



ICAO

UNITING AVIATION

AMENDMENT 40 TO ANNEX 15

AIR NAVIGATION PROCEDURES FOR AIM

November 2018

Roberta Luccioli, ICAO AIM Technical Officer



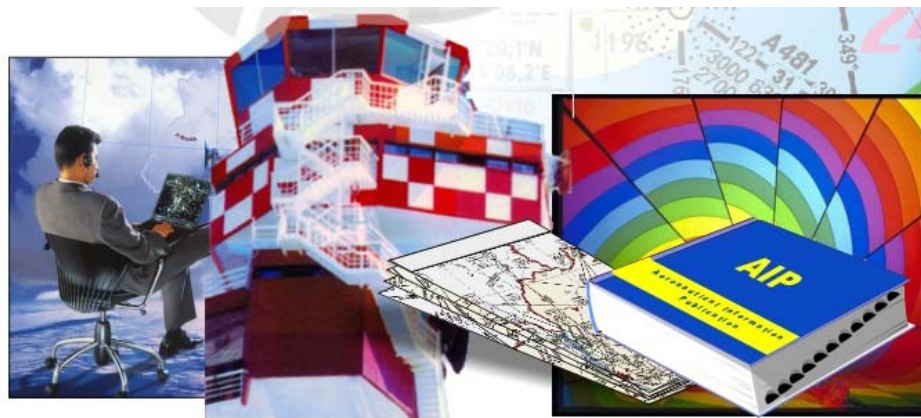
Outline

- From *Aeronautical information services (AIS)* to *Aeronautical Information Management (AIM)* environments
- ICAO Actions
- Amendment 40 to Annex 15
 - Guiding principles
 - Highlights
 - Current Status
 - Impact



From the traditional AIS...

- **Product-centric;**
- **Manual processing** and manipulation;
- Duplication of information, **quality issues;**
- use of **non-harmonized** formats across the exchange interfaces;
- “Point to point” or “application to application” exchanges;
- Insufficient awareness of the quality requirements of **end-use applications.**



... to the new AIM environments

- **Focus is on the data and information**
- **Quality-assured** aeronautical information
- Sources of Artificial Intelligence;
- Aeronautical information is **digitally represented**;
- Aeronautical information is **globally harmonized and interoperable**;
- **Producers** of information decoupled from possible **consumers**;
- Better awareness of the end-use requirements (feedback mechanisms)

Accredited Provider(s) of AIM source data





Global Overview

ICAO ACTIONS



ICAO AIS to AIM Study Group (2008 -2015)

Objectives:

- Global strategy/roadmap for the transition from AIS to AIM
- SARPs/Guidance for a standard AICM/AIXM to enable global digital data exchange
- Other material required to support AIM implementation

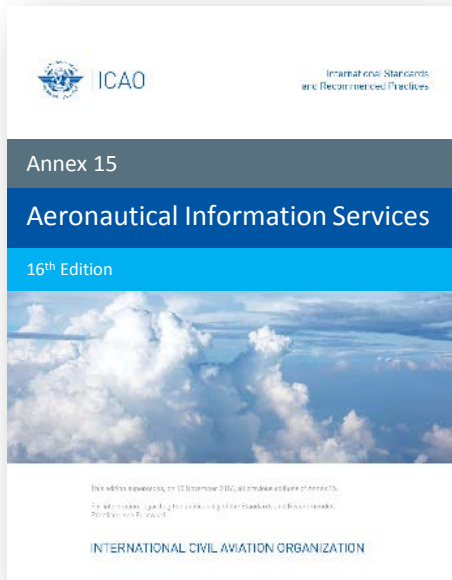


Restructuring of ICAO AIM Documentation

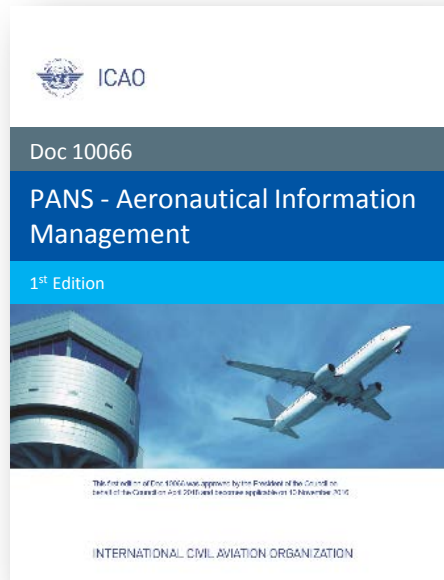
- Answering “the big questions”:
 - *Scope of AIM*
 - *Role of AIM*
 - *Functions of AIM*
 - *Products and services of AIM*
 - *Aeronautical information updates*
- The revised provisions address the needs of defined groups



ICAO AIM framework of documents



? *What...*



? *How...*



? *Guidance...*

Global Overview

ANNEX 15, GUIDING PRINCIPLES



Main elements

Amendment 40 cause major changes to Annex 15...



Introduces new AIM requirements :

- ✓ Splits data origination from publication requirements
- ✓ Strengthens the importance of quality
- ✓ Encourages digitalization of products and services

Reorganizes chapters 4 to 11 into:

- ✓ Chapter 4 - *Scope of Aeronautical Data and Information*
- ✓ Chapter 5 - *Aeronautical Information Products and Services*
- ✓ Chapter 6 - *Aeronautical Information Updates*

Annex 15 significantly reduced in size (6 chapters, **40** pages)



Annex 15 – Chapter 4

Scope of Aeronautical data and Aeronautical Information:



Data origination/collection:

- **minimum data set or scope ;**
- aeronautical information and data to be collected and managed;
- 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;**
- be used to facilitate **formal arrangements between AIS and data originator**

Annex 15 – Chapter 5

Aeronautical Information Products and Services:

SERVICE 1 (legacy)

Provision of AI in a standardized presentation:

- ✓ AIP
- ✓ AIP Amendments
- ✓ AIP Supplements
- ✓ AICs
- ✓ NOTAMs
- Aeronautical Charts
- ✓ **Electronic encouraged**

Continuity

SERVICE 2 (new)

Provision of AI as digital datasets:

- ✓ **New!** AIP data sets
 - ✓ **New!** IFP data sets
 - ✓ Terrain data sets
 - ✓ Obstacle data sets
 - ✓ Aerodrome Mapping data sets
- New data sets: recommended**

Evolution

OTHER SERVICES

Distribution of AI

- ✓ Use of **internet** is recommended

Pre-flight Service

- ✓ Relocated text

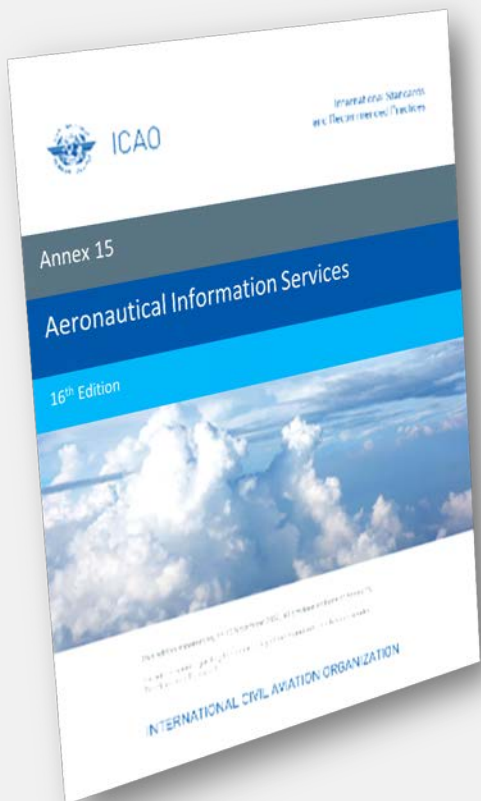
Post-flight Service

- ✓ Relocated text

Improvement

Annex 15 – Chapter 6

Aeronautical Information Updates:



- Legacy products updates: no changes
- NOTAM, as an update mechanism
- **Digital data-set updates** (generic requirements):
 - data sets to be amended as necessary;
 - permanent and temporary changes (long duration) as full data set or sub-set of data ;
 - full data-sets: the differences should be indicated;
 - temporary changes (short duration) – Digital NOTAM
 - updates to the AIP and the digital datasets shall be synchronized



Global Overview

HIGHLIGHTS



Data quality requirements

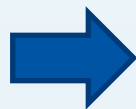
Accuracy, Resolution, Integrity

**+ Completeness, format,
timeliness, traceability**

Upstream

ORIGINATION

Origination of
aeronautical data and
information



AIM

Collection
Validation/Verification
Processing
Distribution

Downstream

END-USE:

End use of aeronautical data
and information

DQR before AMD. 40

DQR after AMD. 40 (EUROCAE ED76A / RTCA DO200B)

NOTAM improvements

Make the NOTAM more fit for purpose:

- Additional operational conditions are included in the provisions to identify when a NOTAM shall/shall not be originated
- Improved requirements for NOTAM distribution:
 - States obligations on NOTAM distribution
 - **!New** requirement to grant the distribution of NOTAM series other than those distributed internationally

NOTAM: 4/6433

NOTAM: 4/6433

Issued: 07/05/2004 03:06

Issued: 07/05/2004 03:06

Effective: Immediately - Until Further Notice

Effective: Immediately - Until Further Notice

State: AK

Facility: ZAN - ANCHORAGE (AL) (TC)

Type: HAZARDS

Type: HAZARDS

Description: TOK JUNCTION, ALASKA

Description: TOK JUNCTION, ALASKA.

FDC 4/6433 ZAN AK.. FLIGHT RESTRICTION TOK JUNCTION, AL
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Role of automation...

Essential! However...

- 3.5.2 Due consideration to the integrity of data and information shall be given when automated processes are implemented and mitigating steps taken where risks are identified.
- *Note.— Risks of altering the integrity of data and information may be introduced by automated processes in case of **unexpected systems behaviors**.*



New Terminology

- **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;
- **Originator, Origination** → to introduce and clarify an entity that is accountable for data origination, from which the AIS organization receives aeronautical data and information;
- **Next Intended User** → to better specify the role of the user in the aeronautical data chain;
- **Provide VS publish** → to encourage the move to digital environments;
- More consistent use of “**form, formats or media**” and “**printed**”, based on the differences between electronic, digital and paper requirements.



Global Overview

ACTUAL STATUS



Annex 15, Amendment 40 - Status



- Adopted by ICAO Council: Feb 2018
- State Letter: April 2018
- App. Date: 8 Nov 2018
- **NOW APPLICABLE!**



Global Overview

THE IMPACT



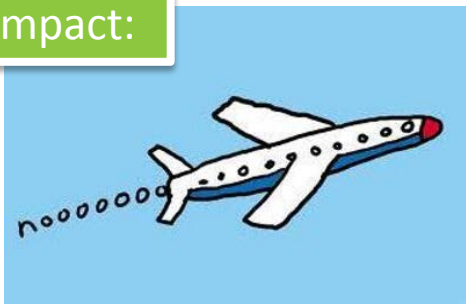
Benefits

- Conceptual Convergence (explain what is “AIM”)
- Important reference for National AIM Regulatory Framework
- Progressive and incentive (smooth transition to AIM)
- Reflect today`s practice (improved consistency with industry standards)
- Prepare for Future (key foundation for SWIM)



Impact

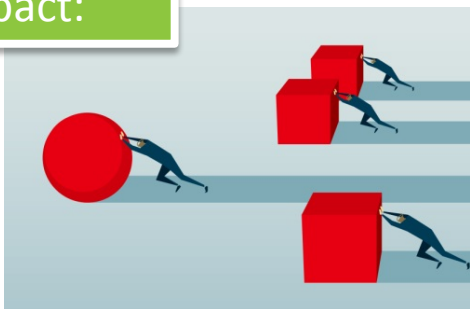
Flight safety impact:



POSITIVE!

Better understanding of AIM
Strengthens quality controls

Efficiency impact:



POSITIVE!

Going digital minimize errors

Financial Impact:



- Initial major investments
- Phased-approach is recommended

Implementation time



2 to 5 years (based on States' current status of implementation)

