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# NCLB AIM Workshop

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## Overview on “ICAO Roadmap for transition from AIS to AIM”

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## Background

- Developed in 2009 by AIS-AIM SG
- To expand upon the direction given in Doc 9750 for the future development of aeronautical information (GANP that introduced GPIs by AN-Conf/11)
- To serve as a strategic positioning initiative to drive the continuing improvement of aeronautical information services in terms of quality, timeliness and the identification of new services and products to better serve aeronautical users.
- Strategy for the evolution from traditional product-centric AIS to the enlarged scope of data-centric aeronautical information management (AIM).



### **Roadmap for the Transition from AIS to AIM**

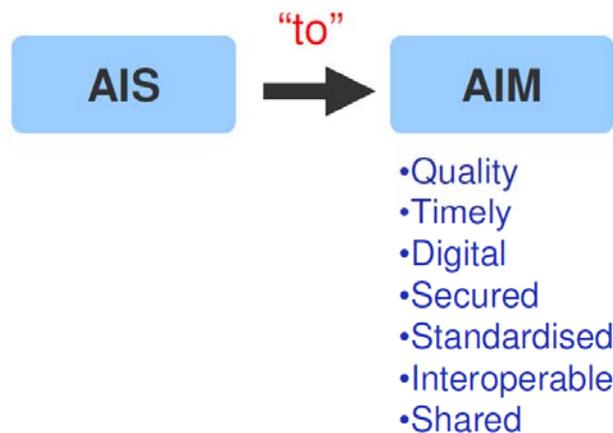
First Edition — 2009

International Civil Aviation Organization



# What is AIM?

- The dynamic, integrated management of aeronautical information through the provision and exchange of quality-assured digital aeronautical data in collaboration with all parties.



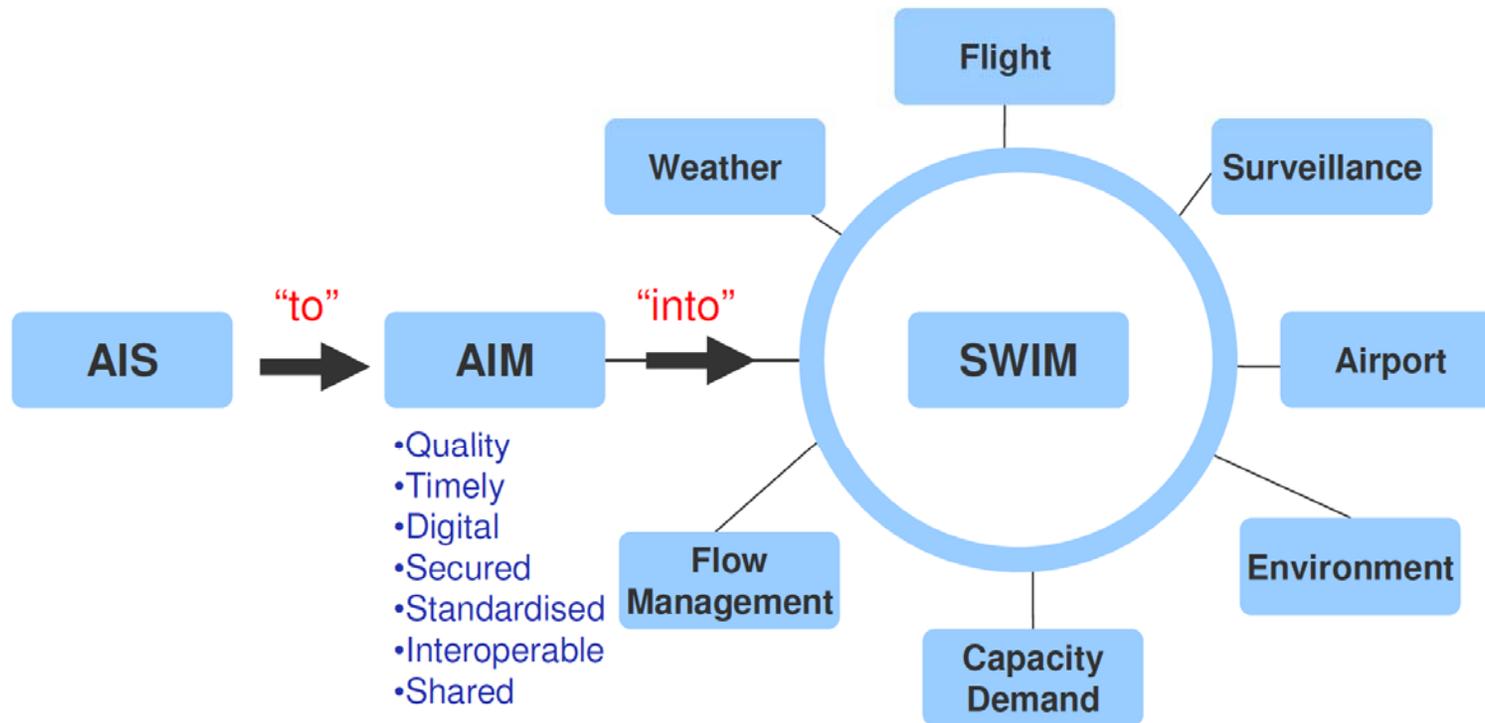
- AIS transformed to AIM
- AIM = Digital AIS+



# Transition to AIM – The AIS Perspective

- AIS transformed to AIM
- AIM = Digital AIS+

Data Domain

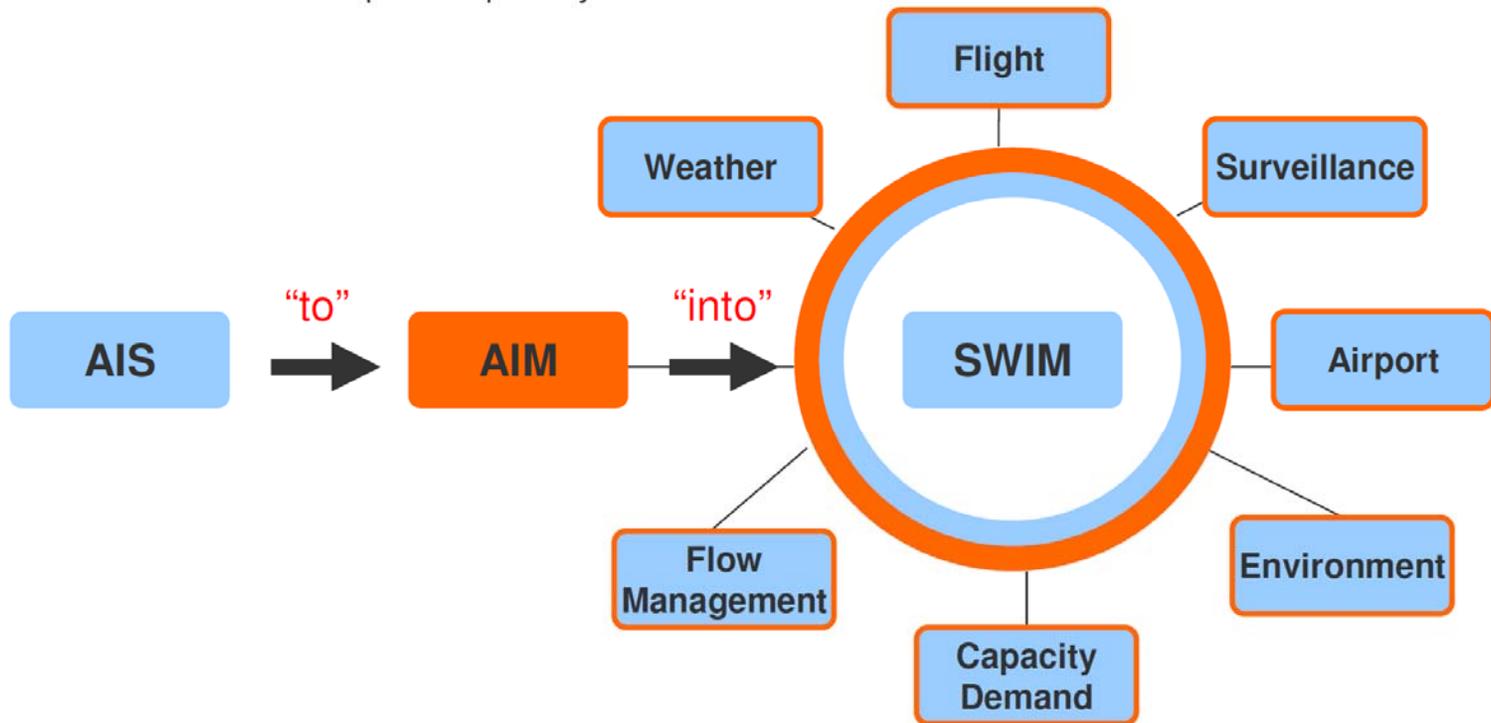




# Transition to SWIM – The AIM Perspective

- AIM plugged into SWIM system
- SWIM embeds Digital AIM concepts
  - Example: temporality

Data Domain

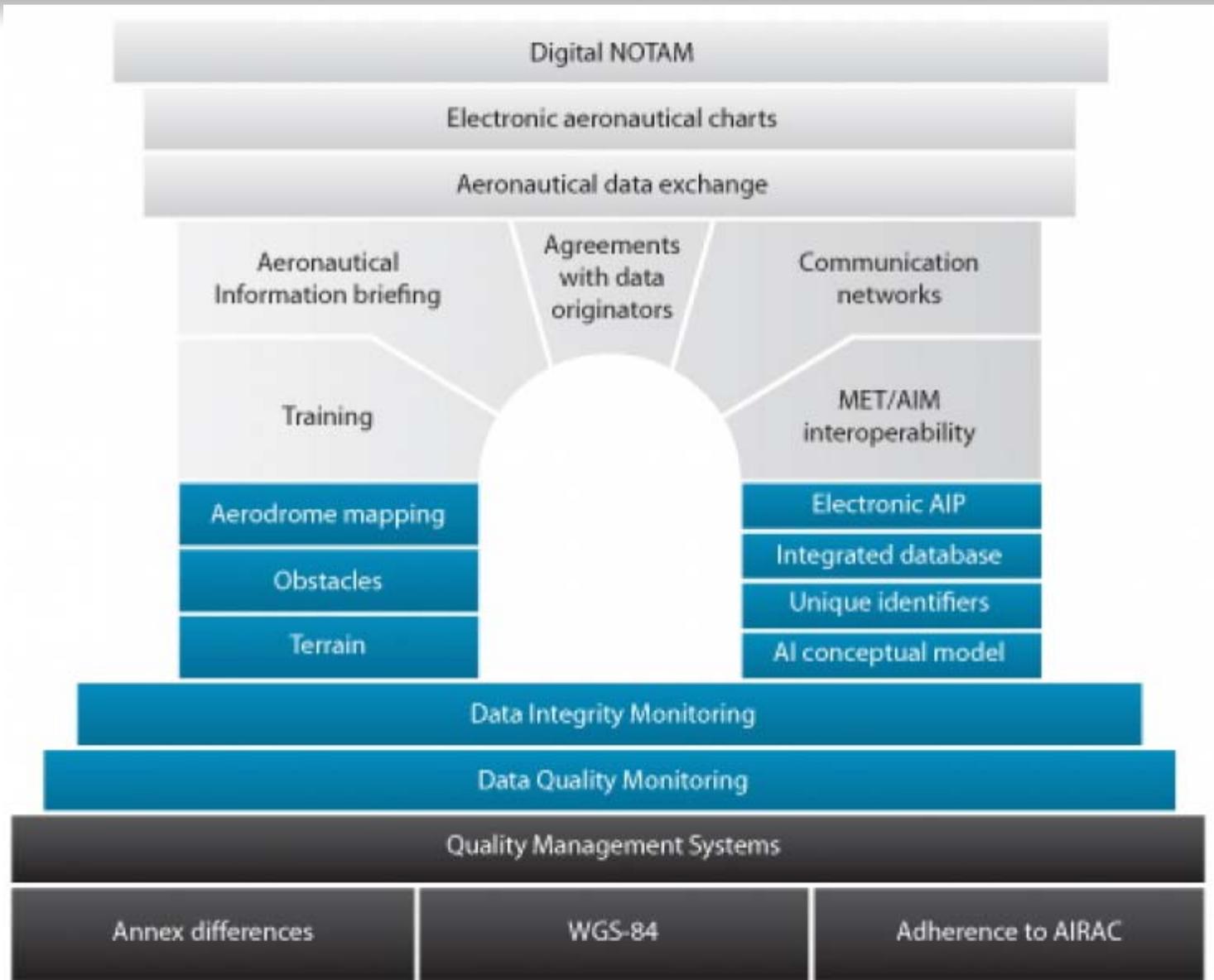




**Phase 3**  
**Information management**

**Phase 2**  
**Going digital**

**Phase 1**  
**Consolidation**





## Phase – 1 Consolidation

- Phase 1 is the pre-requisite for the transition from AIS to AIM (implementation of the current SARPs)
  - QMS implementation is still a challenge for some States



# Phase – 1 Steps

- **P-03 — AIRAC adherence monitoring**

The standard regulation and control mechanisms for the distribution of aeronautical information is an essential element ensuring that each person involved makes decisions based on the same information.

- **P-04 — Monitoring of States' differences to Annex 4 and Annex 15**

Adherence to Standards is an ongoing effort. The transition to AIM offers an opportunity to increase the focus on implementation and on reviewing differences in the application of the Standards by States.

- **P-05 — WGS-84 implementation**

The target of expressing 100 per cent of coordinates in the WGS-84 reference system is achievable. This is one of the first steps to achieve in the transition to AIM.

- **P-17 — Quality**

Quality management measures will be re-enforced to ensure the required level of quality of the aeronautical information. In order to assist States in the implementation of an efficient quality management system, guidance material for the development of a quality manual will be developed.



## Phase – 2 Going digital

- Data-driven processes for the production of the current products;
- Introduction of structured digital data from databases into AIS/AIM processes;
- Introduction of highly structured databases and tools such as GIS;
- Electronic Terrain and Obstacle Datasets; and
- Implementation of aeronautical information conceptual model (AICM).



## Phase – 2 Steps

- **P-01 — Data quality monitoring**

An on-going challenge for organisations producing information is to ensure that the quality of the information suits its intended uses and that data users are provided with the appropriate information about data quality.

- **P-02 — Data integrity monitoring**

Data integrity requirements introduced by safety objectives must be measurable and adequate.



## Phase – 2 Steps

- **P-06 — Integrated aeronautical information database**

The establishment and maintenance of a database where digital aeronautical data from a State are integrated and used to produce current and future AIM products and services is the main step in Phase 2 of the transition to AIM. A database may be operated by States or by regional initiatives under delegation from States. The design of such a database will not be identical in all States or regions because local technical or functional requirements must be considered.

- **P-07 — Unique identifiers**

Improvements to the existing mechanisms for the unique identification of aeronautical features are required to increase the effectiveness of information exchange without the need for human intervention.

- **P-08 — Aeronautical information conceptual model**

Defining the semantics of the aeronautical information to be managed in terms of digital data structures is essential for introducing interoperability. The existing documentation developed by States and international organisations and considered mature enough for global applicability will be used to produce common guidance material. This may serve as a reference for the database design needed in P-06 for States that do not yet have a database.



## Phase – 2 Steps

- **P-11 — Electronic AIP (eAIP)**

The integrated aeronautical information package will not be phased out. On the contrary, it will be adapted to include the new data products needed during the transition to AIM.

The electronic version of the AIP will be defined in two forms: a printable document and one that can be viewed by web browsers. Guidance material will be required to help States implementing the web browser form of the electronic AIP in order to avoid the proliferation of different presentations of AIP information over the Internet.

- **P-13 — Terrain**

The compilation and provision of terrain data sets is an integral part of the transition to AIM.

- **P-14 — Obstacles**

The compilation and provision of obstacle data sets is an integral part of the transition to AIM.

- **P-15 — Aerodrome mapping**

There is a new requirement emerging from industry for traditional aerodrome charts to be complemented by structured aerodrome mapping data that can be imported into electronic displays.



## Phase – 3 Information management

- Enabling AIM functions to address the new requirements of the Global ATM Operational Concept in a net-centric information environment;
- Transfer of information in the form of digital data based on the established databases; and
- Aeronautical data exchange model ensuring interoperability between all systems.



## Phase – 3 Steps

- **P-09 — Aeronautical data exchange**

Defining the syntax of the aeronautical data to be exchanged in terms of field names and types is essential for introducing interoperability.

The exchange of data and the mechanisms to exchange or access the new digital products or services will be defined by an exchange model. The content of the model will be driven by the aeronautical information conceptual model (top-down) and by requirements coming from technological choices (bottom-up); the evolution of the model will be coordinated in order to balance the need for innovation with the need for protecting investments.

The use of the Internet as a communication media is, for example, one important bottom-up driver in the definition of the model. The use of well-established, geographic information standards also applied in non-aeronautical domains is another important technological choice.

- **P-10 — Communication networks**

More data will be exchanged on ground networks and the current data will be exchanged in a form that will require more bandwidth. It is envisaged that a transition of the network to one based on Internet protocol (IP) will be required to cope with these future needs. For the transition to AIM to be effective, the needs of future AIM will have to be declared in terms useable for network specification. Which data network will be used to distribute the new data products and services; what information can be exchanged via the Internet; and what information requires a secured network reserved for aviation are open questions that will need to be answered for the transition to be effective.



## Phase – 3 Steps

- **P-12 — Aeronautical information briefing**

Fine tuning of the current NOTAM format by introduction of new selection criteria is needed to improve the selectivity of the information presented to pilots in the pre-flight information bulletin. (This can be done in Phase 1.) The combination of graphical and textual information in a digital net-centric environment will be used to better respond to the airspace users requirements for aeronautical information in all phases of flight when the new digital data products are specified and made available (in Phase 3).

- **P-16 — Training**

The training of personnel will be adapted to the new requirements on skill and competencies introduced by the transition to AIM. A new training manual will be developed to reflect the new competencies required.

- **P-18 — Agreements with data originators**

Data of high quality can only be maintained if the source material is of good quality. States will be required to better control relationships along the whole data chain from the producer to the distributor. This may take the form of template service level agreements with data originators, neighbouring States, information service providers or others.



## Phase – 3 Steps

- **P-19 — Interoperability with meteorological products**

The meteorological data products of the future will be combined with the AIM data products to form the future flight briefings and the new services provided to all ATM components.

This will require that meteorological data be made available in a similar format to the other aeronautical data that are clearly focussing on the use of open standards (such as XML and GML) for the implementation of table-driven data validation built into the data exchange mechanism, whereas current meteorological data products for aviation are based on simple alphanumeric codes.

- **P-20 — Electronic aeronautical charts**

New electronic aeronautical charts, based on digital databases and the use of geographic information systems, will be defined to complement some paper charts and to replace others that have become obsolete and need to be improved to satisfy user needs. The possibility of deploying these new products over the Internet will be explored.

- **P-21 — Digital NOTAM**

One of the most innovative data products that will be based on the Standard for an aeronautical data exchange model will be a digital NOTAM that will provide dynamic aeronautical information to all stakeholders with an accurate and up-to-date common representation of the aeronautical environment in which flights are operated.

The digital NOTAM will be defined as a data set that contains information included in a NOTAM in a structured format that can be fully interpreted by a computer system for accurate and reliable updates of the aeronautical environment representation both for automated information equipment and for aviation personnel.



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