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FOR A SAFER WORLD

ICAO Asia - SWIM Workshop

Georg Trausmuth

Frequentis group 2015

Global market leader

*) Science, Technology, Engineering, Math

Headquarters **Vienna**

Solutions partners and regional offices in over 50 countries

95% Export

228 M EUR turnover 2015 (preliminary)

1947 Established +

1,309 Employees

80% STEM*

12% R&D

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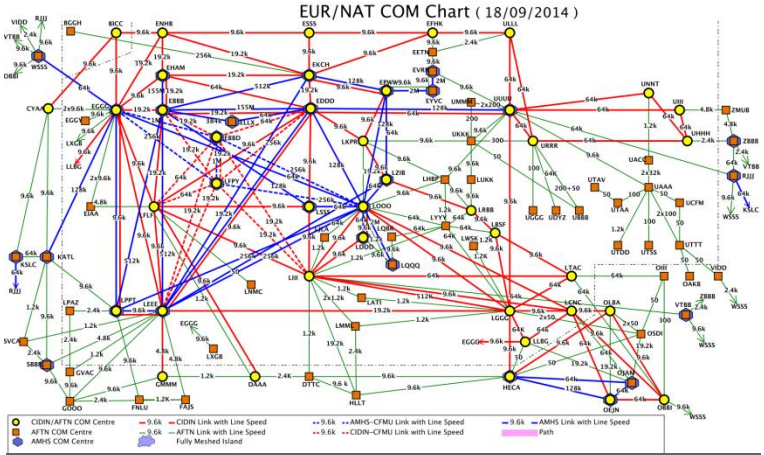
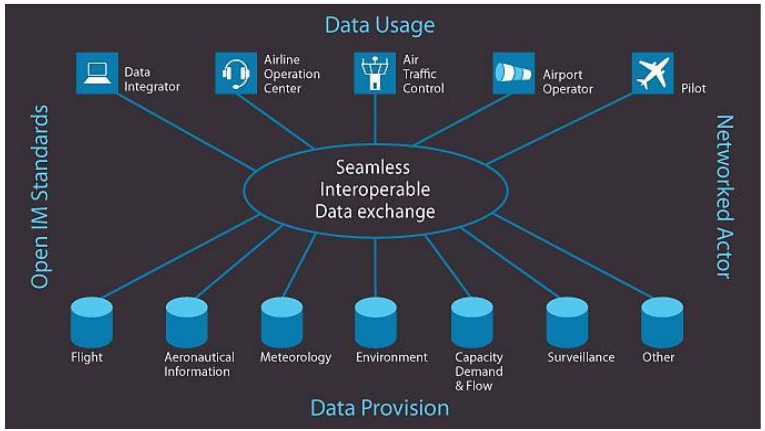
A new paradigm sharing ATM information

Based on commonly agreed and understood data standards and information models





Silos	Shared
Duplicated	Net-centric
Inconsistently updated	Synchronised
Hard to access	Quality-controlled

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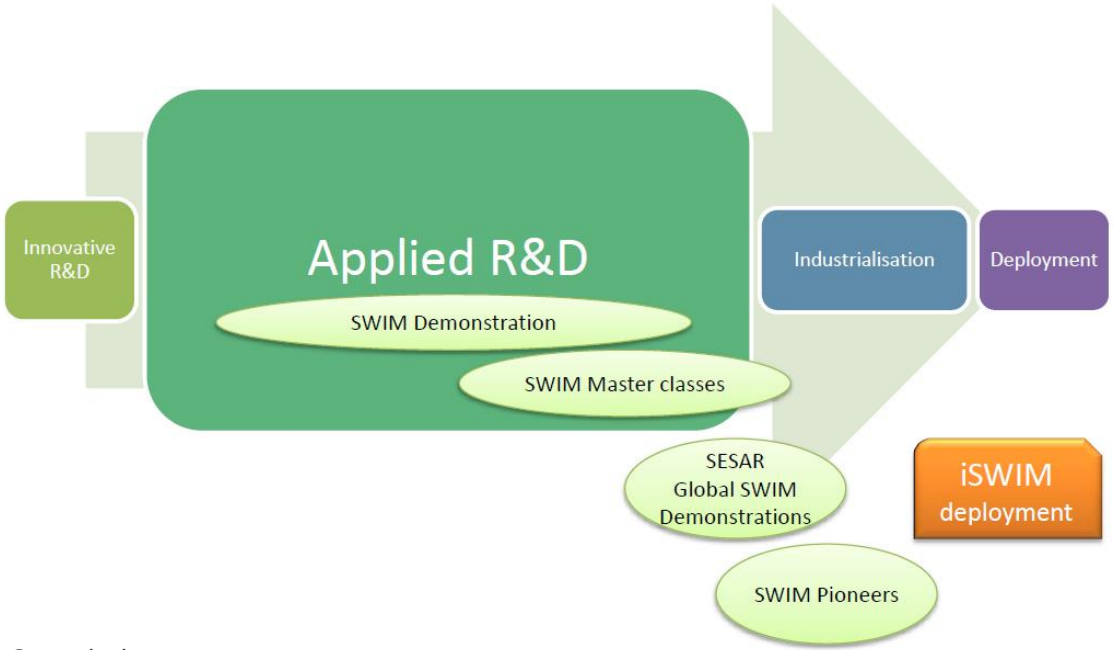
SWIM Development Roadmap Europe

From research to deployment



Source: European Commission

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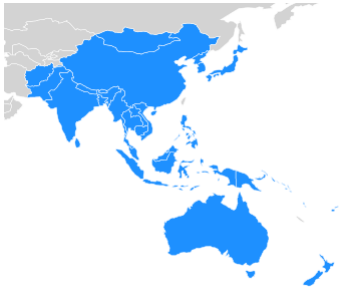
Europa and Asia

Two regions, many nations, high traffic volume



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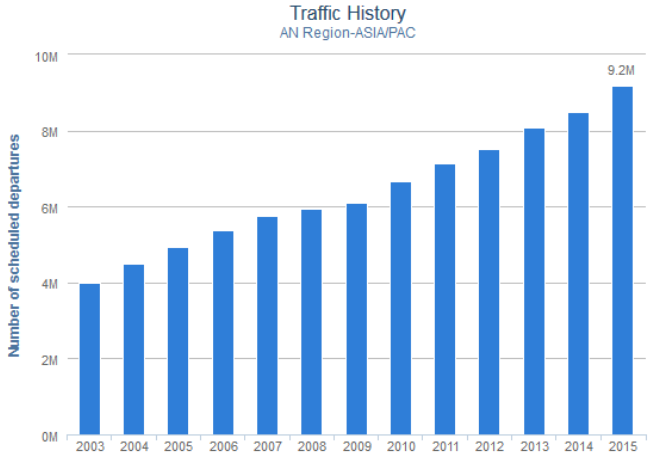
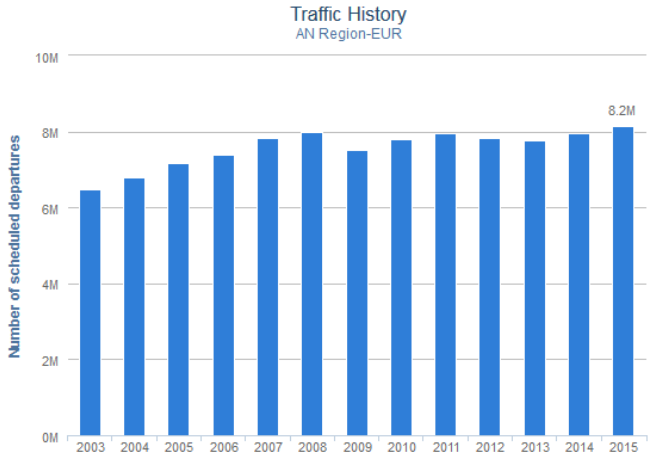
States

53



Source: ICAO



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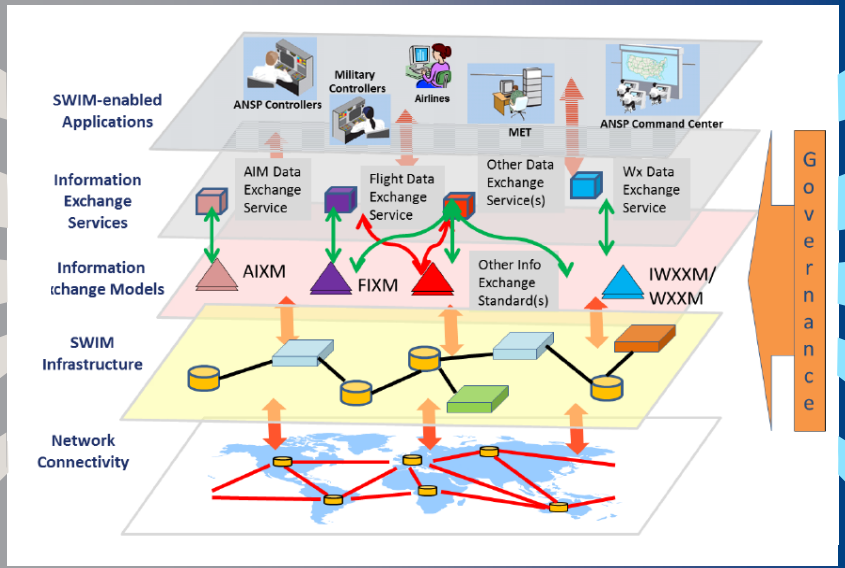
ICAO SWIM Concept of Operations

Similar challenges - SWIM global interoperability framework, ICAO Doc 10039

Europe

- SWIM-enabled applications
- Common, regional and local services
- Standardized exchange models
- Federated infrastructure, shared governance
- PENS communication network



Source: ICAO SWIM CONOPS, Doc 10039

Asia

- SWIM-enabled applications
- Common, regional and local services
- Standardized exchange models
- Regional governance model
- CRV Regional private network

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Setting standards for an open SWIM concept in Europe and across the world

Frequentis leadership in SWIM development

Applications

Services & data modelling

Technical infrastructure and service hosting

- 1st virtual centre demonstrator – cross-vendor
- Winner SWIM masterclass
- SESAR compliant access point
- 10+ years provision of AIM service for European Aeronautical Database
- Deeply involved in standardisation (EUROCAE, WMO, ICAO)

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Example: NAPC

First operational SWIM application for civil / military information sharing

Problem Statement

Decision making in case of renegade, loss of communication, hijacking

Situational Awareness in emergencies, Incidents in the air, sea, land

The solution

- National Air Policing Centre

Common operational picture

- It consumes a number of SWIM services and provides the operator with a unified display of information known as common operational picture

SWIM and legacy sources

- Information is received via SWIM and other legacy, classified sources

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First SWIM in operational civil / military system

NAPC provides the first ever real application and integration of SWIM information

Typical working position

Common operational picture

Voice communication system

Collaboration & decision support

Mobile client

Legal voice and data recording

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NAPC Architecture

SWIM
compliant services via dedicated interfaces

Weather and airport information

Flight plans

Surveillance

Legacy services

Classified
covering all confidential information and customer specific implementations

Data fusion
data collection, correlation and visualisation

SWIM access point

NAPC

Civil entities
Outside core NAPC architecture but involved in workflow through dedicated manual or automatic tools

ANSP (DFS)

Airports

Communities

Airspace users

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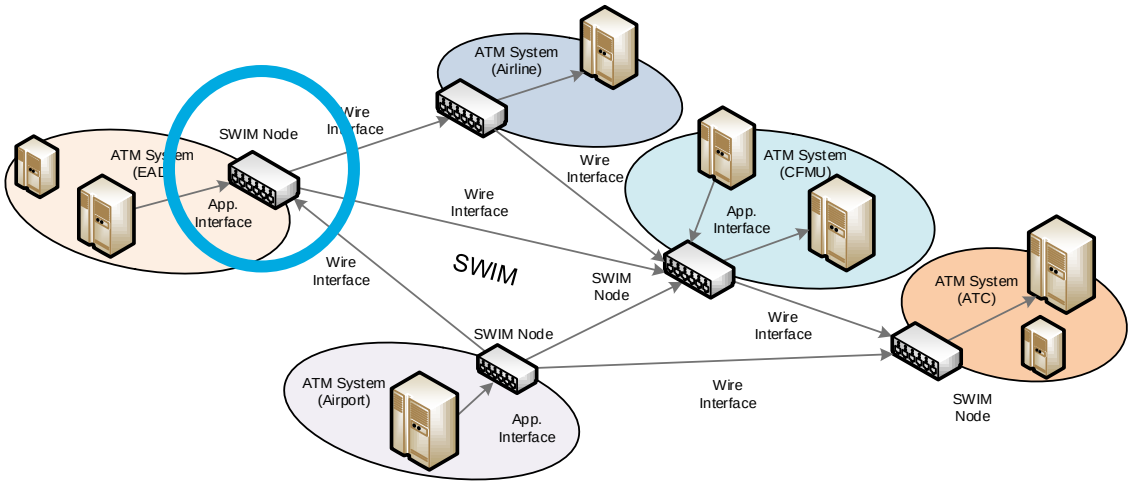
Example: Aeronautical service – SWIM layer

First operational SWIM implementation: SWIM layer AIMSL of EAD

Used in EAD for connecting NM systems and 3rd party systems

Concepts developed in the context of SESAR

Productized and implemented for operational use



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Example: Digital briefing service

Service orchestration for better informed decisions

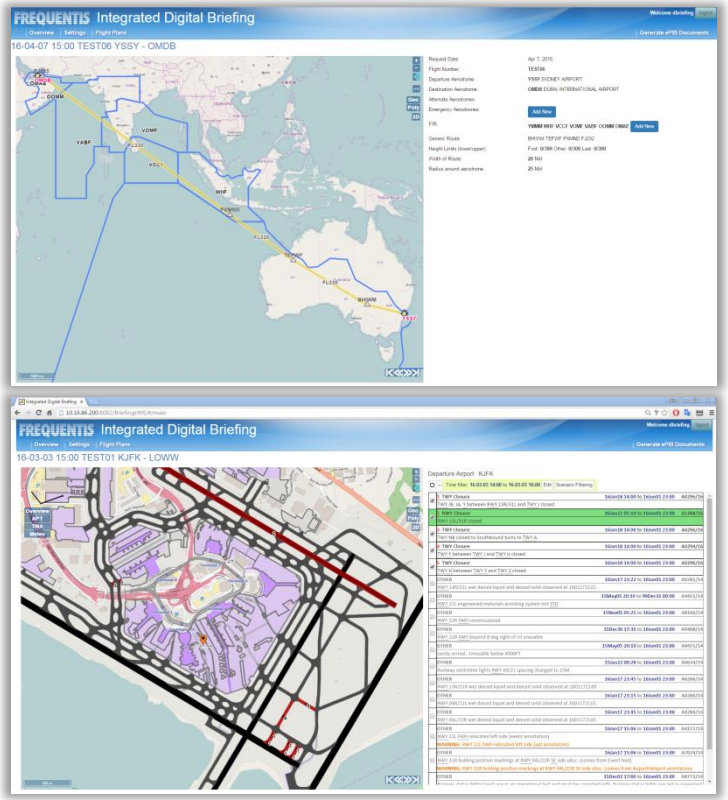
Aggregates and compiles data from existing SWIM services

Purpose: preparation and production of an enhanced pre-flight information Bulletin (ePIB),

Uses data provided by multiple SWIM services over a SWIM-compliant infrastructure

On top **SemNOTAM** introduces a knowledge-based framework that enables fine-grained intelligent semantic filtering

Prioritisation functionality based on temporal, spatial, aircraft/equipment characteristics, user-defined aspects



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Partnering for growth

We set standards

Full member and active in 40+ projects

Member

20 years history working with FAA / DOD

Active in working groups

First virtual centre demo – cross-vendor

SESAR SWIM masterclass winner

ICAO

Active in various initiatives

CANSO

Associate member

RTCA

Member

Winner IFATCA technology award

Winner ICNS best paper award

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Active in shaping the future of information management

Strong involvement in information management research and development around the world

projects focussing on High Performance Tower

Implementation Plan

20 years history working with FAA / DOD

Contributing to: advanced communication data networking; information systems; research efforts

- EFS – 1st system at US Air Force (DoD)
- OASIS – EFS in Alaska
- TFDM – terminal flight data manager
- IVSR – VCS for Towers
- AWIM – airport-wide information management
- Dark tower / Virtual Towers

European ATM Master Plan

40+ projects

SESAR1 → SESAR2020

PCP | CP

Information management

- Applications
- Services
- Technical Infrastructure
- IP Communications
- Governance
- Outreach

ICAO Aviation System Block Upgrades

"Globally Interoperable Systems and Data" one of the four performance improvement areas

- FICE – Flight and flow information
- DATM – Digital Air Traffic Management / Information Management
- SWIM – System Wide Information Management
- AMET - Advanced Meteorological Information

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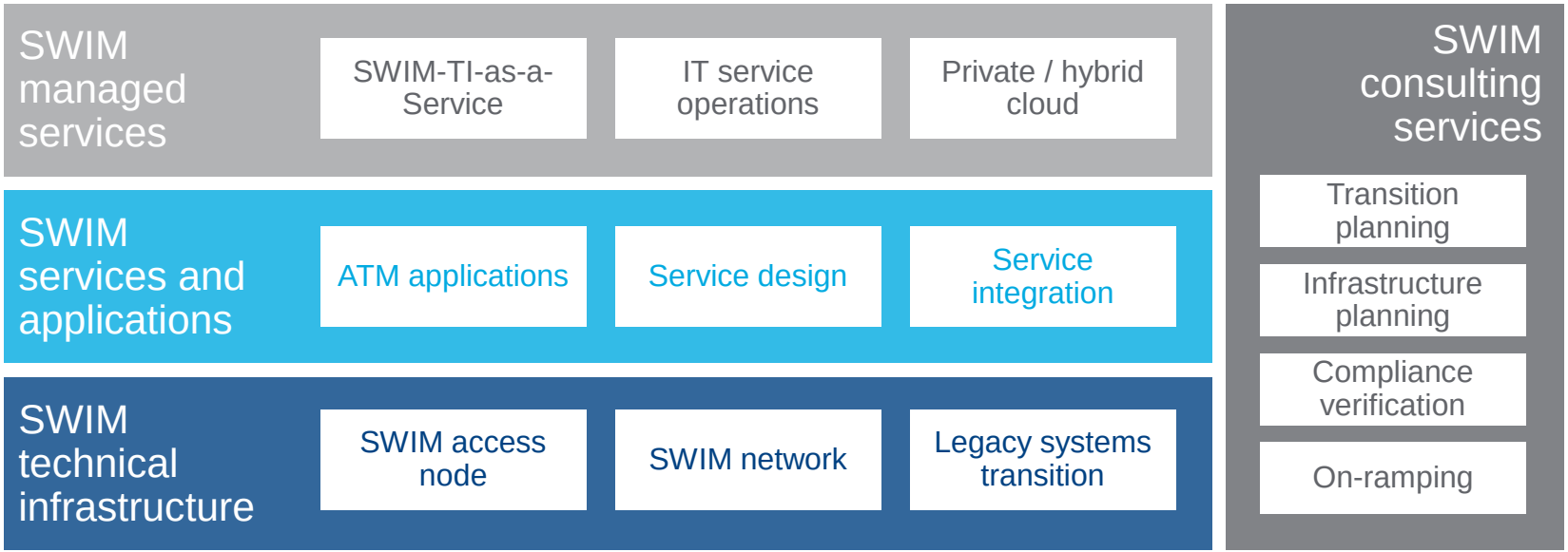
Frequentis SWIM service portfolio



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Conclusions

1. SWIM requirements in Asia show similarities to Europe. A federated SWIM concept under a regional governance would spur information sharing through the implementation of SWIM services and applications.
2. A sound IP communications network is the requirement for reliable information sharing. Intelligent networking and routing secures network performance.
3. Standardization is key. Industry is ready for SWIM deployment, but standardization is required for seamless interoperability.

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