AIS Basics - NOTAM, AIP, Amendments, Supplements, Circulars, Charts, and NOTAM

Putting the basics in place

Workshop for the development of AIS management and oversight for Civil Aviation Authorities (CAAs) and Air Navigation Service Providers (ANSPs)

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Dakar

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## Putting the basics in place

### Contents

- Requirements
  - AIRAC adherence

- Quality Management

- Agreement with Data Originators

- Information/Data Integrity Monitoring

- Putting it in place
  - OPADD

- CHAIN
Integrated Aeronautical Information Package
To be delivered by AIS/AIM Providers

- AIP Amendment
  - Regular AIP Amendment
  - AIRAC AIP Amendment
- Supplements
  - AIRAC AIP SUP

AIRAC AIP or SUP shall be received at least 28 days in advance of the AIRAC effective date

- Circulars
- NOTAM
- Checklist
- PIB
ICAO Roadmap from AIS to AIM

Major components

- **Phase 1 — Consolidation**
  - P-03 — AIRAC adherence monitoring
  - P-04 — Monitoring of States’ differences to Annex 4 and Annex 15
  - P-05 — WGS-84 implementation
  - P-17 — Quality

- **Phase 2 — Going digital**
  - P-01 — Data quality monitoring
  - P-02 — Data integrity monitoring
  - P-06 — Integrated aeronautical information database
  - P-07 — Unique identifiers
  - P-08 — Aeronautical information conceptual model
  - P-11 — Electronic AIP
  - P-13 — Terrain
  - P-14 — Obstacles
  - P-15 — Aerodrome mapping

- **Phase 3 — Information management**
  - P-09 — Aeronautical data exchange
  - P-21 — Digital NOTAM
  - P-10 — Communication networks
  - P-12 — Aeronautical information briefing
  - P-16 — Training
  - P-18 — Agreements with data originators
  - P-19 — Interoperability with meteorological products
  - P-20 — Electronic aeronautical charts
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Aviation "environment" data is constantly changing.

It is essential, for both efficiency and safety, that Pilots, ATM systems and services have the same "environment" data set.

AIRAC: defines a series of common dates and an associated standard aeronautical information publication procedure for States
- Worldwide effective dates with 28 days intervals
- Always on a Thursday
AIRAC Adherence (Phase 1 P-03)
Analysis

- **Effective date:**
  - when changes take effect.

- **Reception date:**
  - When users should receive the publications

- **Publication date:** when AIS organisation sends out the information
  - AIRAC AIP AMDT or SUP:
    - At least 42 days (56 for major changes) before effective date.
    - Publication of a Trigger NOTAM (at publication date) coming to force on respective AIRAC date and remaining in force for 14 days.
## Publications Timeline

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AIRAC Adherence (Phase 1 P-03)
Analysis – Causes of non-adherence

- AIS is not the 'creator' of any aeronautical information and depends fully on many different data originators (route & airspace planners, procedure designers, navaid maintainers, airports, etc.) to provide data both timely and correctly to them. An analysis of European AIRAC Non-adherence events led to the following classification:
  - **Non-awareness** among stakeholders of the importance of sticking to the AIRAC rules.
  - **Insufficient planning and co-ordination** (nationally, bilateral among neighbouring states and even international).
  - **Correction** of timely but incorrect earlier publications.
  - **Variable and slow communication means**. Even at state level, information is communicated in varying formats, using different (read: paper = slow) communication means which introduces delays. This can be further aggravated by the need for translation from national to any other publication languages and printing/distribution delays.
  - **Postal Delay**. Surprisingly enough, the average European postal delay of any Amendment is three (!) weeks. This makes a mockery of the two week allowance planned in the AIRAC regulations.
  - **Monitoring and Regulation**. There is no (centralised) monitoring/policing body. It is the States' own responsibility to adhere to AIRAC.
  - The occasional 'force majeure'.
AIRAC Adherence (Phase 1 P-03)
Put in place

- Identify current deficiencies
  - Non-awareness of the importance of sticking to the AIRAC rules
  - Insufficient planning and co-ordination
  - Variable and slow communication means
  - Correction of earlier publications
  - Etc.

- Establishing Procedures
  - pTracker user guide
    - Verify your postal delays and monitor your own AIRAC adherence results:
      - Publication announcements
      - Log reception dates
  - ISO 9000
    - ICAO Annex 15 explicitly requires AIS organisations to implement a Quality Management System (QMS). Any such QMS enforces the formalisation of all incoming, processing and outgoing processes. This in itself, is a big step towards as it forces organisations to structure their activities.

- Reporting and action
Putting the basics in place

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States must implement national regulation on the requirement for all organisations involved in aeronautical data processing and publication, to have a Quality Management System in place, which shall manage the safety of all their services.

- Quality management should be applicable to the whole aeronautical information data chain from data origination to distribution to the next intended user, taking into consideration the intended use of data

- Letters of agreement concerning data quality between originator and distributor and between distributor and next intended user may be used to manage the aeronautical information data chain

- The quality management system should follow the ISO 9000 series of quality assurance standards, and be certified by an approved organization
Quality Management (Phase 1 P-17)

Analysis

- **Link**: [ICAO - Manual on QMS for AIS](#)
  - Page25: 3.4 General requirements for the implementation of a QMS

- **Process mapping and development**
  - *QMS shall be implemented and maintained encompassing all functions of an aeronautical information service.*
  - *EUROCONTROL has published harmonised guidelines representing "best" AIS practices for receipt, storage and publications of AIS Static Data, that State AIS can refer when developing their QA process.*

- **Links:**
  - [AIS Data Process (ADP)](http://www.eurocontrol.int/articles/quality-phase-1-p-17) - describes WHAT actions are carried out to produce the Annex 15 Integrated Aeronautical Information Package.
  - [AIS Data Proces Poster](http://www.eurocontrol.int/articles/quality-phase-1-p-17) - overview of the mapping of the Static Data Procedures to the ADP.
  - [http://www.eurocontrol.int/articles/quality-phase-1-p-17](http://www.eurocontrol.int/articles/quality-phase-1-p-17) - eADP/eSDP
Quality Management (Phase 1 P-17)

Analysis

- Auditing
  - *The execution of such QMS shall be made demonstrable for each function stage, when required*

- Accreditation
  - *To be certified by an ISO 9000 approved organization*

- *Link: ICAO - Manual on QMS for AIS*
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Agreements with Data Originators (Phase 2 P-01)

Analysis

- Clear need for a more formal arrangement for the provision of source information to the Aeronautical Information Services (AIS) and that this need is best served through the use of Service Level Agreements (SLA)

- (ICAO) Doc 8126 AIS Manual - 2.4 Working Arrangements
  - 2.4.1 To ensure promptness and accuracy in the distribution of aeronautical information, each of the services responsible for providing the AIS with raw data should designate individuals who are to be responsible for maintaining direct and continuous liaison with the AIS.

  - 2.4.2 Additionally, liaison should be arranged and local agreements established, where necessary, between aerodrome/heliport AIS units and those local authorities in aerodromes, communications, meteorology, air traffic services, search and rescue and facilitation responsible for the origination of current information on aerodrome/heliport conditions and services.
Agreements with Data Originators (Phase 2 P-01) Analysis

- Link:
  - SLA Package
Agreements with Data Originators (Phase 2 P-01)
Analysis

- Specifications for the Origination of Aeronautical Data:
  - Volume 1: Volume 1
  - Volume 2: Volume 2

- Service Level Agreement Template
  - SLA Template
Putting the basics in place

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- Requirements
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- Quality Management

- Agreement with Data Originators
  - Information/Data Integrity Monitoring (Phase 2 – P02)

- Putting it in place
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  - CHAIN
Information/Data Integrity Monitoring (Phase 2 P-02)
Analysis - Aeronautical Data Supply Chain

Supply chain to get aeronautical data get into the cockpit

- Multitude of actors:
  - Data Originators (e.g. aerodrome, navaid owner, airspace designers etc.) supply their information into the AIS
  - AIS produces the AIP which may be a paper or an electronic copy
  - AIP are processed by the Data Houses (e.g. Jeppesen, etc.)
  - Data houses extract data required from AIP, format and packing it
  - Set of data available for Data Packers (e.g. Honeywell, Garmin, etc.)
  - Data Packers pack the data for the specific FMS of the different aircraft

- Problems: Integrity maybe degraded or lost
  - Multiple actors based on manual processes with the existence of numerous transaction points
  - Re-type the aeronautical data before processing it further, transformation of formats, etc.
Data integrity monitoring is the monitoring of the data from originator, through the data process chain, to eventual publication.

Data integrity monitoring can be facilitated by the implementation of processes like CHAIN (Controlled and Harmonised Aeronautical Information Network).

Objectives:

- Improve accuracy and quality of aeronautical navigational data with focus on data integrity
- Enhance data management by establishing common procedures/processes to enable interoperability
- Enhance the transfer of aeronautical information between origination & publication
Information/Data Integrity Monitoring (Phase 2 P-02)

Analysis

- Process and Procedures
  - automated data integrity process addressing the transfer process in the data chain
  - At each step, ensure that hand-over of data being interoperable, traceable and quality assured
  - Link:
    - [Data Integrity - A Practical Guide](#)

- Reporting

- Analysis

- Action
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Operating Procedures for AIS Dynamic Data
OPADD

- Procedures related to NOTAM, SNOWTAM, ASHTAM as well as guidance for the harmonisation of these AIS messages

- OPADD is intended to complement ICAO Standards and Recommended Practices (ICAO Annex 15 and ICAO Doc 8126)

- Objectives:
  - Promote uniformity in the collection and dissemination of aeronautical data and aeronautical information, in the interest of safety, quality, efficiency and economy
  - Improve overall efficiency of AIS, in terms of speed, accuracy and cost effectiveness, by the increased use of automation

- Link:
  - OPADD
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Controlled and Harmonised Aeronautical Information Network
CHAIN

CHAIN is used to improve the accuracy and quality of the originated aeronautical data and its management from the point of origination to the point of publication and to subsequently enable enhanced processing throughout the entire aeronautical data chain.

CHAIN supports aeronautical information regulators and service providers in implementing and maintaining traceable, controlled and auditable processes in compliance with ICAO Annex 15 requirements for data quality with a focus on data integrity.

The mission of CHAIN is to transform the current error prone data supply chain for aeronautical navigation data into one that provides high quality data through automated processes, underpinned by international standards.
Controller and Harmonised Aeronautical Information Network 
CHAIN - Aeronautical Data and Information Quality (ADQ)

- European Commission Regulation EC 73/2010 laying down requirements on the quality of aeronautical data and aeronautical information for the single European sky 
  - ADQ IR

- Scope:
  - Aeronautical information data process chain extends from the original data sources through AIS and publication to the end users of the data for aeronautical applications
  - The purpose of the draft implementing rule is to supplement and strengthen the relevant existing requirements of ICAO Annex 15.

- 5 means of compliance developed by EUROCONTROL
  - AI exchange model (AIX)
  - Electronic AIP (eAIP) specifications
  - Data Assurance Levels
  - Data Quality Requirements
  - Data Origination
Thank You

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