



# AIP Data Set in UAE:

## Regulatory Approach & Implementation Challenges

*ICAO Inter-regional EUR/MID Workshop on PANS AIM*

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GCAA UAE



## Amendment 40 to ICAO SARPS AIS: A conceptual groundwork for AIM

The amendment presents a major restructuring of Annex 15 and related documents in order to support the incorporation of new technical requirements and how to manage Aeronautical Information (AI).

Generally, encourages the transition from a product-centric AIS to the broader concept of a data-centric and service-oriented management of AI.

The technical component of the amendment includes as follows:

- The scope, role and functions of AIM;
- The products and services (revised terminology) within an AIM environment and the associated update mechanism;
- The split of data collection vs. provision (end-products);
- Focus on Quality:

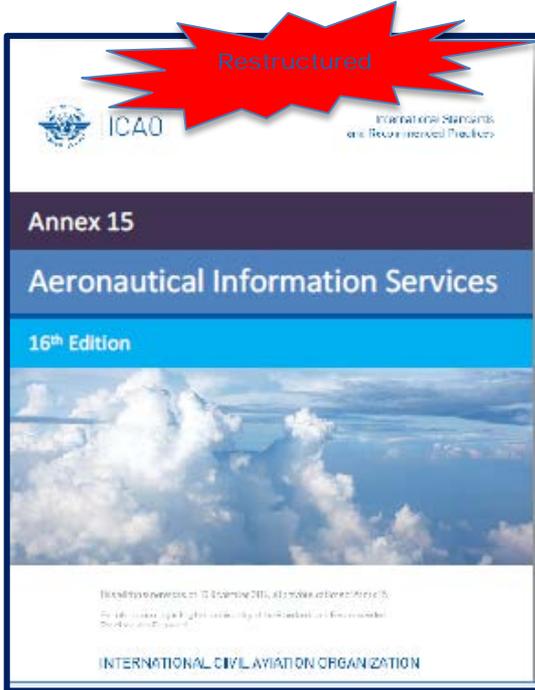
- (1) DQR are expanded & consolidated from other Annexes in "one stop shop" (PANS-AIM),
- (2) New "tools" to strengthen quality at origination/collection i.e. Aeronautical Data Catalogue,
- (3) Better identification of roles and AI provision responsibilities in the context of transition AIS2AIM,

- Promotes Digital Data sets: A step forward from eAIP towards digital (d)AIP.

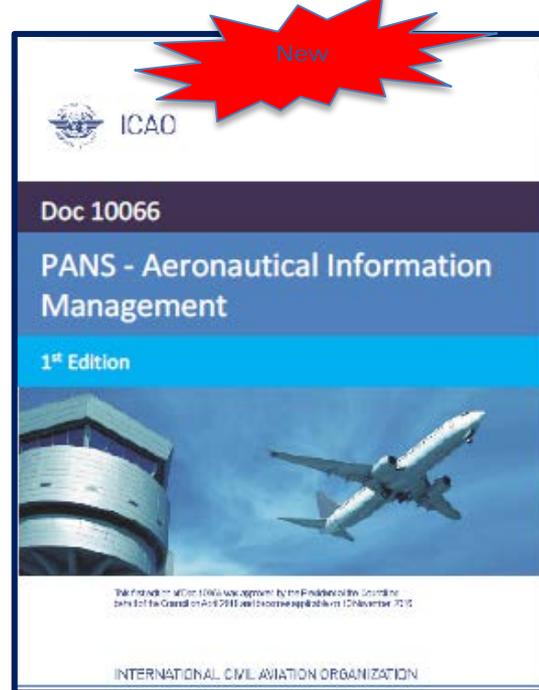




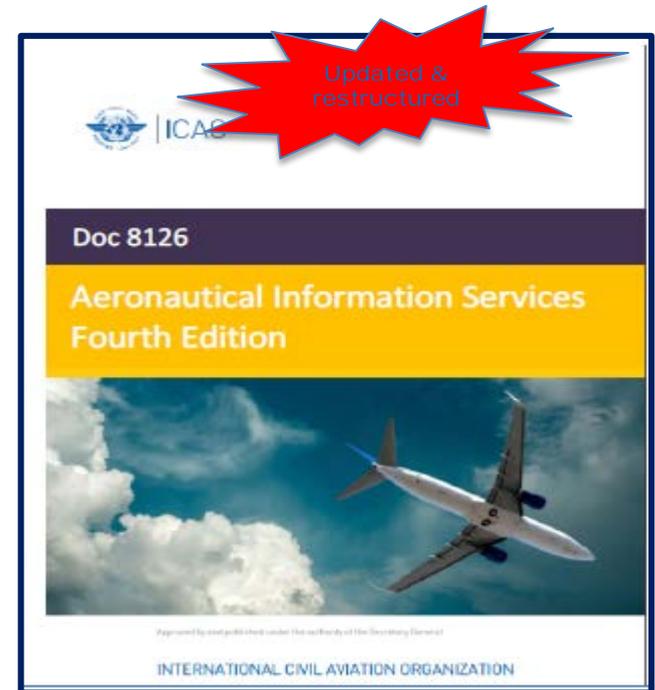
# Amendment 40 to ICAO SARPS AIS: AIM Documents Framework



- Requirements & Performance specs or “what” to be provided
- State Letter, April 2018;
- Applicable Nov. 2018;



- Operational provisions from Annex that were too prescriptive, detailed or procedural in nature;
- AIM expert's instructions (or “how to” provide)
- State Letter, July 2018;
- Applicable Nov. 2018



- Explanatory guidance expanded: Vol. I to IV;
- E.g. Vol. IV “Digital Products and Services”;
- Still under work, but first priority yet;
- Ready by the applicable date Nov. 2018;



## Amendment 40 to ICAO SARPS AIS: Implementation Task List

ICAO State Letter outlined the implementation task list and the impact assessment high level guidance that States should follow in relation to Amendment 40 to Annex 15.



The general strategy is two-folded as follows:

- (1) Transposing the new/modified ICAO provisions into national regulations and,
- (2) Assessing the implementation impact of the technical content of Annex 15/PANS-AIM specifications.

### Regulatory approach essential steps for States:

- Establishment of a national implementation plan considering the new and modified provisions;
- Drafting of the modification(s) to the national regulations and means of compliance (MoC);
- Official adoption of the national regulations & MoC;
- Filling of State differences with ICAO, if necessary;

### Implementation technical impact actions:

- Financial impact reflecting the investment in equipment and resources depending on respective State AIM development status;
- Technical impact analysis by introducing the digital datasets;
- Efficiency impact in providing data in digital form with automated exchange and minimizing human interventions;
- Training of ops staff in the use of the new provisions



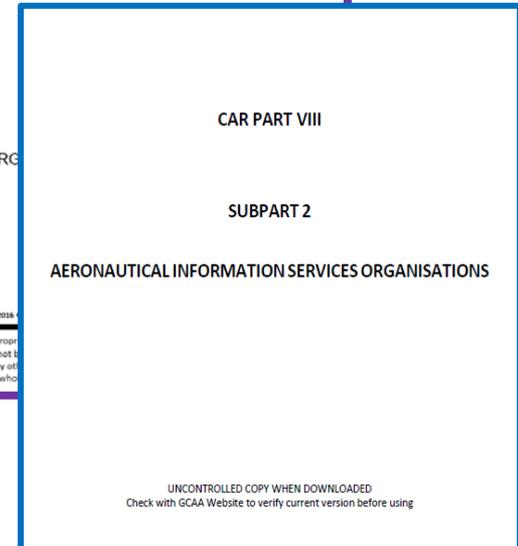
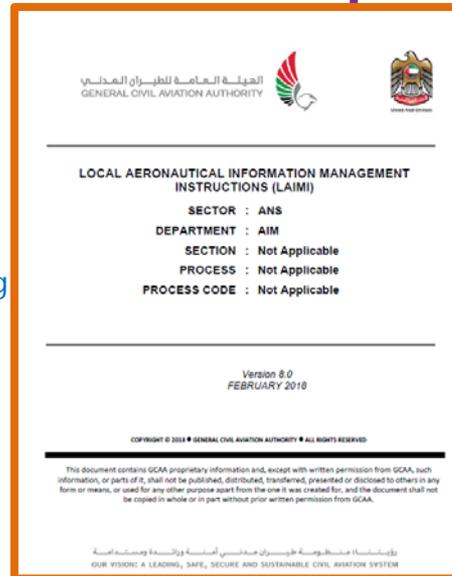
# UAE AIM Regulatory Approach: Rule & Instruction documents

UAE AIM activity is regulated through a number of documents containing local instructions (LAIMI), the rules governing AIM certification & operations (CAR Part VIII, Subpart 2), exposition illustrating AIM compliance with all regulatory obligations (Organizational Exposition), etc.

Several requirements currently in Annex 15 are moved to the new PANS-AIM, hence the need to modify UAE AIM-related regulatory framework in order to properly account for the new references and terminology.

The initial review conducted to the following set of necessary updates:

- List of services enlarged with digital datasets (*upon implementation*)
- Replace new terms e.g. AI Package vs. AI Product;
- Reconsider all paragraph references from ICAO Annex 15, PANS-AIM and the modified Doc. 8126;
- Reassess the location/paragraphs for Data Quality Requirements (DQR) as all are consolidated in PANS-AIM Data Sets Catalogue;
- Revise the specs for NOTAM i.e. when shall or not be originated in line with Annex 15 updates, adding specification for AIP Datasets, Pre/Post Flight Information updates in CAR part VIII, Subpart 2;
- Add new processing instructions for AIP Data Set, reexamine the GCAA Website/Portal procedures, rethink the reciprocal exchange of SWIM services, etc. in LAIMI.





# UAE AIM Regulatory Approach: Strategy updates

UAE AIM information and policy regarding the transition from AIS to AIM is contained in the Civil Aviation Advisory Publication (CAAP 54).

The national plan is originated by the Regulator and it identifies the major milestones recommended for an uniform AIM evolution across UAE.

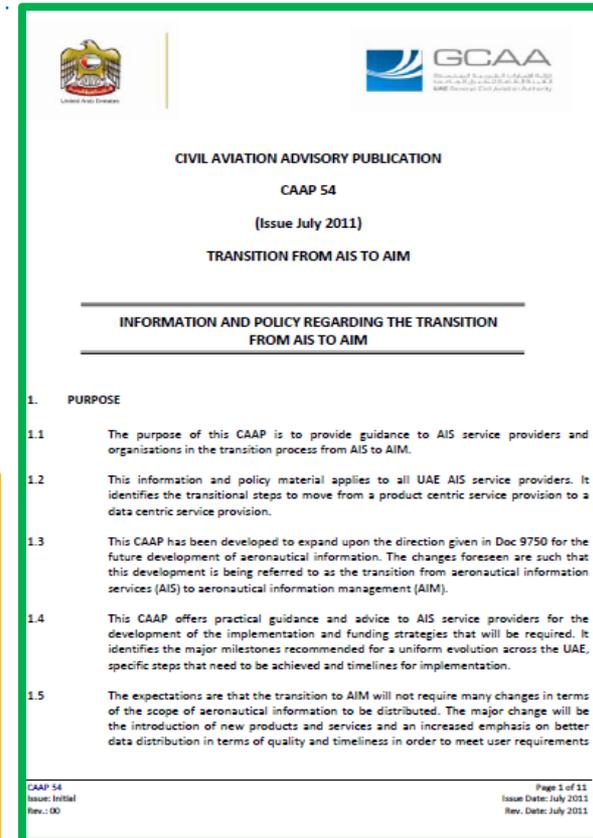
From transition plan stand point, UAE AIM is moving into Phase 3 with a strengthened “Going Digital” basis.

Present version of CAAP 54 has foreseen that in the 3<sup>rd</sup> phase, new products & services will be developed in support of AIM functions.

Hence, the intent is to engage the Regulator for updating the Information Management phase with the new step “AIP Dataset”. The Regulator strategic engagement should trigger the direction of UAE AIM “operational” implementation.

## High level aspects to be covered:

- Implementation AIP Dataset seen as interoperability scenario;
- Include in UAE SWIM services portfolio;
- Impact study on cost-recovery (financial) mechanism;
- Staff planning & training;
- Envisaged for 2019 -2021 plan (mindful of SARPS applicability Nov. 2018)





## UAE AIM Technical Approach: Implementation Challenges (general)

Initial technical assessment is high level due to pending (final) PANS-AIM version (State Letter & on-going work on the guidance material (Doc. 8126).

Also, we are mindful of ICAO projects list identified in support of, generally, implementation of AIM requirements and, specifically, of dealing with the digital datasets and interoperability issues thru three dedicated projects (working groups): Digital Datasets (#9), AIM Interoperability (#10) and AIM in SWIM (#11)

However:



As foundation, UAE AIM has determined as follows:

- Its AIXM 5.1 system would enable the provisions of all data sets with exception of digital Terrain data;
- But, based on data exchange experience, AIXM 5.x alone cannot ensure the system interoperability!
- Non-coordinated AIXM 5.x systems i.e. no common set of BRs, non-shared encoding rules, etc. is harming the interoperability;
- Across UAE, one major challenge is the lack of system interoperability between ANSPs/Airports and UAE AIM due to different level of automation i.e. from manual to fully automated processes;
- It is recognized that AIP Dataset implementation should enforce the system to system interoperability.



# UAE AIM Technical Approach: Implementation Challenges (deep-dive)

- **Cross-border data:** FIR BDRY significant points, FIR geographical borders, common route segments (data) consistency.

## Possible Solution

- Coordination (SLA) required to decide who is the authoritative source for what data;
- Geographical position e.g. FIR border alignment (AIP description) transposed into digital data

- **User impacts:**
  - Data provision in different formats (AIXM, ARINC 424, csv),
  - Handling of cross-border data received from various sources e.g. authoritative source, referential integrity, etc.;
  - “Mixed mode” processes e.g. significant points (ENR 4.4) digital dataset and ENR 3.x from (e)AIP, digital data sets vs. charts, etc.

## Possible Solution

- Regional initiative in harmonizing data exchange formats (AIXM 5.1);
- Single source for digital data applied also by neighbouring State;

- **Data Set Format:**
  - Data file as export vs. product (e.g. SWIM service);
  - Temporality mechanism catering AIP AMDT + AIP SUPP

## Possible Solution

- Quick win vs. strategic approach;
- TEMPDELTA concept extended to SUPP;



# UAE AIM Technical Approach: Implementation Challenges (deep-dive)

## ➤ Data Set Provision

- Data set or data sets? i.e. one file, separate files (by data type), logical groups, mapping AIP sections (GEN 2.5, ENR 2.1, ENR 4.4, AD 2.19, etc.)

### Possible Solution

- Based on ICAO guidance, specify and implement the decision into the national AIM system State and processes.

## ➤ AIM System Evolution

- Database application vs. eAIP: analysis if the eAIP spec needs to be updated;
- Delivery mechanism: database export, (SWIM) web services, etc.

### Possible Solution

- Temporary solutions (manual processing of existing data, queries, etc.):
  - ✓ Data set(s) as file(s) published on the AIS website.
- Strategic enhancement of the AIM system (SWIM):
  - ✓ Service description, registry, discoverability, user management, security, etc.
  - ✓ Service interfaces: expose current export HMI, push/pull interfaces;



# Conclusions

- Annex 15 is considered part of UAE AIM regulatory frame work, therefore the update of appropriate rules, local instructions, regulatory obligations as well as the national transition plan is prerequisite!
- Guidance/clarification documentation is still pending and awaited to a great extent:
  - ✓ State Letter PANS-AIM & Aeronautical Data Catalogue,
  - ✓ Doc. 8126 (4 volumes),
  - ✓ Eurocontrol AIXM Coding Guidelines for the AIP Data Set,
  - ✓ Outcome AIM projects (working groups) on data set implementation.
- Upon Regulator strategy and decision, consider the notification of differences to the PANS-AIM (eff. Nov. 2018) in the State AIP (section GEN 1.7).
- Consider a “Transition Period” for provisions of full UAE eAIP in parallel with data sets:
  - ✓ Transition time of one to two years;
  - ✓ Issue of Aeronautical Circular (AIC) mentioning the alignment with ICAO requirements, the “grace period” e.g. 1 Jan 2021 after when AIP Datasets are no longer contained in UAE eAIP;
- Initiate national impact assessment plan for:
  - ✓ AIM process adaption;
  - ✓ AIM system evolution;
  - ✓ Financial evaluation;



# Thank you