



EASA
European Aviation Safety Agency



ARISE+

Funded by the European Union and implemented by the
European Aviation Safety Agency

From AIS to AIM



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Your safety is our mission.

An agency of the European Union 



Active from 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



Experts* from

- ▶ Australia, Brasil, China, France, Ireland, Japan, Kenya, Nigeria, Russia, South-Africa, South-Korea, Sweden, UK, USA, CANSO (Avitech, ITV, Nav Canada, skyguide, ...), IATA/Jeppesen, IFAIMA, IFALPA, EUROCONTROL



Results to date

➤ AIS2AIM Roadmap



➤ Anx15 - Amdt 36 – Appl. date 2010

- Automation, quality, eAIP, etod <<\$\$

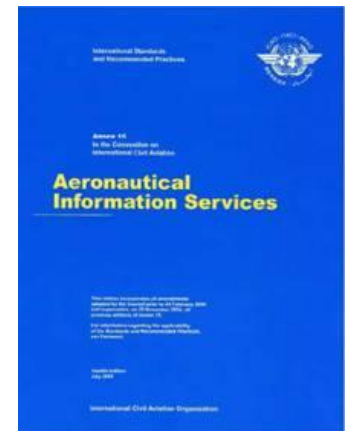
➤ Anx 15 - Amdt 37 – Appl. date 2013

- AIM inclusion, Roles & Responsibilities, Terminology, IM grouping
- Automation>> & Digital Data exchange
- Etod tuning & Airport Mapping Data Bases (AMDBs) inclusion
- Integrity Values out (classifications kept)
- AIP Template, SNOWTAM format enhancements

➤ Anx 15 – Amdt 40 – Appl. Date 2018

- New PANS-AIM

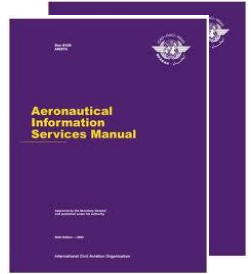
➤ Guidance material proposals





Guidance Material

- AIS Manual – Amdt 3 (Doc 8126)
- New Quality Manual (Doc 9839)
- New Training Manual (Doc 9991)
- Aeronautical Chart manual – Amdt 3 (Doc 8697)
- And more coming !

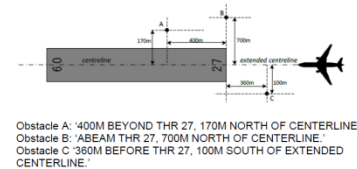




More Guidance – OPADD v4

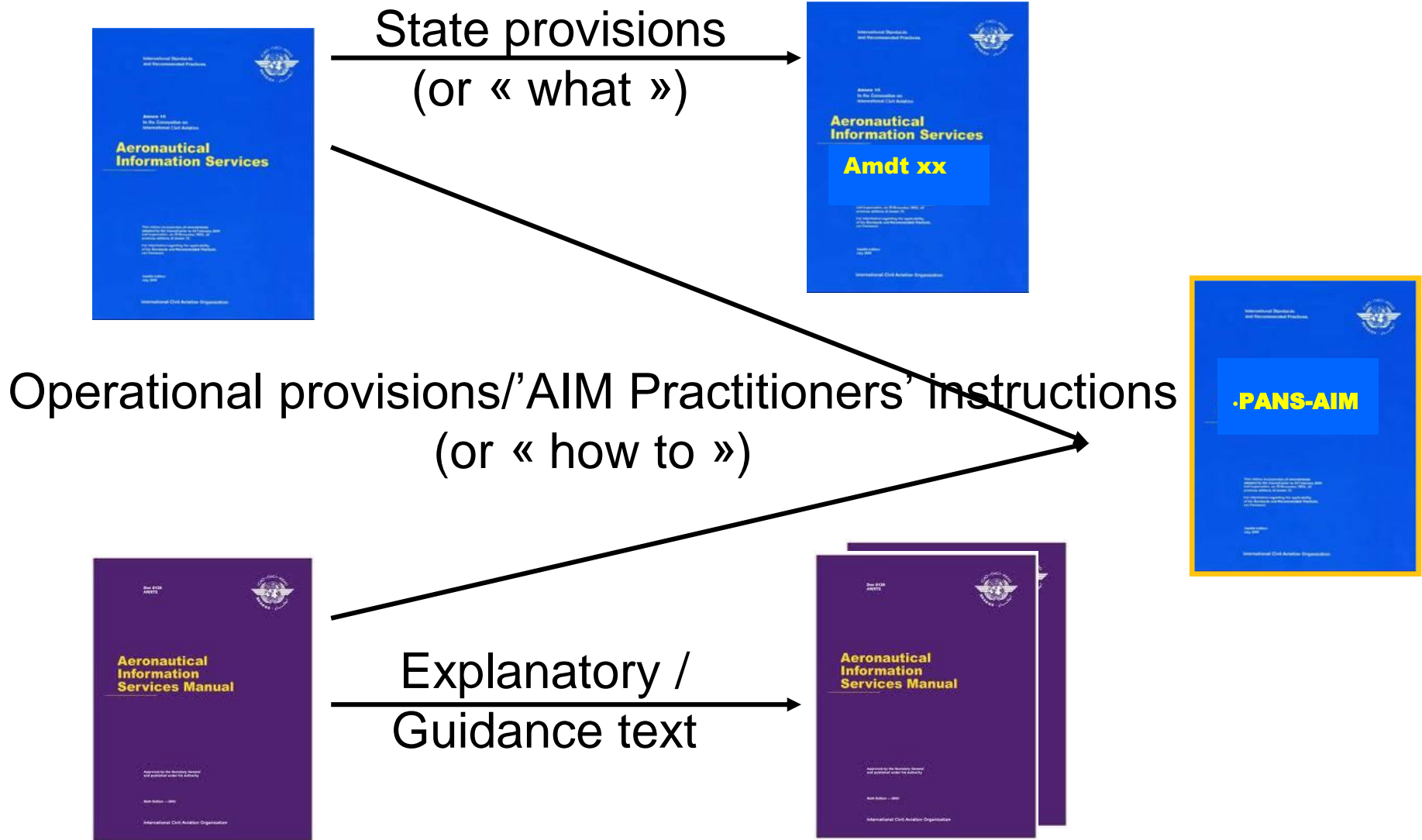


- Operating Procedures for AIS Dynamic Data
- Existing since 2000 (v1)
- The world's NOTAM expertise written down
- What's new with V4
 - 154 pages !
 - Aligned with latest ICAO SARPs
 - Incorporating Digital NOTAM Structuring concepts
 - Graphics, examples, ...
- Download for free from www.eurocontrol.int/aim





The road to AIM





Annex 15 / PANS-AIM - I

- **Split** Data collection/provision – From **Product to Data Centric**
- **Digital Data services**
 - **Several** Datasets : Aeronautical (AIP), Terrain, Obstacles, Aerodrome Mapping, Instrument Flight Procedure Design
 - *"**progressive** introduction of the requirements for digital data publication"*
 - *"**incentive** - allowed to remove certain AIP tables, if data is made available digitally"*
 - Short-term operational sign. update - [implicit – **Digital NOTAM**]

- But also
 - **English Language**
 - **Safety Management** provisions
 - **Data quality** separated from Quality/Safety **Management**
 - **I-AIP** replaced by **Aeronautical Information Products**



Annex 15 / PANS-AIM - II

- ▶ Further cleaning up of 'Terms' (collect/provide/promulgate/...,)
- ▶ Strengthening 'Formal arrangements' (DO↔AIS)
- ▶ Data protection provisions updated (CRC one option + ED76/DO200A)

- ▶ Some Doc8126 AIP text (multiple volumes, page numbering, formatting, ...) lifted to PANS-AIM level
- ▶ Paper vs Electronic (AIP/eAIP) clean-up
- ▶ Improved consistency with industry standards (definitions, provisions)

- ▶ Restructured Annex 15 (+- **30** pages) + New PANS-AIM (+- **100** pages)



PANS-AIM – Data Catalogue

| Subject | Property | Sub-Property | Type | Description | Reference | Accuracy | Integrity | Orig Type | Pub. Res. | Chart Res. |
|---------|----------------|----------------|-----------|--|--|----------|-----------|-----------|-------------|------------|
| Runway | | | | A defined rectangular area on a land aerodrome prepared for the landing and take-off of aircraft. (Annex 14) | | | | | | |
| | Designator | | Text | The full textual designator of the runway, used to uniquely identify it at an aerodrome/heliport which has more than one. E.g. 09/27, 02R/20L, RWY 1. | Annex 15 App 1 AD 2.12 1) Annex 14 I 2.5.1 a) | | | | | |
| | Nominal length | | Distance | The declared longitudinal extent of the runway for operational (performance) calculations. | Annex 15 App 1 AD 2.12 3) Annex 14 I 2.5.1 a) | 1m | critical | surveyed | 1 m or 1 ft | 1 m |
| | Nominal width | | Distance | The declared transversal extent of the runway for operational (performance) calculations. | Annex 15 App 1 AD 2.12 3) Annex 14 I 2.5.1 a) | 1m | essential | surveyed | 1 m or 1 ft | 1 m |
| | | | Polygon | Geometries of RunwayElement, RunwayDisplacedArea and RunwayIntersection | AMDB | | | | | |
| | | | Point | The geographical location of runway centre line at each end of the runway, at the stopway and at the origin of each take-off light path area, and at each significant change in slope of the runway. | Annex 4 Ch 3 and 4, 5 AMDB | 1m | critical | surveyed | | |
| | | | Point | The geographical location of the runway centre point. | Annex 4 Ch 3 and 4, 5 AMDB | 0.25m | critical | surveyed | | |
| | | | Point | The geographical location of the corresponding centre point. | | | | | | |
| | | | Line | The geographical location of the runway exit line. | | | | | | |
| | | Style | Text | Style of runway exit line | | | | | | |
| | | Directionality | Code List | Directionality of RWY exit line (one-way or two-way) | | | | | | |
| | Surface type | | Text | The surface type of the runway defined as specified in Annex 14 Volume I | Annex 14 I 2.5.1 a) | | | | | |
| | Strength | | | | Annex 15 App 1 AD 2.12 4) | | | | | |

Aerodromes
Airspaces
ATS Routes
Instrument Flight Procedures
Navigation Aids / Systems
Obstacles
Geographic Information

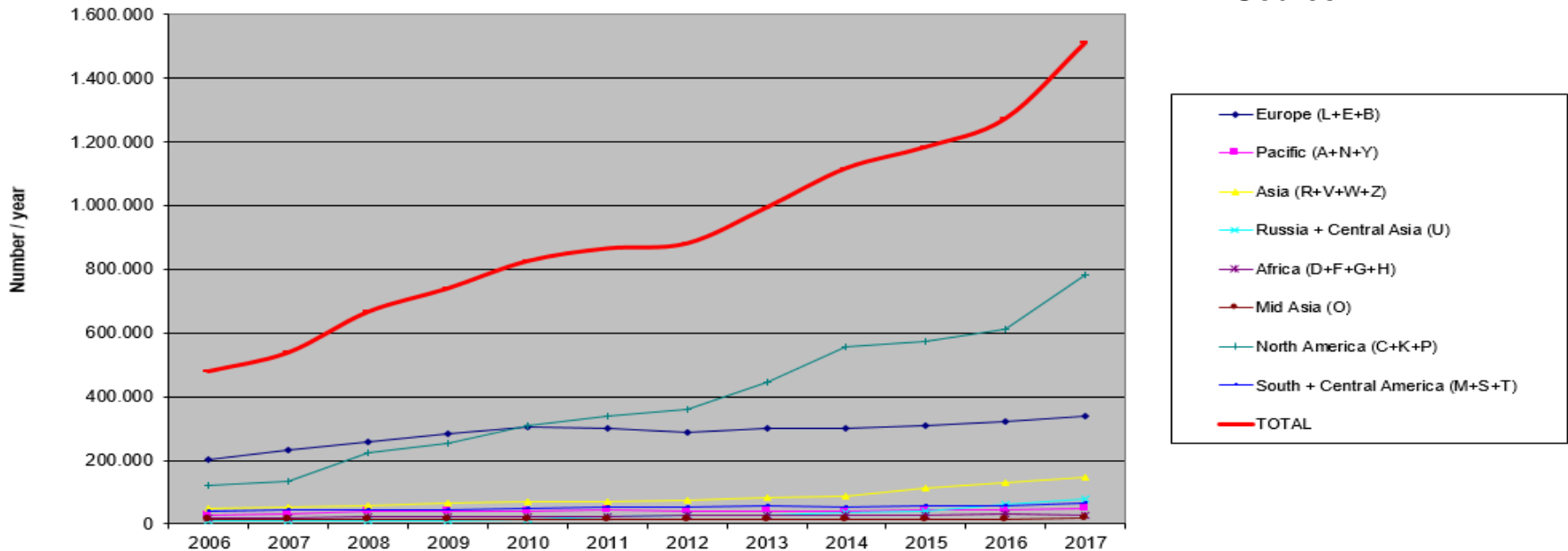
Usage:
Common language
One-stop-shop
SLA with DOs



NOTAM Proliferation

(International) NOTAM Trends

Source : EAD



| REGION | 2000 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | Increase 2000 - 2017 |
|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|-------------------------|
| Pacific (A+N+Y) | 16.919 | 27.642 | 31.462 | 38.897 | 39.405 | 42.058 | 45.462 | 41.129 | 42.310 | 42.200 | 45.367 | 46.297 | 48.323 | 286% |
| Asia (R+V+W+Z) | 30.452 | 47.624 | 51.104 | 56.565 | 64.937 | 69.344 | 70.530 | 73.274 | 81.974 | 89.133 | 113.364 | 128.595 | 147.062 | 483% |

Several NOTAM Proliferation mitigation & general NOTAM quality improvement proposals



Lead the way to implementation...





Aeronautical Data Origination



Problem statement:

There are several issues with origination of aeronautical data and information:

- Originated data are not of the right quality
- Non effective communication among stakeholders
- Lack of formal arrangements.

Impact:

- Quality is not commensurate with the intended use of the information
- Global priorities: PBN, A-CDM, ATFM, SWIM

Action Plan:

- AIS Manual is already under work:
 - Guidance on formal arrangements
 - Formal arrangements template
 - Aeronautical Data Catalogue
 - Roles and responsibilities
- Additional work on the Data Catalogue?

Metrics:

Measure implementation:

- N. of established formal arrangements between data originators and the ANSP/year



New AIM requirements





Notice to Airmen (NOTAM)



Problem statement:

- For pilots and flight planning units it is difficult to filter the NOTAM properly
- The total number of NOTAM issued per year has increased by 2.4 times worldwide
- Quality of NOTAM information is not always adequate
- The filtering criteria are not sufficient to cope with modern operations (TBO).

Impact:

- High impact on flight safety and efficiency
- Global priorities: PBN, A-CDM, ATFM, SWIM

Action Plan:

- Looking into long-term solutions: develop a new concept for an Information Service (SWIM)
- Coordination with communities of interest
- Develop ICAO provisions
- Regional roll-out implementation activities

Metrics:

Qualitative:

- Evaluation of report by aircraft operating agencies and data providers



AIM in SWIM



Problem statement:

- The Annex 15 and PANS-AIM specify five categories of digital aeronautical data sets that shall/should be provided by AIS, but do not indicate how these data sets are actually provided

Impact:

- Proliferation of different ways to provide information, therefore jeopardizing interoperability
- Impact on the vision of an interoperable global ATM system for all users.

Action Plan:

- Define minimum set of requirements for the provision of digital data sets services
- Define set of requirements for more advanced “query/reply” digital data services.
- Define set of requirements for “dynamic” updates to digital data sets service

Metrics:

Measure Implementation:

- Number of State AIS providing digital data sets through a SWIM service



AIM for UTM



Problem statement:

- The drone manufacturing industry and user community has seen fast expansion. With limited airspace and a dense population, the need for a traffic management system that includes drones has become urgent. This system needs information and data supporting both aircraft and drones traffic management.

Action Plan:

- UAS Advisory Group (UAS-AG) is addressing all aspects of UTM at ICAO.
- Coordinate with the UAS-AG on AIM support
- Establish actions accordingly





AIM Implementation Strategy



- Introduction
 - Why an AIM implementation Strategy
 - The main objectives
 - A project-management approach
- The ICAO Provisions: current situation
 - Annex 15, PANS-AIM
 - The AIS Manual
- Upcoming requirements
 - Airspace Users requirements (ATM)
 - Requirements coming from other domains (e.g.UTM)
 - Towards SWIM
- The Strategy: the “AIM” Projects
 - Projects to support implementation of existing provisions
 - Projects for future implementations



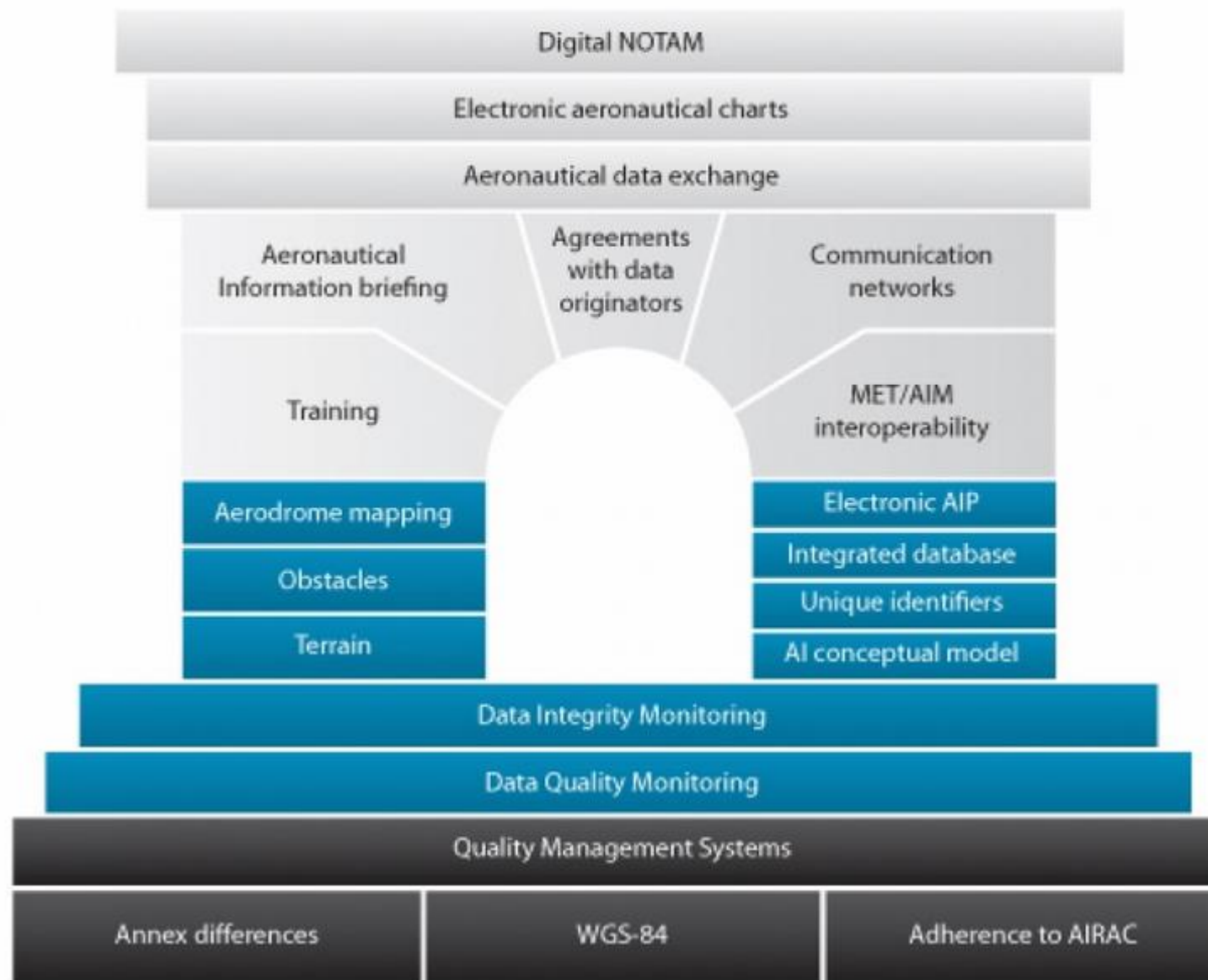
ICAO AIM Expert Group

- Establishment of ICAO expert group/s to execute the 12 AIM projects
- The ICAO expert group/s will be formalized soon!





AIS to AIM Roadmap





EUROCONTROL AIM Material

www.eurocontrol.int/aim

https://www.eurocontrol.int/aim

110%

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SESAR 2020

SESAR 1

ATM Master Plan

ATM Architecture & Information Management

Aeronautical Information Management (AIM)

AIRAC adherence

Quality

Quality Monitoring

Integrity monitoring

TOD

eAIP

...

Aeronautical Information Management (AIM)

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AIM : the right digital Aeronautical Information, at the right place, at the right time.

The aim of the aeronautical information service (AIS) is to ensure the flow of aeronautical information/data necessary for safety, regularity, economy and efficiency of international air navigation. The importance of aeronautical information/data changed significantly with the implementation of area navigation (RNAV), performance-based navigation (PBN), airborne computer-based navigation systems and data link systems. Corrupt or erroneous aeronautical information/data can potentially affect the safety of air navigation.

The aeronautical information/data based on paper documentation and telex-based text messages can not satisfy anymore the requirements of the ATM integrated and interoperable system and therefore the AIS is required to evolve from the paper product-centric service to the data-centric aeronautical information management (AIM) with a different method of information provision and management. For that purpose, ICAO has developed a roadmap to reflect the importance of the evolution and to address the required changes and is being referred to as the transition from AIS to AIM. The roadmap identifies the major milestones recommended for a uniform evolution across all regions of the world, the specific steps that need to be achieved and timelines for implementation.

The transition to AIM will not involve many changes in terms of the scope of information to be distributed. The major change will be the increased emphasis on data distribution, which should place the future AIM in a position to better serve airspace users and ATM in terms of their information management requirements.





Quality (Phase 1 P-17)

Quality

[Quality Monitoring](#)

[Integrity monitoring](#)

[TOD](#)

[eAIP](#)

[AMDB](#)

[AIXM](#)

[Integrated briefing](#)

[Training](#)

[SLA](#)

[Digital NOTAM](#) ▶

AIS Data Process (ADP) and Static Data Procedures (SDP)

Within ECAC States the drive to implement ISO 9001:2000 Quality Management in AIS and the development of the European AIS Database (EAD) required a thorough description of AIS operations. This was achieved with the ADP and SDP that establish a set of harmonised guidelines agreed upon by ECAC States as representing "best" AIS practices for receipt, storage and publications of AIS Static Data. A direct benefit of these guidelines is to provide State AIS with a baseline to which they can refer when developing their QA process.

- The **AIS Data Process (ADP)** describes **WHAT** actions are carried out to produce the Annex 15 Integrated Aeronautical Information Package.
- The **Static Data Procedures (SDP)** relate to the AIS Data Process and detail **HOW** these actions are undertaken and traced.
- The **AIS Data Process Poster** provides an overview of the mapping of the SDP to the ADP.

ADQ IR

The European Commission adopted on 26 January 2010 the Regulation EC 73/2010 laying down requirements on the **quality of aeronautical data and aeronautical information for the single European sky**. Further information is available on the [ADQ-webpages](#).

Downloads

- [eADP/eSDP](#)
- [AIS Data Process \(ADP\) \(pdf\)](#)
- [AIS Data Process Poster \(pdf\)](#)



Conclusions

- It is considered that significant progress has been made
- ICAO AIM material fully updated to support evolving ATM needs
- Harmonised implementation the next challenge
- Next steps now being identified



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