Towards a Common Understanding
Creating the Network-centric Environment
“From AIS to AIM”

“Worldwide Symposium on Enabling the Net-Centric Information Environment”

Ken REID
Head of Aeronautical Information Management Division
EUROCONTROL
Introduction (1)

- ATM operations are a complex interaction of dissimilar activities
- Frequently no physical links exist between them
- In Europe the 100 main airports are:
  - connected by approx. 600 airspace segments
  - controlled by 65 ATCC’s with many systems
  - operated by 38 ANSP’s with different cultures
- Terrestrial communications usually fixed point-to-point links
- Information sharing often limited
- Coordination & management frequently dysfunctional
- No common situation picture of ATM operations exists
Lack of a common picture and effective in-time communication and cooperation

**NEGATIVE IMPACT**

Improved situational awareness would benefit all

**LITTLE COST**

Effective means of understanding and cooperation will result in reduced capacity loss and an increased system throughput

**ATM IS FACED WITH A PARADIGM SHIFT**
The Paradigm Shift

CREATING THE PARADigm SHIFT

- Establish culture of information sharing, to
- Enable True system interoperability
- Deliver a complete, accurate & temporal situation picture common to ground/air
- Through evolution of the Net-centric information environment
The Net-centric Environment

“the true Intranet of ATM”

- Challenge is to create a regulated environment covering multiple & diverse actors from
  - ATM and non-ATM Domains
- The key to this Symposium
Overview

• Based on Net-centric Enterprise Architecture

“light-weight, massively distributed, horizontally-applied architecture, that distributes components and/or services across an enterprise's information value chain using Internet Technologies and other Network Protocols as the principal mechanism for supporting the distribution and processing of information services”

• In ATM and SESAR especially referred to as the ‘Concept of System Wide Information Management (SWIM)’

• Short/medium term evolution through Aeronautical Information Management - AIM
Aeronautical Information Management (AIM)

The **right** digital Aeronautical Information, at the **right** place, at the **right** time.

- Human AIM
- Institutional AIM
- Quality AIM
- Digital AIM
What is AIM?

• Reflects changing ATM environment
• Emphasis on flexibility & interoperability
• Recognises need to transit from products to data
• Envisages the “pooling” of selectable data for tailored application from significantly expanded data sets
• Is a Concept, a System & a Service
  • WHAT, WHY and to an extent HOW
  • NOT WHO – for States/industry to decide
• Is short/medium term implementation of net-centric INF ENV described in SESAR ATM Master plan
• Forms basis of Eurocontrol CND IM Strategy, an elaboration of the Master Plan
AIM Basics

- Digital provision of quality information
- Move towards a state of information sharing and exchange
- Based on Enterprise Architecture & Service Oriented Architecture (SOA) concepts aligned with
  - SESAR
  - Trend towards Network Centric Operations
- Will follow & leverage existing global and open interoperability regulations & standards
- Time line to 2020 & transition to SWIM
AIM evolution

- Information On-demand
- Information filtering based on location and time (4D) to
  - support of future 4D trajectory management, and
  - collaborative decision making
- Static and dynamic information fusion
- Seamless information sharing
- Open solutions
- Innovative digital services and products
- Improved situational awareness
Digital AIM Basics
Traditional Architecture

• Dedicated information exchange
• The Strategic Vision exists….
• The current situation; e.g. exchange of MET in Europe
AIM Basics
Data Modeling

- AIXM – Aeronautical Information Exchange Model
- AMXM – Airport Mapping Exchange Model
- WXXM – Weather Information Exchange Model
- ANXM – Airport Operations Information Exchange Model
- TIXM – Terrain Information Exchange Model

Established
Under development
AIM
Seamless information sharing
• (generic) AIM Information Management Functions
  • Quality, Content & Distribution
  • Maintenance & updating
  • Exchange & access
  • Description & discovery
  • User identity & profile
  • Security & authentication
  • Notification
  • Digital data rights
  • Charges etc
• Each IM function implies information sharing
  • Extended Data Models to cover shared information management requirements
• Global rules & regulations are needed for safe & effective management
Information Management In Europe

- Essential nature of IM reflected in SES Regulation
- Requires unbundling of services, an institutional change
- Further regulation such as aeronautical data quality on way
- The SESAR ATM Target Concept
  - Transition from ICAO Flight plan to 4D Business Trajectory
  - Transition to Network Centric Operations
  - Based on Service Oriented Architecture (SOA) principles
  - Compliant with ICAO ATM Target Concept
- IM a key enabler of SESAR ATM Target Concept
- IM Strategy second pillar of Eurocontrol CND realignment
- Key component Reference Model for ATM IM: RM-ATM-IM
Conclusion

- AIM much more than “modern” AIS
- Embraces ALL ATM information needs
- Based on open requirements, open standards, and open exchange models
- Pace of change accelerated by SESAR & NextGen
- SESAR & Eurocontrol IM Strategy in support will define WHAT, WHEN, HOW but not WHO
- Technology not the issue, institutional & resource issues are
- ICAO is key to standardised & harmonised global change & management
- Symposium marks the start in the Paradigm Shift