



INTERNATIONAL UNION
OF RAILWAYS

unity, solidarity, universality

4th UIC RailTopoModel and railML[®] Conference

Towards to International Railway Standards of Infrastructure Topology Model and Data Exchange Format

UIC HQ, Paris April 28th/29th, 2015

Overview of EUROCONTROL



Hubert LEPORI
EUROCONTROL ATM/RDS/IM
28-Apr-2015

WHO ARE WE?

EUROCONTROL – Member States



WHAT DO WE DO?

We build the Single European Sky!



Provide **air traffic services** in the upper airspace of Belgium, Luxembourg, the Netherlands and the north west of Germany



Manage the **Pan-European Network**

Research & Development



Draft **regulations**



Collect **Route charges**

Civil-military Aviation Coordination



Standardisation of Air Traffic Management (ATM) Information Exchanges

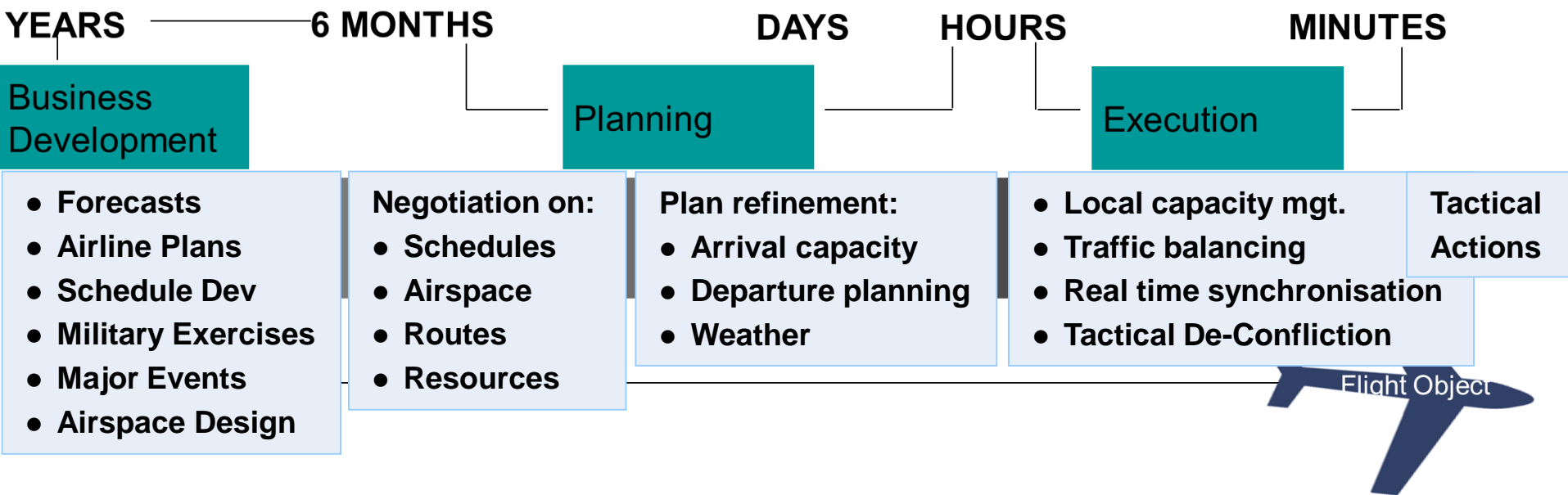


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EUROCONTROL ATM/RDS/IM
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The need for sharing ATM information



Sharing Information a Key enabler for planning – executing - analysis



Data in ATM - Example

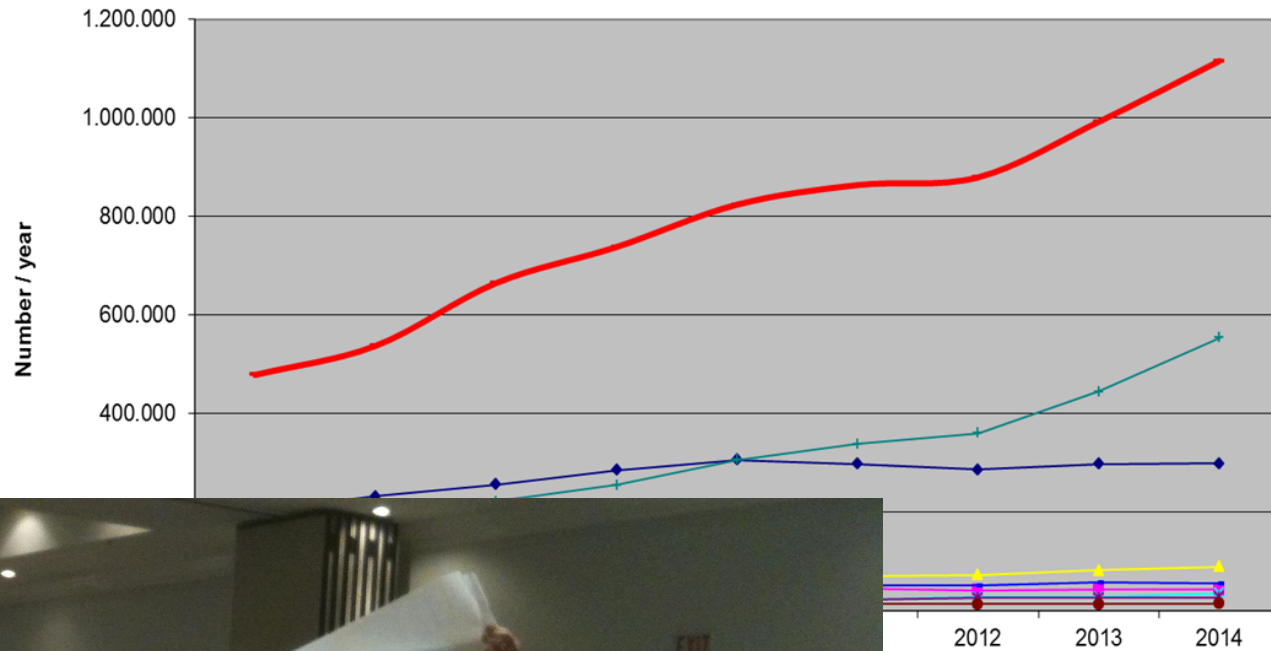
E) NDB HB U/S DUE WIP. IAP NDB(L)DME RWY 04 AND LLZ/DME NDB(L) RWY 22 ARE TEMP WITHDRAWN. ACFT WILL BE RADAR VECTORED TO ILS APCH RWY 22 OR LOC/DME RWY 04 OR VISUAL FINAL. IN THE EVENT OF A MISSED APCH ON EITHER RWY, CLIMB STRAIGHT AHEAD TO 3000FT QNH OR AS INSTRUCTED BY RADAR. IN THE EVENT OF BELFAST RADAR BEING UNAVAILABLE, ALDERGROVE RADAR WILL VECTOR ACFT TO LOC RWY 04 SUBJECT TO WORKLOAD. AS PER ALTERNATIVE PUBLISHED APCH PROC, ACFT MAY WHEN APPROVED, SELF POSITION TO FINALS RWY 22/04 VIA DME ARC, ROUTEING TOWARDS VOR BEL FM EITHER NELBO, RINGA OR NEVRI UNTIL INTERCEPTING THE DME ARC. ACFT JOINING VIA BLACA SHOULD CONTINUE ON TRACK MAGEE THEN LEAVE MAGEE TRACK 255 AND ESTABLISH ON THE RWY 22 LOC AT DME 11.5 I-BFH, THEN AS DIRECTED. FOR RWY 04 AFTER PASSING MAGEE ESTABLISH ON THE DME 11 ARC RWY 04 HB QDM022 CAN BE SUBSTITUTED BY BEL DME 15.5. RWY 22 HB QDM245 CAN BE SUBSTITUTED BY BEL R085. MISSED APPROACH RWY 22:- CLIMB TO 3000FT, INITIALLY STRAIGHT AHEAD TO 3000FT OR I-BFH D9, WHICHEVER IS EARLIER, THEN LEFT TURN ON TRACK 005 TO INTERCEPT ON BEL R075 OUTBOUND TO MAGEE, OR AS INSTRUCTED. MISSED APPROACH RWY 04:- CLIMB TO 3000FT INITIALLY STRAIGHT AHEAD TO INTERCEPT AND ESTABLISH ON THE BEL R075 OUTBOUND TO MAGEE, OR AS INSTRUCTED. THESE INSTRUCTIONS SHALL ALSO APPLY IN THE EVENT OF A RTF DURING A MISSED APCH. THEREAFTER COMPLY WITH STANDARD RTF PROCEDURE. FROM: 29 MAY 2009 11:05 TO: 31 OCT 2009 21:30 A1656/09

Usage of data in ATM

International NOTAM Trends (source EAD)



(International) NOTAM Trends



Pre-flight Information Bulletin (PIB)



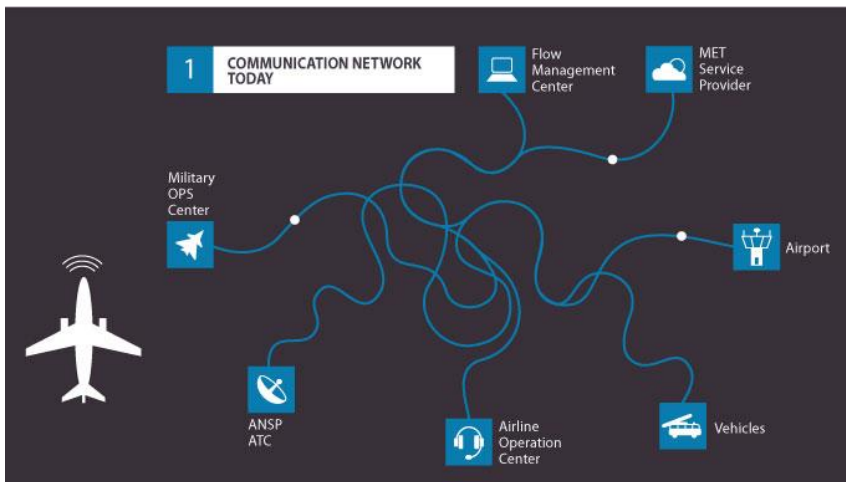
Usage of data in ATM



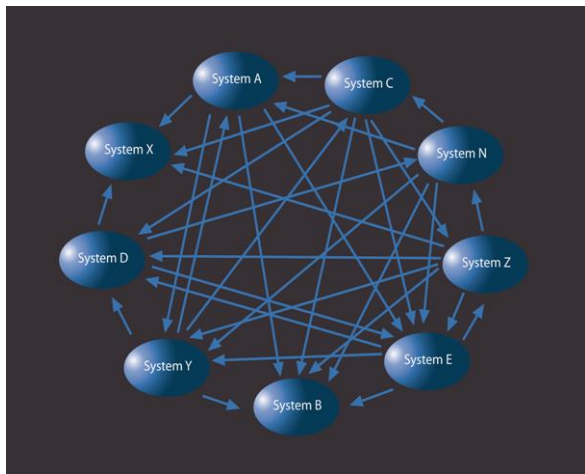
*... as a drunken man
uses lamp-posts*

*...for support rather
than illumination*

Today's ATM Information System...



Point to point connections
 Partial visions
 Duplications (... and gaps)
 Multiple dedicated interfaces
 Multiple specific technical solutions



Potential high costs
 Limited inter-operability
 Limited flexibility

The solution: SWIM

Doc 10039
AN/511



MANUAL ON SYSTEM WIDE INFORMATION MANAGEMENT (SWIM) CONCEPT

Disclaimer

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Advanced edition (unedited)

Definition : “SWIM consists of standards, infrastructure & governance enabling the management of ATM information and its exchange between qualified parties via interoperable services.”

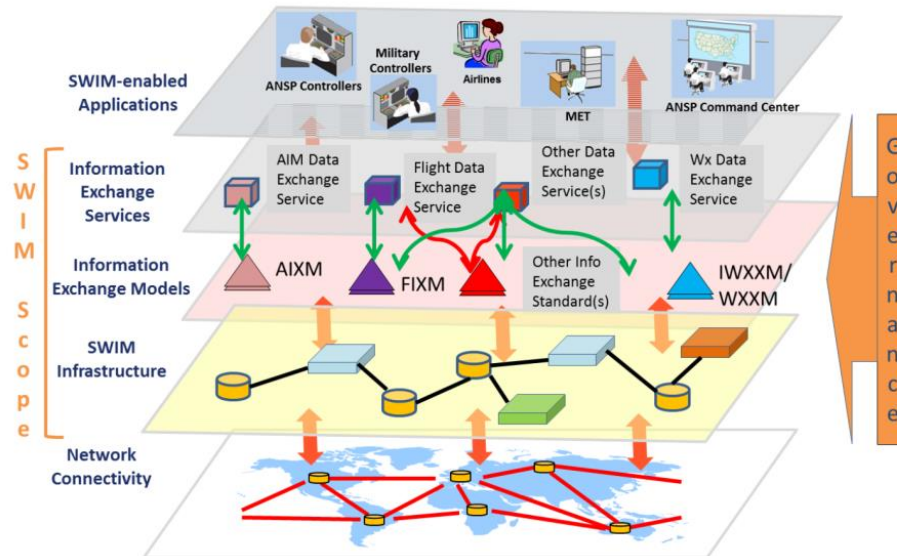


Figure 2. SWIM Global Interoperability Framework

Standards for ATM Information

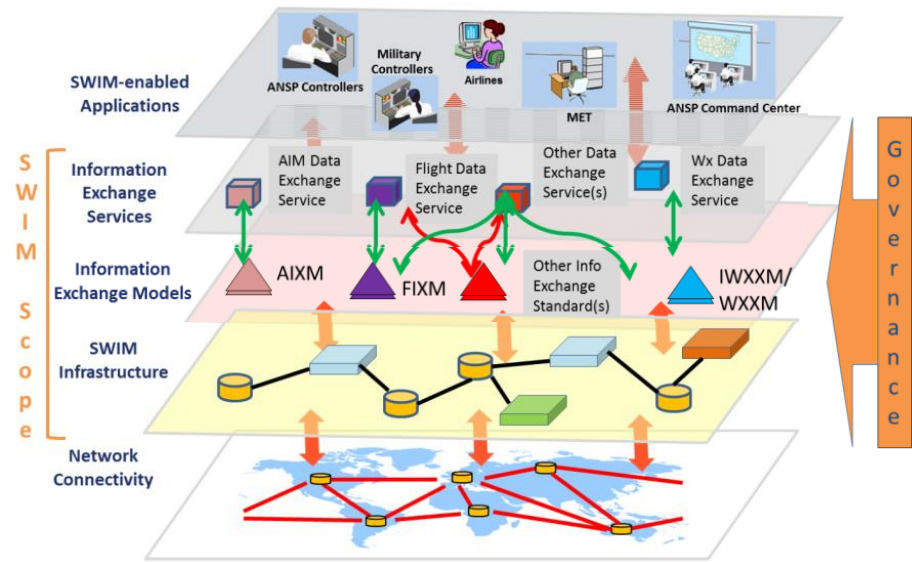



Figure 2. SWIM Global Interoperability Framework




AIXM

Infrastructure / Digital NOTAM
Increasing implementations
Lessons learned



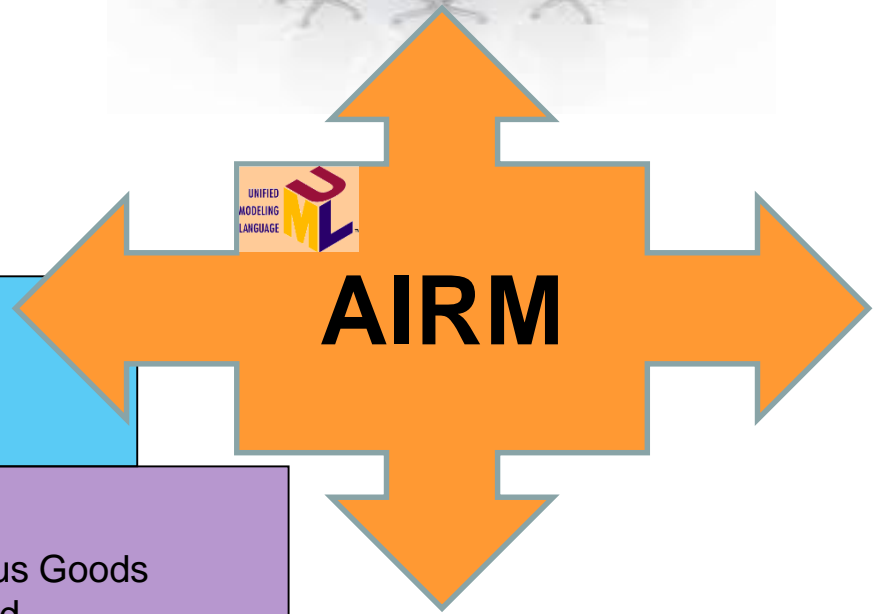
WXXM

Aviation Meteorology
Data coming (really)



FIXM

Flight / ... / Globally Unique Flight Id / Dangerous Goods
(ICAO) Requirements still being finalised



What about me ?

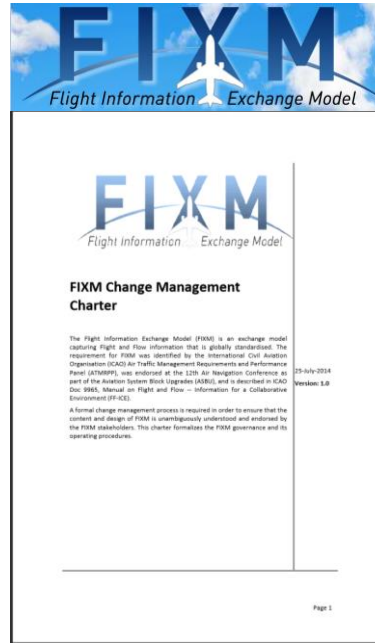
AIDX, AMDB, Asterix, ED133 ...

Governance



FIXM CCB:

- (Ultimately) inclusive
- Air Navigation service providers, IATA, FAA / EUROCONTROL,...



No WXXM CCB

- FAA / EUROCONTROL



Managed directly by ICAO / WMO

AIRM

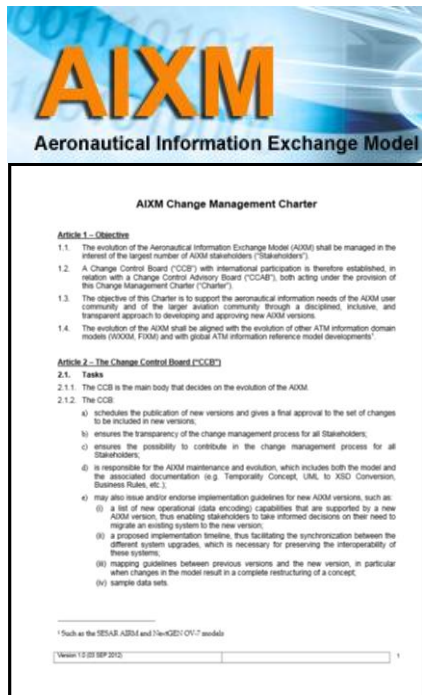
AIRM CCB:

- Ops projects, Airspace Users, Enterprise Architects, System / Service projects
- Up and running before the start of main technical work.



AIXM CCB:

- Fully inclusive
- (Mostly) industries



SWIM Benefits

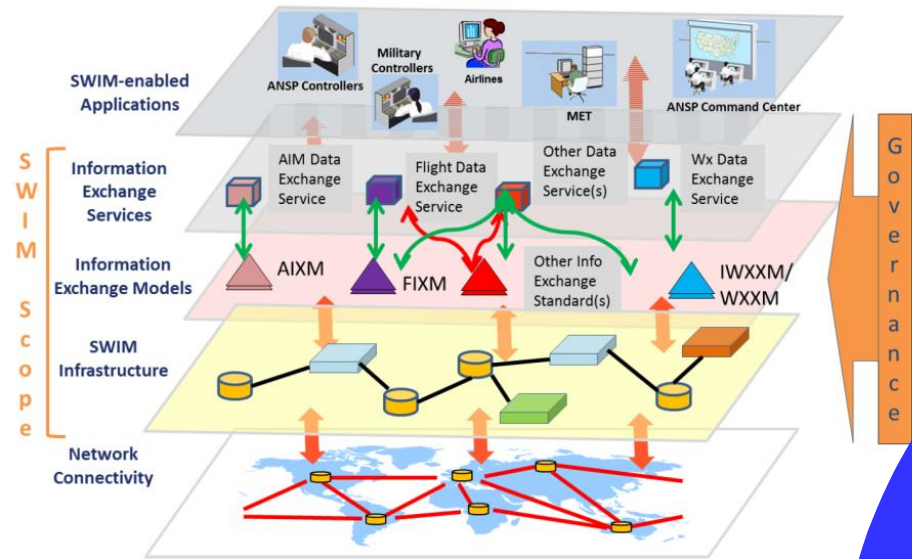
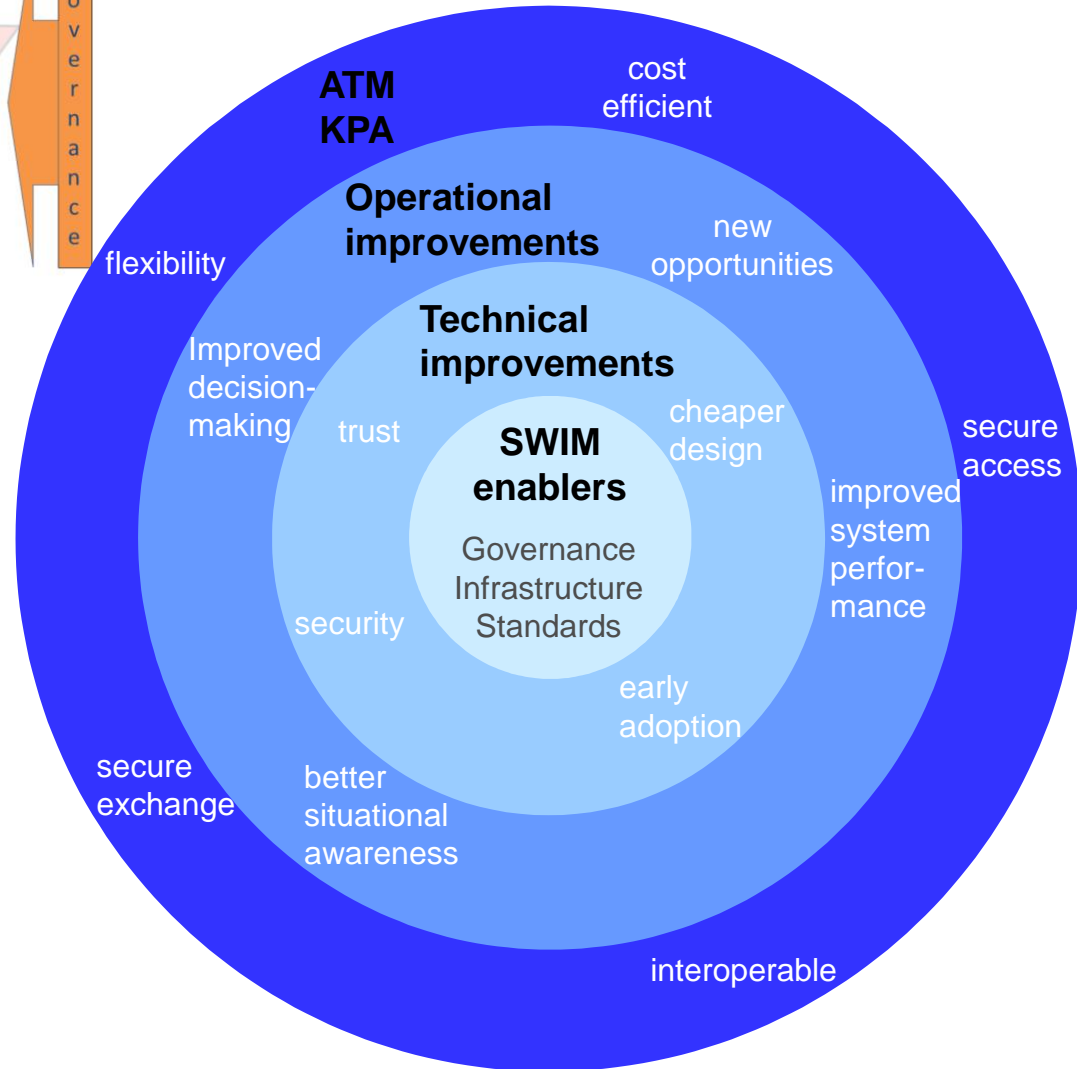


Figure 2. SWIM Global Interoperability Framework



SWIM IN PRACTICE
TODAY

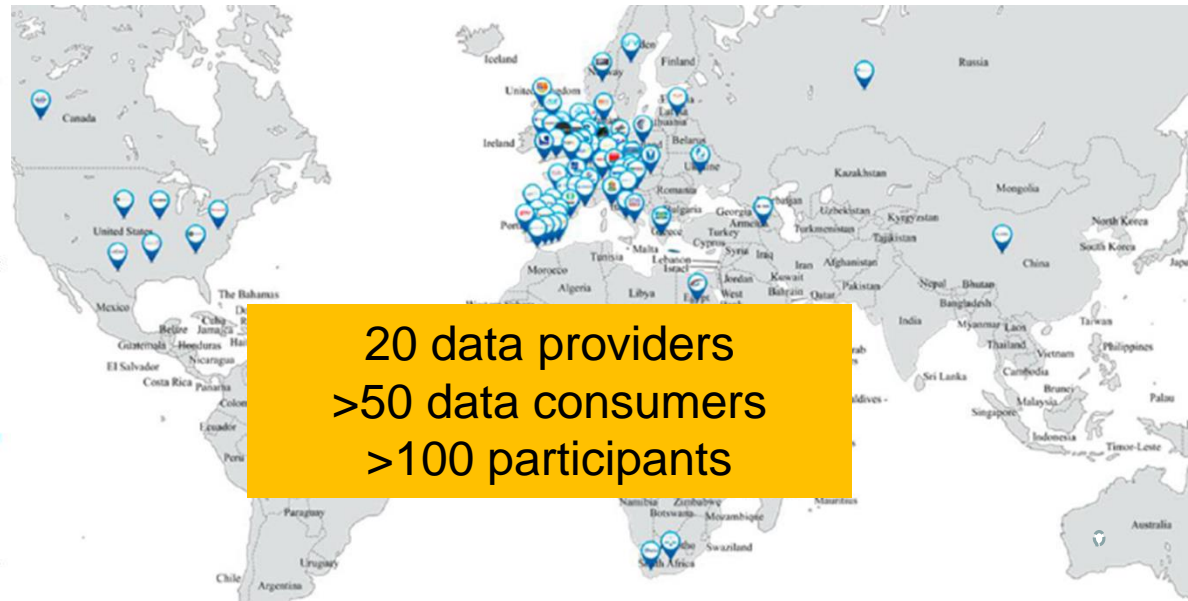
The SWIM Master Class



A global SWIM Sandbox
During 6 months 'play' together in a Non-Operational environment
providing/consuming SWIM Services

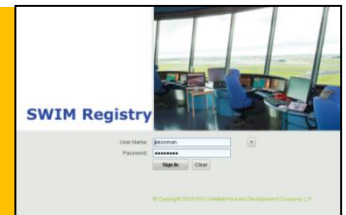


2014 Participants



20 data providers
>50 data consumers
>100 participants

- Aeronautical, Meteorological, Flight, Environmental, Surveillance, Aircraft, ... services
- All in registry



A success story: Extended Arrival Management

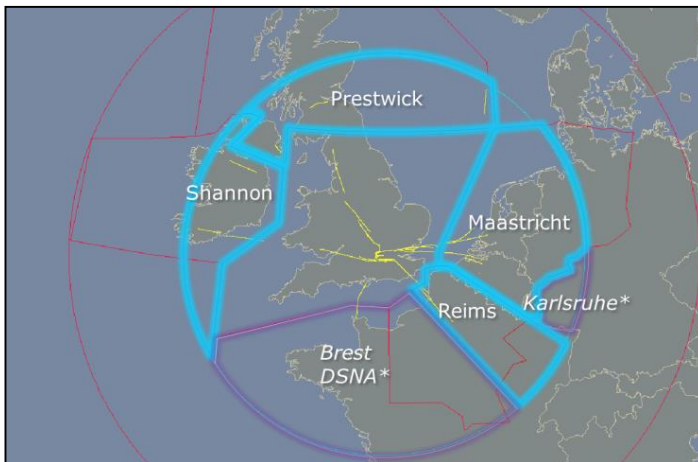
SWIM Master Class 2013

- Sharing of **delay information** via a web based service with Air Navigation Service Providers
- Open web based architecture



XMAN London Heathrow Trial 2014

- Cooperation and support of Reims, Shannon, Prestwick, London and Maastricht ATC centres.



Next steps (2015?)

- New trials with regards to operational changes for ATCO and supervisory staff

Benefits (/year!):

- **33.5 M€ fuel saving**
- **32.000 ton of CO2 reduction**

SWIM Master Class 2015



- RailML data sources for SWIM Master Class?
- Interested in accessing aviation data?

Want to join the SWIM Master Class 2015 as provider / consumer / observer?

Programme	
10 April – 15 June 2015	Call for participation
23 June 2015	SESAR SWIM Master Class Launch event
1 July – 30 October 2015	Open competition: Develop your SWIM compliant service or application
10 December 2015	SESAR SWIM best-in-class awards ceremony

SESAR SWIM MASTER CLASS

Towards Global Demonstrations

Take up the challenge and become SWIM Best in Class for 2015

Looking for

- Developers of SWIM-enabled ATM applications
- Developers of SWIM-enabled ATM information services
- Providers of SWIM infrastructures or services

Compete for the Best in Class award with your innovative SWIM-enabled solution,
Or
Simply **participate** to discover state-of-the-art SWIM.

By joining the SESAR SWIM Master Class, you will enjoy privileged access to our unique SWIM development community bringing together SWIM infrastructure, services, practical examples, training as well as a growing network of SWIM experts from across the globe.

That's not all!

Beyond the challenge, your participation to the SESAR SWIM Master Class opens the door to the SWIM Global Demonstrations in June 2016.

"Selex ES has participated in the SWIM Master Class since its first edition. We consider it a unique opportunity to promote our efforts on SWIM and discover opportunities to collaborate with other participants."
Dario Di Crescenzo, Programme Manager, Selex ES.

"SESAR SWIM Master Class 2014 has been a great avenue for FlightAware to collaborate with SWIM providers, developers, and consumers to create innovative ATM solutions."
Daniel Baker, Chief Executive Officer, FlightAware.

Programme

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Join the SESAR SWIM Master Class 2015

Find out more at www.sesarju.eu/masterclass or contact us at swim@sesarju.eu

Apply now!



Questions & Contact Information



➤ EUROCONTROL

<https://www.eurocontrol.int/>

<https://www.eurocontrol.int/atm-architecture-information-management>

➤ SWIM

<http://www.sesarju.eu/swim>

➤ SWIM Master Class 2015

www.sesarju.eu/masterclass

swim@sesarju.eu

➤ Governing Standards

[AIRM – ATM Information Reference Model](#)

➤ Information Exchange Standards

[AIXM - Aeronautical Information Exchange Model](#)

[WXXM – Weather Information Exchange Model](#)

[FIXM - Flight Information Exchange Model](#)



Contact us!



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Thank you for your kind attention

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