



AIM, the Key to Interoperability

**Role of the Data Integrator
in providing AIM**

ICAO

GREPECAS

Aeronautical Information Management

Sub-Group

23-27 November 2009

Lima, Peru

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International Relations

Jeppesen

What is AIM ?

- **Aeronautical Information Management** (per ICAO) Dynamic, integrated management of aeronautical information services – safely, economically and efficiently – through the provision and exchange of quality assured digital aeronautical data in collaboration with all parties.
- **Information management** (per Wikipedia) is the collection and management of information from one or more sources and the distribution of that information to one or more audiences. Management means the organization of and control over the structure, processing and delivery of information.

Who are the AIM stakeholders ?

There are generally four tiers of AIM stakeholders, each with different roles, responsibilities, obligations and needs.



End user

Pilots, aircraft operators, ATS organizations, flight support organizations and other entities that use aeronautical information to support safe, efficient and orderly flight operations.

Commercial Service Provider

An organization, generally a corporation, that creates value-added services from the „official“ facts, data and information about the State aviation system.

State Designated Service Provider

An organization, often referred to as an ANSP, which has been designated by a State to fulfill some of the State obligations for AIS/AIM provision. ANSPs are often „corporatized“ organizations.

State Civil Aviation Authority

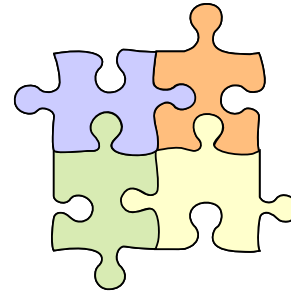
State government organization responsible for the safety, regularity and efficiency of national and international aviation within its borders.

Aeronautical Information Today Product Centric

Data Integrators



Mainly data focused



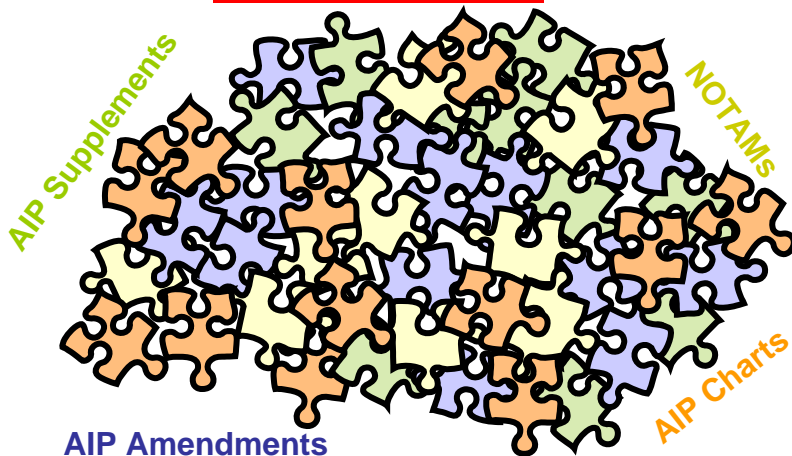
End user



Mainly product focused



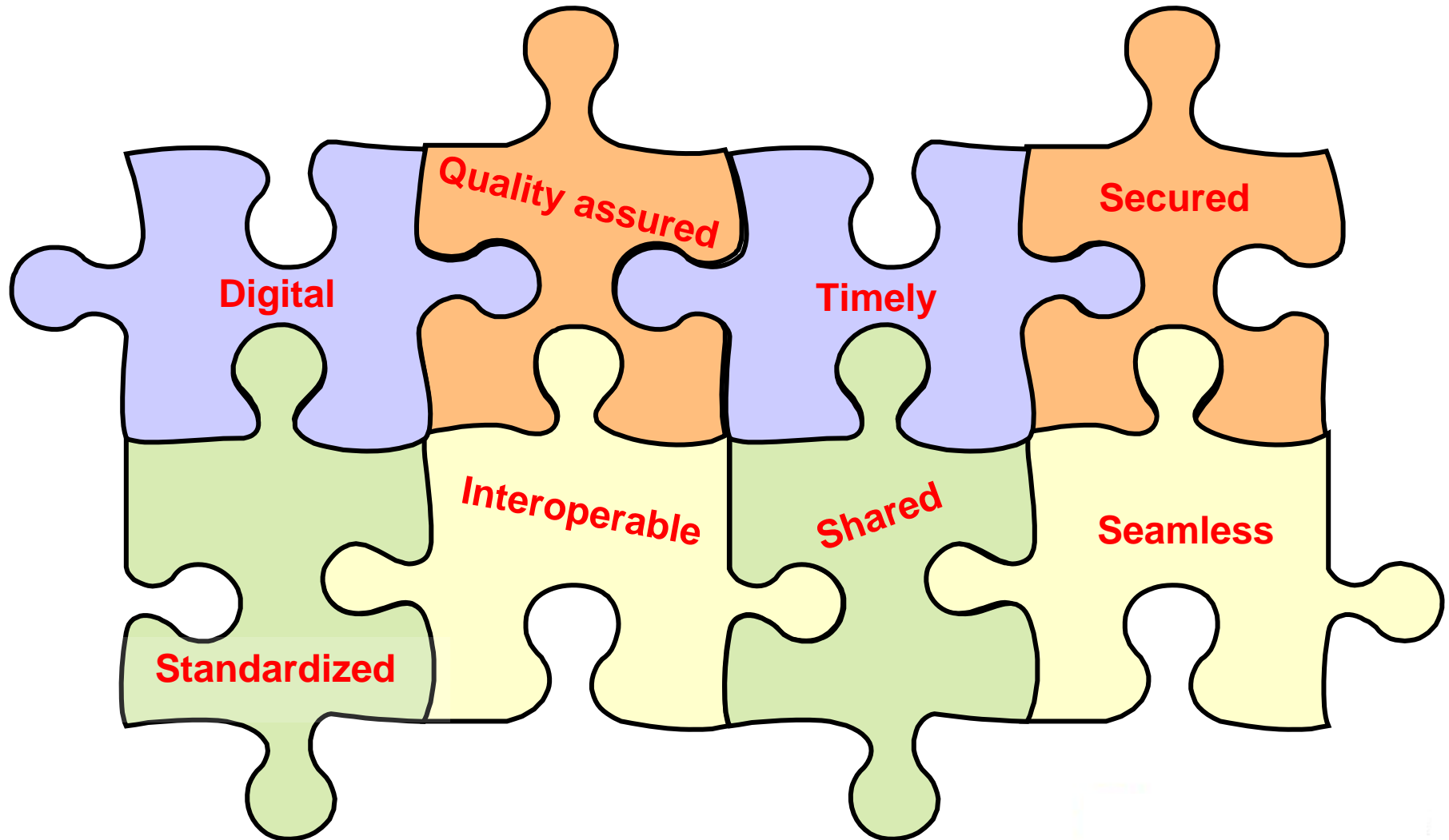
CAAs / ANSPs



AIS/AIM offices around the world produce many great products

Commercial service providers and end users to consolidate them into a consistent and usable whole.

The AIM puzzle



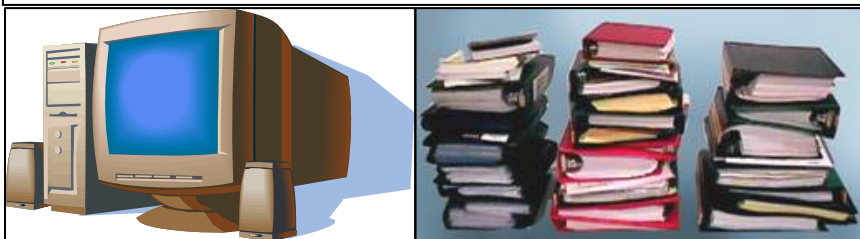


Digital transformation

CAAs / ANSPs

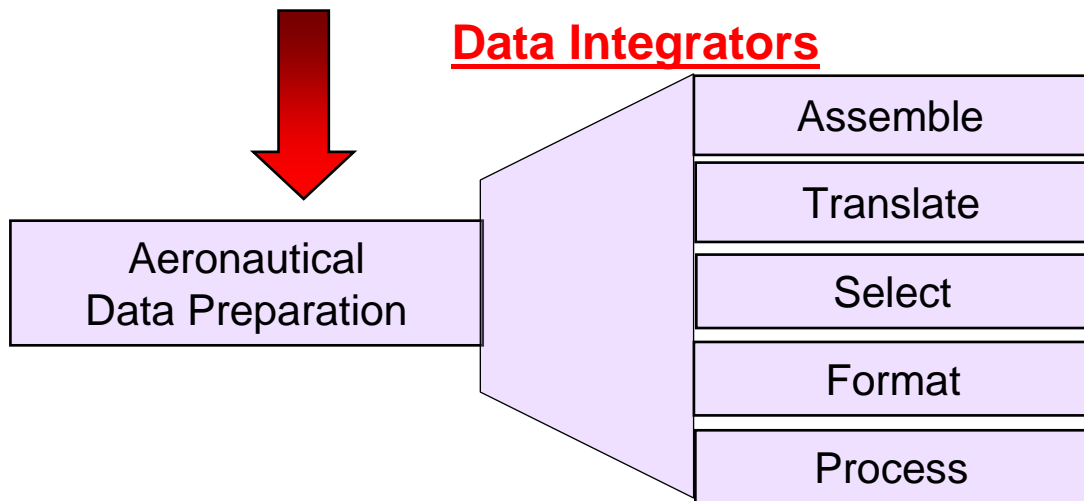
Average number of „products“ issued by 200+ AIS/AIM offices per AIRAC cycle:

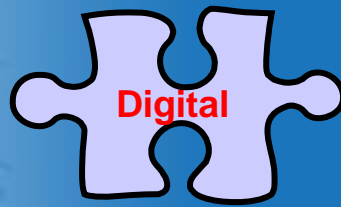
- 18,300 source pages (paper & PDF)
- 72,000 NOTAMs



Embedded Digital Information Solutions

Data Integrators

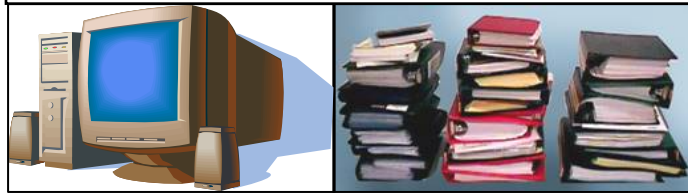




Digital transformation

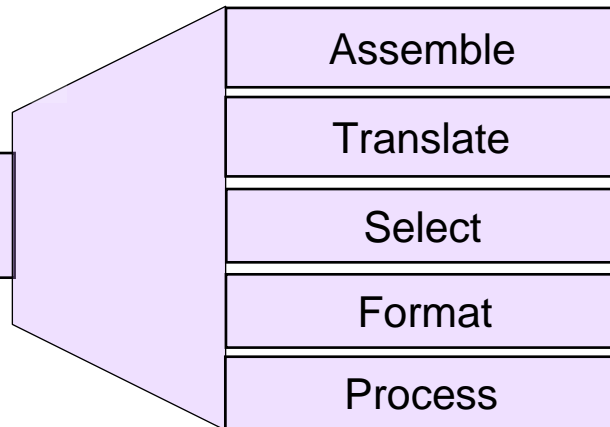
CAAs / ANSPs

AIS/AIM Offices



Data Integrators

Aeronautical
Data Preparation



Aeronautical Data maintained in the global Jeppesen Aviation Database

- 14,644 Airports
- 89,222 Airport Details
- 10,630 Airport Comms
- 28,629 Navaids
- 4,552 ILS Approaches
- 6,259 VOR Approaches
- 3,619 NDB Approaches
- 7,089 RNAV Approaches
- 17,543 Departures
- 13,156 Arrivals
- 72,000 Terminal Waypoints
- 3,437 High Airways
- 3,024 Low Airways
- 2,766 High/Low Airways
- 22,600 Enroute Waypoints



Interoperability

The word „**Interoperability**“ is increasingly being used with the Information Management discourse. Its meaning, though, remains somewhat ambiguous, as do many of the benefits.

interoperable *adj.*

able to operate in conjunction

interoperability *n.*

(Concise Oxford Dictionary, 9th Edition)

Some Definitions

interoperability

[...] is the ability of a system or a product to work with other systems or products without special effort on the part of the customer. Interoperability becomes a quality of increasing importance for information technology products as the concept that "The network is the computer" becomes a reality. (whatis.com)



Interoperability

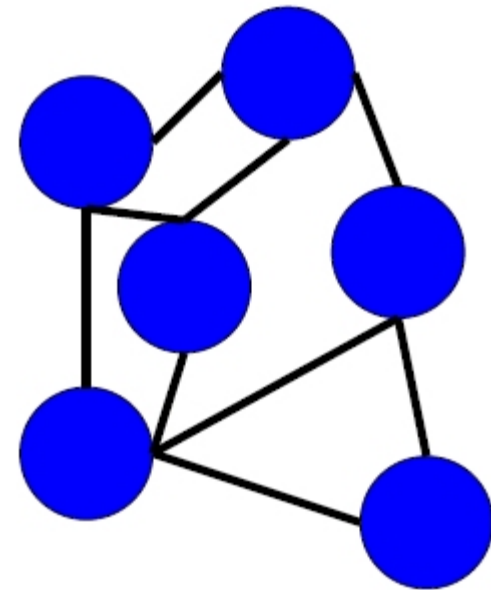
Interoperability in the context of AIM – What is it and why do we need it ?

Definition Interoperability means that an organization should be actively engaged in the ongoing process of ensuring that the content, quality, format, availability and flow of information within the ATM system is managed in such a way as to maximize opportunities for exchange and use of this information.

Based upon this definition, it should be clear that there is far more to ensuring interoperability than using compatible software and hardware, although that is, of course, important.

Commercial data providers, as truly interoperable organizations, integrate data from different locations and sources and they maximise the value and potential of information. They assure that this information is effectively exchanged with other equally interoperable bodies, allowing new knowledge to be generated from the identification of relationships between previously unrelated sets of data.

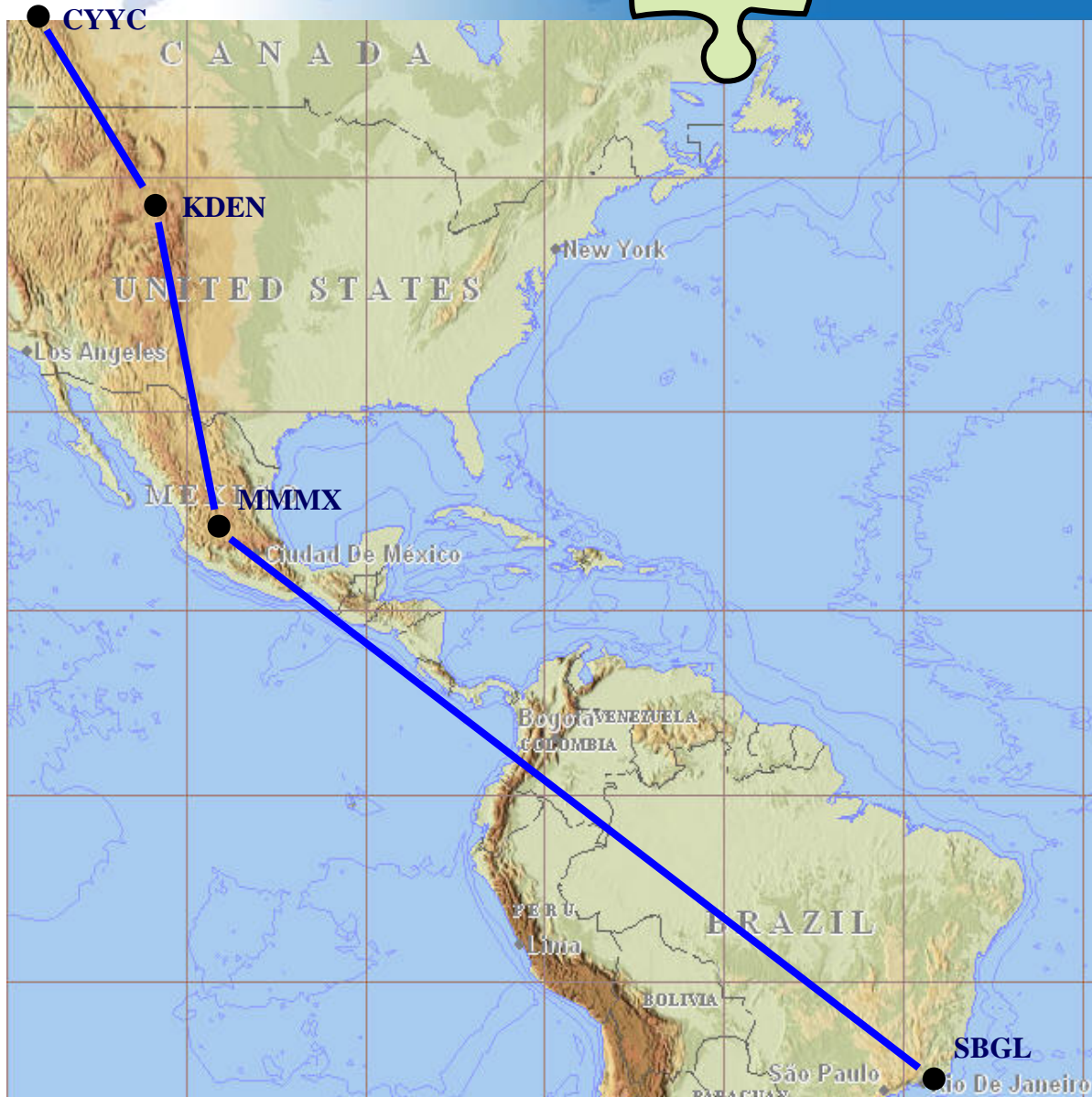
Interoperability is needed to bridge the gap between real and digital worlds. In the ATM system it enables and optimizes the use of new technologies and it fosters innovation.



Interoperability



Standardized Information

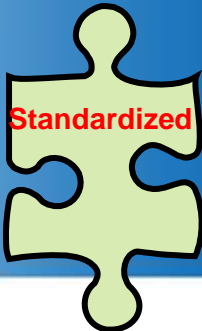


Interoperability requires standards.

Data Integrators apply global standards to charts, databases and other products.

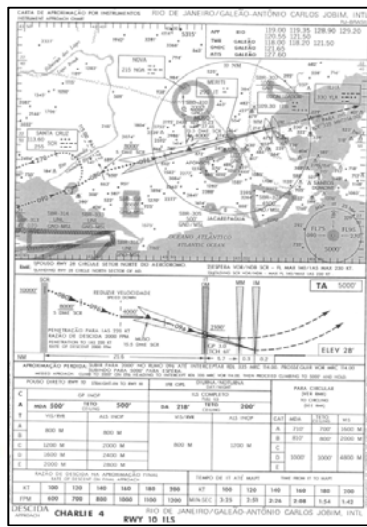
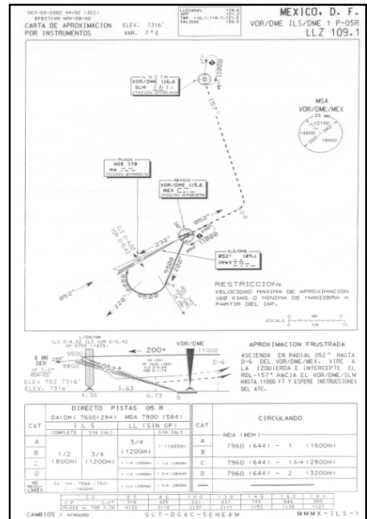
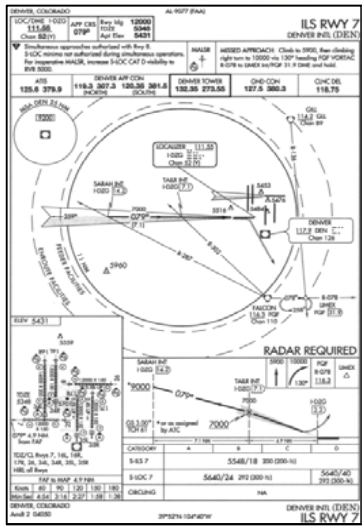
Example:

Charts and databases for international flights.



Standardized Information

Country-provided chart formats

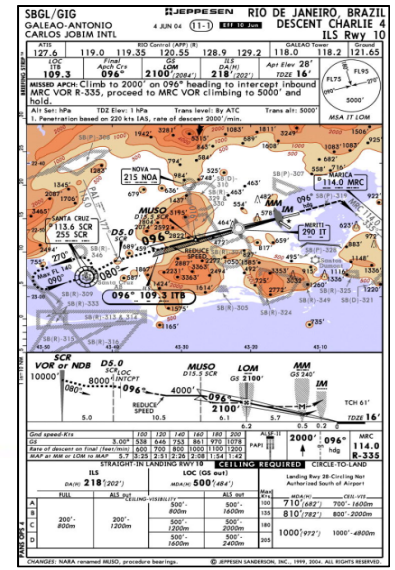
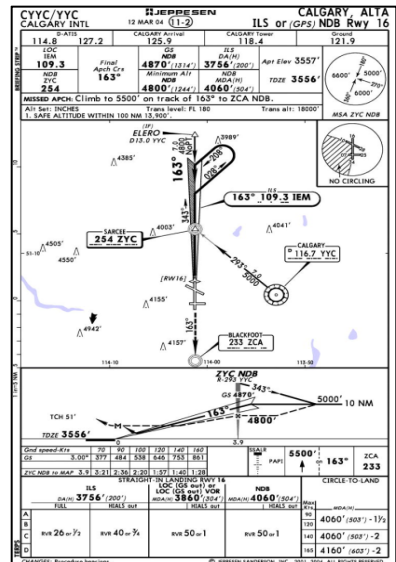
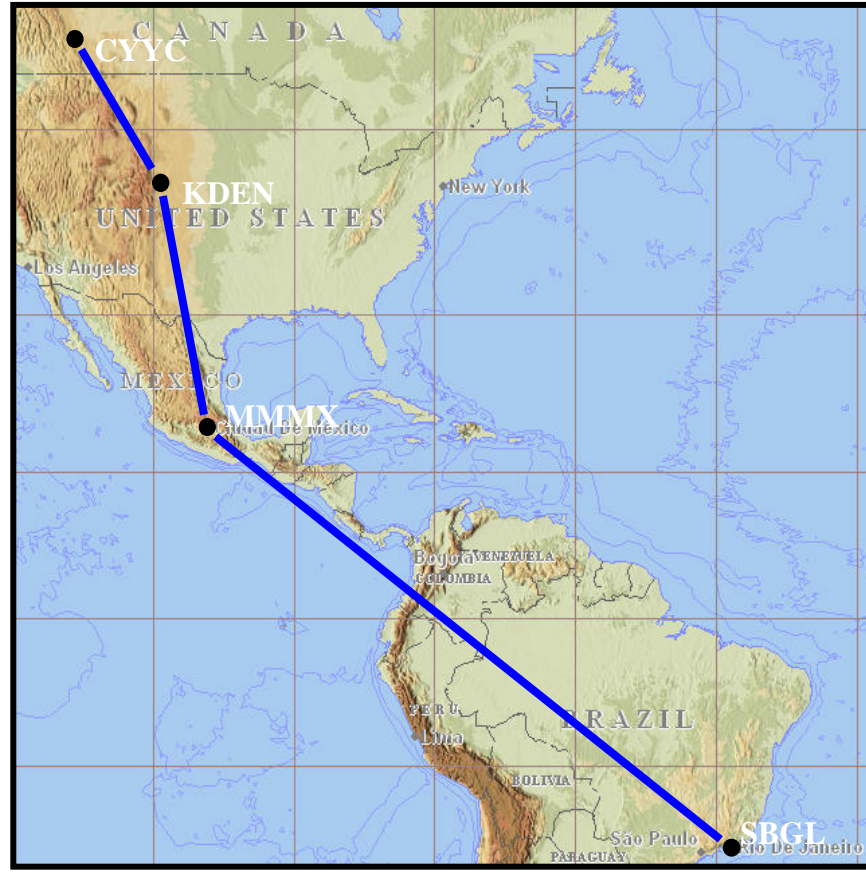
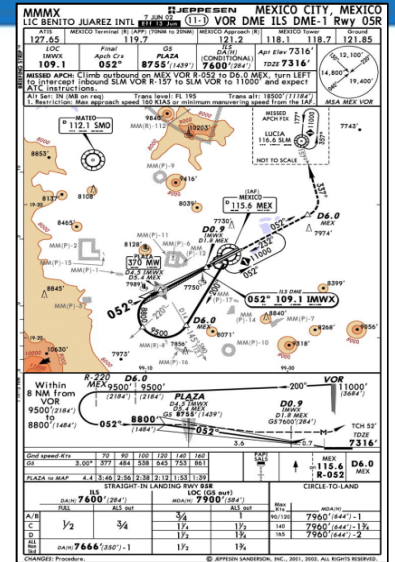
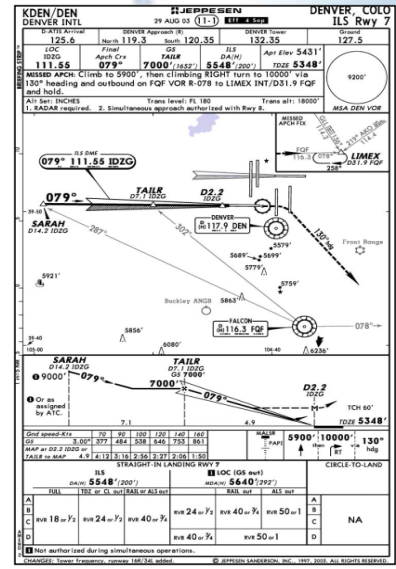


Placement of elements & symbology varies with each chart



Standardized Information

Jeppesen chart formats



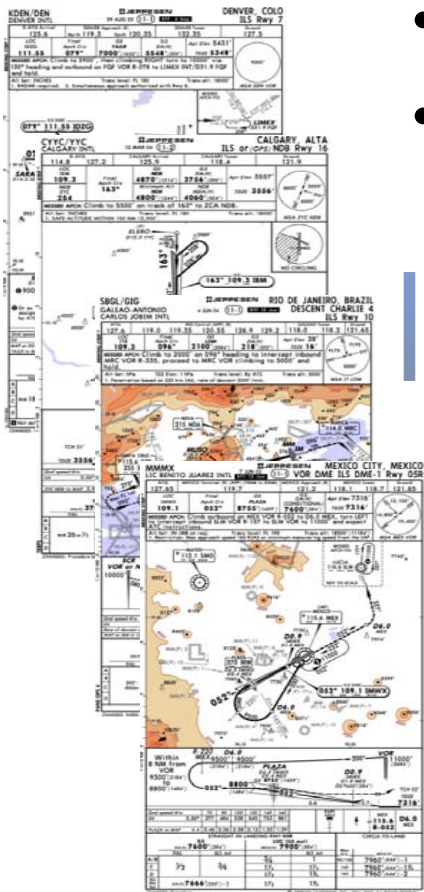
Placement of elements & symbology consistent for all charts



Standardized Information

Standardized digital maps and data are:

- Printed
- Uploaded to EFBs
- Coded in flight management system navigation databases



Transforming

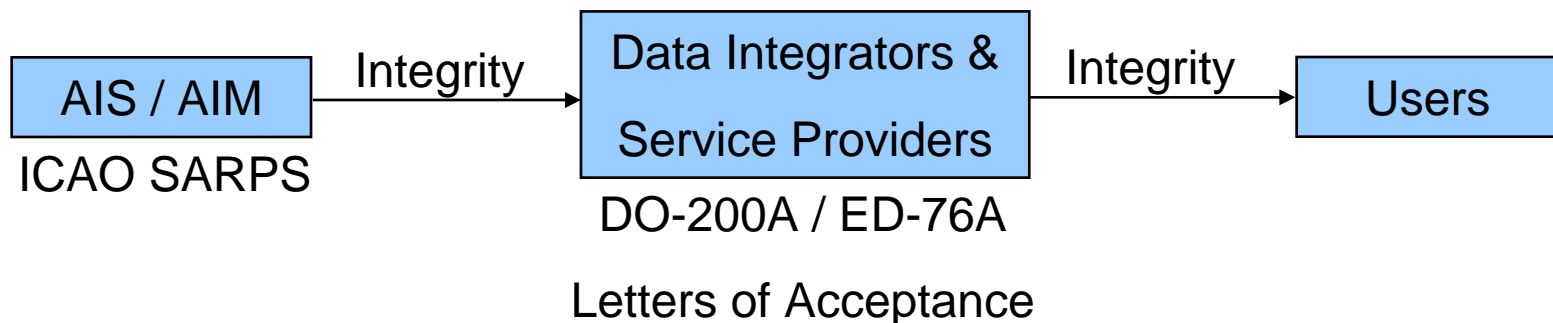


Embedded Digital Information Solutions



Quality Assured Information

- High quality aeronautical “facts” must be defined in AIM
- Then integrity must be maintained through the data chain.
- AIM must enable innovation and operational efficiency, not impede it.





Quality Assured Information

Commercial suppliers must comply with different Quality Standards



ISO 9001:2000



ED-76 / DO-200A



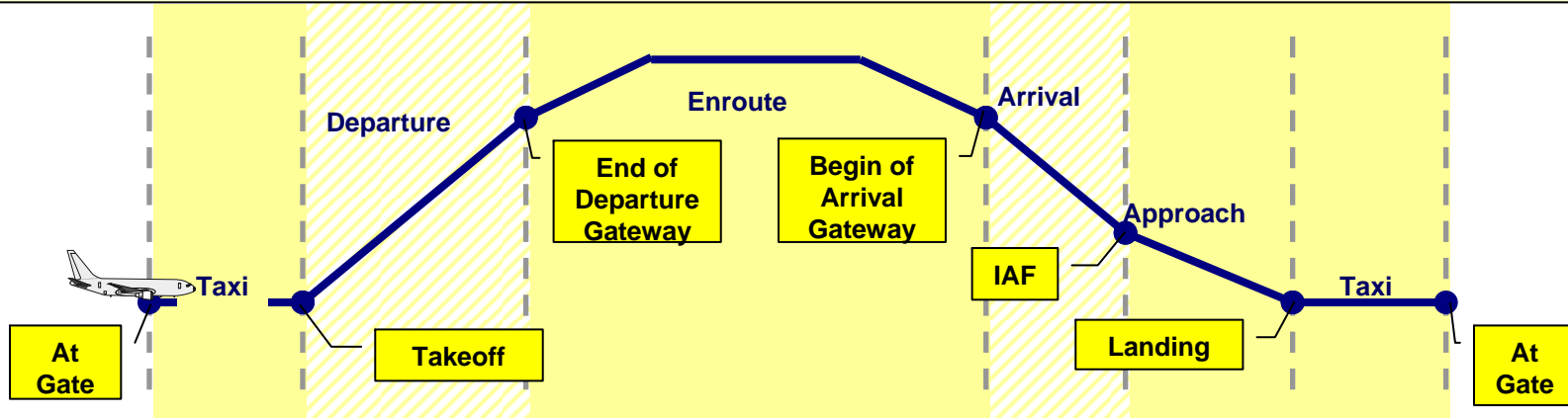
**LoA / Letter of Acceptance
Issued by EASA & FAA**

- Database maintenance uses more than 12,000 programmed aviation logical rules for automatic data plausibility checks,
- Blind re-key of essential and critical data by second and independent person,
- Large number of manually performed edit checks,
- 80 – 100 data clarification requests to States per AIRAC cycle

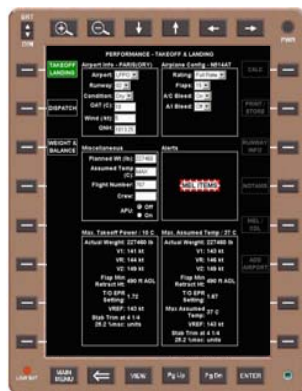
Processing of Aeronautical Data requires a strict Quality Management along the entire data chain



Digital, quality assured and interoperable data is required to move towards a seamless gate-to-gate operation.



Weather & NOTAMS



Aircraft Performance



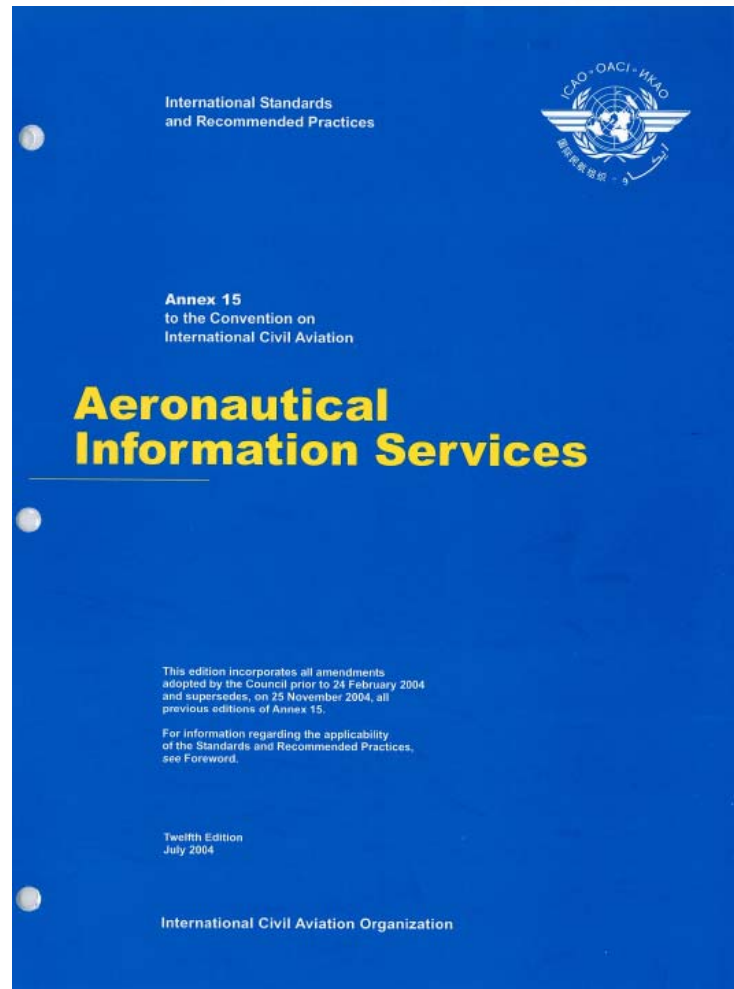
Taxi Situation Awareness



Airport Familiarization



Charts



CHAPTER 1. INTRODUCTION

The object of the aeronautical information service is to ensure the flow of information/data necessary for the safety, regularity and efficiency of international air navigation. The role and 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.

To satisfy the uniformity and consistency in the provision of aeronautical information/data that is required for the operational use by computer-based navigation systems, States shall, as far as practicable, avoid standards and procedures other than those established for international use.

3.1 Responsibilities and functions

3.1.1 Each Contracting State shall:

a) provide an aeronautical information service; or

b) agree with one or more other Contracting State(s) for the provision of a joint service; or

c) delegate the authority for the provision of the service to a non-governmental agency, provided the Standards and Recommended Practices of this Annex are adequately met.

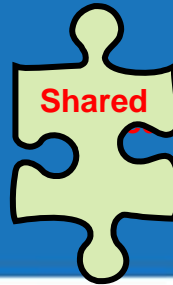
3.1.1.1 The State concerned shall remain responsible for the information published.

Aeronautical information published for and on behalf of a State shall clearly indicate that it is published under the authority of that State.

3.1.6 An aeronautical information service shall ensure that aeronautical information/data necessary for the safety, regularity or efficiency of air navigation is made available in a form suitable for the operational requirements of:

a) those involved in flight operations, including flight crews, flight planning and flight simulators; and

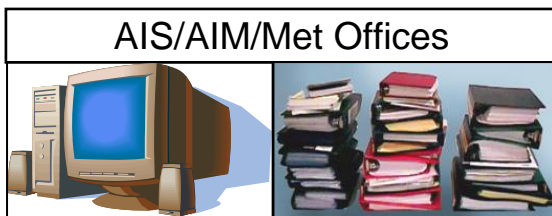
b) the air traffic services unit responsible for flight information service and the services responsible for pre-flight information.



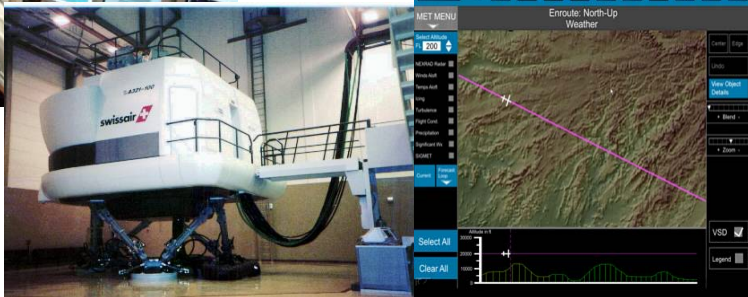
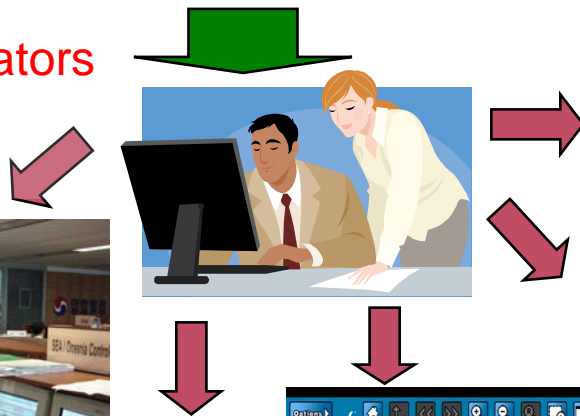
Shared Information

Aeronautical information **in a form suitable for the operational requirements of those involved in flight operations** is the combined effort of CAAs, ANSPs and commercial service providers.

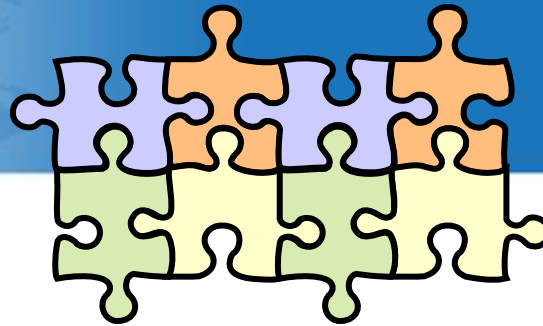
CAAs & ANSPs








Data Integrators & Service Providers



The AIM Puzzle comes together in partnership



- 
 Reliable, consistent, digital, standardized and high quality data is fundamental to support current and future cockpit applications, to assure interoperability and to move towards a seamless gate-to-gate-operation.
- 
 Based on user requirements and needs it is the role of CAAs and ANSPs to build the aeronautical data foundation. Commercial service providers bridge the gap between the „airspace facts“ published by the State and the end user.
- 
 If we want AIM to become the “Intranet of ATM”, all actors in the data supply chain must be “on board”. **We need each other to meet the challenges.** This includes a strong ICAO support, strong State support and strong industry involvement.
- 
 States, through AIM, build the aeronautical information foundation for innovative and efficient products and services.
- 
 Access to aeronautical information, facts and data should be open and unrestricted to all stakeholders. That will allow and encourage innovation, efficiency and progress to continue in the development of products and services users need.

Together, we support global aviation

