



# **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"><li>1. Maintains awareness of the information requirements of the different users concerning aeronautical information</li><li>2. Verifies that aeronautical data is compliant with quality requirements (accuracy, resolution, completeness, format) on reception</li><li>3. Monitors the quality of aeronautical information from origination to distribution to internal and external stakeholders (integrity, timeliness, traceability)</li><li>4. Uses available tools to gather, monitor and comprehend the aeronautical information in its different status (collection, storage, processing, transfer)</li><li>5. Manages the aeronautical information in the user's context</li><li>6. Identifies and Manages potential threats that can cause degradation of aeronautical information flow or the quality (e.g. interruption of aeronautical data process)</li><li>7. Develops effective contingency plans based upon potential threats</li></ol>

**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

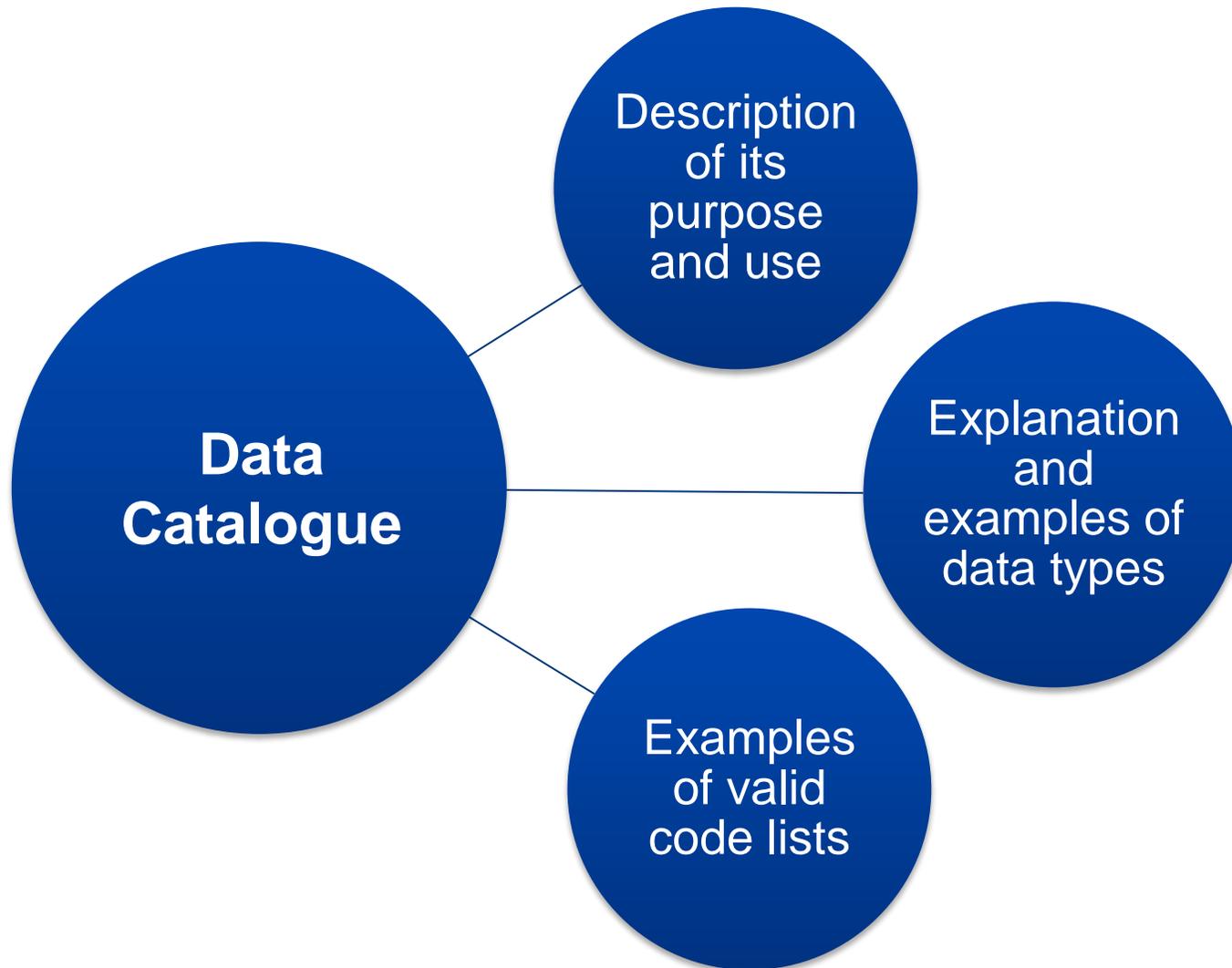


# VOLUME 2

## 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



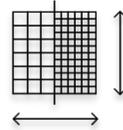
# Data Quality Requirements – DQRs

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



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Accuracy



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Resolution



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Integrity

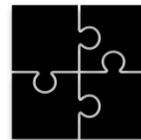


Traceability



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Timeliness



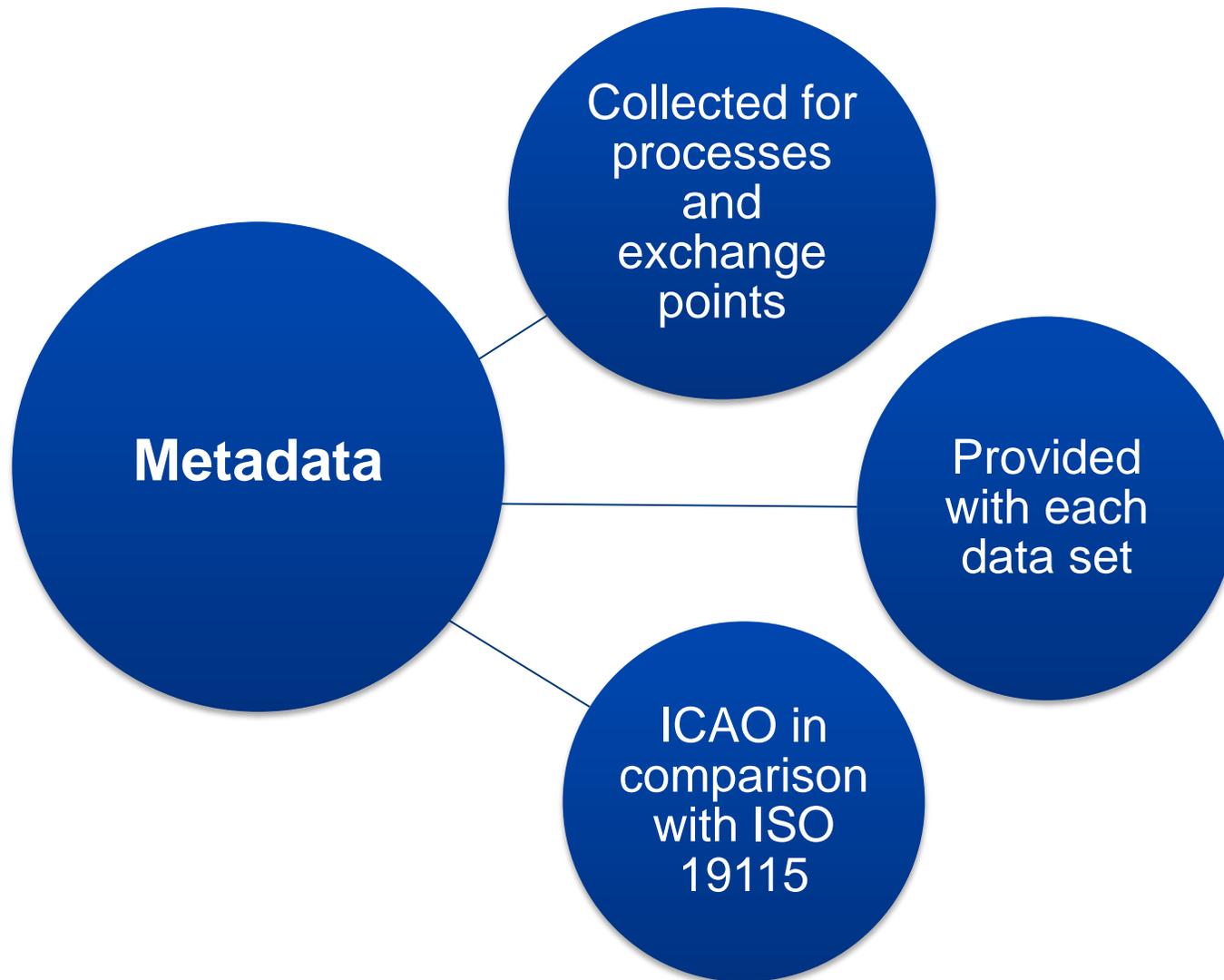
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Completeness

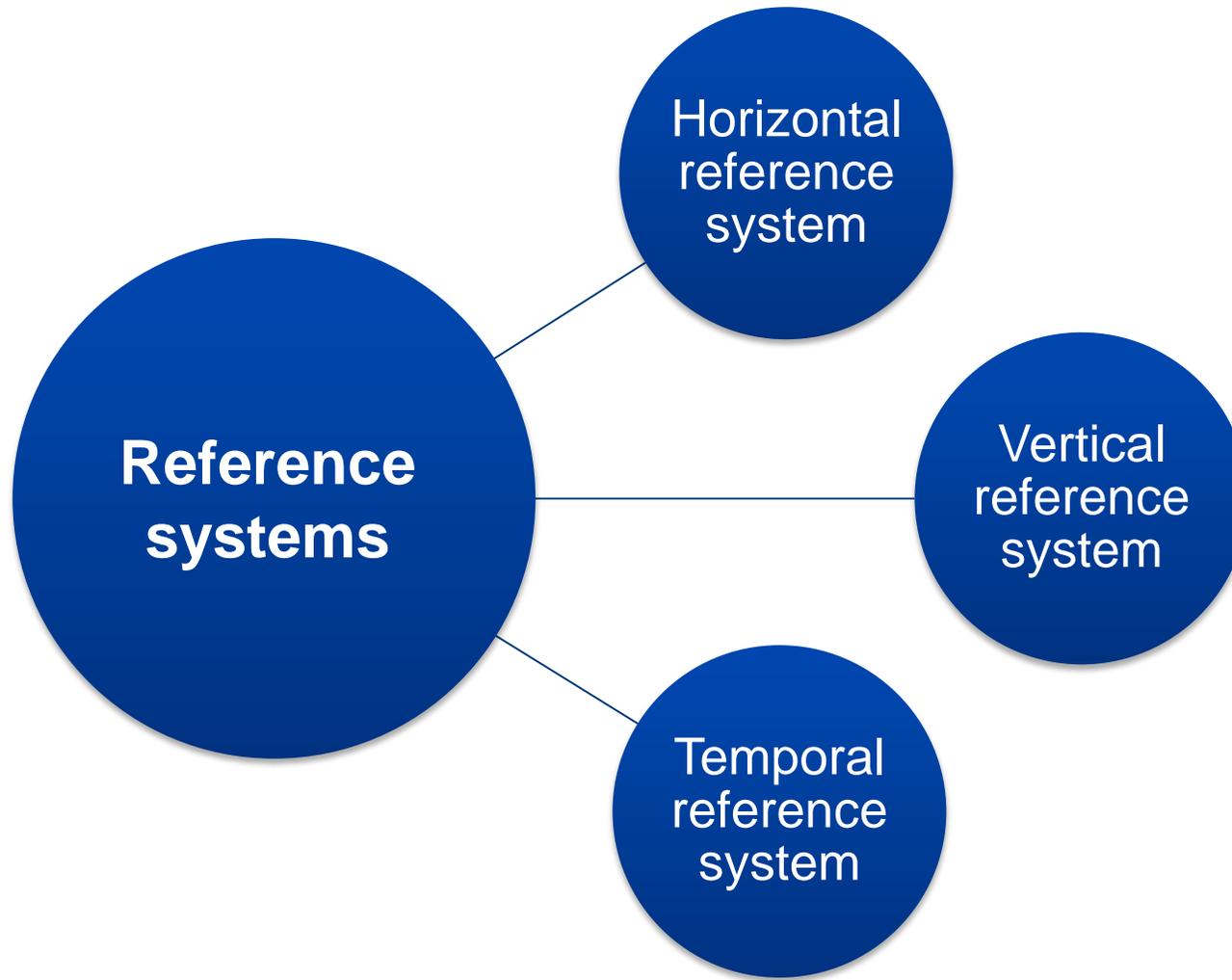


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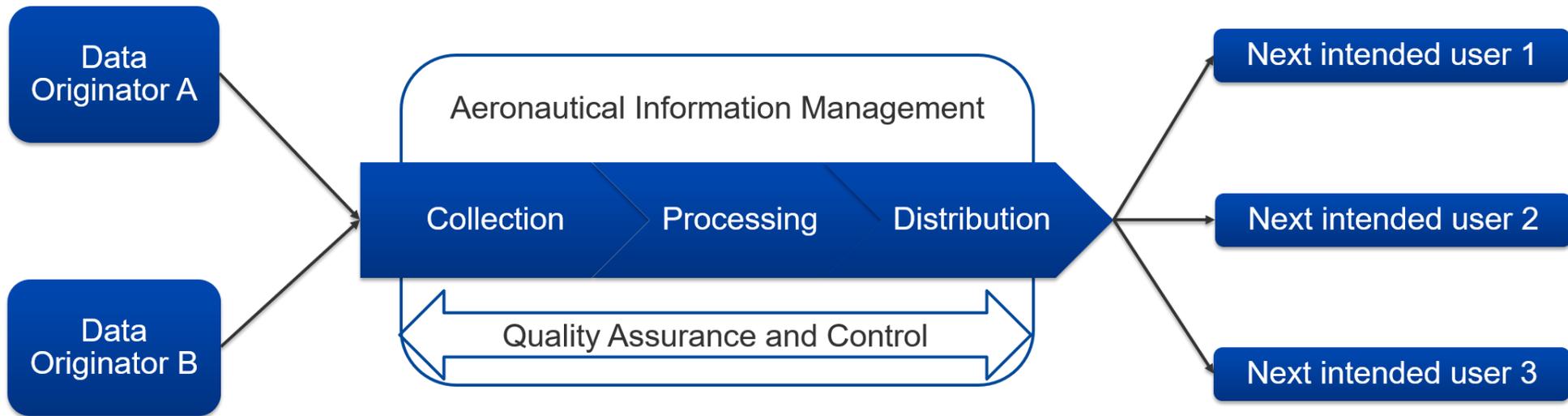
Format



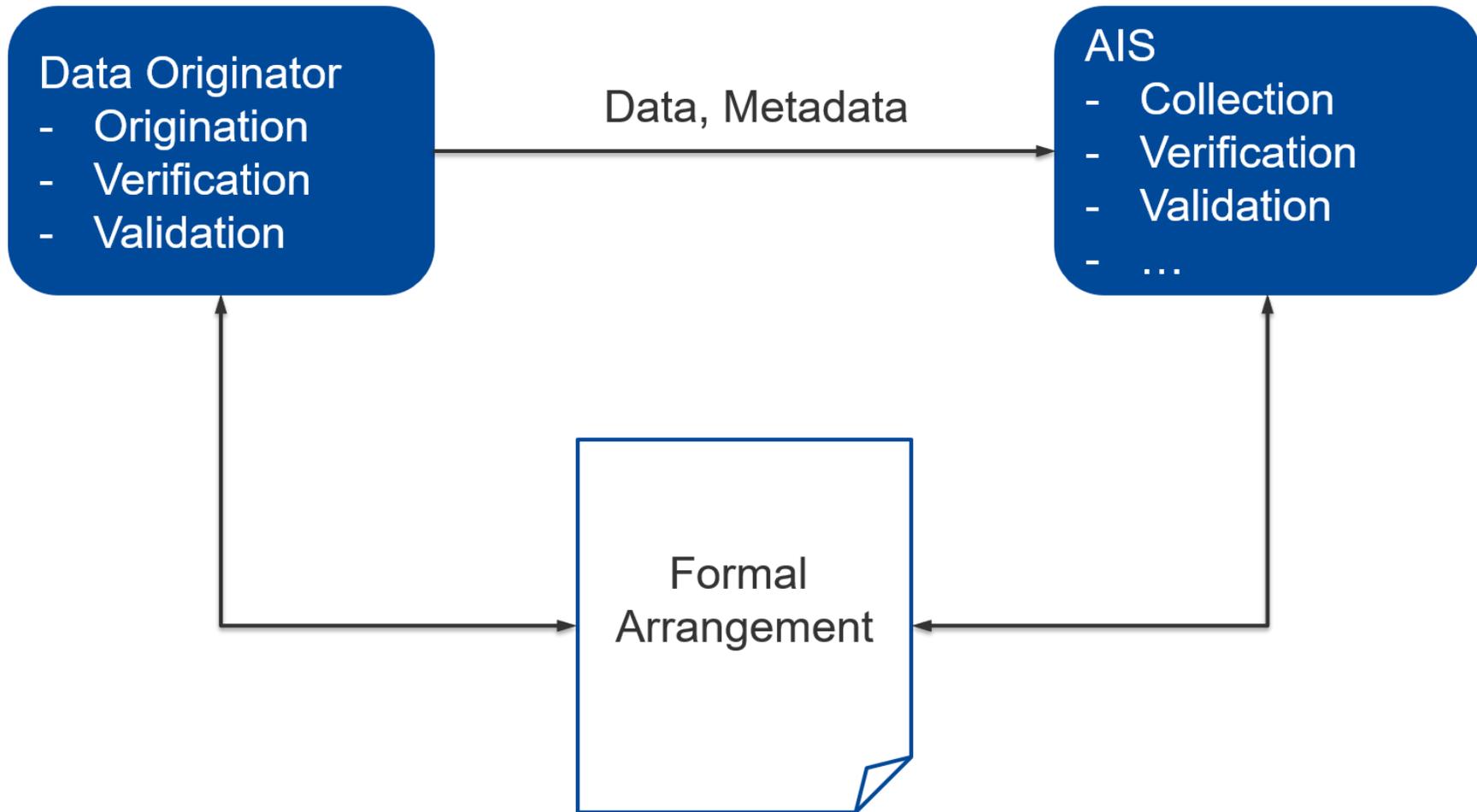
# Reference Systems



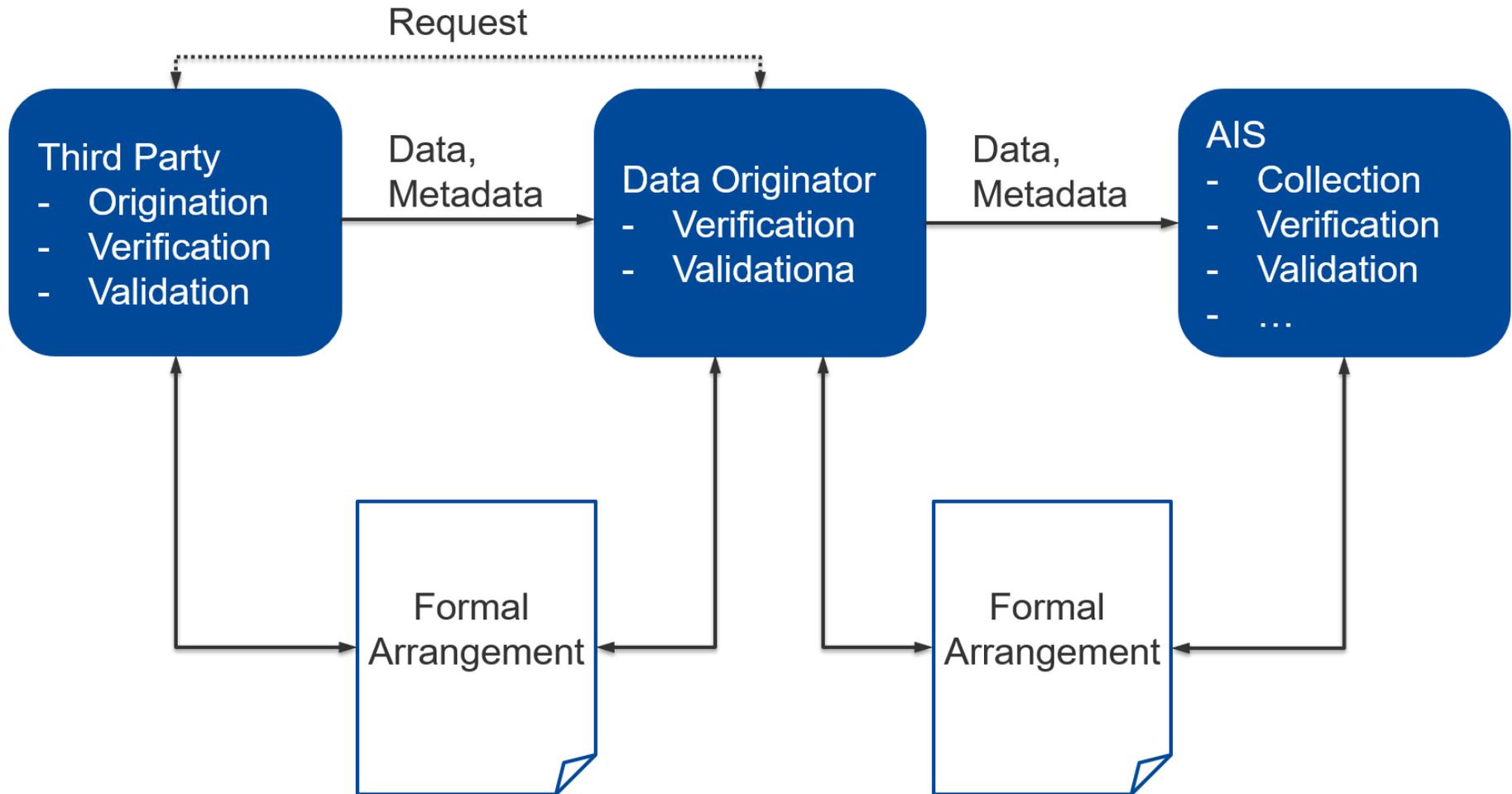
# Aeronautical Information Management Process



# Collection – Formal Arrangements



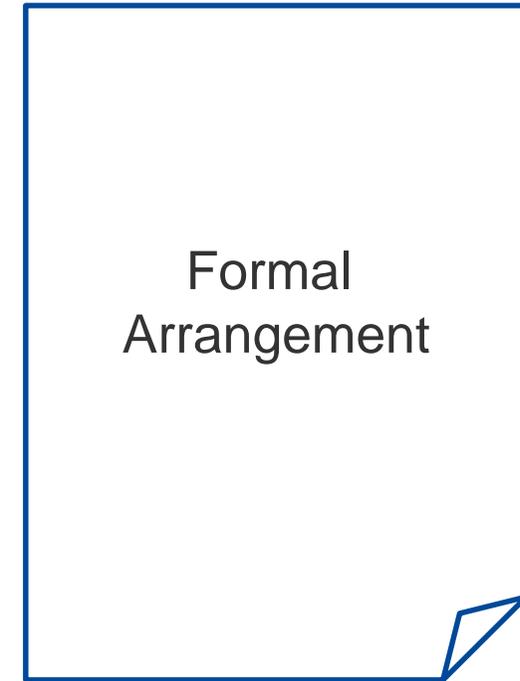
# Collection – Formal Arrangements



# Collection – Formal Arrangements

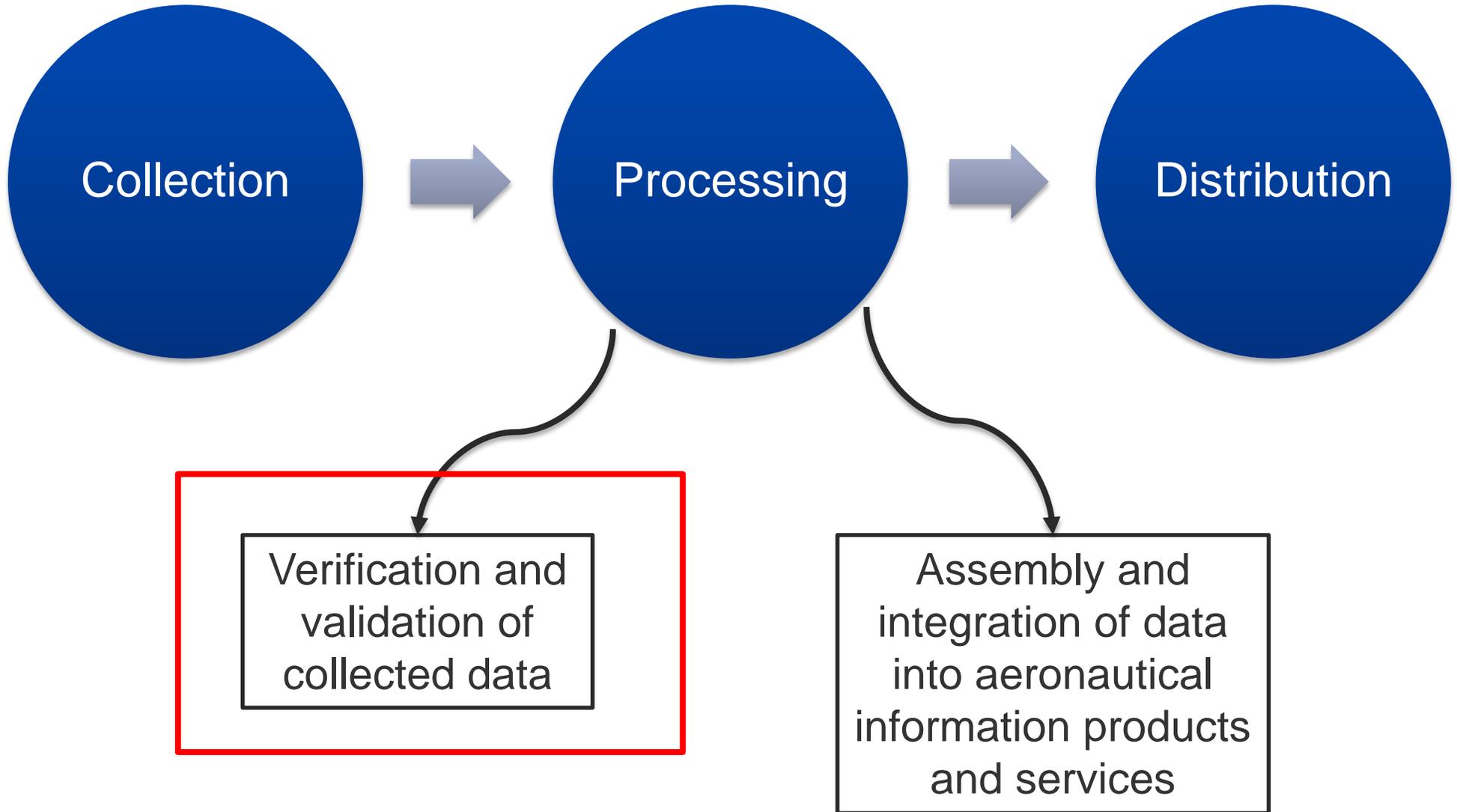
## □ Minimal content of formal arrangements:

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

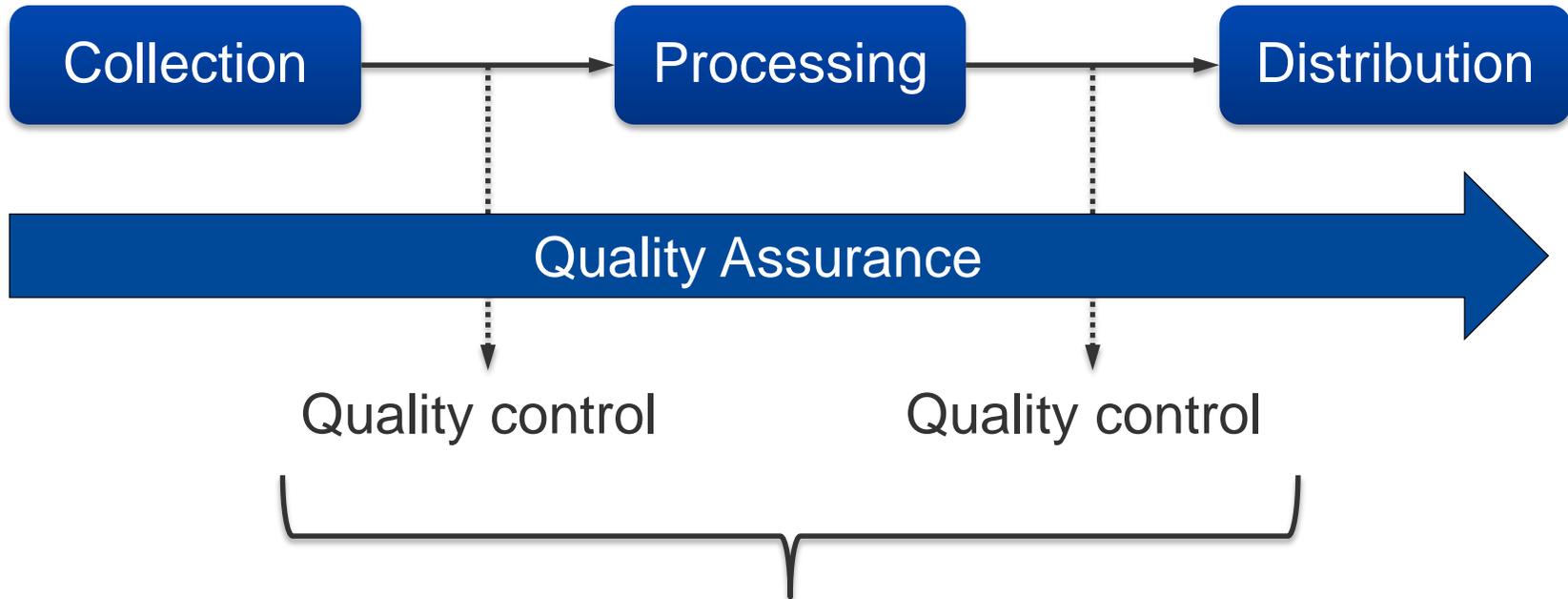


## □ Sample formal arrangement as Appendix

# Processing of Aeronautical Data and Information

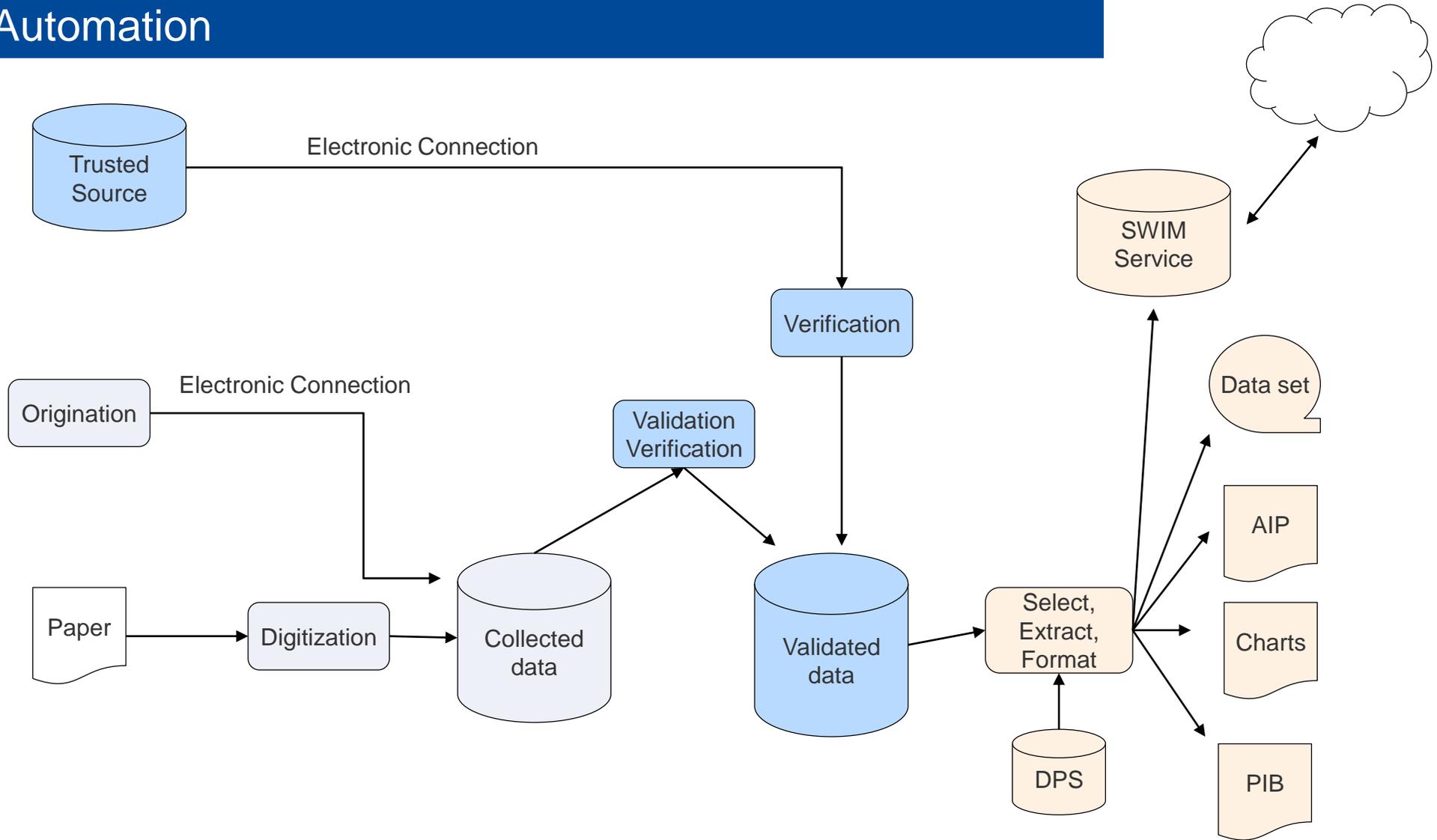


# Quality Assurance and Control



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

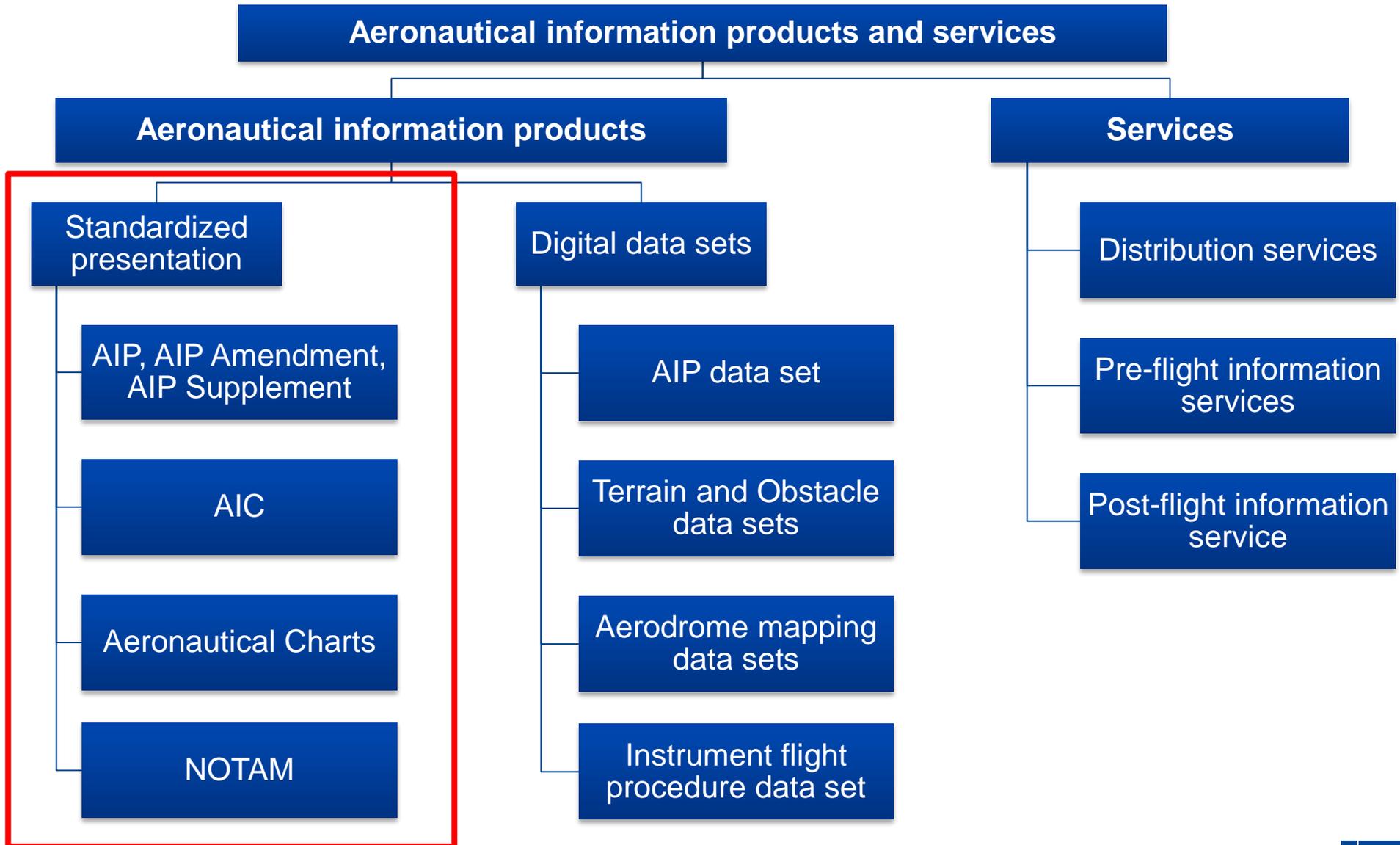
Level 4 AIM SWIM services



## **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

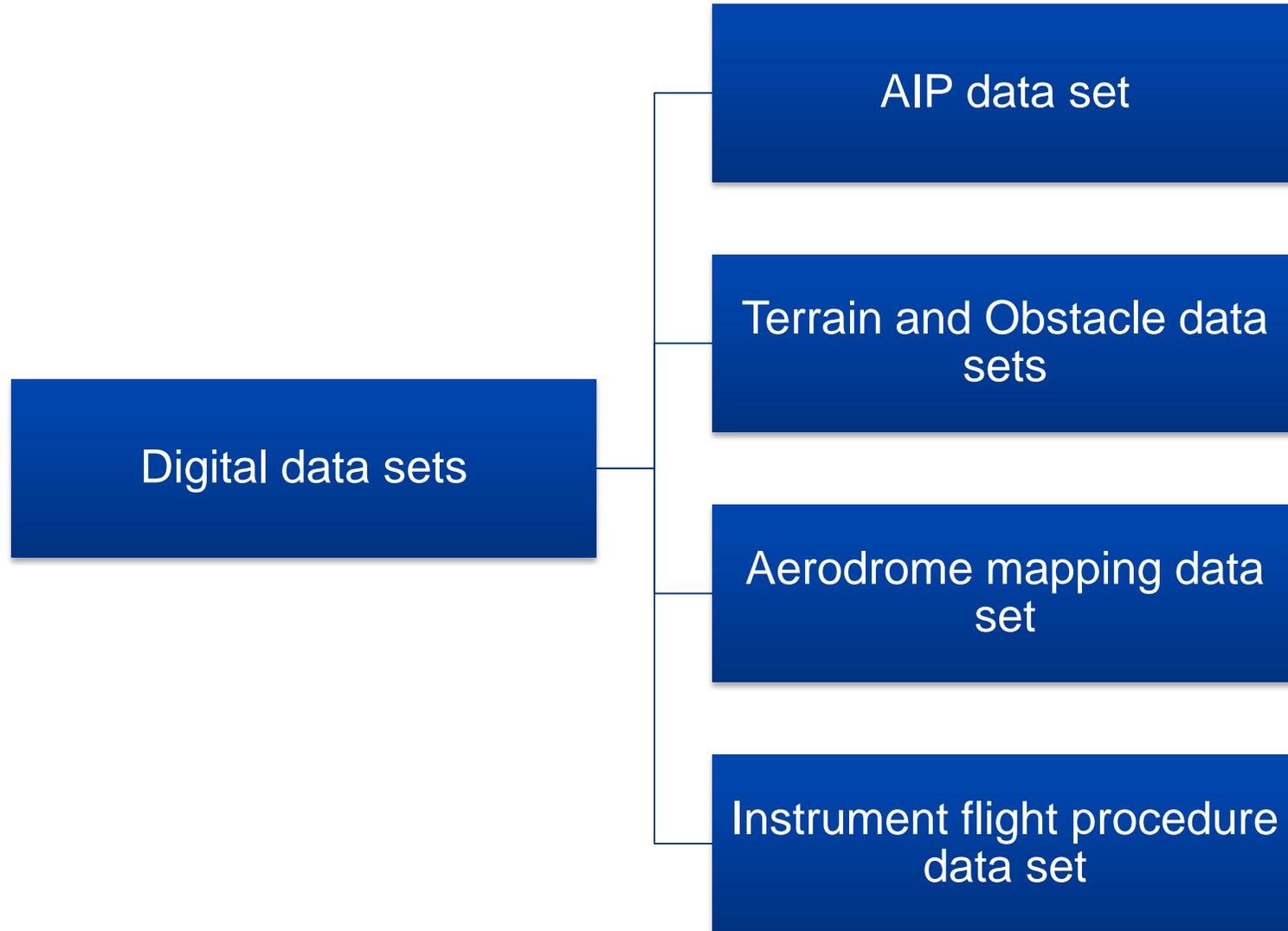
Data portrayal

Data product  
delivery

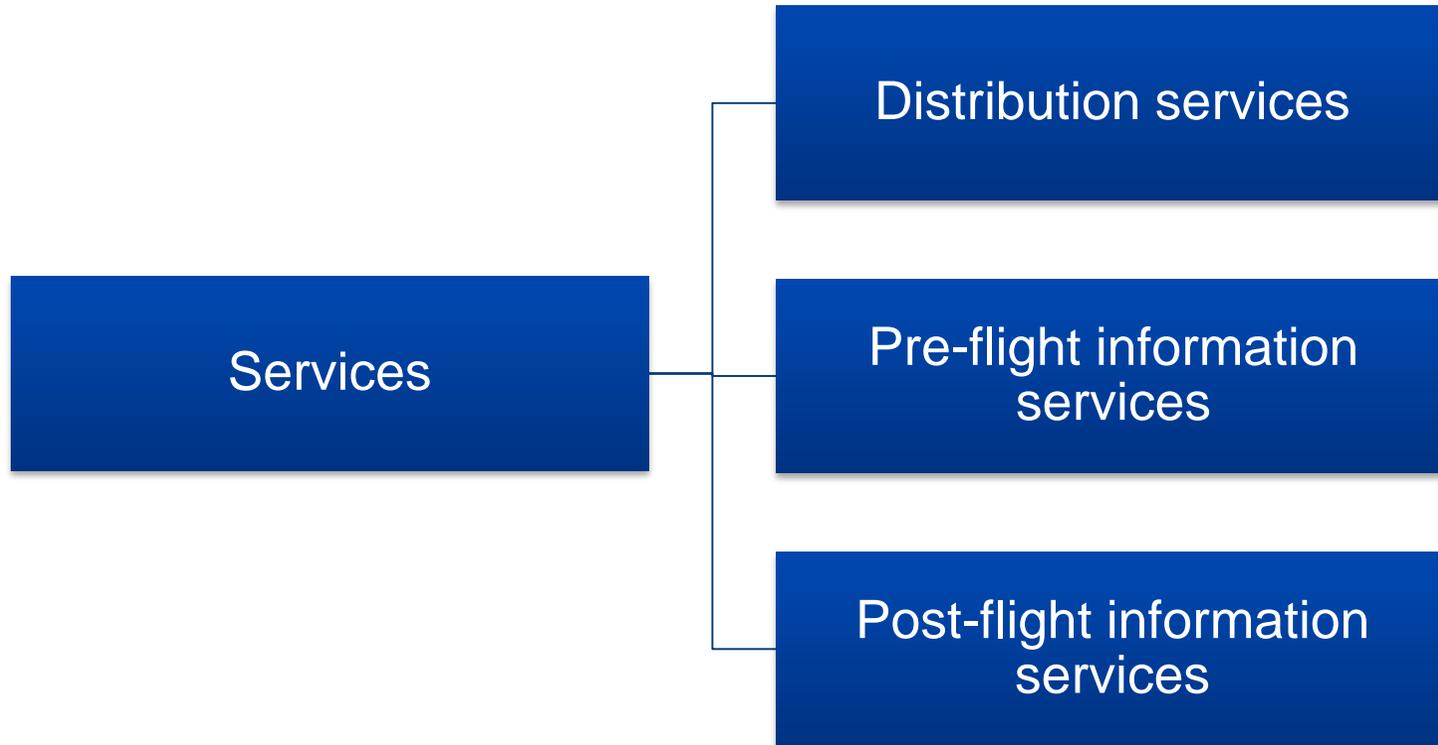
Metadata

Additional  
information

# Aeronautical Information Products as Digital Data Sets



# Aeronautical Information Services





**Thank you for your attention!**