

ICAO APAC AAITF/8

Aeronautical Information Quality

A Commercial Data Supplier View

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Aeronautical Data Supply Chain

Four Tiers of AIM Stakeholders

Each has different roles, responsibilities, obligations and needs



State Civil Aviation Authority

State government organization responsible for the safety, regularity and efficiency of national and international aviation within its borders.

State Designated Service Provider

An organization designated by a State to fulfill State obligations for AIS provision. These are often *corporatized* organizations referred to as ANSPs.

Commercial Service Provider

An organization, generally a corporation, that creates value-added services from the „official“ facts, data and information about the State aviation system.

End user

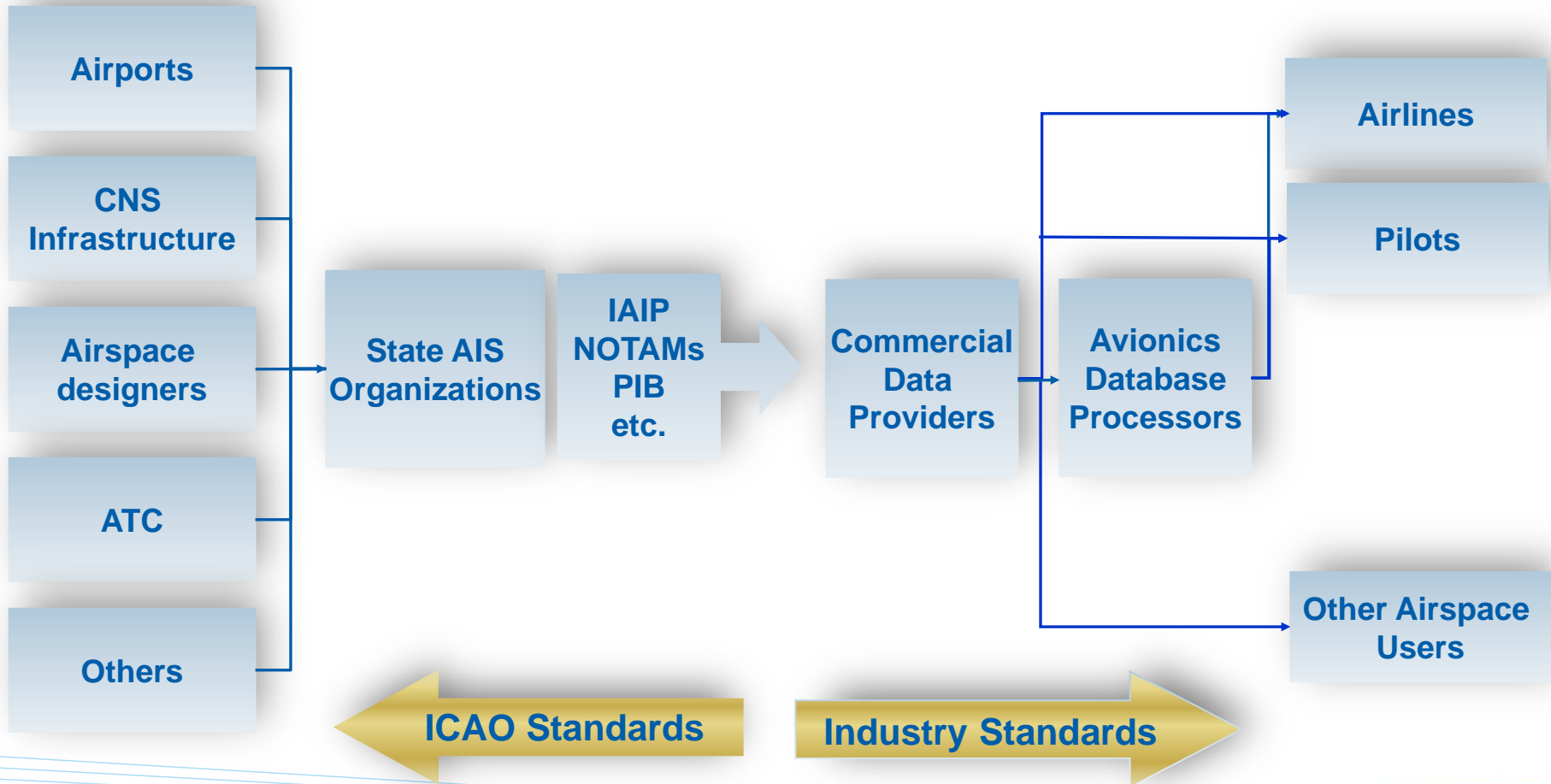
Pilots, aircraft operators, ATS organizations, flight support organizations and other entities that use aeronautical information to support safe, efficient and orderly flight operations.

Aeronautical Data Supply Chain

Information and Data Flow

End User

Data Originators



Aeronautical Data Flow

Data Streams

Commercial Data Provider

Products

State provided data

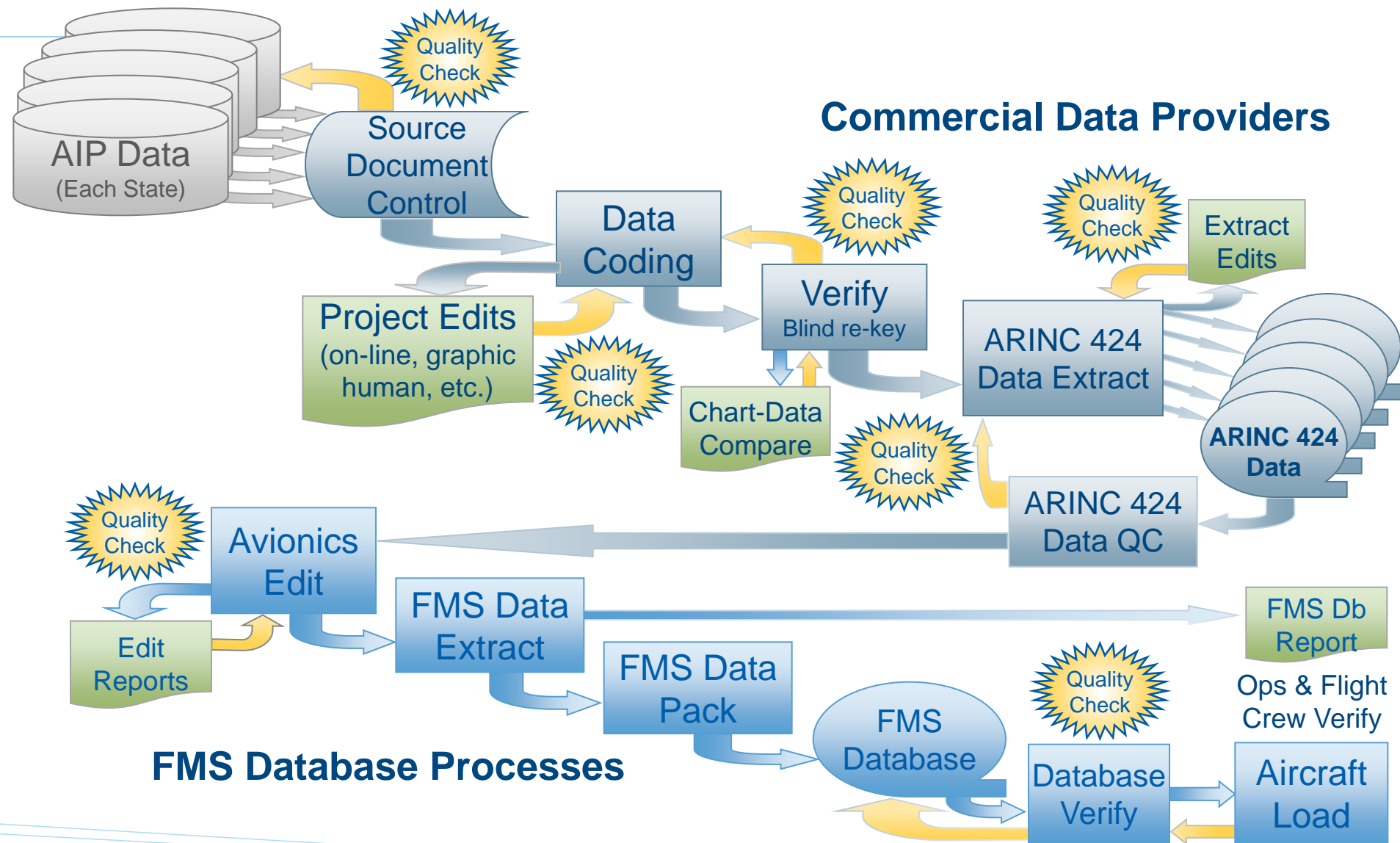
Customer provided data

Supplier derived data

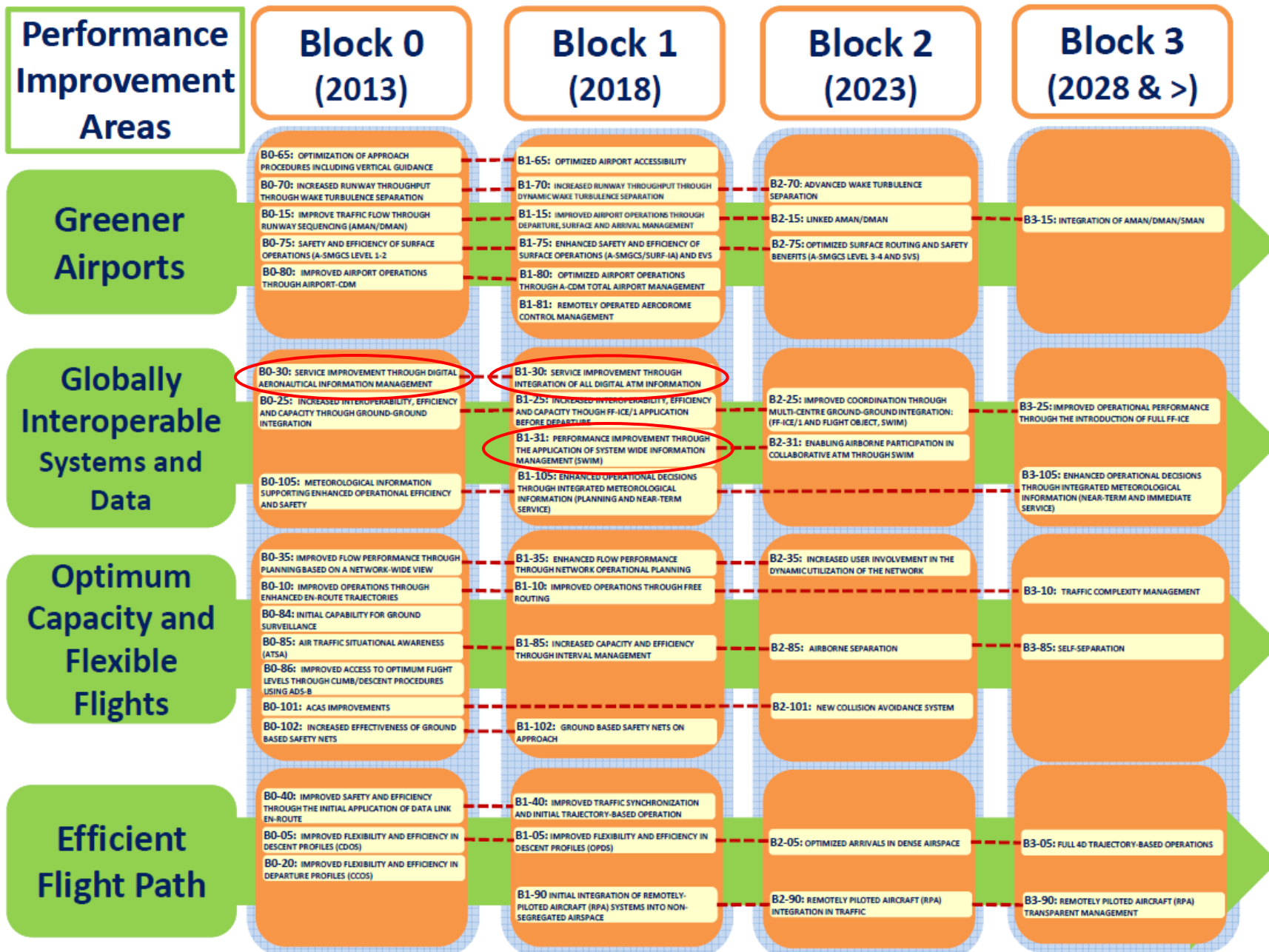
Gather
Analyze
Aggregate
Standardize
Reconcile
Configure
Integrate
Add value
Distribute

Navigation Data
Services
❖
Charting Services
❖
Operation Services

Aeronautical Data Process



Aviation System Block Upgrades



Aviation System Block Upgrades

- Globally Interoperable Systems and Data -

**Block 0
(2013)**

**Block 1
(2018)**

**Block 2
(2023)**

B0-30: SERVICE IMPROVEMENT THROUGH DIGITAL AERONAUTICAL INFORMATION MANAGEMENT

B0-25: INCREASED INTEROPERABILITY, EFFICIENCY AND CAPACITY THROUGH GROUND-GROUND INTEGRATION

B0-105: METEOROLOGICAL INFORMATION SUPPORTING ENHANCED OPERATIONAL EFFICIENCY AND SAFETY

B1-30: SERVICE IMPROVEMENT THROUGH INTEGRATION OF ALL DIGITAL ATM INFORMATION

B1-25: INCREASED INTEROPERABILITY, EFFICIENCY AND CAPACITY THROUGH FF-ICE/1 APPLICATION BEFORE DEPARTURE

B1-31: PERFORMANCE IMPROVEMENT THROUGH THE APPLICATION OF SYSTEM WIDE INFORMATION MANAGEMENT (SWIM)

B1-105: ENHANCED OPERATIONAL DECISIONS THROUGH INTEGRATED METEOROLOGICAL INFORMATION (PLANNING AND NEAR-TERM SERVICE)

B2-25: IMPROVED COORDINATION THROUGH MULTI-CENTRE GROUND-GROUND INTEGRATION: (FF-ICE/1 AND FLIGHT OBJECT, SWIM)

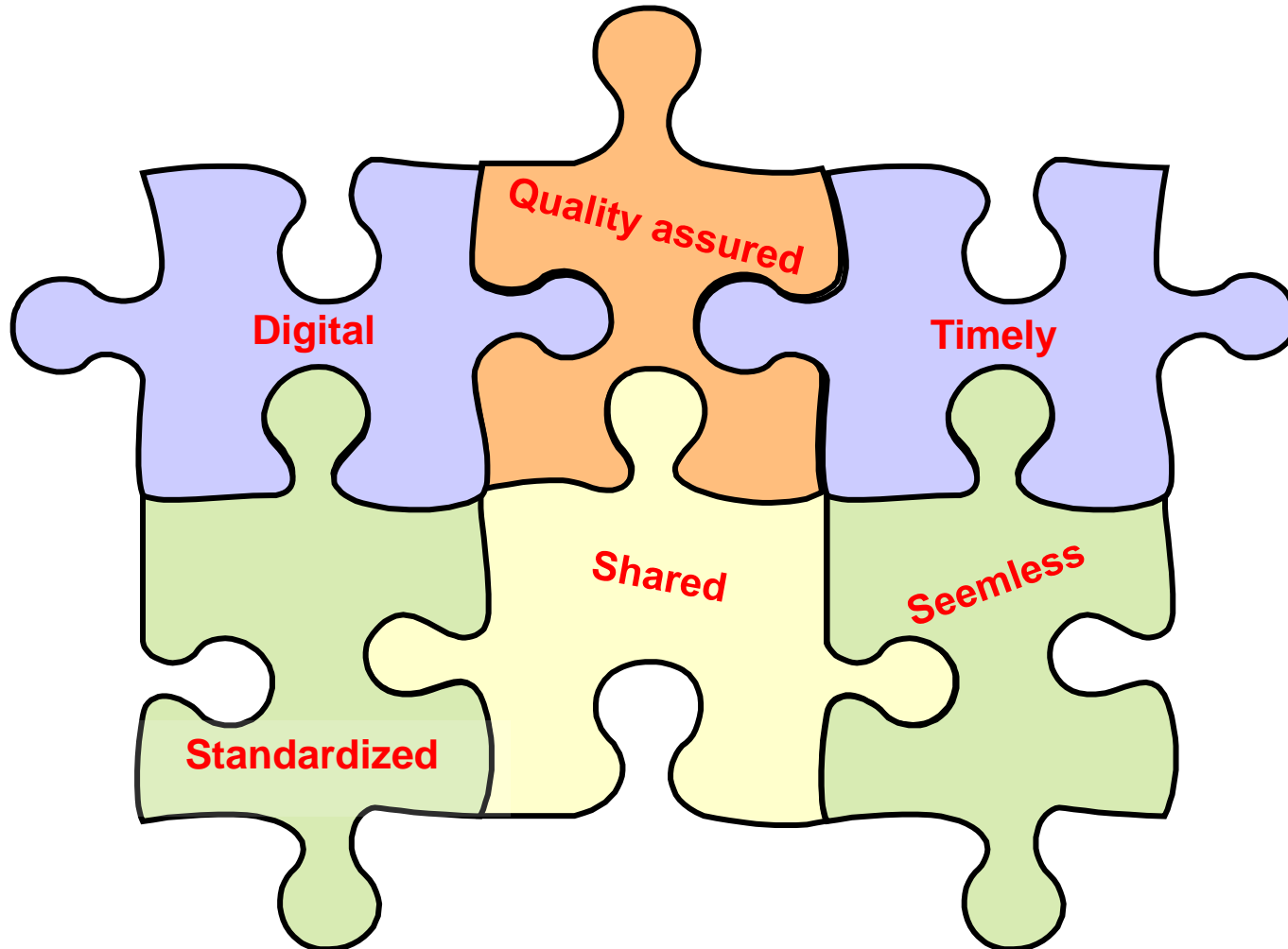
B2-31: ENABLING AIRBORNE PARTICIPATION IN COLLABORATIVE ATM THROUGH SWIM

Transition AIS to AIM

Safe and efficient global aeronautical information management that supports a **digital, real-time, accredited** and **secure** aeronautical information environment.

Present and future navigation systems and other air traffic management systems are **data-dependent**. All require access to global, broad-based aeronautical information of a considerably **higher quality** and in a **more timely manner** than is generally available today. The provision of **aeronautical information is a core element of air navigation services**.

Aeronautical Information Management Puzzle



AIS to AIM

2010

Paper Electronic Digital

- Many human transaction points and media breaks
- Data integrity risks
- High demand for resources
- Limited scope of information
- Slow data flow and risk of late info

Conventional NOTAMS

- The 60 year old NOTAM system does not satisfy future ATM needs
- Text messages not suitable for automated processing
- Human interpretation required
- etc.

Static Data Provision

Digital Electronic Paper

Static data with dynamic update

Digital NOTAMS

Dynamic Data Provision

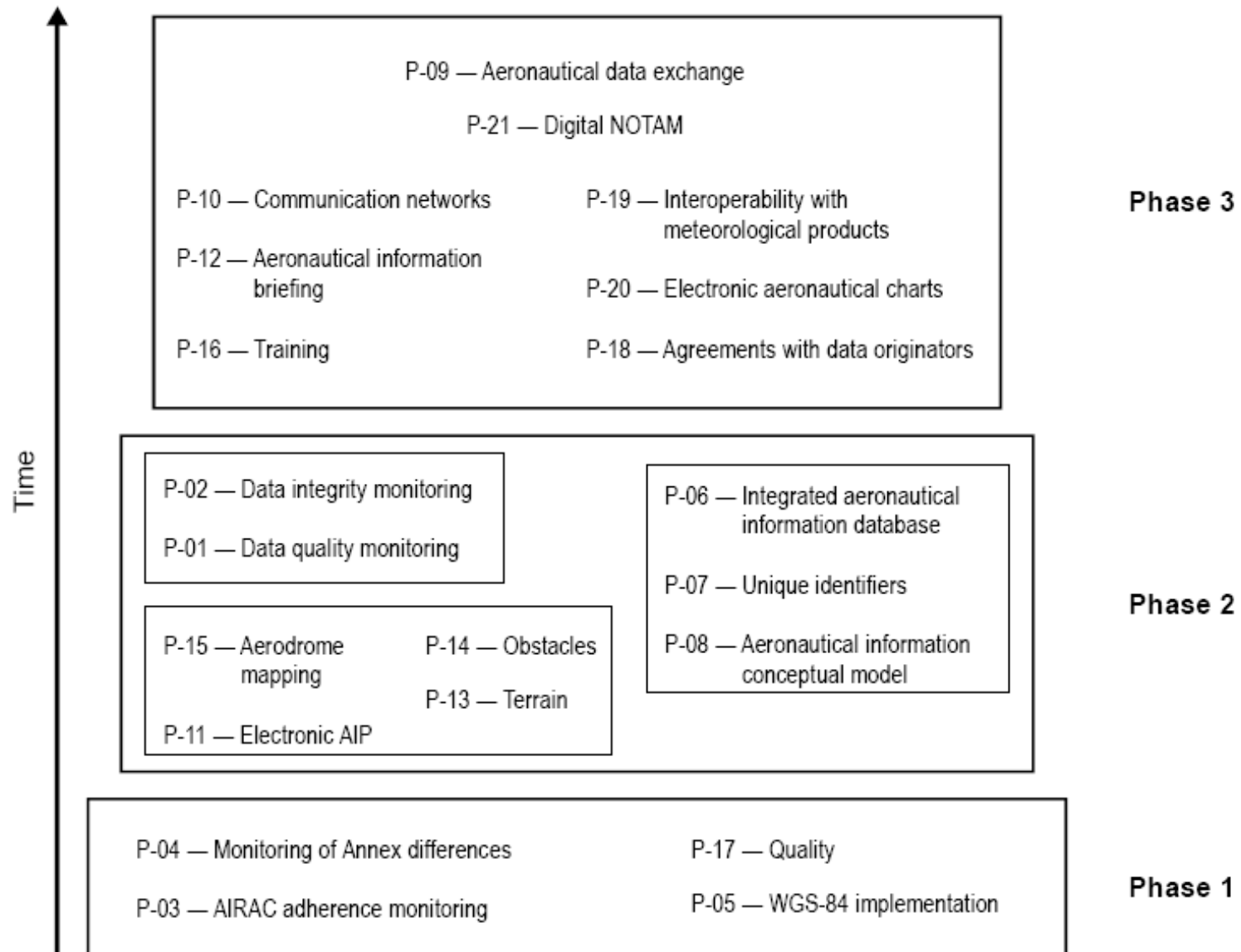
2016

- Few or no media breaks and human transactions
- High data integrity and quality
- Reduced demand for resources
- Extended scope of information
- Expedited data flow and more timely info
- **Structured format for automated processing to all ATM actors in order to create and maintain accurate and up-to-date situational awareness of aeronautical operations environment**

AIS-AIM Roadmap

- Phase 1 – Consolidation
 - Quality Requirements
 - AIRAC adherence
 - Implement coordinate reference standard (WGS-84)
 - Provision of terrain and obstacle data
- Phase 2 – Going Digital
 - Introduce data driven processes
 - eAIP
 - Improve quality and availability
- Phase 3 – Information Management
 - Fully digital information management
 - Digital information exchange
 - Further quality and availability enhancement

AIS-AIM Roadmap Steps



Data Volume Challenge

Worldwide aeronautical data volume

- Very large and growing
- Increasingly difficult to manage with required quality

- 14,600 Airports
- 89,200 Airport Details
- 10,600 Airport Comms
- 28,600 Navaids
- 4,600 ILS Approaches
- 6,300 VOR Approaches
- 3,600 NDB Approaches
- 7,100 RNAV Approaches
- 17,500 Departures
- 13,200 Arrivals
- 72,000 Terminal Waypoints
- 3,400 High Airways
- 3,000 Low Airways
- 2,800 High/Low Airways
- 22,600 Enroute Waypoints

Data Quality Characteristics

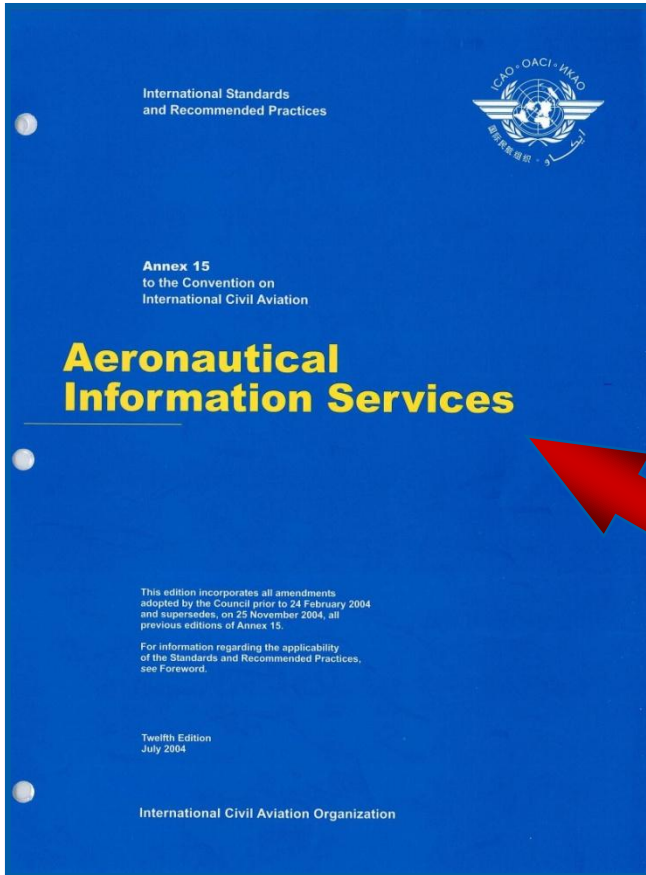
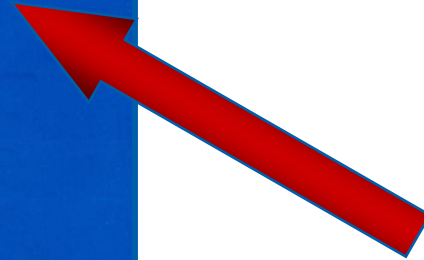
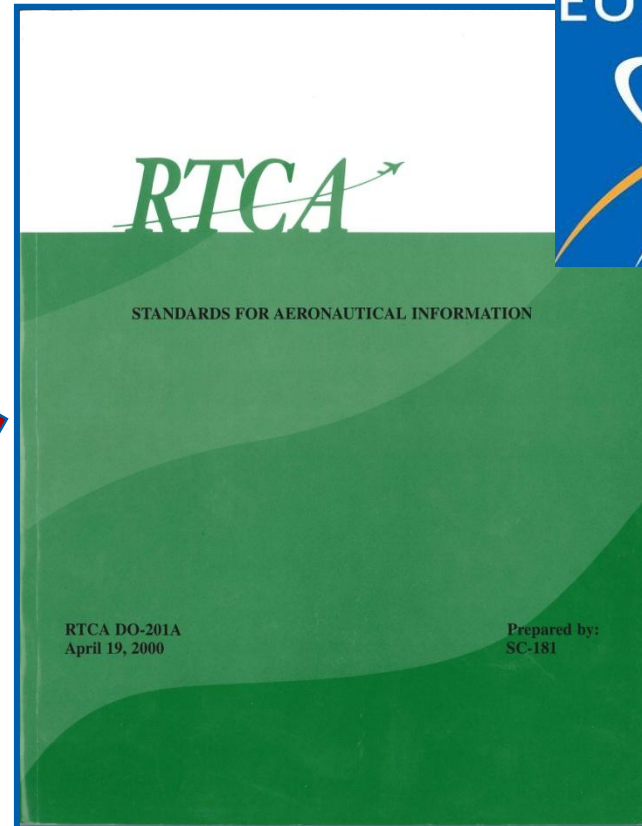
- Accuracy
- Resolution
- Integrity
- Timeliness



Industry Data Standards

DO-201A / ED-77A

Industry Requirements for Aeronautical Information



Key elements of DO-201A incorporated in ICAO Annex 15

Industry Data Standards

STANDARDS FOR PROCESSING
AERONAUTICAL DATA

Referenced in
FAA AC 120-153,
*Acceptance of Data Processes
and Associated Navigation
Databases*

DO-200A / ED-76A
*Standards for Processing
Aeronautical Data*

DO-200A /ED-76 processes
expect source data quality that
meets Annex 15 SARP

DOCUMENT NO. RTCA/DO-200A
September 28, 1998
Prepared by: SC-181

RTCA

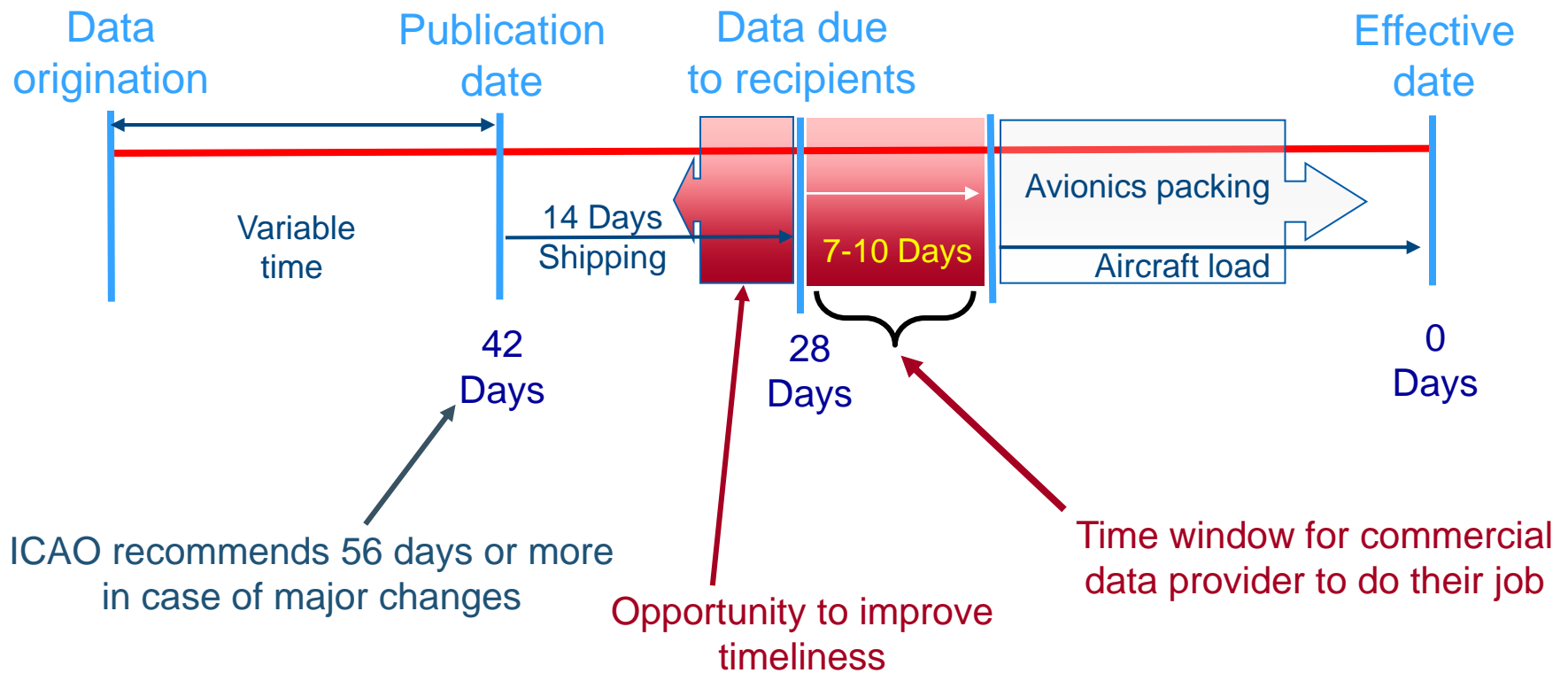
"Requirements and Technical Concepts for Aviation"

EUROCAE



Timeliness

AERONAUTICAL INFORMATION REGULATION AND CONTROL (AIRAC)

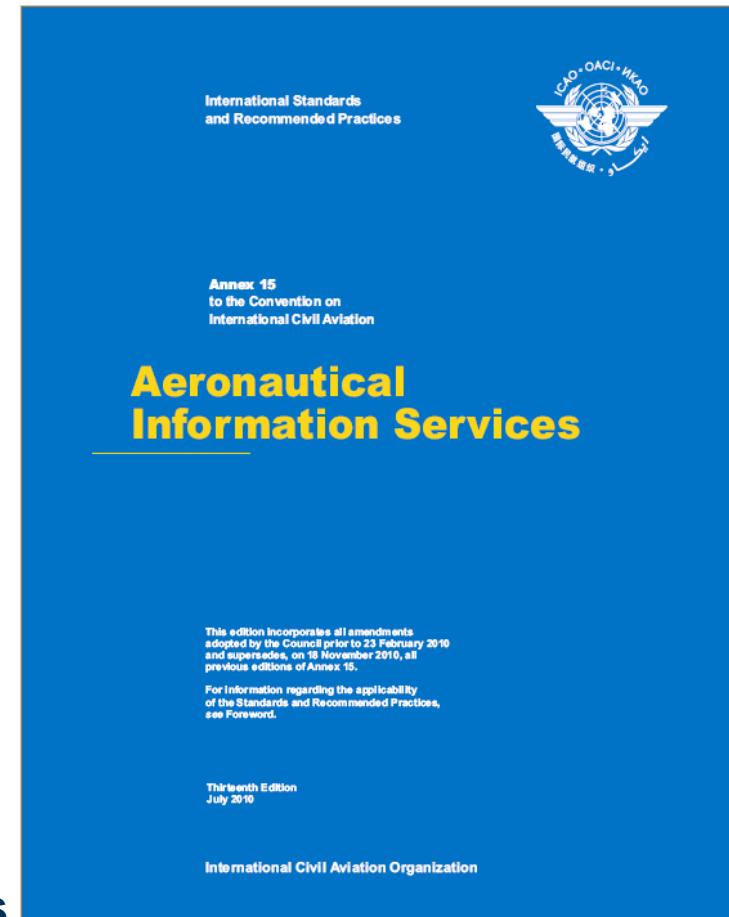


Major Changes

Annex 15 (Appendix 4, Part 3) defined what constitutes a “major change”:

- New aerodrome open for intl IFR traffic;
- New runway(s) for IFR operations at international aerodromes;
- Design and structure of the ATS route network;
- Design and structure of a set of terminal procedures (including change of procedure bearings by 1°)

Applies to both paper and electronic publications



Typical Aeronautical Data Problems Today

- **Late information per AIRAC**
 - Publication
 - Postponement
- **Publications not received (numbers not in sequence)**
- **Uncertainty about AIRAC publications**
 - No AIRAC-nil NOTAM
- **Conflicting information**
- **Inconsistent data relationships**
 - Detail data changes without corresponding procedure changes
 - Inconsistency between procedures
 - Common data not changed in all affected uses
- **Inconsistent data across State boundaries**
- **Unreliable clarification channels**

