ASBU Implementation Workshop

SWIM
Some Practical Steps
27 November 2015

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Todays Agenda

- SWIM – State of play

- Start SWIMming

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- Start SWIMming

What is SWIM ?

Definition : SWIM consists of standards, __infrastructure__ & __governance__ enabling the management of ATM __information__ and its exchange between qualified parties via interoperable __services__."
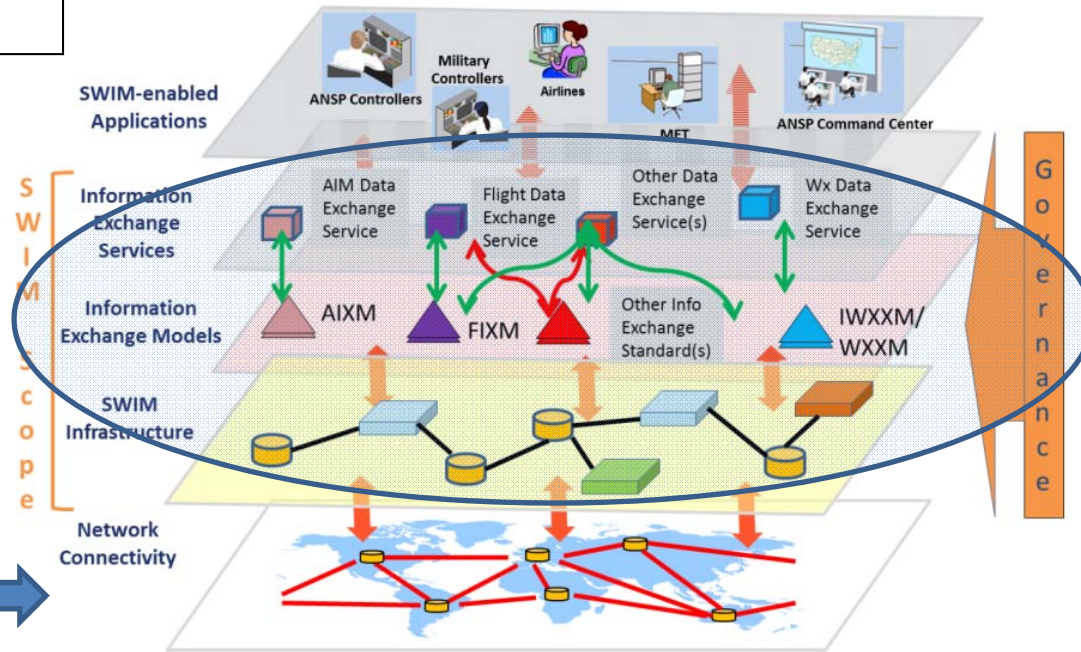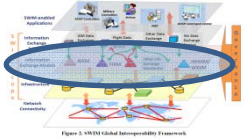

Figure 2. SWIM Global Interoperability Framework

IP = Internet, …

Information

AIXM
ICAO & Increasing implementations
Digital NOTAM
Lessons learned

WXXM
I(CAO)WXXM
Reality mapping
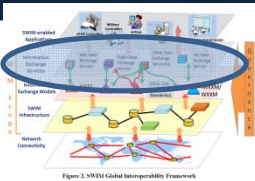Data coming

FIXM
V3 / CCB
Towards implementation – V4

AIRM

ICAO pick-up

What about me ?
AIDX, AMDB, Asterix, …

SWIM Pioneer
Network Manager B2B Services

EUROCONTROL

Services:
- Airspace Management
- Aeronautical Info
- Flight Plan Services

Similar trends FAA & elsewhere

Legend:
- b2b_ops_military
- b2b_ops_lara
- b2b_ops_ground_handling
- b2b_ops_fpval
- b2b_ops_european_commission
- b2b_ops_ao_flight_filing
- b2b_ops_ao
- b2b_ops_ansp
- b2b_ops_amc
- b2b_ops_airport

Requests per Day
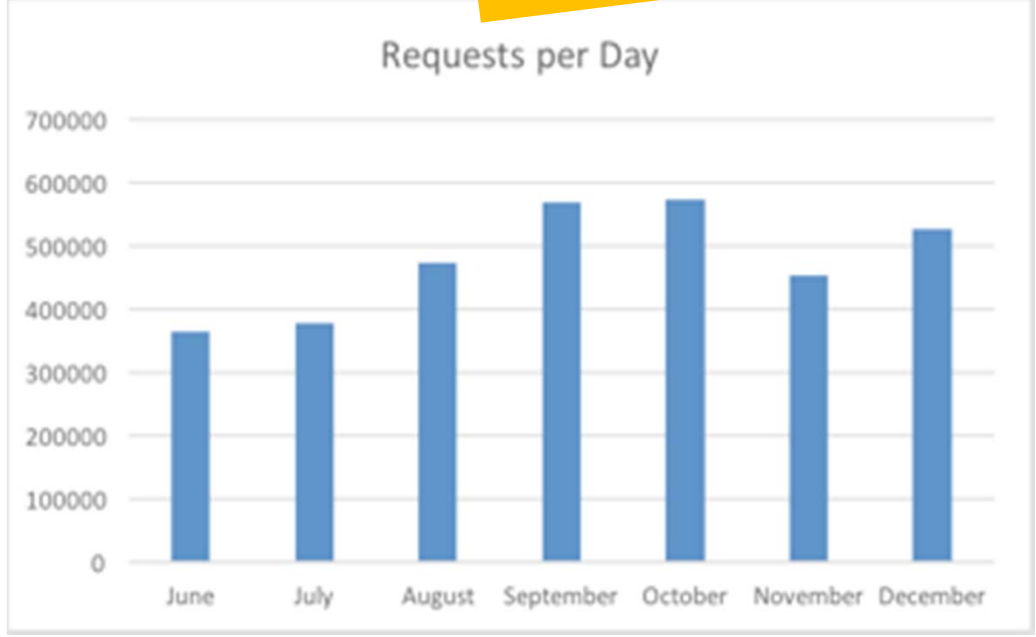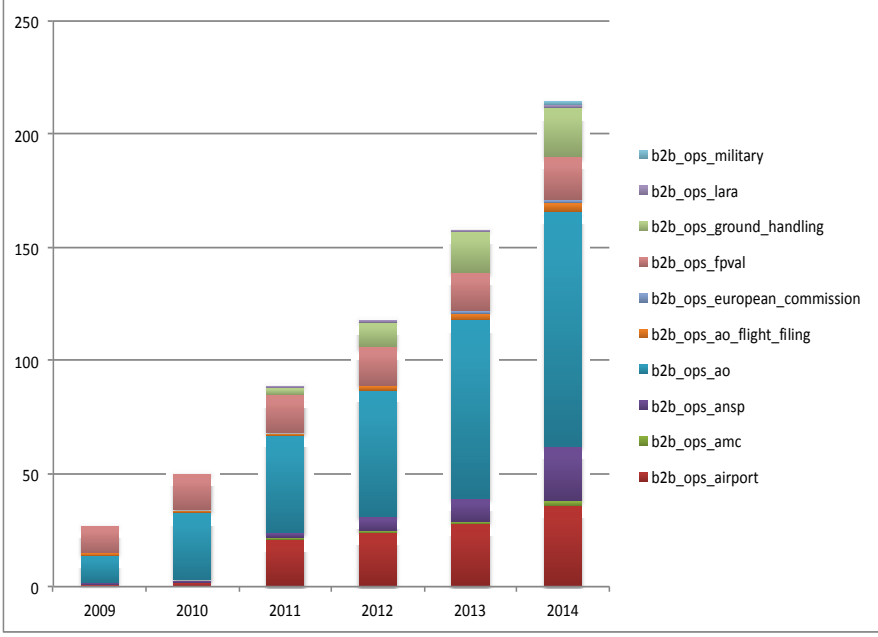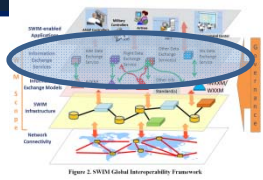
Services

- Examples: Aeronautical, Met, Flight, …

- More and more being **Developed & Deployed**

- Towards a true **business transformation** !

1. NB OF B2B WEB SERVICES CUSTOMERS

Other, 3
Handling, 27
Internal, 5
Airport, 7
ANSP, 19
CFSP, 36
AO, 61
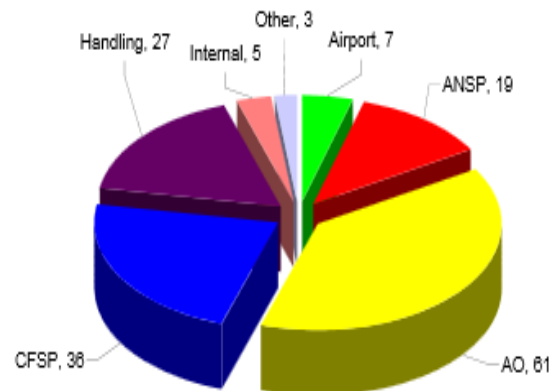
5. B2B WEB SERVICES - LOAD PER CUSTOMER (OPS & PRE-OPS)

Heaviest Customers (August 2013)

14% 13% 10% 8%
6%
5%
19% 17% 2% 3% 3%

- FlightAware
- AENA
- Frequentis/NAS Center
- Rocket Route
- Majestic Executive Aviation
- Other (83)
- Universal Aviation
- WINGX
- Lufthansa
- Holland Aero
- ARINC
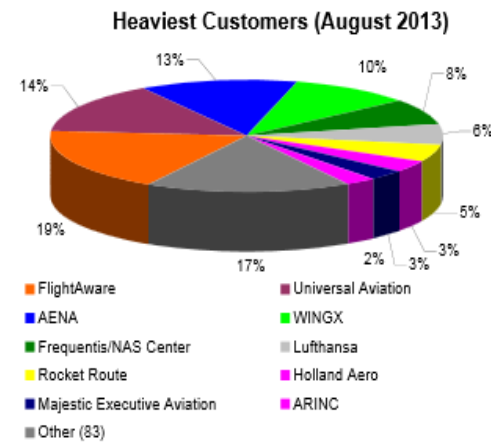
- Discovery through so called **Registry**

  http://eur-registry.swim.aero

SWIM Registry
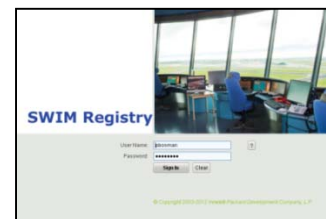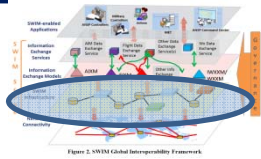
Technical Infrastructure

- IT is found to be **mature**

IT in ATM
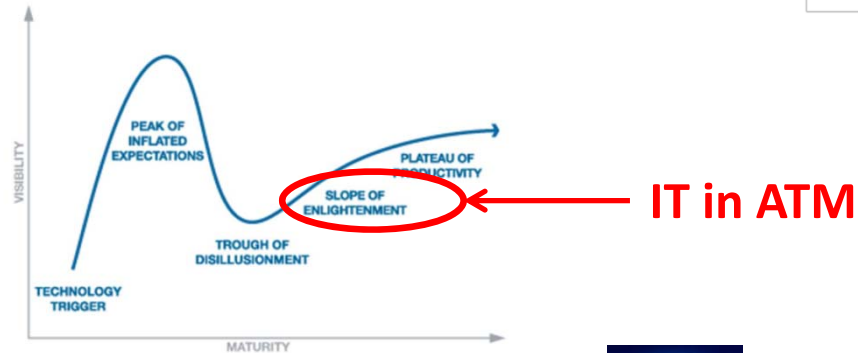
- Mostly an issue of **agreeing** on used (open) standards

- Through so called **Technical Profiles** (Yellow / Blue / …)

E.g. Yellow = SOAP1.1/1.2, WSDL1.1/*2.0*, WSI1.2/*2.0*, *WS-Security1.1*, TLS1.0/*1.1/1.2*, PKI x.509v3, *XML-Encryption, XML-Signature*, ECRYPT II, XML 1.0/1.1, XML-Schema, *WFS/WMS/…*, HTTP/1.1, HTTP-GET/*POST, MTOM*, … (Red is core, *rest* is optional for Provider)

Pub/Sub : AMQP1.0

Governance

Initial SWIM (iSWIM)

EU initiative to move towards **SESAR Deployment Carrot/Stick** approach

What are the SWIM Standards ?

Foundation Standard

- Essential Requirements
- Controlled Vocabulary
- Examples
    - Need for semantic interoperability
    - Based on Open Standards
    - Interoperable Services

Guidance

- AIRM
- AIRM Rulebook
- Service Rulebook
- Technical Infrastructure profiles
- Compliance Framework

SWIM Registry

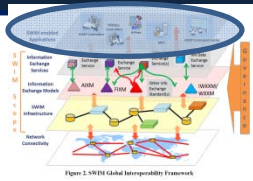**Performance Based Approach**

Enabled applications

- ## Extended Arrival Sequence Service

- ## Benefits (/year!)
  - 33.5 M€ fuel saving
  - 32.000 ton of CO2 reduction

Todays Agenda

- SWIM – State of play

- Start SWIMming

Help !
My boss asks me to <u>do/be</u> SWIM

A 'How-To-Get-Started' checklist

✓ Do you have some/all data in Digital Format (XMs, …) ?

✓ Are you able to provide this as a web-service ?

✓ Using technos such as SOAP, HTTP, TLS ?

✓ Over (secured/open) Internet ?

Then you are SWIM(ming) !

SWIM Global Demos

April – May 2016
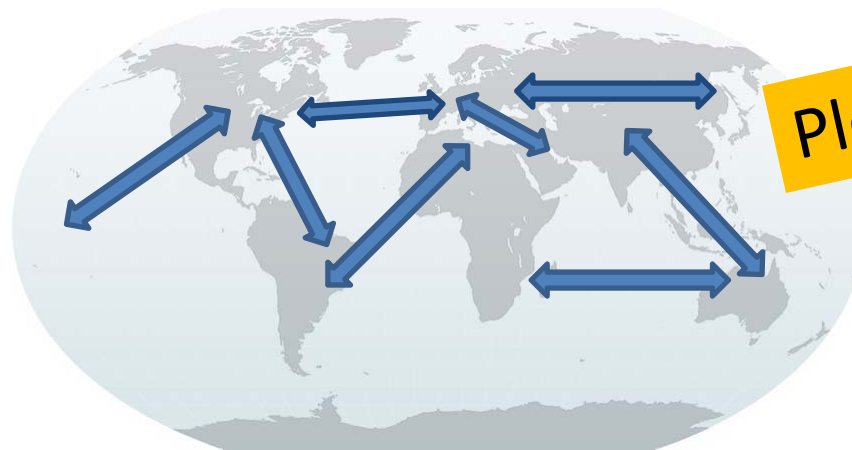
Please all join in !

Jumpstart
A free SWIM Concept Demonstrator

- **NOT for Operational Use**

- Open source -C#/.NET

- Available upon signing license agreement ☺

- Tested with data sources from around the globe
  – Incl AIM, MET, Flight, Surveillance, ICAO, …

- Supported (Open) Standards
  – WFS, WMS, WS-N, WSDL, SOAP, REST, HTTP, TLS, PKI, AMQP, XML, JXSD, SON
  – AIXM 5.1 (incl Dig NOTAM), iWXXM, FIXM v2/v3, (NM B2B), ..

- Includes Jumpstart (Cloud-based) Services
  – AIXM4.5 → AIXM5.1
  – METAR/TAF → iWXXM
  – Flightplan2012 → FIXMv2/v3
  – Federated PKI
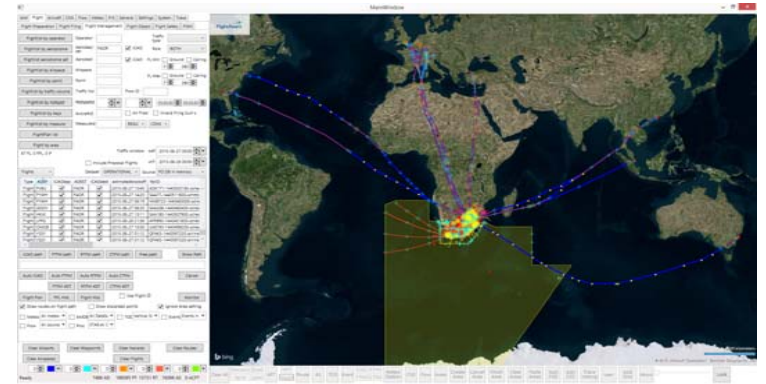
How real is this all ?
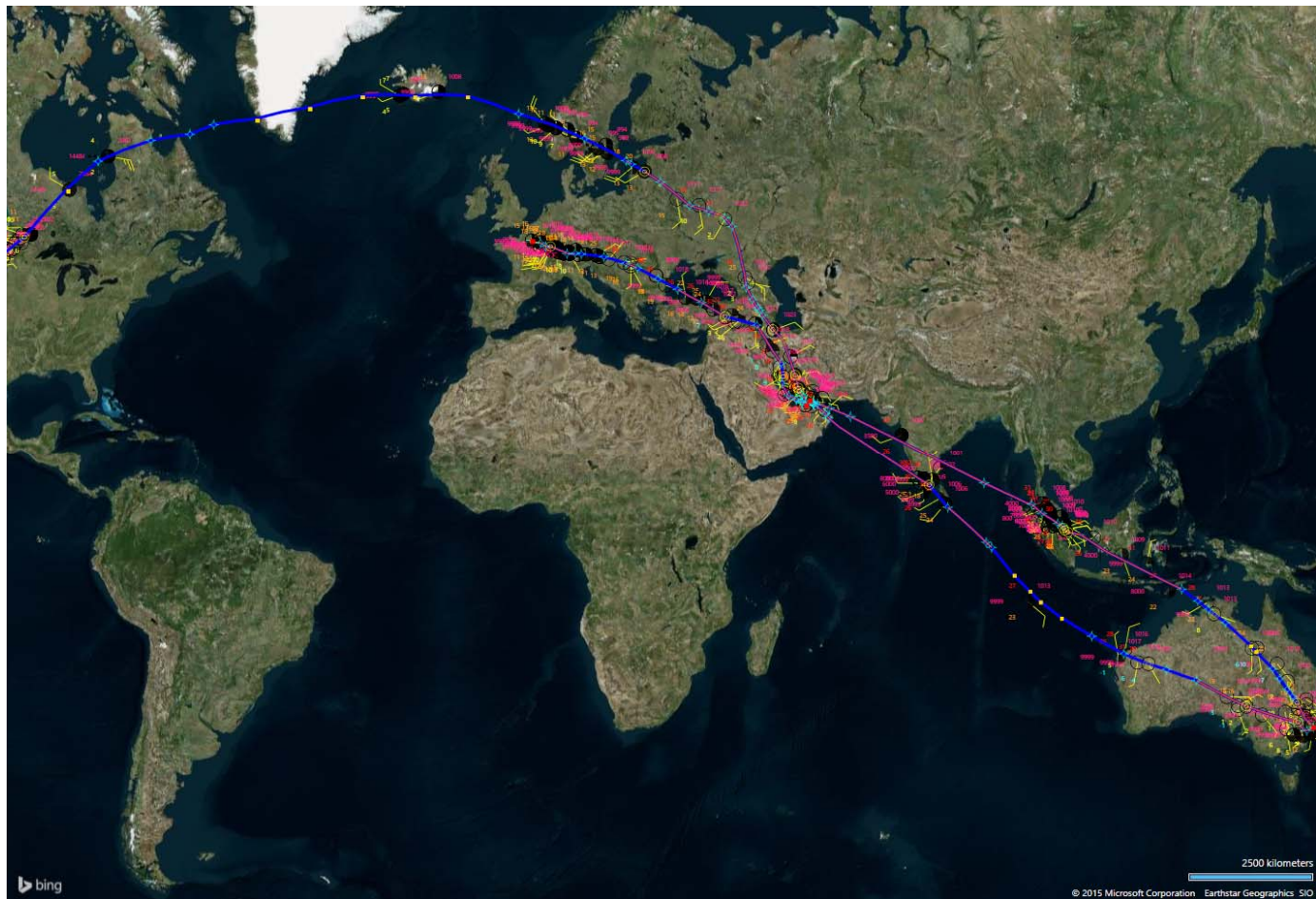
Sources (All live !): FAA NASR56, NM B2B, SADIS, FlightAware, …

How real is this all ?

Sources: NMB2B, SADIS, GCAA, FlightAware, …

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How real is this all ?

Sources: EAD, FlightAware, GCAA, SADIS, …

Local or Central ?

SWIM is not prescriptive

Depends on your local business case

Importance is to unlock & share your data !
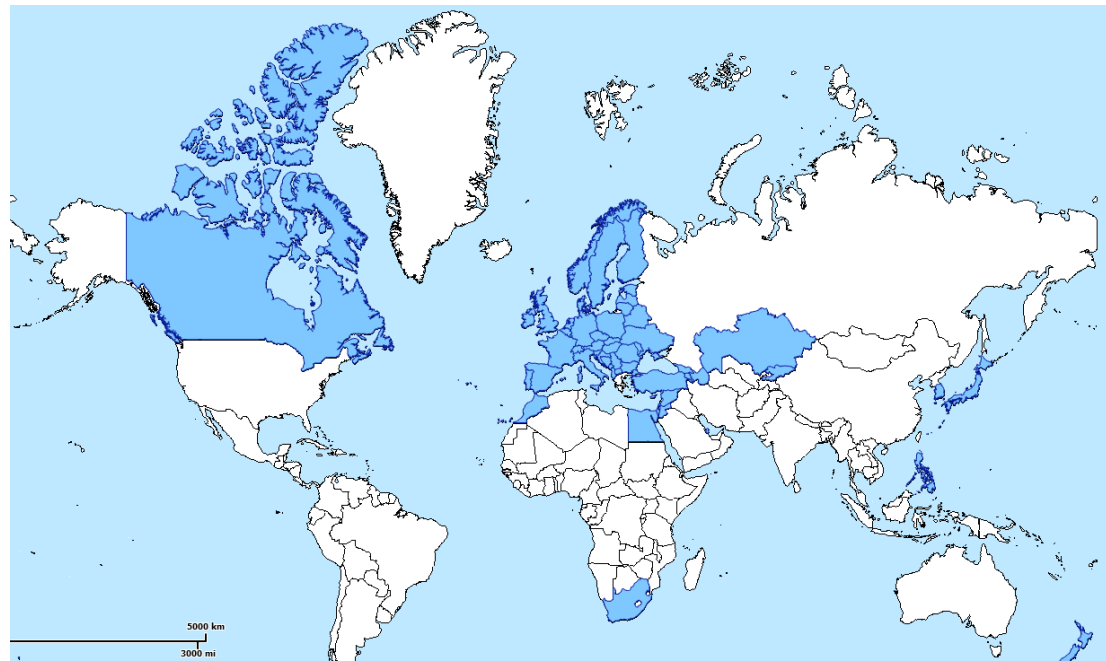
EAD Participating States, more welcomed !

ICAO
Information Management Panel

- Air Navigation Conference 2012 conclusion

- Participants
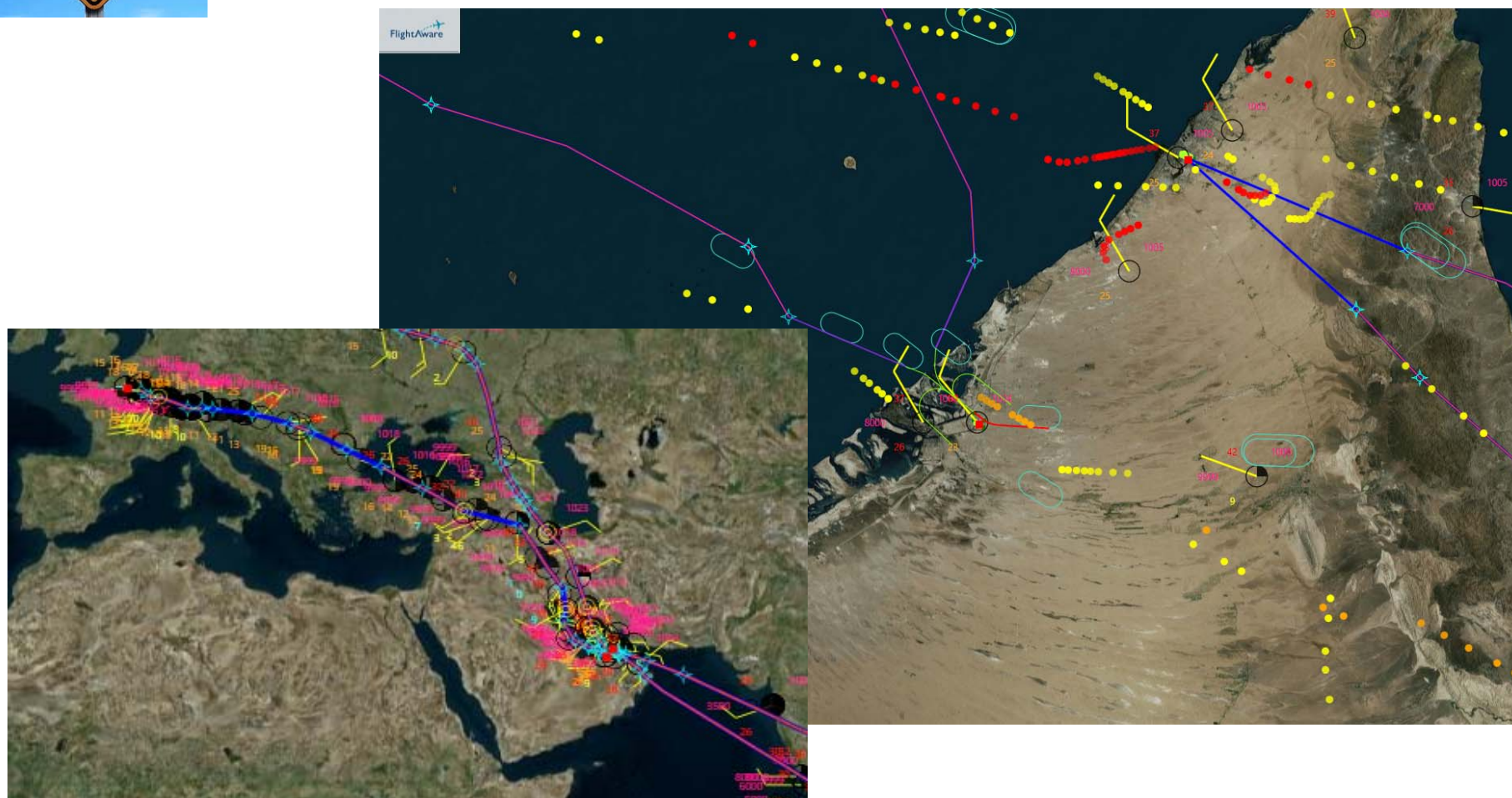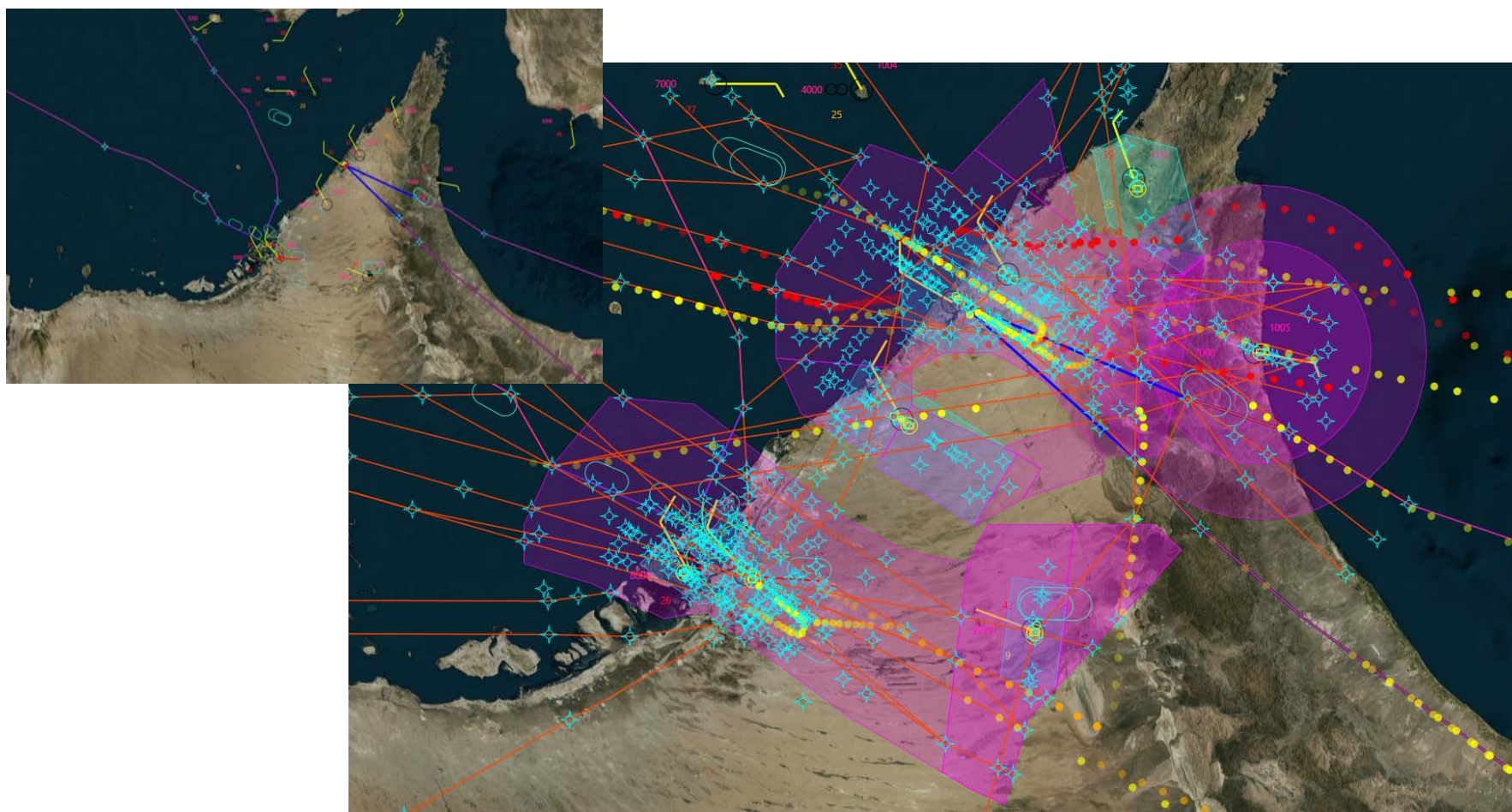 - Australia, Brazil, Canada, China, France, Germany, India, Japan, Russian Federation, Saudi Arabia, Singapore, South Africa, Sweden, Turkey, United Arab Emirates, United States, ASECNA, CANSO, EUROCONTROL, IATA and the International Coordinating Council of Aerospace Industries Associations (ICCAIA)

- Building from ICAO ATMRPP SWIM Concept (Doc 10039

- **Planned deliverables (work in progress!)**
  - Updated SWIM Concept Manual (Doc10039)
  - Initial IM SARPs
  - New NOTAM Concept / replacement proposal
  - AIRM Package
  - Global registry proposal ?

  - **All by November 2018**

So what can you do ?

- Free : Follow SWIM Webinars
  - www.sesarju.eu/swim/resources

- Free : Install & Use Jumpstart
  - www.sesarju.eu/swim/resources

- Free : Participate to SWIM Global Demos (till Q2/2016)
  - www.swim.aero

- Free : Follow IMP proceedings
  - www.icao.int/airnavigation/IMP/Pages/default.aspx

paul.bosman@eurocontrol.int

Conclusions

Figure 2. SWIM Global Interoperability Framework
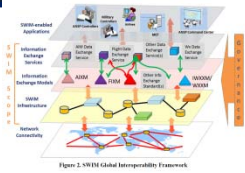
SWIM is a becoming a reality with impressive Benefits
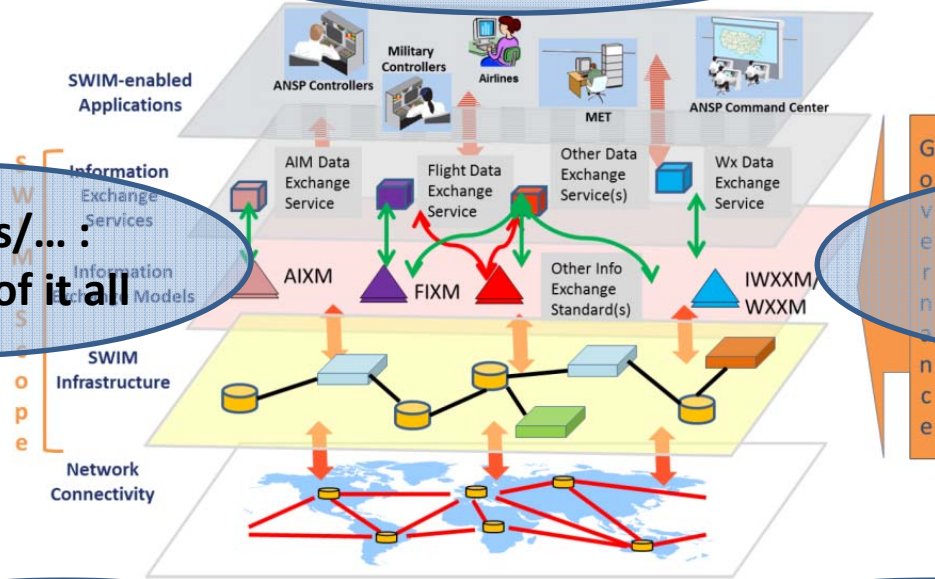
AIRM/XMs/… : Foundation of it all

ICAO IM Panel ++

(Web)-Services : Booming

More global trials / demos will further de-mistify and obtain more benefits

Questions & Contact Information

- **SESAR Joint Undertaking**
  www.sesarju.eu/swim
  Linked in http://www.linkedin.com/groups?gid=3748809&trk=hb_side_g

- **Email** swim@sesarju.eu

- **Registry**
  http://eur-registry.swim.aero

- **Data Exchange models**
  – *Aviation Information Data Exchange*   **www.aidx.aero**
  – *AIXM - Aeronautical Information Exchange Model*   **www.aixm.aero**
  – *WXXM – Weather Information Exchange Model*   **www.wxxm.aero**
  – *FIXM - Flight Information Exchange Model* **www.fixm.aero**

- **AIRM** http://im.eurocontrol.int/wiki/index.php/AIRM

- **Some additional info**
  www.eurocontrol.int/im & **im.eurocontrol.int/wiki**

- **IM Panel** http://www.icao.int/airnavigation/IMP/Pages/default.aspx