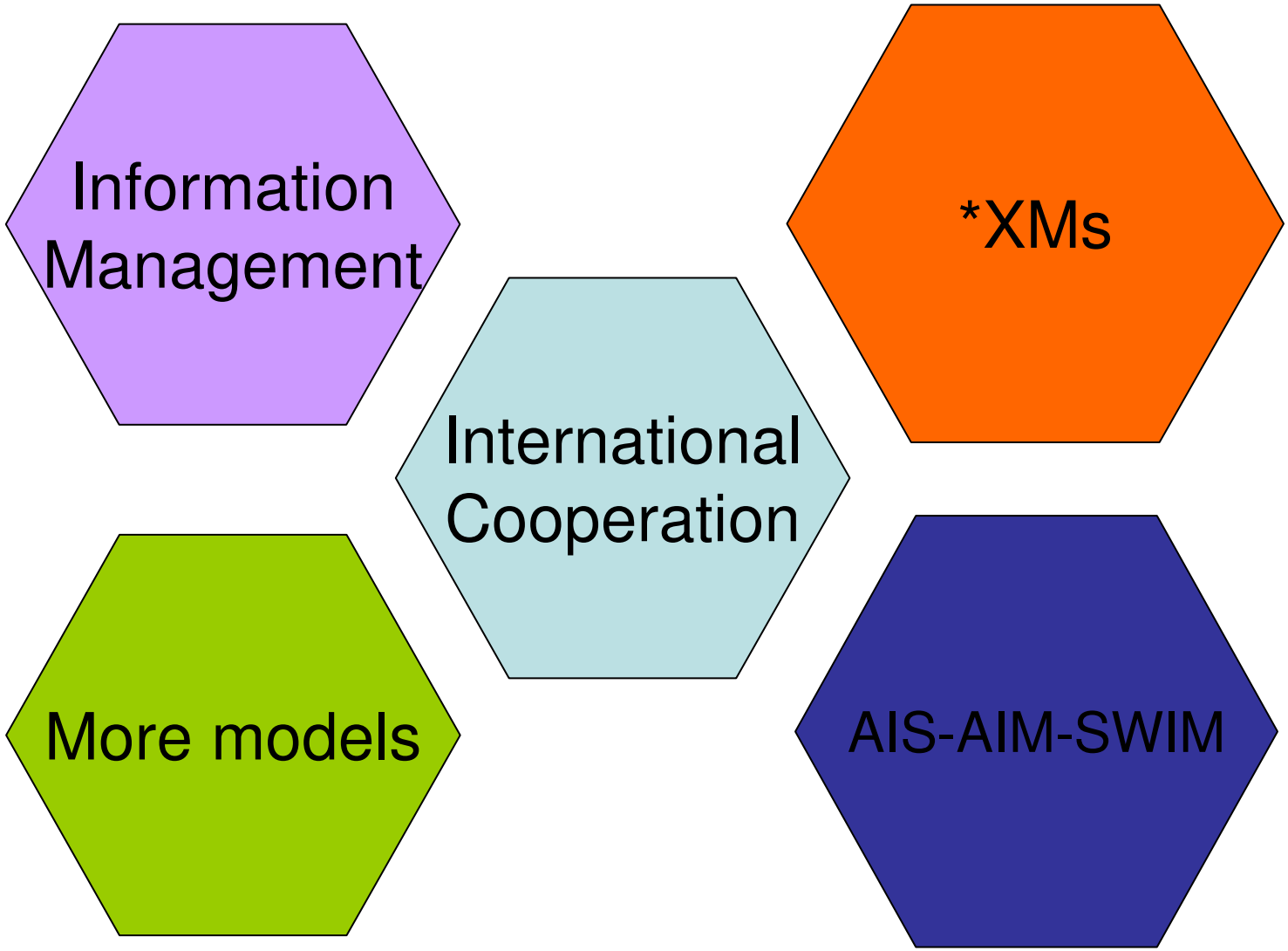
Air Transportation Information Exchange - Conference

The need for Global Information Management

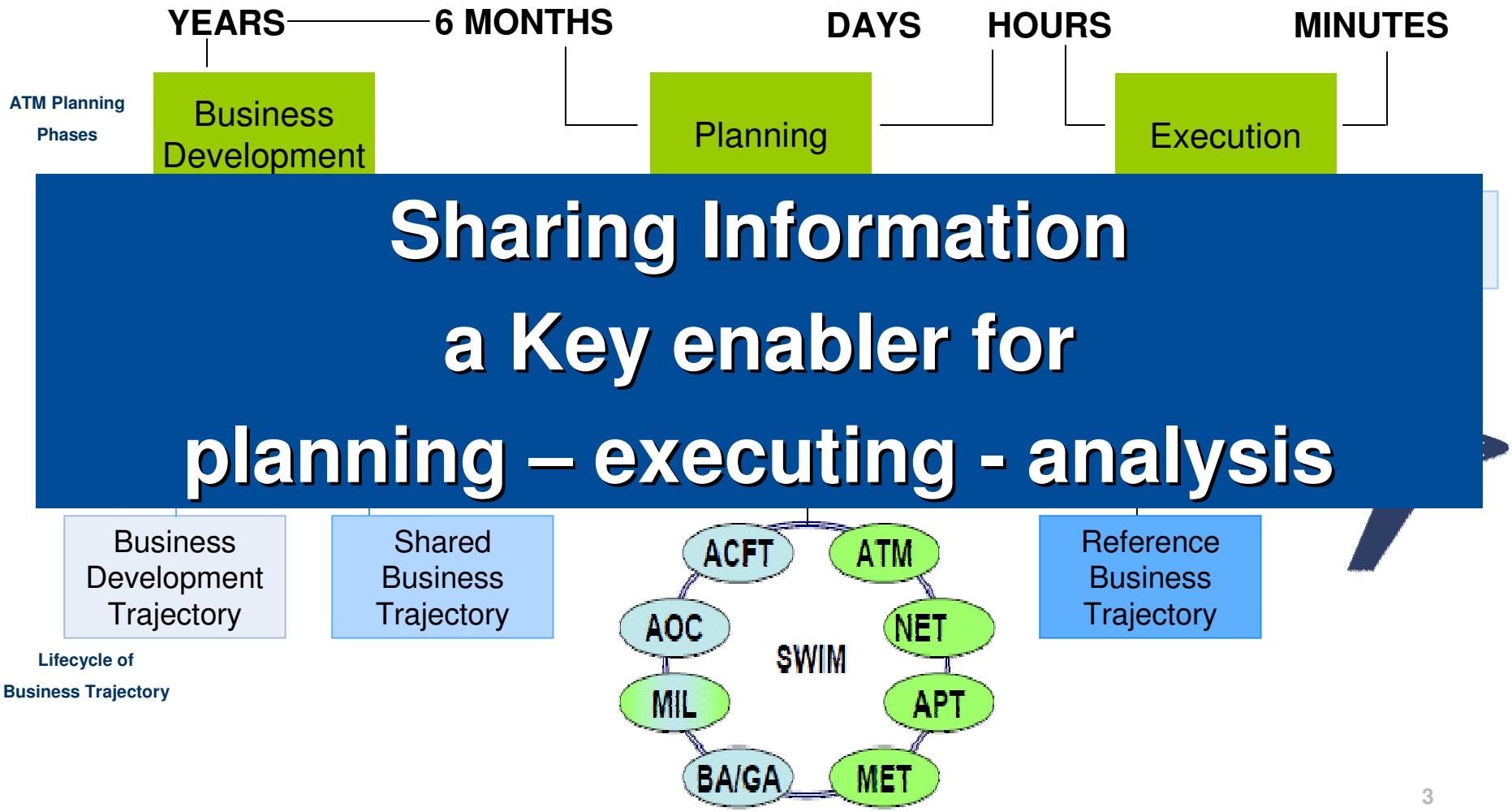
Paul Bosman
SWIM/Enterprise Architecture Unit manager, Agency AIM focal point
EUROCONTROL

EUROCONTROL

Todays agenda

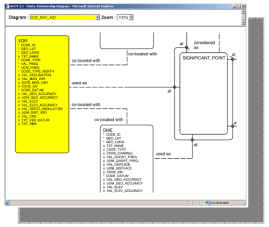


The need for sharing ATM information



Aeronautical Information Exchange Model (AIXM)

Started in 1997 (!)



Developed as EAD Data/Db structure

Since 2003 by joint FAA/Eurocontrol

And the rest of the international community
(+- 1000 members, +- 350 organisations) Forum | AIXM

European AIXM implementation through EAD

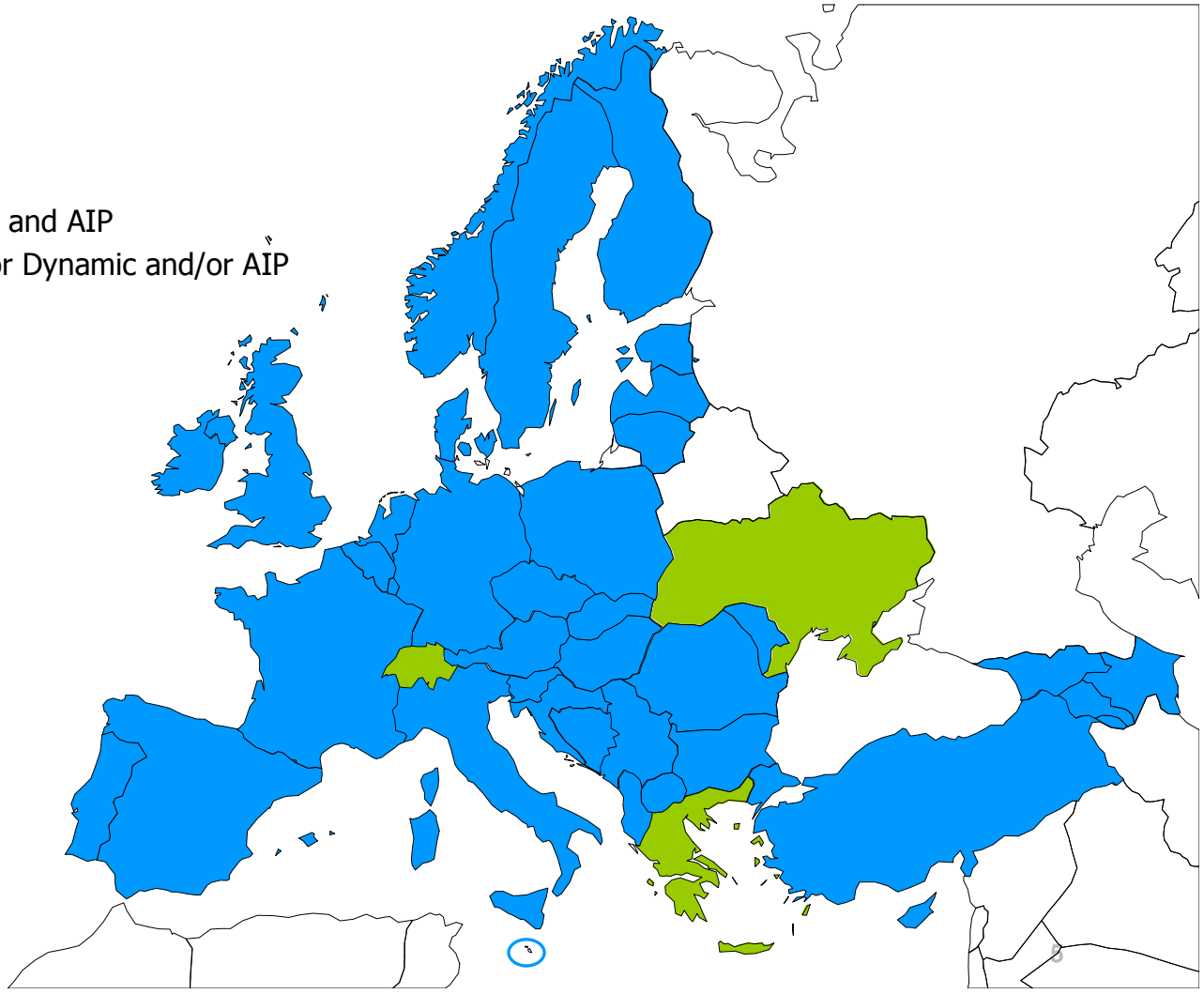
40 **States migrated to EAD**

27 States fully Migrated: Static, Dynamic and AIP

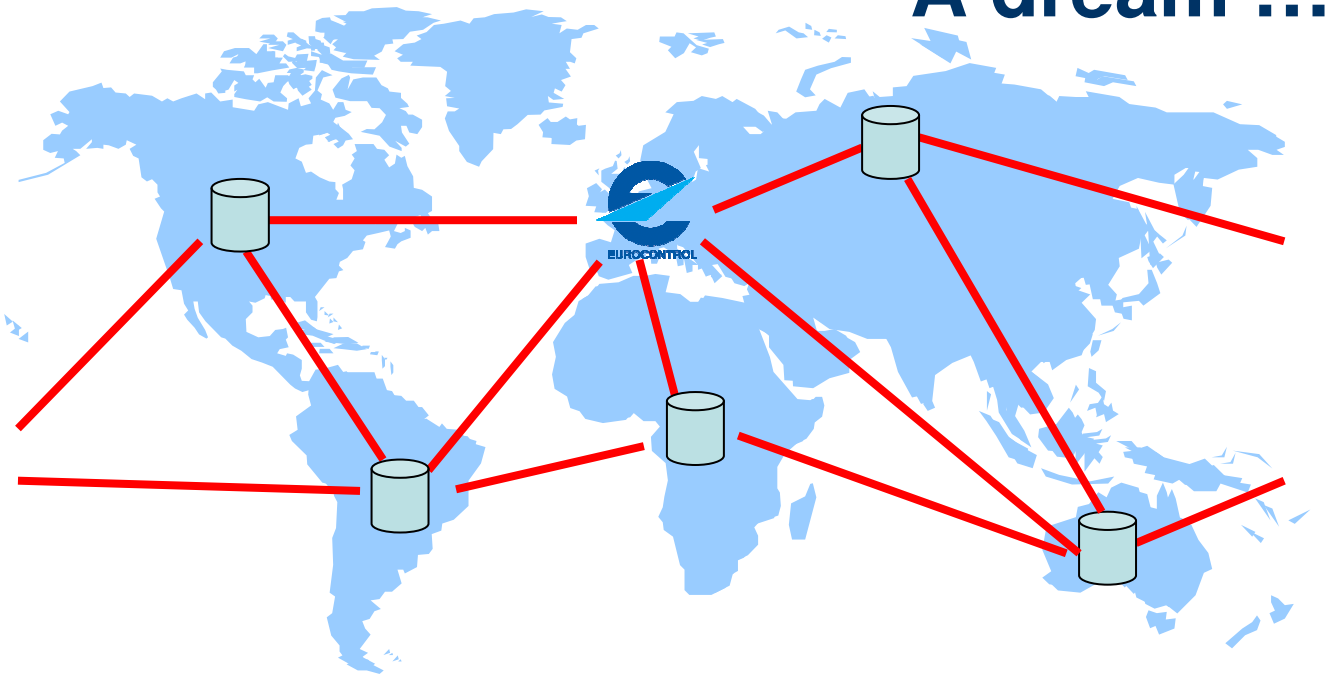
13 States partially migrated: Static and/or Dynamic and/or AIP

3 **States committed**

	Operations.
Greece	2012
Switzerland	2012
Ukraine	2011



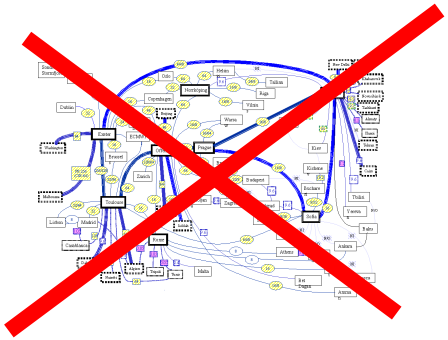
A dream …



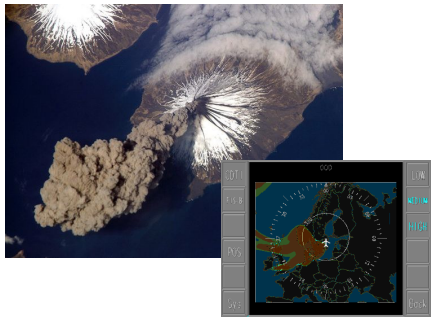
… becoming reality …

Connected	Canada, Australia, New Zealand, Jordan, Philippines
Committed/testing	Belarus, Egypt, Japan, Kazakhstan, Morocco, Singapore, South Africa, Syria, Taiwan
Discussing	Tunisia, Algeria, FAA, NGA, …
Developments	Brazil, Russia, India, South-Korea, …

Weather Exchange Model



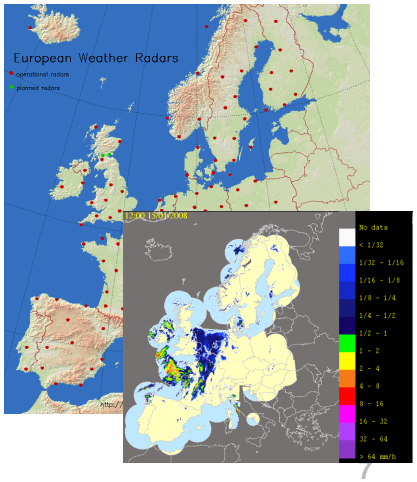
- History
  - First steps by EUROCONTROL in 2007
  - Since 2008 a conjoint FAA/EUROCONTROL development
  - Version 1.1 : mid-2010



- Core of NextGen Weather & SESAR MET Information Exchange

- Coordinated with World Meteorological Organization, ICAO & OGC

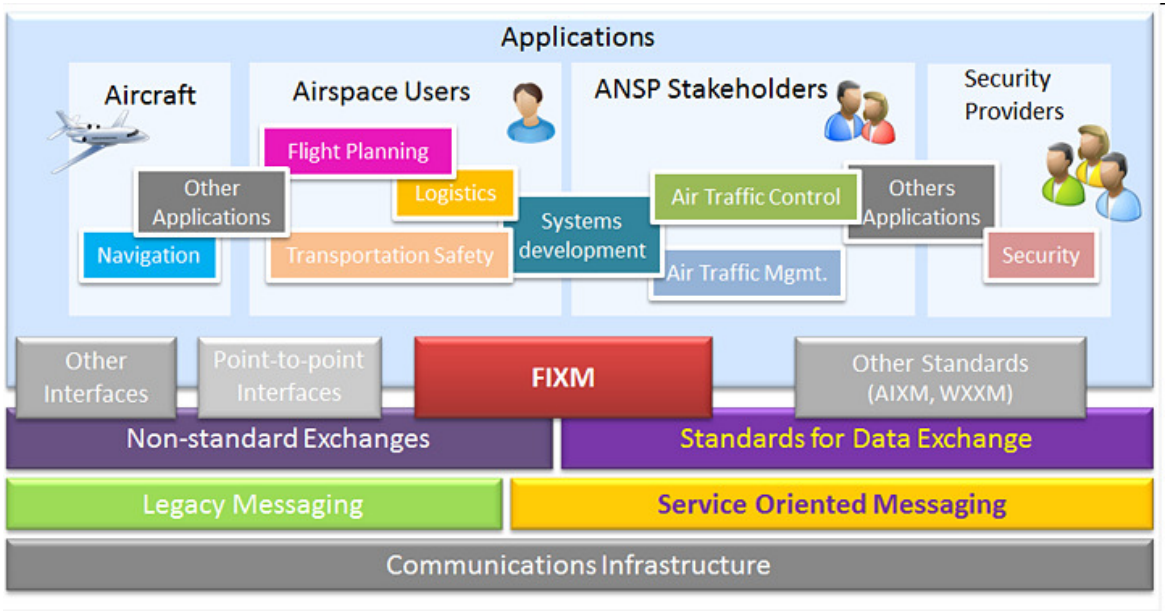
- Validated:
  - OGC (OWS 6, 7 and 8)
  - WMO/ICAO (especially in context of exchange via ICAO AFS)
  - NextGen and SESAR demonstrations/validations
  - Industry partners and providers



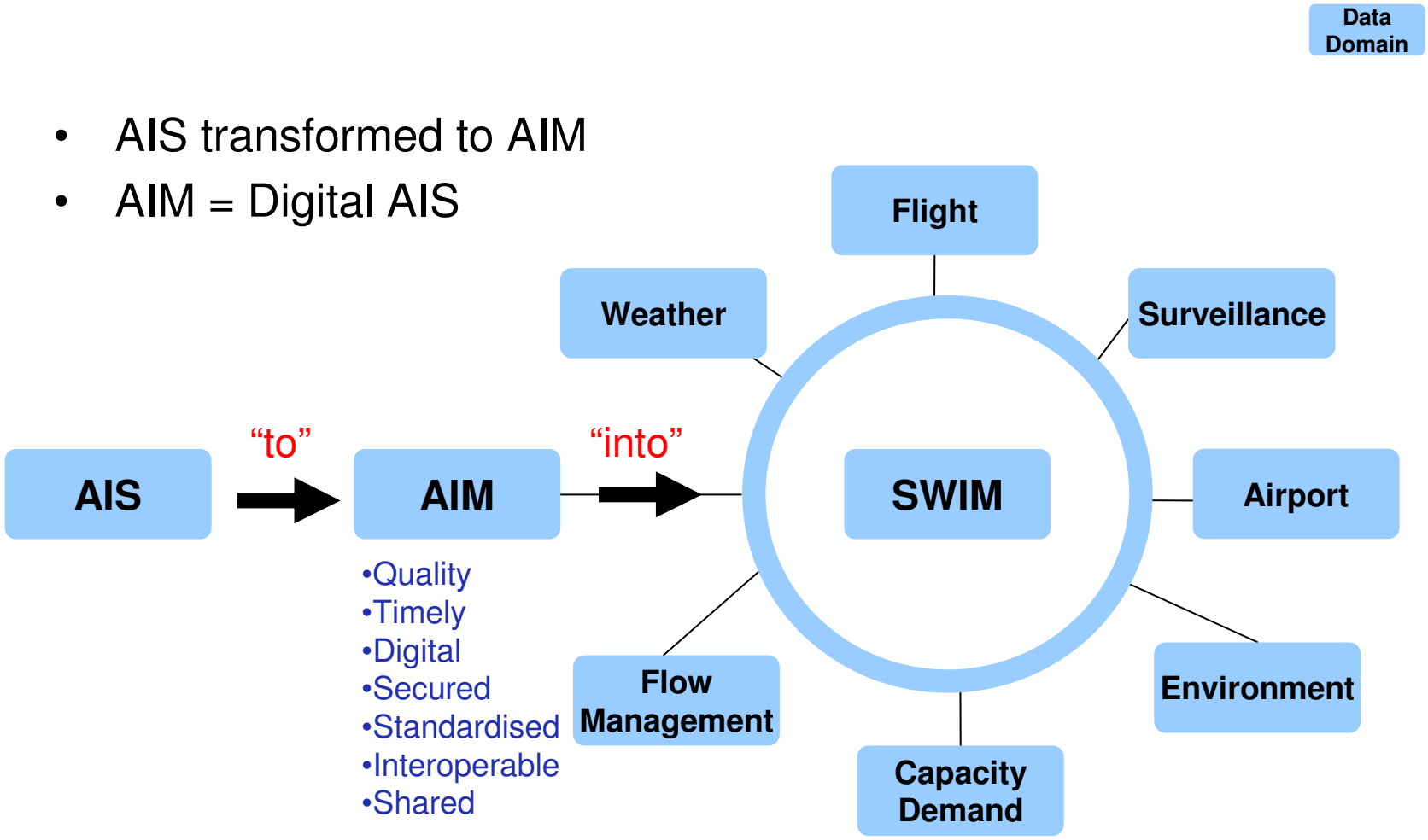
- Version 2.0 under development
- Reference implementations planned for 2012 (Ash, WX Radar)

Flight Information Exchange Model

- 2011 initiative
- A data interchange format for sharing information about flights throughout their lifecycle



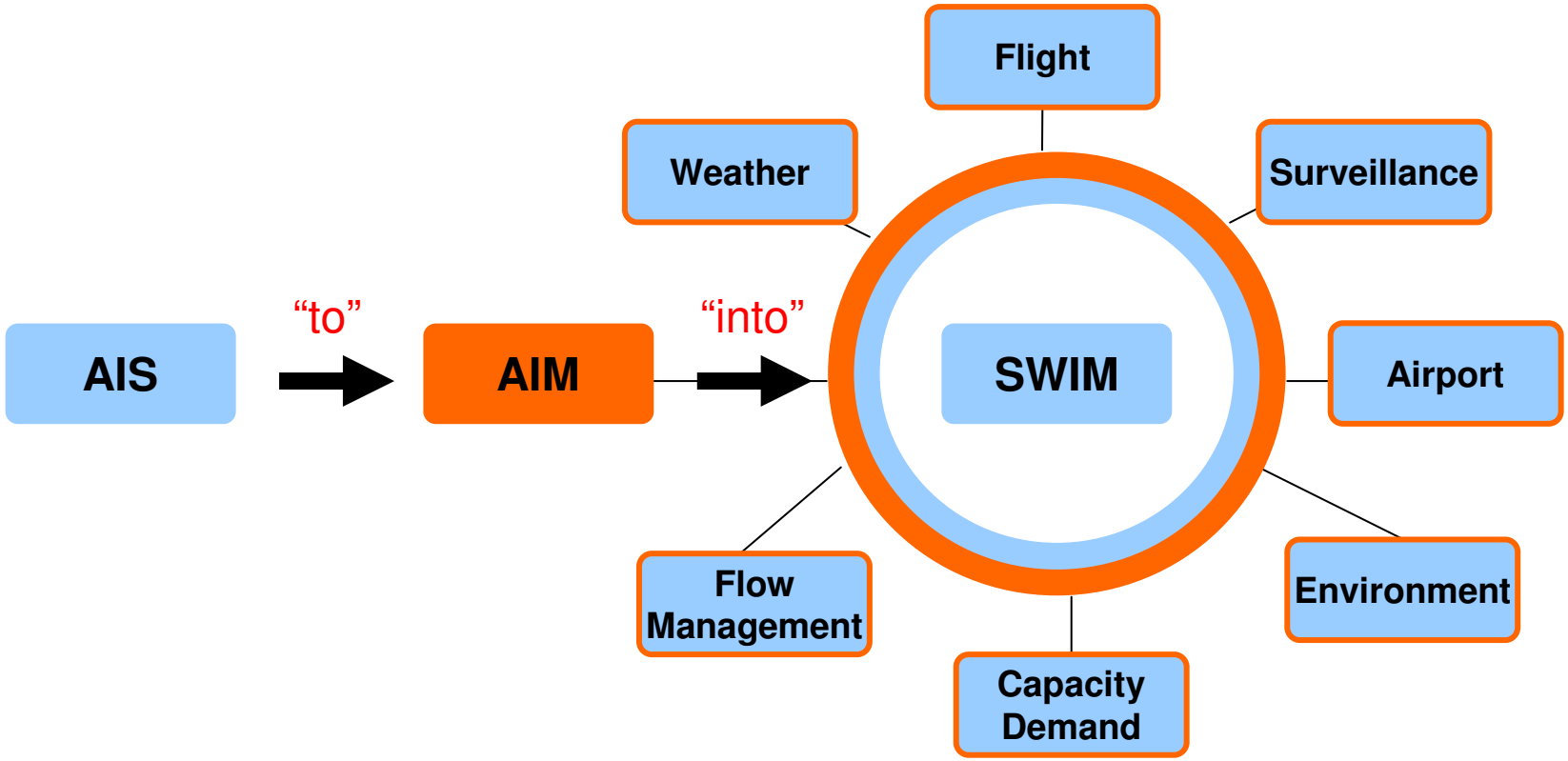
Transition to AIM - The AIS perspective



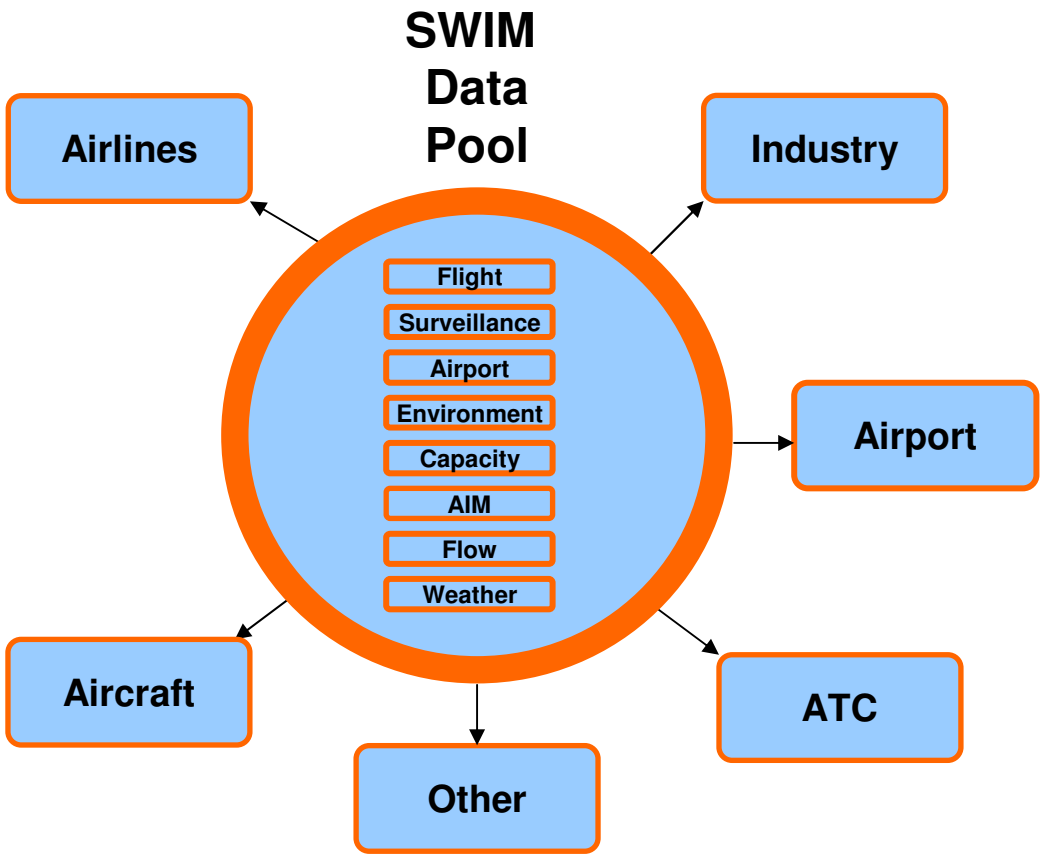
- AIS transformed to AIM
- AIM = Digital AIS

Transition to SWIM – The AIM perspective

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

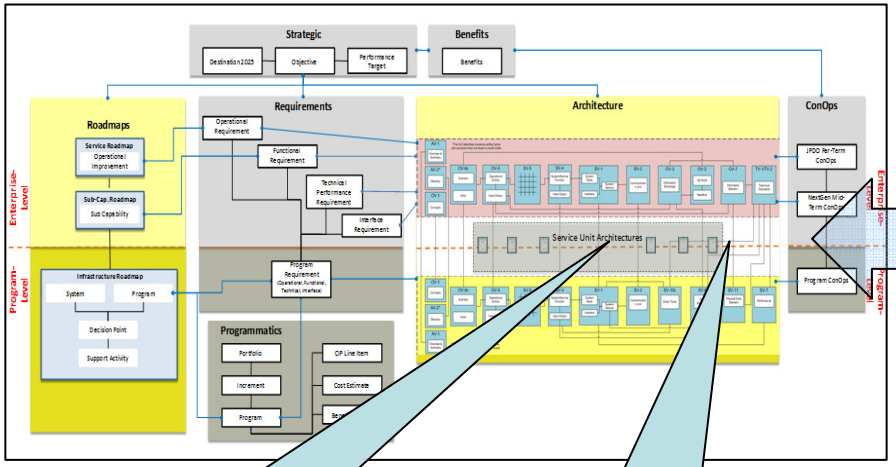


SWIM – Serving the ATM world

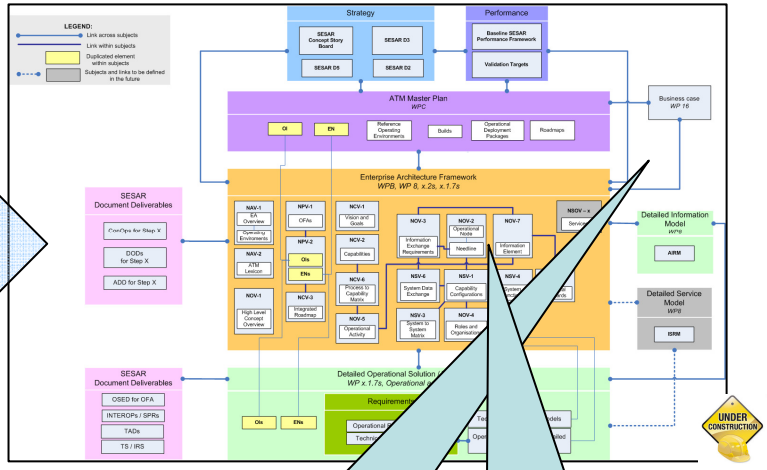


Time for a top-down approach

FAA NAS Architecture



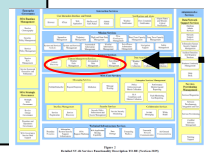
Draft SESAR Architecture



Logical data model (OV-7)

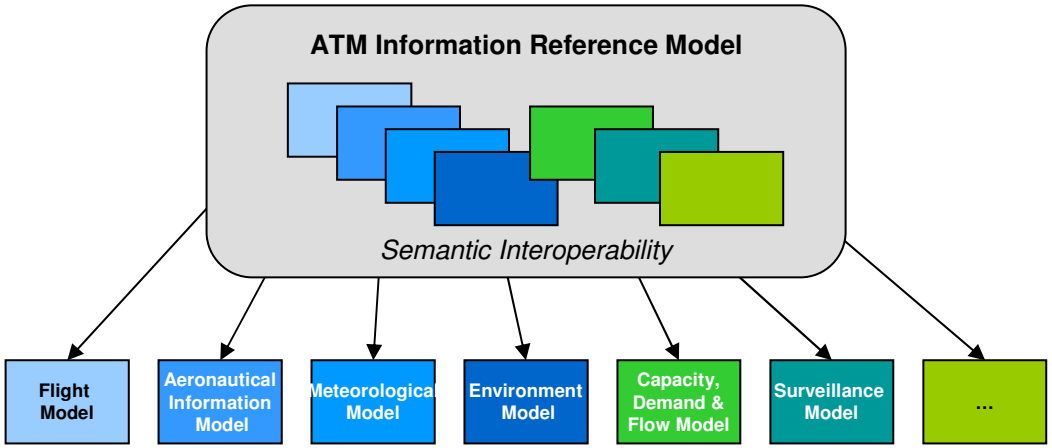
AIRM (NOV-7/ NSV11a)

"Service Approach"



"Service Approach" (ISRM/NSOVxx)

ATM Information Reference Model (AIRM)

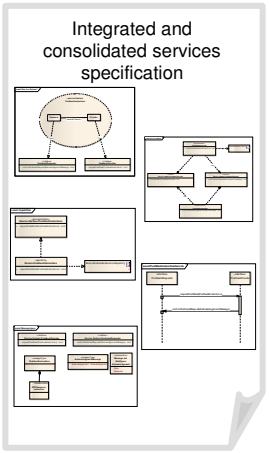


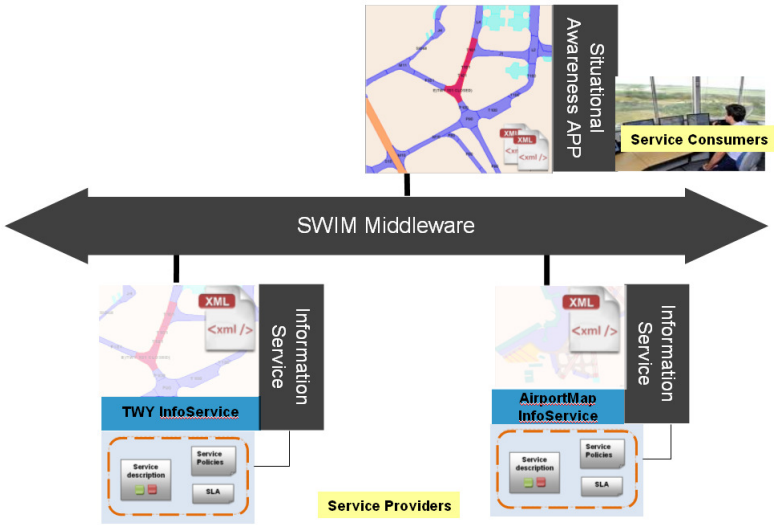
- Ensure **semantic interoperability** within ATM
- Act as a tool for promoting **ATM information standards worldwide**
- Represents **civil & military** ATM information
- Ensure **same shared meaning** of data at both origin and destination
- First version exists, **AIXM/WXXM part of initial load**.

- *"Now, no-one to my knowledge has ever accused AIRM of being "sexy" but it is crucial. It's vital for global interoperability…* " DG EUROCONTROL

Information Service Reference Model (ISRM)

- Models information to be exchanged by ATM systems (nodes)
- Defines interface and interactions at logical level
- Derives service payloads from AIRM
- Fully SOA based (using NAF Service Oriented views)



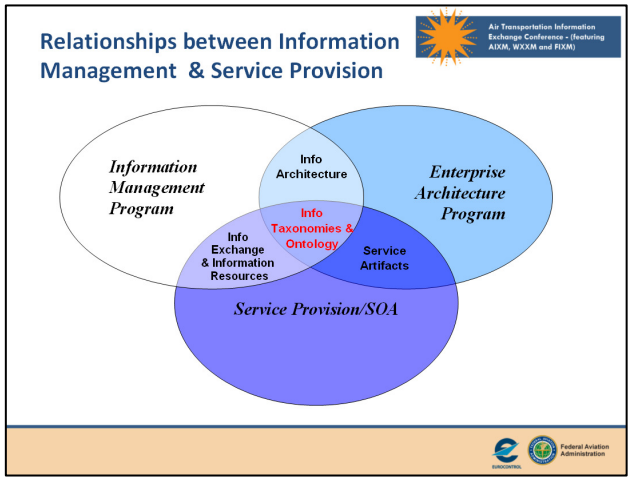


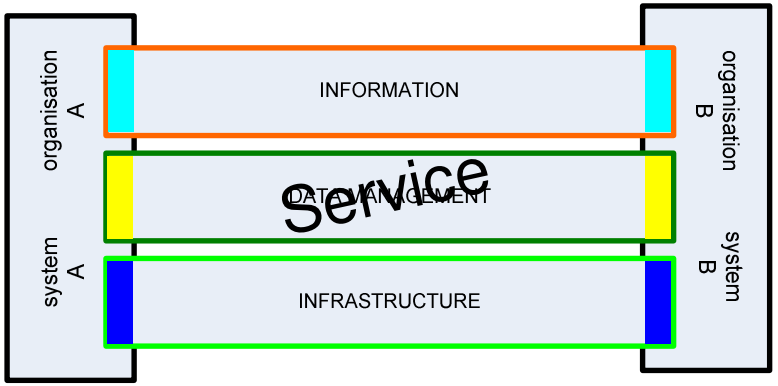
E.g. "Common Situational Awareness"

SWIM enabled Application consuming TWY Status & Airport Map Info Services

Information Management is (so much) more than just Data models … but first

Information management. [ICAO Annex 15 – draft Amdt 37]
The management of resources and processes for the timely collection, integration, exchange and delivery of quality-assured data, information and services.





(SW)IM = The ATM implementation of IM

International Coordination – Just some thoughts

- **Global semantic interoperability is key. All to participate !!**
- ICAO of course but to which level of detail ?
- The AIXM experience
  - Seeking widest possible stakeholder involvement, further formalised and made transparent through Internet forum & CCB
  - Global adoption through ICAO referencing
  - Regional/national legislation when required
  - *Ok for all ? To be further exploited for ATM SWIM ?*
- OGC – Open Geospatial Consortium
  - Aviation Domain Working Group, Testbeds, …
  - Usage of standards
  - *How to further evolve ?*
- Registry
  - *Any experiences ? Any global dimension ?*
- SWIM Infrastructure
  - *Time for more international exchanges and trials ?*

Conclusions

- IM, AIRM, ISRM, Registry, …
  - New terms for ATM
  - Very natural in an Enterprise Architecture (EA) / Service Orientated Architecture (SOA) approach
  - Any similar experiences/activities ?
- Get involved
  - Participate to definitions, data & service models definition & review
  - Contribute to IM Governance discussions - Operational/Technical/Institutional/Organisational/…
- Lets go for a truly global ATM ..
- More information ?
  - http://www.eurocontrol.int/aim & http://www.sesarsju.eu/swim
  - paul.bosman@eurocontrol.int

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