



Indra Avitech Transition from AIS to AIM Service Catalogue

“The training of personnel will be adapted to the new requirements on skill and competencies introduced by the transition to AIM.”

ICAO Roadmap for the Transition from AIS to AIM

“It is recognized that to satisfy new requirements arising from the Global ATM Operational Concept, aeronautical information services (AIS) must transition to the broader concept of aeronautical information management (AIM).”

The 36th ICAO Assembly recognized the need for an AIM strategy and concept in this respect, as it was also noted in the recommendations of the 2006 AIS Global Congress. A transition strategy is being developed to ensure the availability of real-time accredited and quality assured aeronautical information to any ATM user in a globally interoperable and fully digital environment.

The following tasks are carried out under the strategic objective "Efficiency":

- Development of a strategic roadmap to support the transition from AIS to Aeronautical Information Management (AIM);
- Development of appropriate presentation of aeronautical data and information to the end user, including electronic AIPs and charts;
- Assurance of a uniform, global approach for the provision of aeronautical data and information through increased use of the Internet;
- Increased implementation of the world geodetic system - 1984 (WGS 84), quality management systems, and electronic terrain and obstacle data.”

As described by the “ICAO Roadmap for the Transition from AIS to AIM” the traditional product-centric Aeronautical Information Services (AIS) of today will evolve to the enlarged scope of data-centric Aeronautical Information Management (AIM) to satisfy the requirements and needs of the aviation industry. The ICAO Roadmap envisages the transition towards AIM in three phases:

- **Phase 1 - Consolidation**
- **Phase 2 - Going Digital**
- **Phase 3 - Information Management**

This change towards AIM needs, amongst others, the implementation of new technology and processes, a solid knowledge of aviation in general and of the principles of AIS / AIM in particular, and an understanding of the significance of aeronautical data used in aircraft cockpits and in the air traffic management system as a whole.

The services of Indra Avitech are dedicated to accompany Air Navigation Service Providers and their Aeronautical Information Services through the transition from AIS to AIM taking into consideration the three phases of the transition. We offer you audits, assessments, workshops as well as skills and operational trainings for each single transition phase.

Audits, assessments, workshops and trainings can be tailored toward an individual customer's requirements and can be conducted either at the Indra Avitech facilities or at the customer's own premises.

Transition from AIS to AIM

The provision of aeronautical data and information of today is mainly focused on the requirements of pre-flight briefing by publishing Aeronautical Information Publications (AIP), Supplements (SUP), Aeronautical Information Circulars (AIC) and NOTAM.

With the increased use of airborne computer-based navigation systems, including Global Navigation Satellite Systems (GNSS) and the use of computer technology in the management of data and information as well, the emphasis is put on the digital form of data that will drive all processes for the management of information.

Aeronautical data has become the critical component of the airborne system and of the entire Air Traffic Management (ATM) altogether. Consequently, corrupt or erroneous aeronautical data can potentially affect the safety of air navigation.

The role of AIS will therefore need to transit to an information management service, changing duties, responsibilities and scope to satisfy these new requirements - and to evolve from **traditional product-centric AIS** to the enlarged scope of **data-centric Aeronautical Information Management (AIM)**.

The required changes have been described by ICAO in its “**Roadmap for the Transition from AIS to AIM**”. Three phases of action (including more than 20 defined steps) are envisaged to complete the transition to AIM:

Phase 1: Consolidation

- Refinement of existing standards
- Identification of potential gaps
- Assessment of the potential risks

Phase 2: Going digital

- Implementation of databases
- Introduction of database-driven processes
- New electronic products (e.g. eAIP, digital NOTAMs, datasets)

Phase 3: Information Management

- Steps to enable future AIM functions to address all new requirements of the future net-centric information environment
- Adoption of a standard for an aeronautical data exchange model (AIXM)

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Services provided for Transition from AIS to AIM

Phase 1: Consolidation Phase

The Consolidation Phase

During Phase 1 of the transition to AIM, steps will be taken to strengthen a solid base by enhancing the quality of the existing products. Fine-tuning and improvement of ICAO's Standard and Recommended Practices (SARPs) for existing products will continue to be conducted in the usual manner in order to respond to near-term user requirements.

This phase is the most important part of the transition as it is the foundation of all other activities towards a successful AIM implementation. A check through audits will show the gap, if there is any, between the existing organization and the ICAO equivalent and consistent AIS. Following the main parts and issues to be taken care of:

Adherence to ICAO Annexes and relevant Documents

The requirement for States to adhere to the ICAO Annexes and relevant Documents must be emphasized. Since the electronic AIP will have the exact same structure as the paper version, it is important that States make every effort to issue their aeronautical information as specified in ICAO Annex 15.

Use of WGS-84

The requirement to use a common horizontal, vertical and temporal reference system remains essential to facilitate the exchange of data between different systems. Therefore, the expression of all coordinates in the AIP and charts using WGS-84 is important and should be pursued during the first phase of the transition to AIM.

AIRAC Adherence

The requirement for States to adhere to the aeronautical information regulation and control (AIRAC) process must be emphasized. The quality of the future service to be provided under information management will rely on the proper mechanism for distribution and synchronization of information. Shorter response times will be required in the future and this can only be achieved if the current requirements can, at the very least, be met.

In general, this means that AIRAC information must be published under the AIRAC requirements while non AIRAC information can be published in separate publications.

Implementation of a Quality Management System

Quality requirements on information are covered by current SARPs in terms of accuracy and integrity. The steps in Phase 1 aim to meet these requirements. Should the requirements prove difficult to implement, they would have to be reassessed to verify that the risk of harm to persons or damage to property for not achieving the requirements is reduced to, and maintained at or below, an acceptable level (definition of safety). In addition, States will implement and continuously improve their quality management system in view of its increasing importance for future products and services.

Initial Audits

In order to follow the ICAO Roadmap for the Transition from AIS to AIM, it becomes even more important to determine the status quo by an audit. This will help to define the starting point, identify the gaps and plan and execute the necessary corrective actions in order to perform an accurate, efficient and smooth transition.

Indra Avitech can help you in all those matters by conducting audits in the area of aeronautical products, AIM readiness, QMS / SMS and even before, during or after your transition towards an AIM.

All our audits will include the proper audit records and documents, a gap analysis and a risk assessment that will facilitate significant improvements that can be consolidated in the organization.

Available audits:

- AIS / AIM Product (AIP / NOTAM) Audit
- Staff Assessment Audit
- AIS to AIM Audit
- AIM QMS / SMS Audit

Audit duration:

- Depends on the size of the organization, the volume of the products and the already achieved accomplishments.

Language:

- English

Location:

- On-site at the customer's premises or in the Indra Avitech facility in the area of Frankfurt (Germany) if all the documentation and answers required are timely made available.

Training Courses

Within the context of the established QMS, the **skills** and **knowledge** required for each function shall be identified, and personnel assigned to perform those functions shall be appropriately **trained**.

States shall ensure that personnel possess the **skills** and **competencies** required to perform specific assigned functions, and appropriate records shall be maintained so that the qualifications of personnel can be confirmed.

During the consolidation phase:

Appropriate staff training is the key factor in the successful transition from old to new technology and processes. The implementation of new operational concepts includes, amongst others, the development of an understanding of aviation, principles of the AIS, the aeronautical data chain from origination to the end users, aeronautical data and information and finally data quality and electronic publishing.

All those involved in the AIS / AIM transition will have to become familiar with such subjects, which is best achieved through structured training by experienced instructors. Our trainers have gained experience not only on the subjects above, but as well as having worked for members of the aeronautical data chain as Air Navigation Service Providers, data warehouses and end users.

In order to achieve a high level of knowledge and competencies for personnel working in AIS and to make them ready for the transition towards AIM Indra Avitech offers a wide range of courses, including management training, introduction in aviation and AIS, basic and advanced AIS courses and finally an introduction in quality management.

Courses can be tailored toward an individual customer's requirements and can be conducted either at the Indra Avitech Training facilities or at the customer's own premises.

Duration of courses / trainings: The exact duration of all Indra Avitech courses depends on the knowledge level of the trainees. Therefore, we propose to conduct staff assessments to determine the exact needs and to be able to customize and / or tailor the duration and possibly the content to fit into the intended future organization and roles.

AIM Training for the Management

This course is especially designed for the management in AIM. It focuses on the significance of AIM in aviation, in particular on the importance of aeronautical data and the transition towards an information management. Moreover, it gives a detailed overview of the necessary organizational and infrastructural changes required and offers solutions to achieve the transition towards AIM.

Course details:

- Duration: 3 - 5 days
- Language: English

Participants:

- Management responsible for AIS / AIM or part of it.

Location:

- Indra Avitech facility in the area of Frankfurt (Germany). On-site training at the customer's premises or other Indra Avitech offices can also be arranged.

Introduction to Aviation and the principles of AIS

This course is designed to give an introduction into the various aspects of aviation and to understand the role and significance of AIS / AIM in this context.

Course details:

- Duration: 3 – 5 days
- Language: English
- Final Examination: The course includes a final exam of 1 hours.

Participants:

- The course is intended for staff working in the wider area of AIS / AIM and with limited knowledge in aviation and AIS / AIM.

Location:

- Indra Avitech facility in the area of Frankfurt (Germany). On-site training at the customer's premises or other Indra Avitech offices can also be arranged.

AIS Training

This course offers a comprehensive training for beginners in AIS / AIM as described by ICAO and EUROCONTROL training manuals. The training is also intended for staff already working to refresh and consolidate general knowledge in AIS.

Course details:

- Duration: 4 – 12 weeks (20 to 60 workdays)

The duration of the course depends on the existing knowledge of the trainees and can be tailored on request of the customer, taking into consideration current or future positions of the trainees in AIS / AIM. Moreover, the course can be divided up into several blocks over a longer period of time to make it more convenient for the trainees.

- Language: English
- Final Examination: The course includes a final exam of 4 - 6 hours (depending on the duration of the course).

Participants:

- Beginners in the various areas of AIS / AIM with limited aviation knowledge (ab-initio course) as well as staff already working in AIS / AIM (refresher course).

Location:

- Indra Avitech facility in the area of Frankfurt (Germany). On-site training at the customer's premises or other Indra Avitech offices can also be arranged.

AIM Basic Training

The AIM Basic Training is designed to refresh and consolidate general knowledge on AIS and AIM and to better understand the various tasks for the AIS to AIM transition.

Course details:

- Duration: 2 – 4 weeks (10 to 20 workdays)
- Language: English
- Final Examination: The course includes a final exam of 4 hours.

As a prerequisite for participating in the AIM Advanced Course the exam must have been successfully passed.

Participants:

- AIS staff with knowledge in the various areas of AIS (AIP publishing, charting, NOTAM, planning or briefing).

Location:

- Indra Avitech facility in the area of Frankfurt (Germany). On-site training at the customer's premises or other Indra Avitech offices can also be arranged.

AIM Advanced Training

The Advanced AIM Training course focuses on the AIS products and services and in particular on aeronautical data and its importance in the new Aeronautical Information Management data- centric concept aiming to future data provision methods described in the latest amended ICAO Annex 15 and ICAO PANS-AIM.

Course details:

- Duration: 3 – 5 weeks (15 to 25 workdays)
- Language: English
- Final Examination: The course includes a final exam of 4 hours.

Participants:

- AIS staff with knowledge in the various areas of AIS (AIP publishing, NOTAM, planning or briefing).

As a prerequisite for participating in the AIM Advanced Course the exam of the AIM Basic Course must have been successfully passed.

Location:

- Indra Avitech facility in the area of Frankfurt (Germany). On-site training at the customer's premises or other Indra Avitech offices can also be arranged.

AIS to AIM Training

This course focuses on the transition from AIS to AIM, from a product-centric service to a data-centric management of aeronautical data, considering the today's importance of aeronautical data. Moreover, it gives a detailed overview of the organizational changes required and offers solutions to achieve the transition towards AIM.

Course details:

- Duration: 5 days
- Language: English
- Final Examination: The course includes a final exam of 2 hours.

Participants:

- AIS / AIM staff (including project managers) involved in the aeronautical data chain process.

Location:

- Indra Avitech facility in the area of Frankfurt (Germany). On-site training at the customer's premises or other Indra Avitech offices can also be arranged.

Quality and Safety Management System (QMS / SMS) for AIM

This course is designed for staff working in the various positions and levels in AIS / AIM. The focus is on the management and control of quality and safety in AIM as required by ICAO and other regulatory authorities. In addition, it focusses on the importance and significance of high-quality aeronautical data in today's aviation.

Course details:

- Duration: 5 days
- Language: English
- Final Examination: The course includes a final exam of 2 hours.

Participants:

- AIM staff with knowledge in the various areas of AIM (AIP publishing, charting, NOTAM, planning or briefing), AIM management and Quality department staff.

Location:

- Indra Avitech facility in the area of Frankfurt (Germany). On-site training at the customer's premises or other Indra Avitech offices can also be arranged.

Phase 2: Going Digital

Going Digital

During Phase 2 of the transition to AIM, the main focus will be on the establishment of data-driven processes for the production of the current products in all States. States that have not yet done so will be encouraged “to go digital” by using computer technology or digital communications and introducing structured digital data from databases into their production processes. The emphasis will, therefore, not be on the introduction of new products or services but will be on the introduction of highly structured databases and tools such as geographic information systems.

An aeronautical information conceptual model will provide guidance for States to implement such digital databases. Guidance material will include advice on a minimum data set to begin a phased development of the database.

Many States are already providing electronic equivalents of their AIPs, e.g. on CD or on the Internet. These electronic AIPs may be accessible for printing and/or for navigation via a web browser tool. Guidance material that will be based on existing best practices will be provided to States to ensure that new types of media will be harmonized for users.

Awareness Workshop

To start your transition to AIM it is important to have as many stakeholders of the aeronautical data chain on board as possible. Information needs to be shared, project plans have to be explained and agreed and the different flow of information as well as future implementation of AIM systems has to be demonstrated, discussed and agreed.

Indra Avitech can conduct and moderate such an Awareness workshop for you as we have done successfully for various states.

Course details:

- Duration: 1 - 2 days
- Language: English

Participants:

- Stakeholders of the aeronautical data chain; current and future users of aeronautical data; regulatory authority

Location:

- On-site workshop at the customer's premises.

Aeronautical Data Owner (Originator) Training

This course is designed for the aeronautical data owners, originators or providers. The training will focus on the content, format and quality requirements of aeronautical data and information set by the next intended user to be able to fulfil the end users demand and needs.

Course details:

- Duration: 3 days
- Language: English
- Final Examination: The course includes a final exam of 1 hour.

Participants:

- Stakeholders of the aeronautical data chain who are originating and providing data and information towards the AIM.

Location:

- Indra Avitech facility in the area of Frankfurt (Germany). On-site training at the customer's premises or other Indra Avitech offices can also be arranged.

Terrain and Obstacle Data (TOD) Training

This course is designed for all organizations, administrations and staff involved in the provision of terrain and obstacle data (TOD) sets as required by ICAO Annex 15 and ICAO Doc 10066 (PANS-AIM). The training will focus on the needs and requirements for terrain and obstacle data sets, and the implementation process taking into account institutional and technical matters.

Course details:

- Duration: 2 - 3 days

The duration of the course depends on the group of the participants. The course can be tailored on request of the customer, taking into consideration the various tasks of the involved organizations and people.

- Language: English
- Final Examination: The course includes a final exam of 1 hour.

Participants:

- Surveying organizations, aviation authorities, airports and AIM staff.

Location:

- Indra Avitech facility in the area of Frankfurt (Germany). On-site training at the customer's premises or other Indra Avitech offices can also be arranged.

AIM Coordination Training

This course focuses on the duties and responsibilities of a future AIM coordinator. It offers solutions to the usual coordination problems and trains a workflow to increase the quality of aeronautical data and information in the AIM.

Course details:

- Duration: 3 days
- Language: English
- Final Examination: The course includes a final exam of 2 hours.

Participants:

- Current or future AIM coordinators.

Location:

- Indra Avitech facility in the area of Frankfurt (Germany). On-site training at the customer's premises or other Indra Avitech offices can also be arranged.

AIXM Training

This course is designed for future Aeronautical Data maintenance staff and is the basis / prerequisite for the Aeronautical Data Training.

Course details:

- Duration: 2 days
- Language: English
- Final Examination: The course includes a final exam of 1 hour.

Participants:

- Future AIM data maintenance staff.

Location:

- Indra Avitech facility in the area of Frankfurt (Germany). On-site training at the customer's premises or other Indra Avitech offices can also be arranged.

Aeronautical Data Training

This course focuses on the duties and responsibilities of future AIM data maintenance staff. The course shows the history of aeronautical data, the usage in past, current and future avionics but as well the regulatory authorities behind the data. The trainees will also work on an aeronautical database to get familiar with workflows and processes to increase the quality of aeronautical data and information in the AIM.

Course details:

- Duration: 3 - 5 days
- Language: English
- Final Examination: The course includes a final exam of 2 hours.

Participants:

- Current or future AIM maintenance staff

Location:

- Indra Avitech facility in the area of Frankfurt (Germany). On-site training at the customer's premises or other Indra Avitech offices can also be arranged.

Aeronautical Text Publication Training

This course is especially designed for staff working in the aeronautical text publication. The focus of the course is on the overall enhancement of the knowledge about aeronautical publications in general, and the use of modern tools for the production and production and quality checks of aeronautical text in particular, considering the requirements of aeronautical publications.

Course details:

- Duration: 3 - 5 days
- Language: English
- Final Examination: The course includes a final exam of 2 hours.

Participants:

- AIS staff already working in the aeronautical text publication

Location:

- Indra Avitech facility in the area of Frankfurt (Germany). On-site training at the customer's premises or other Indra Avitech offices can also be arranged.

Aeronautical Charting and Visualization Training

This course is especially designed for staff working in the aeronautical chart production. The focus of the course is on the overall enhancement of the knowledge about aeronautical charts in general, and the use of modern tools for the production and quality check of charts in particular, taking into account the requirements of electronic charts used in the cockpit of modern aircraft.

Course details:

- Duration: 3 days
- Language: English
- Final Examination: The course includes a final exam of 2 hours.

Participants:

- AIS staff already working in the aeronautical chart production

Location:

- Indra Avitech facility in the area of Frankfurt (Germany). On-site training at the customer's premises or other Indra Avitech offices can also be arranged.

Joint Migration (Customer and Indra Avitech)

This joint migration is a common effort to analyze the current customer AIP, convert the publication to aeronautical data and text and enter the information into the relevant AIM system module with the goal to provide ICAO conform aeronautical products as data sets or HTML eAIP publications. The Joint migration can substitute parts of the operational training.

Course details:

- Duration: Depends on the size of the customers aeronautical product (AIP)
- Language: English

Participants:

- The current AIS staff after completion of the relevant training intended to form the future AIM organization.

Location:

- Indra Avitech facility in the area of Frankfurt (Germany) or other Indra Avitech offices and at the customer's premises.

Final Audits

To determine the end of Phase 2 it becomes even more important to determine the new status quo by an audit. This will help to define the end point / close the Project, identify the pending gaps and plan and execute the necessary corrective actions in order to transit to an ICAO compliant AIM with the possibility to be audited, credited and / or certified.

Indra Avitech can help you in all those matters by conducting audits in the area of aeronautical products, AIM completeness, QMS / SMS after your transition towards an AIM.

All our audits will include the proper audit records and documents, a gap analysis and a risk assessment that will facilitate significant improvements that can be consolidated in the organization.

Available audits:

- AIS / AIM Product (AIP / NOTAM) Audit
- Staff Assessment Audit
- AIS to AIM Audit
- AIM QMS / SMS Audit

Audit duration:

- Depends on the size of the organization, the volume of the products and the already achieved accomplishments.

Language:

- English

Location:

- On-site at the customer's premises or in the Indra Avitech facility in the area of Frankfurt (Germany) if all the documentation and answers required are timely made available.

Phase 3: Information Management

Information Management

During Phase 3, steps will be taken to enable future AIM functions in States to address the new requirements that will be needed to implement the Global Air Traffic Management Operational Concept in a net centric information environment.

The digital databases introduced in Phase 2 will be used for the transfer of information in the form of digital data. This will require the adoption of a Standard for an aeronautical data exchange model to ensure interoperability between all systems not only for the exchange of full aeronautical data sets, but also for short-term notification of changes.

As new products are introduced, organizational changes will need to be made to implement better management of information in terms of:

staff planning and staff training;

- formalization of agreements with data providers to ensure a high degree of data quality;
- introduction of an extensive amount of explicit meta-information;
- impact on cost-recovery mechanisms; and
- explicit traceability of the changes to information and identification of liabilities.

ATM systems will require a common information reference model with quality procedures for the management of seamless information flow to ensure not only interoperability between States but also interoperability between different systems within the State. New digital data products and services will be specified to serve these interoperability requirements.

The definition of new AIM data products and services will be based on requirements identified for each ATM component. A structured approach to the development of these new requirements for AIM will be followed to ensure that any Standards recommended for AIM are derived from agreed information exchange models; these models will specify the minimum information required to support business services defined for ATM functions that are identified to fulfil desired outcomes in terms of performance requirements.

Implementation Workshop

To finalize your transition to AIM it is important to have as many stakeholders of the aeronautical data chain on board as possible in order to present the outcome of the Transition from AIS to AIM and to discuss the pending issues, next tasks and necessary steps forward.

Indra Avitech can conduct and moderate such an Implementation workshop for you as we have done successfully for various states.

Course details:

- Duration: 1 - 2 days
- Language: English

Participants:

- Stakeholders of the aeronautical data chain; current and future users of aeronautical data; regulatory authority

Location:

- On-site workshop at the customer's premises.

Revision Maintenance (On-The-Job) Training

This training is designed to support customers in the revision maintenance and the associated roles (coordination, data, text and chart maintenance, logistic).

Course details:

- Duration: Proposed is a minimum of 3 revision cycles
- Language: English

Participants:

- AIM staff after a successful completion of the functional and operational training and the initial publication of the new aeronautical product (eAIP).

Location:

- On-site training at the customer's premises.

INFORMATION

Our company:

Indra Avitech is an internationally leading developer of aeronautical information systems. Our comprehensive expertise ranges from single components to complete turnkey solutions. Indra Avitech's products provide diverse solutions for AIM (Aeronautical Information Management), Communication (SWIM and MHS), ATM, and MET for civil and military customers (e.g. ANSPs, CAAs) in more than 50 countries worldwide. Our goals are to empower full situational awareness and efficiency, allowing time for proper decision making and the effective management of air traffic. Indra Avitech systems, services and training lead to an increase in safety and punctuality and to savings in cost.

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