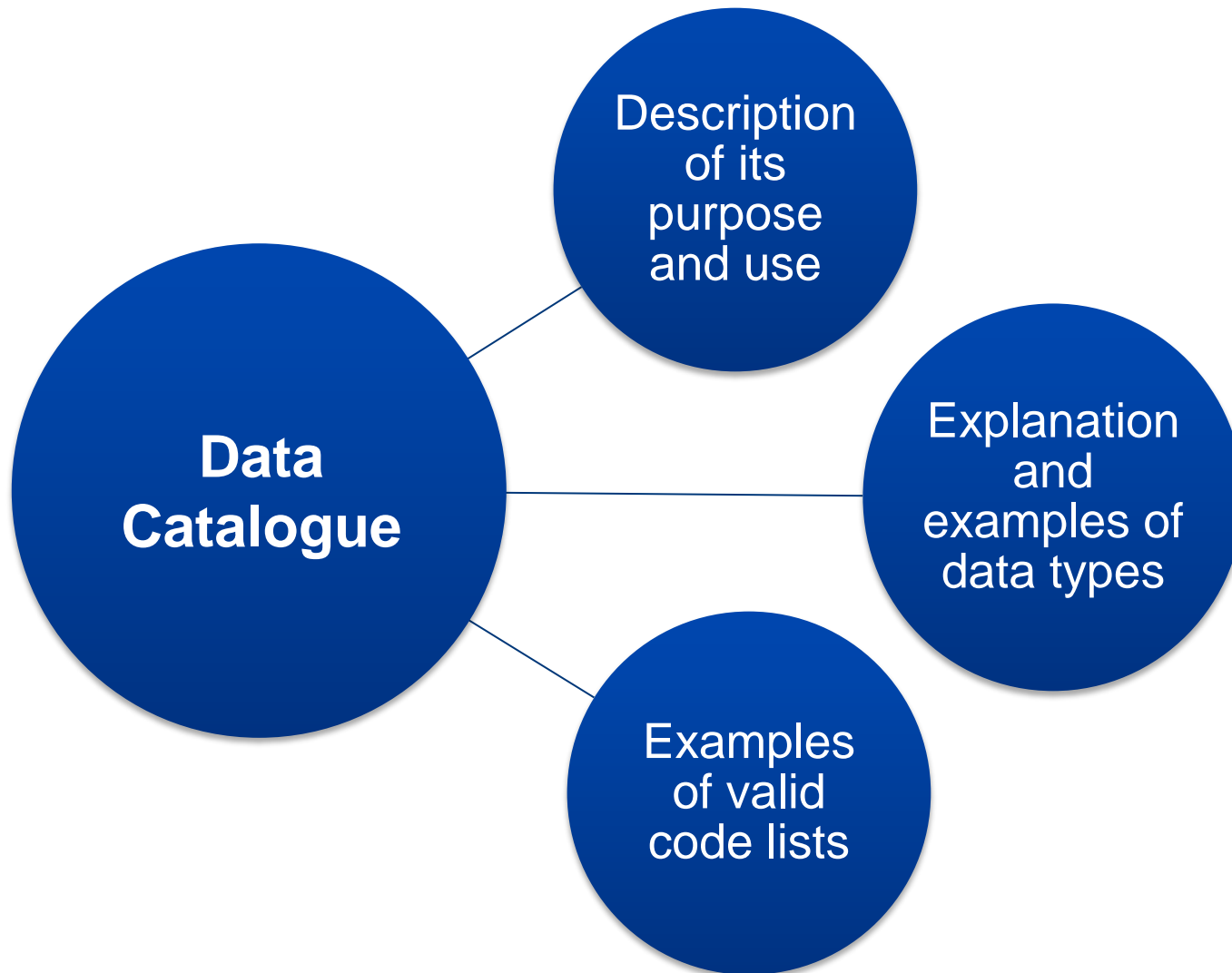
- ❑ Chapter 1 – Introduction
 - Completely re-written – new text
- ❑ Chapter 2 – AIS Responsibilities and functions
 - Some parts like Competencies had to be completely re-written and aligned with the respective ICAO framework – new text and only a few parts updated → are being aligned with Volume 3 and 4, resolution of some open issues still in progress (e.g. AIRAC from management perspective)
- ❑ Chapter 3 – Aeronautical information management
 - Some parts like AIM Principles or Digitalisation are being rewritten (in progress → finalised by the end of April) – new text and only a few parts updated → are being aligned with Volume 2 and 4, resolution of some open issues still in progress (e.g. QMS and SMS aspects and other)
- ❑ Chapter 4 – Organization of an Aeronautical Information Service
 - Some had to be completely re-written – new text and parts updated

VOLUME 2

Processing Aeronautical Data

Content of Volume 2

- ❑ Aeronautical data scope
 - Data catalogue
 - Data quality requirements
 - Metadata
 - Reference systems
- ❑ Collection
 - Formal arrangements
- ❑ Processing
 - Verification and validation
- ❑ Distribution
- ❑ Quality assurance and control
- ❑ Automation



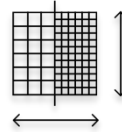
Data Quality Requirements – DQRs

- Data Quality – a degree or level of confidence that the data provided meets the requirements of the data user in terms of:



edited by Tammy Whatmore
18/04/2018

Accuracy



edited by Sergey Novosyolov
18/04/2018

Resolution



edited by Russian Design
18/04/2018

Integrity

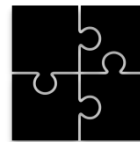


Traceability



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Timeliness



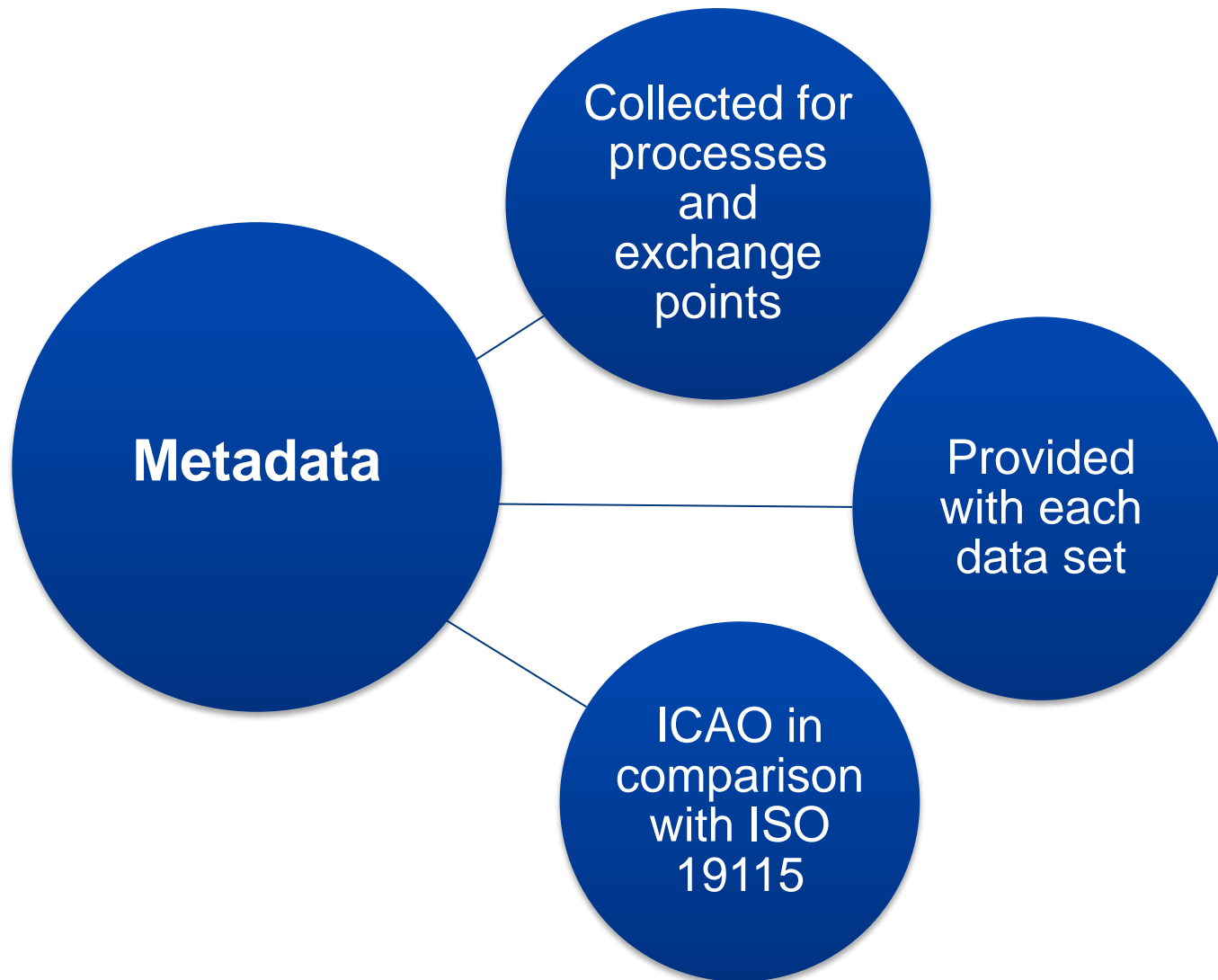
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Completeness

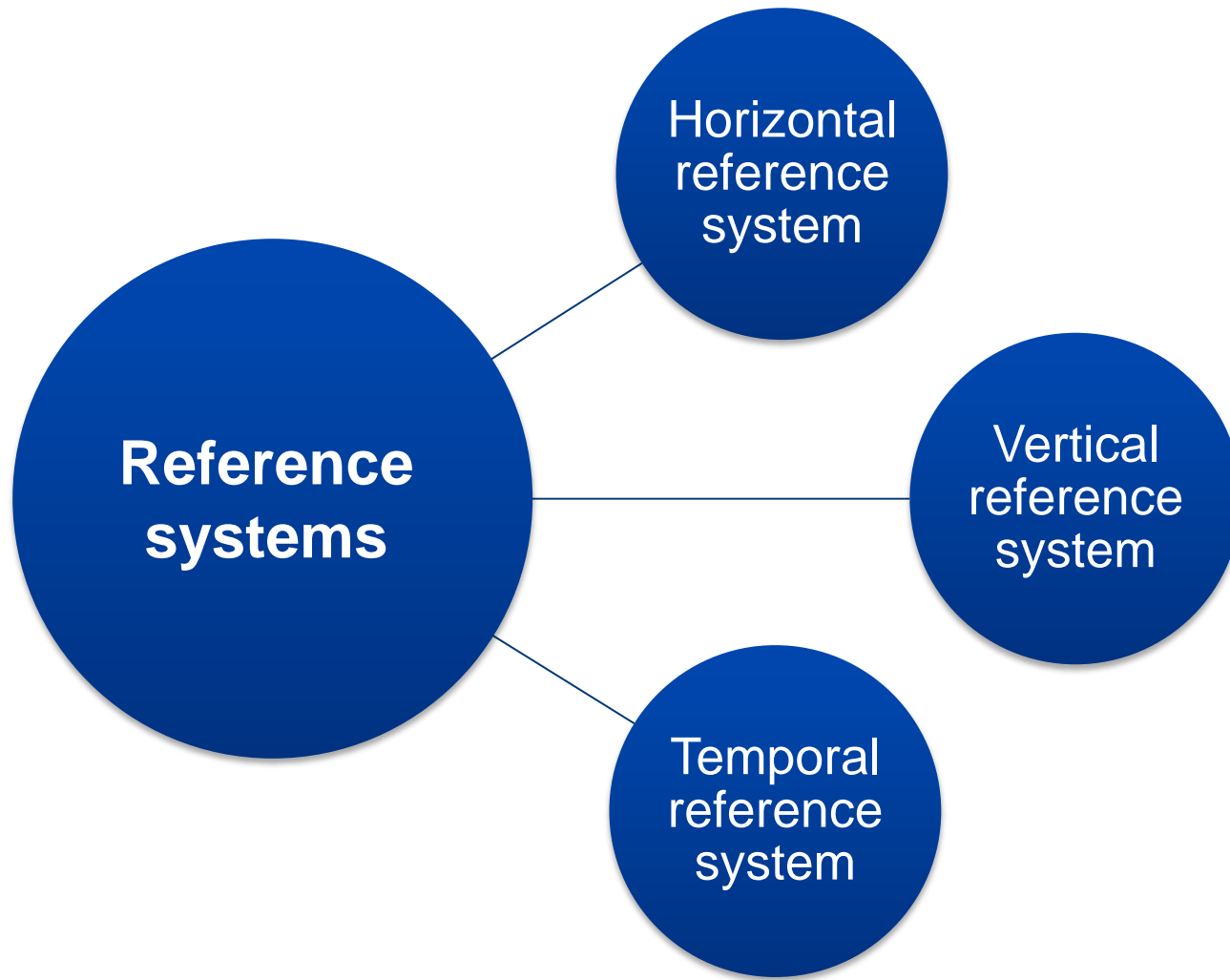


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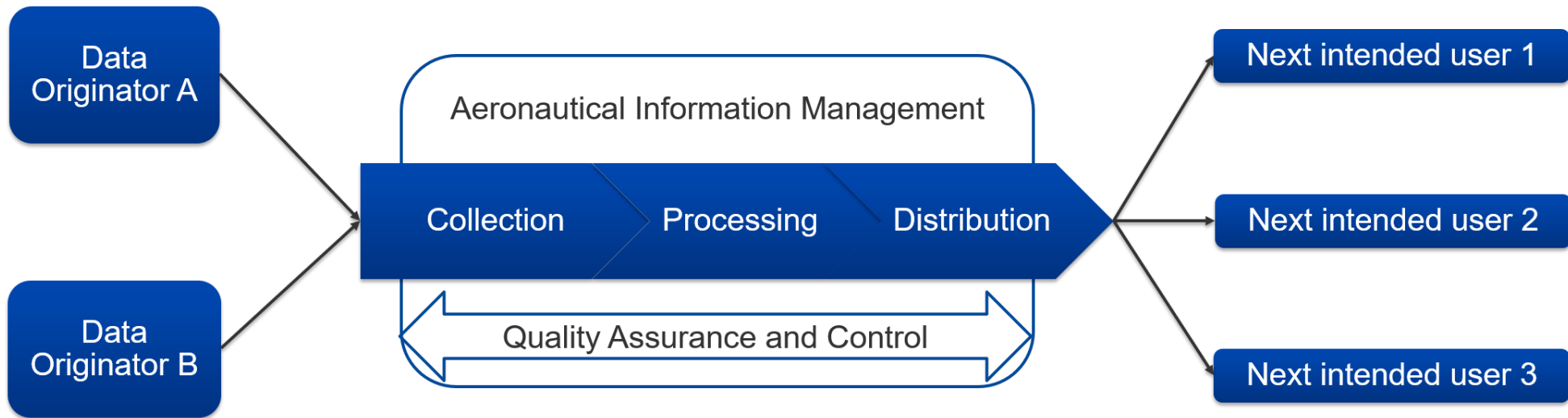
Format



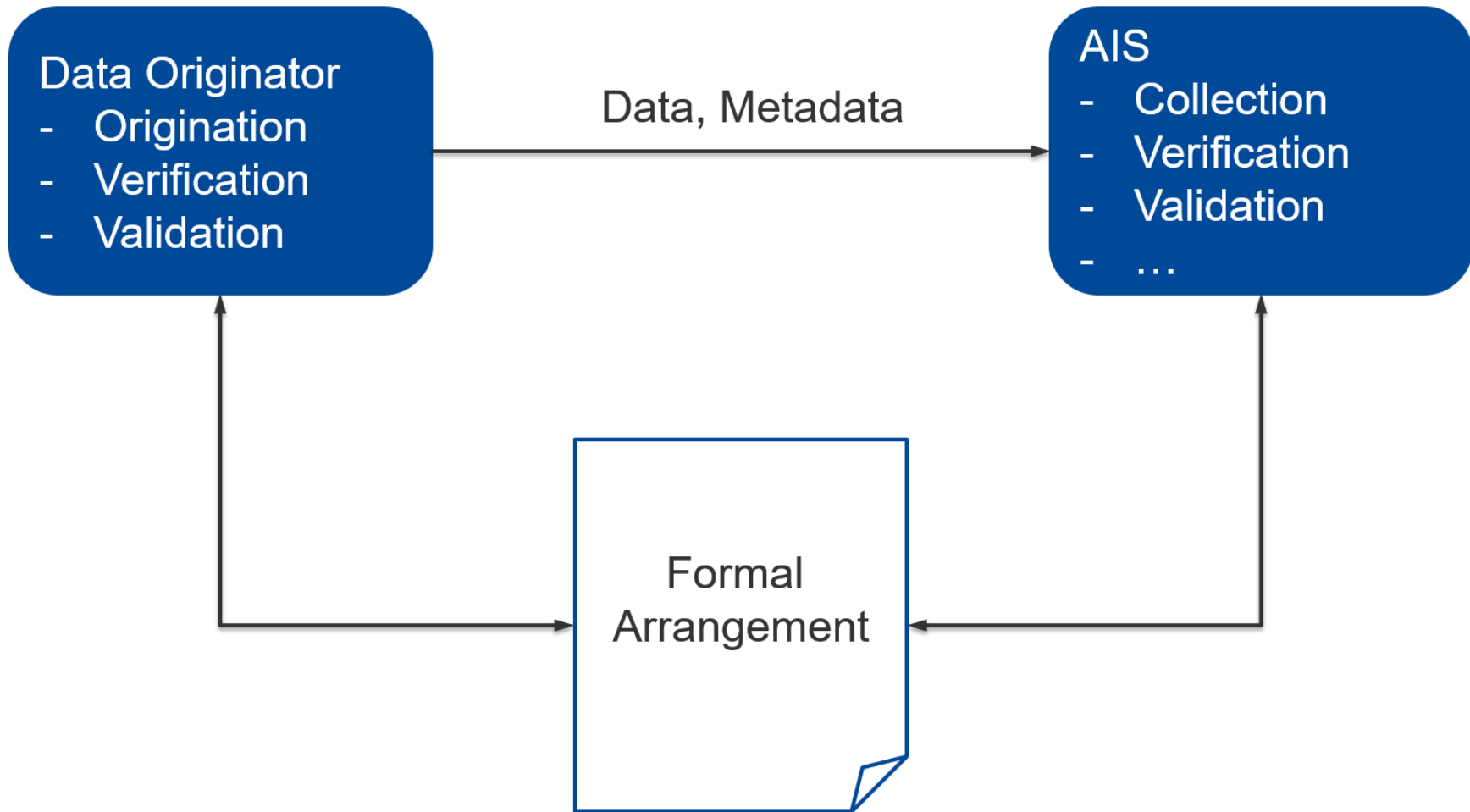
Reference Systems



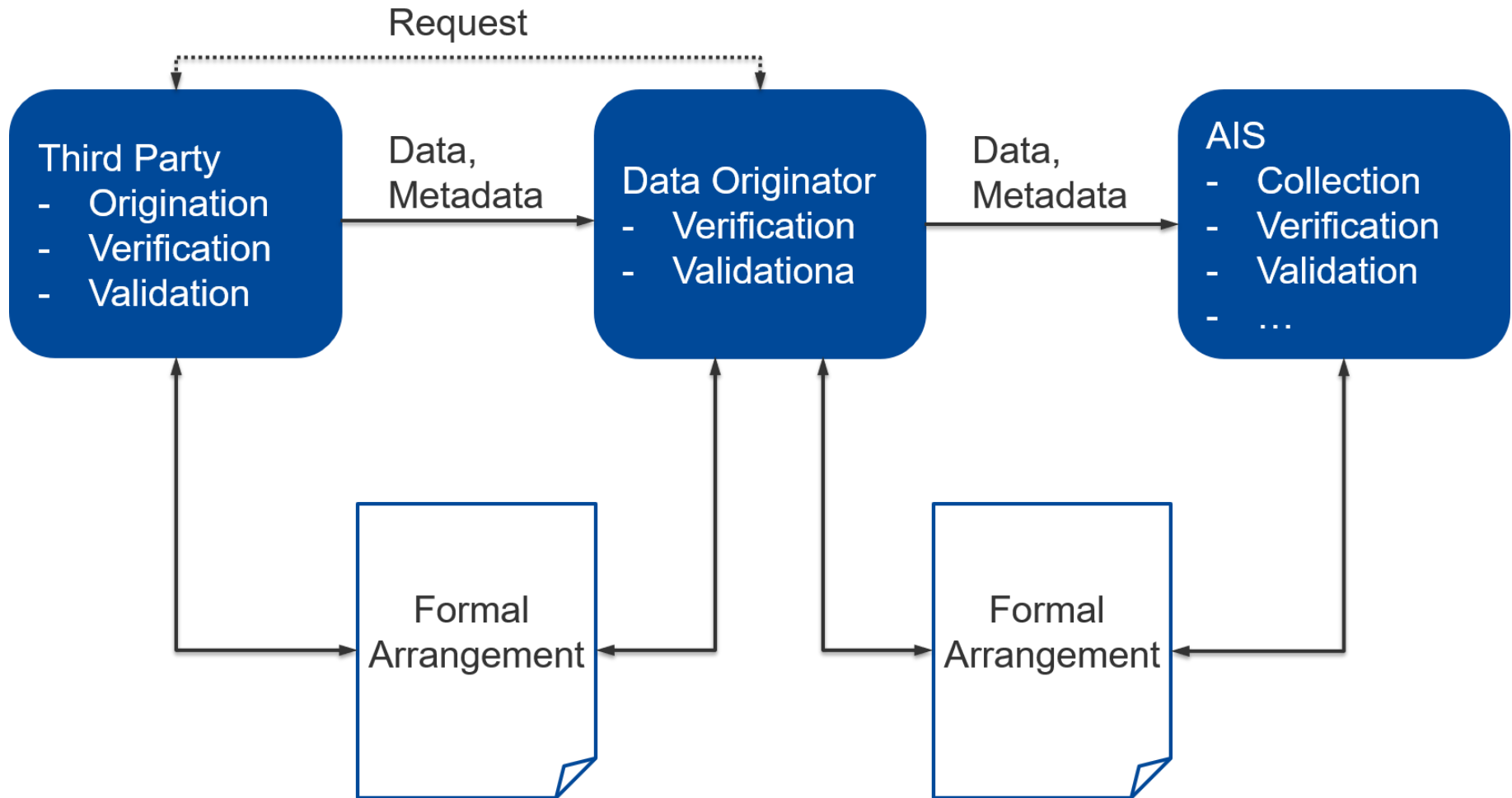
Aeronautical Information Management Process



Collection – Formal Arrangements



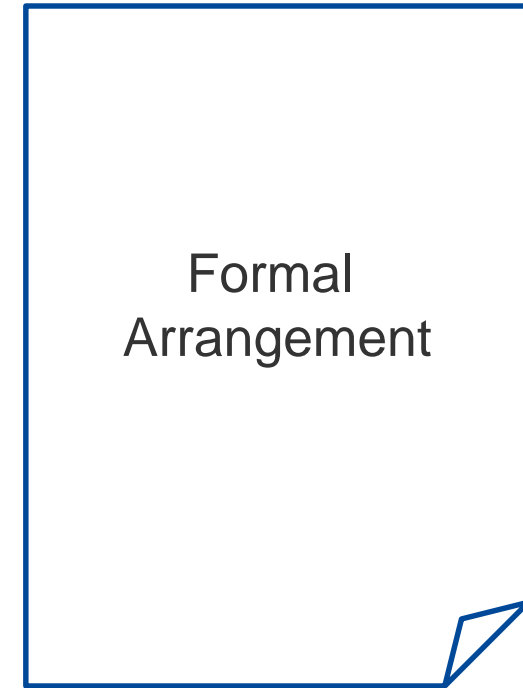
Collection – Formal Arrangements



Collection – Formal Arrangements

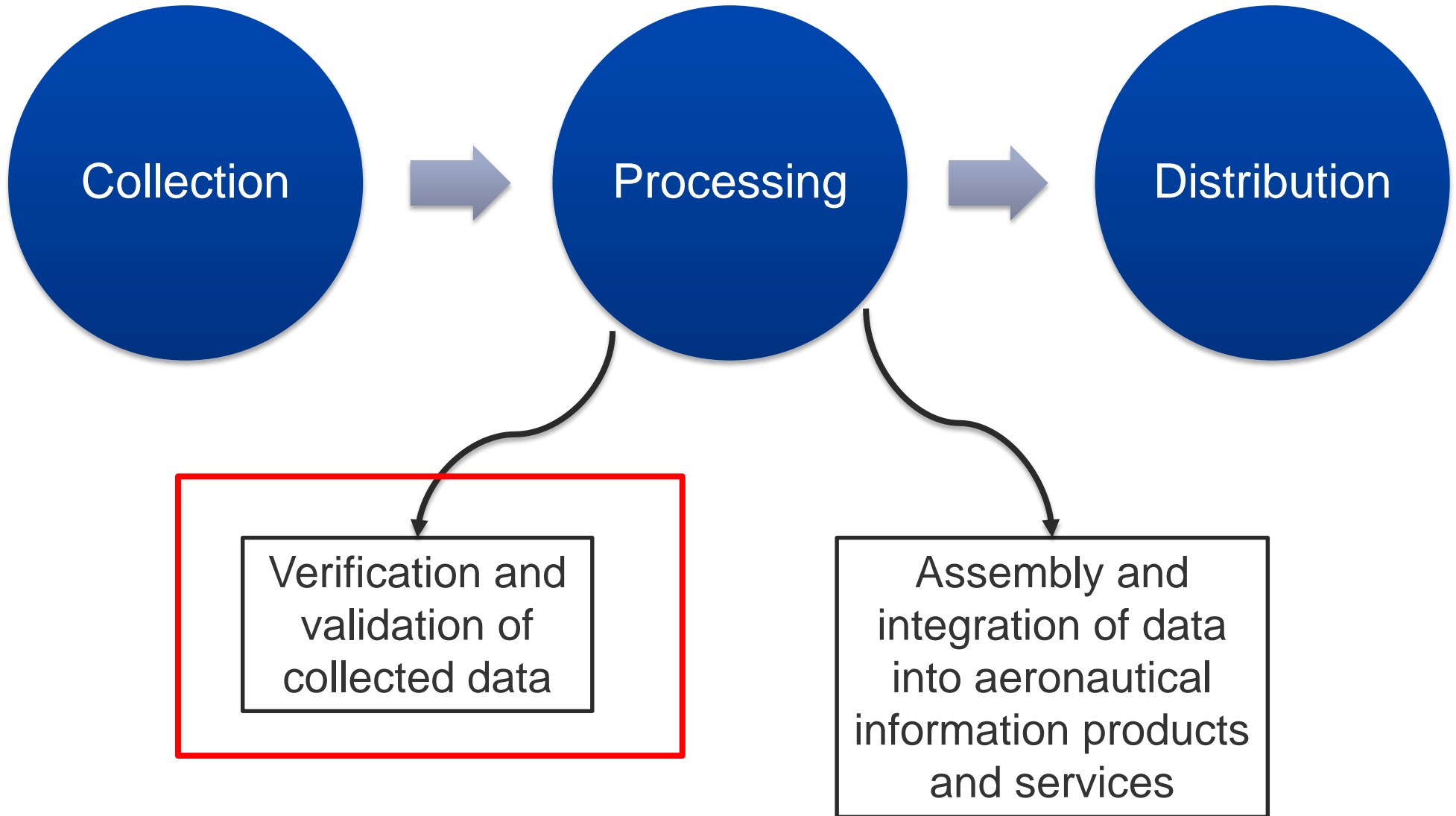
☐ Minimal content of formal arrangements:

- Regulatory framework
- Data origination
- Quality assurance
- Metadata and quality reporting
- Data delivery
- Error handling

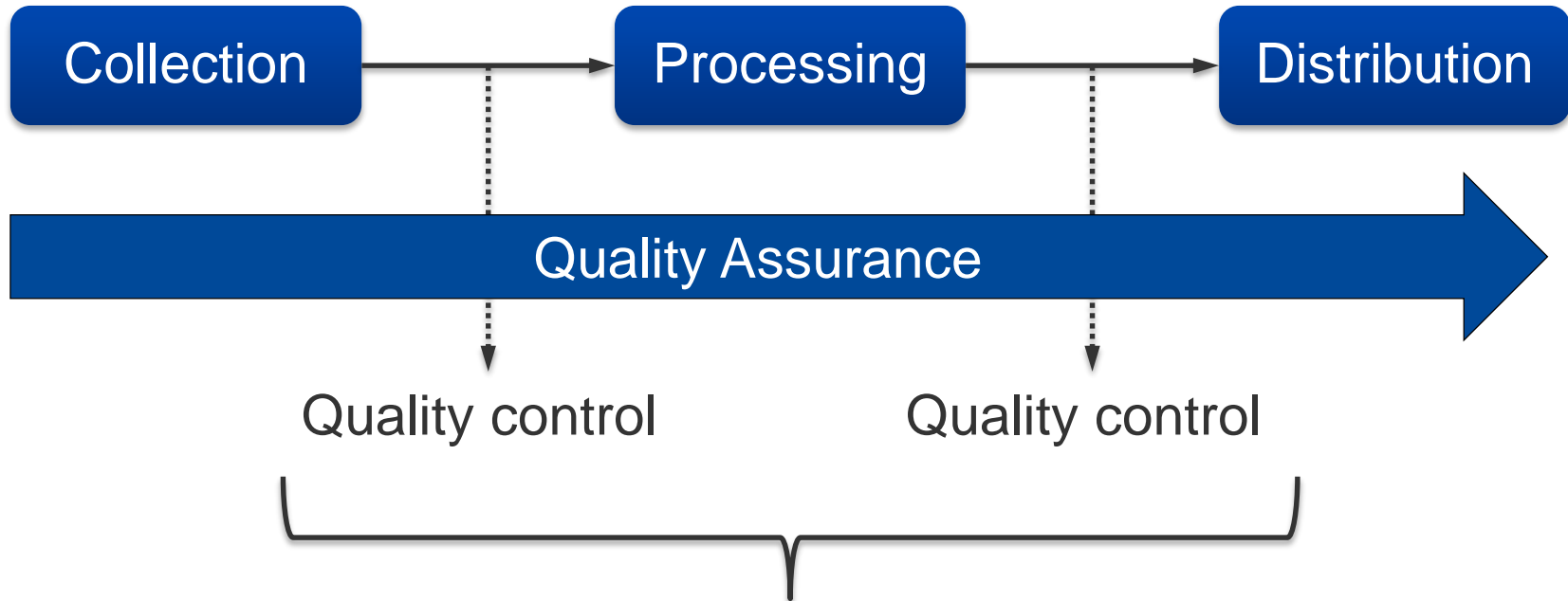


☐ Sample formal arrangement as Appendix

Processing of Aeronautical Data and Information

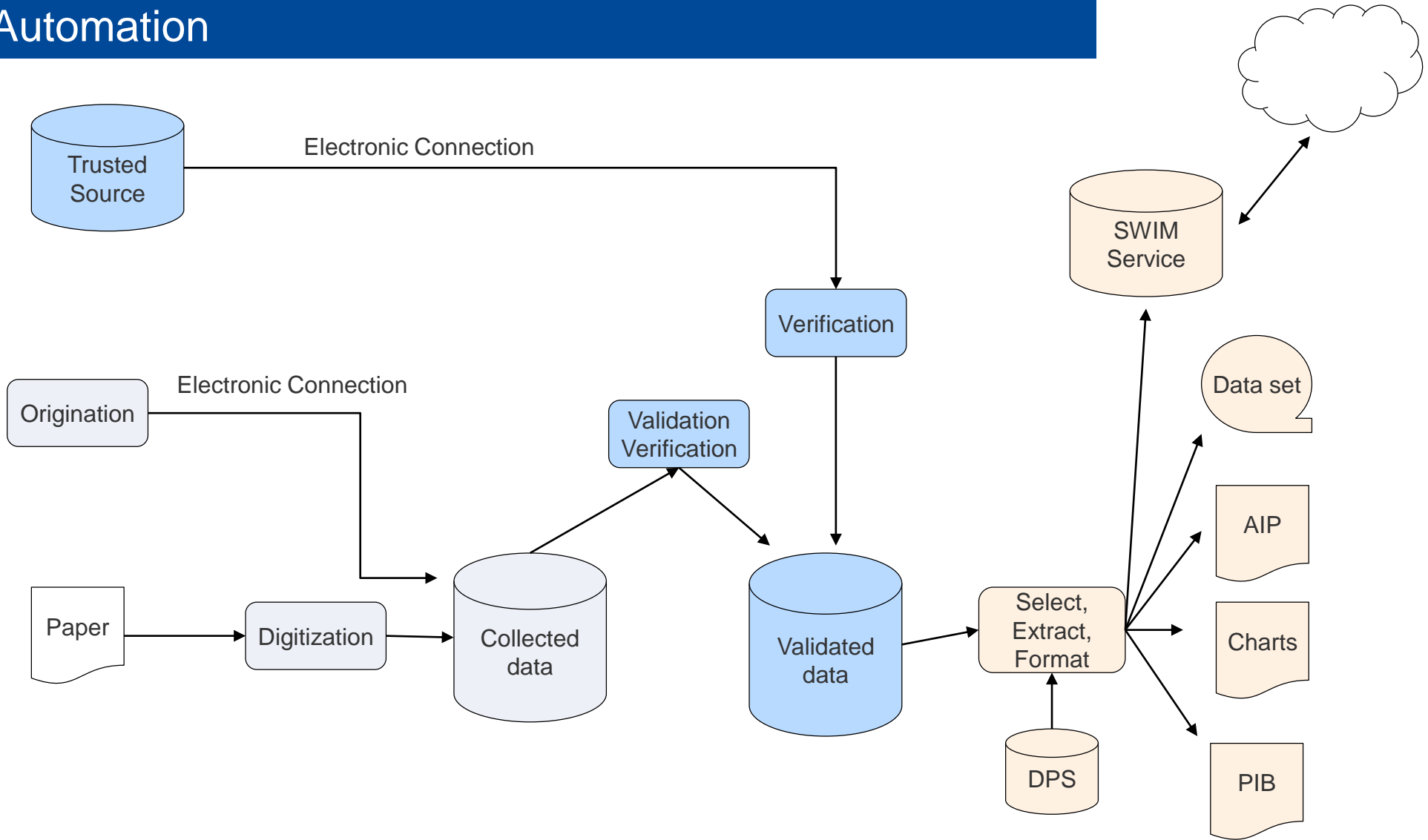


Quality Assurance and Control



mitigation of errors and faults in the entire process

Automation



Phases of Automation

Level 0 Manual

Level 1 Data centric

Level 2 Automated workflow

Level 3 Full AIM integration

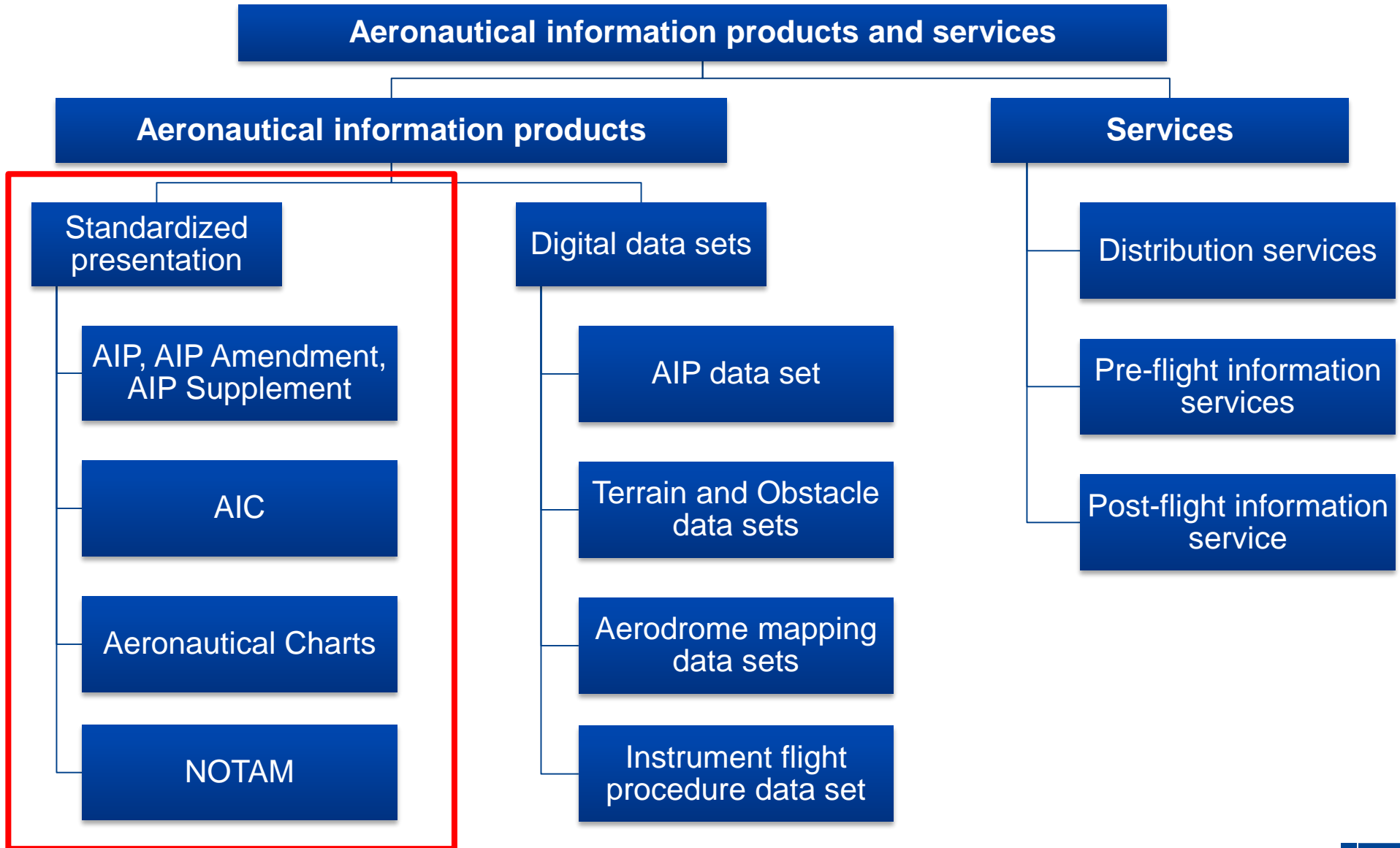
Level 4 AIM SWIM services



VOLUME 3

Aeronautical Information in a Standardized Presentation

Aeronautical Information Products and Services



Changes to Previous Version

- ❑ AIP
 - AIP Amendment
 - AIP Supplement
 - eAIP → **NEW**
- ❑ AIRAC → **UPDATED**
- ❑ AIC
- ❑ NOTAM → **UPDATED (based on AIS-AIM SG/5 SN/4)**
- ❑ Appendices
 - Appendix 1 – Explanatory notes → **UPDATED**
 - Appendix 2 – Specimen AIP → **UPDATED**
 - ...
 - Appendix 7 – NOTAM Selection Criteria → **UPDATED**
 - ...



VOLUME 4

Digital Products and Services

Content of Volume 4

- ❑ Digital exchange of aeronautical information
 - System Wide Information Management
 - Aeronautical data and information exchange models
- ❑ Digital data sets
 - Data product specification
 - Aeronautical information products as digital data sets
- ❑ Aeronautical information services

❑ ***Conceptual model***

- description of features, associations and data type, using UML

❑ ***Encoding format***

- enclosing aeronautical information into digital format, using languages such as XML or GML

❑ ***Extension mechanism***

- specific addition meant for a specific group of users

❑ ***Additional guidelines***

- additional provisions to the model such as the temporality concept, the feature identification and reference, the GML profile for aviation data, and the business rules concept

Reference to AIXM Specification

- ❑ The current AIXM Specification is available on the site: <http://www.aixm.aero>.
- ❑ The AIXM Specification contains the following documents:
 - AIXM Data Model (UML)
 - AIXM XML Schema (XSD)
 - AIXM Temporality Concept
 - AIXM Feature Identification and Reference
 - Guidance and Profile of GML for use with Aviation Data
 - AIXM Application Schema and Extensions
 - AIXM Business Rules (data verification) – Using Schematron and SBVR

Data Product Specification

Data product specification includes:

Overview

Specification
scope

Data product
identification

Data content
information

Used reference
system

Data quality
requirements

Information about
data capture

Data
maintenance

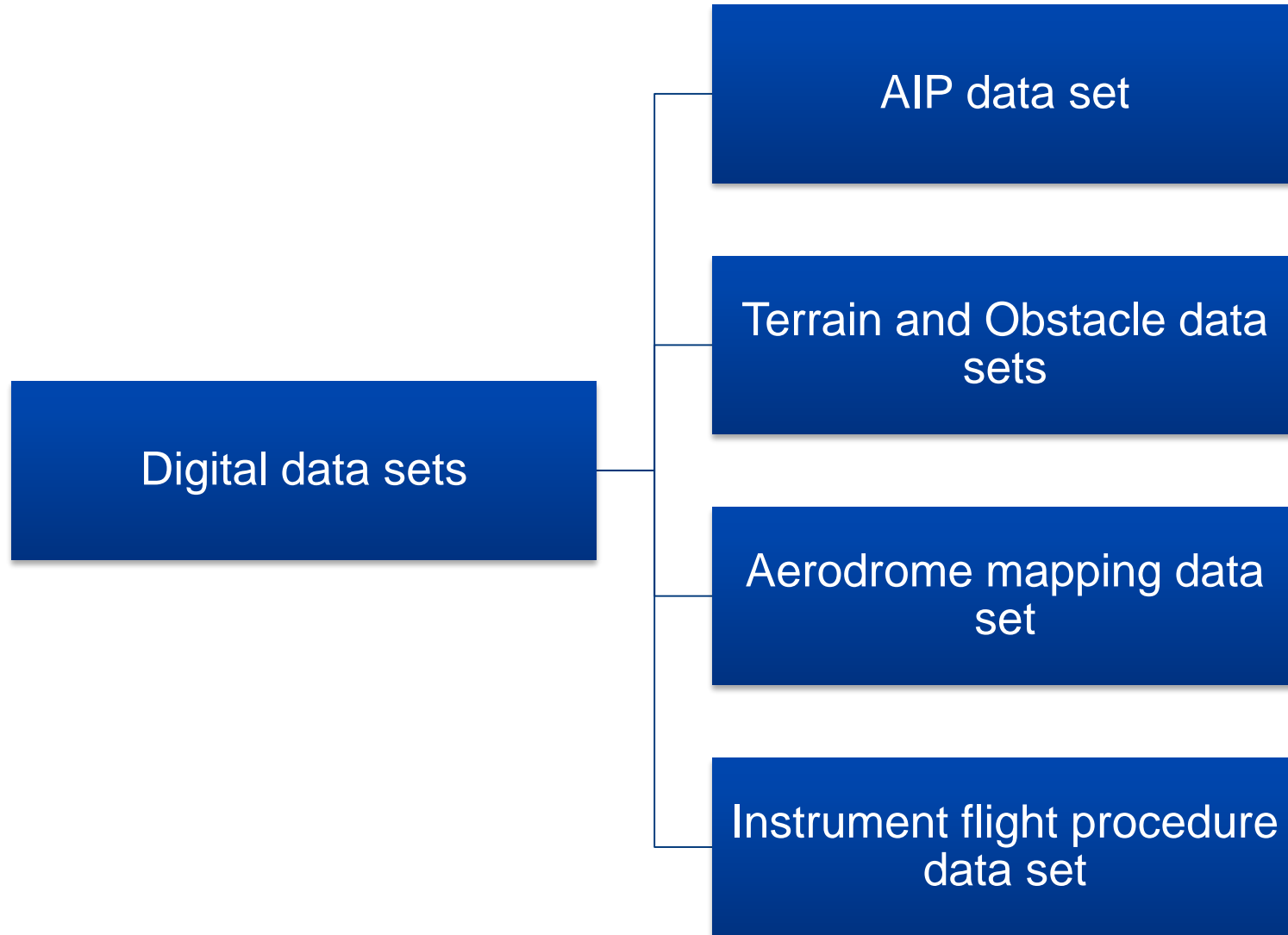
Data portrayal

Data product
delivery

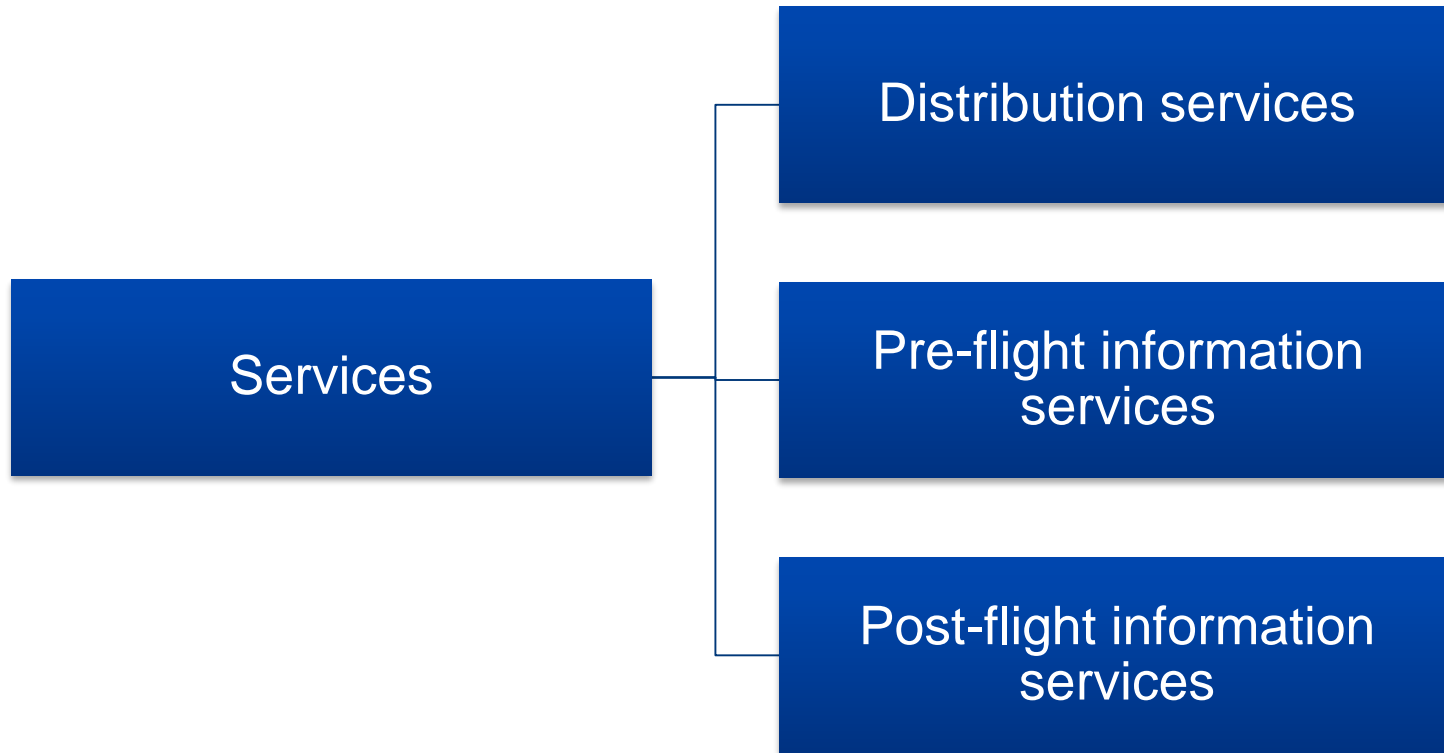
Metadata

Additional
information

Aeronautical Information Products as Digital Data Sets



Aeronautical Information Services





Thank you for your attention!