SWIM & AMHS

ICAO Asia Pac ATNICG Meeting, Jakarta, March 18-22, 2013
Agenda

- FRQ & SESAR/SWIM
- SESAR Demonstration at WorldATM
- SWIM and AMHS
FRQ & SESAR/SWIM
FRQ & SESAR

- Frequentis is an official member of the SESAR Joint Undertaking
- Involved in different Work Packages
- Data- and Service Modelling for AIRM (Aeronautical Information Reference Model), superset of AIXM including other domains for SWIM (WP 8)
- SWIM Infrastructure (WP14)
- Network Information management System (WP13)
SWIM Conceptual Model
→ SESAR- Digital NOTAM/ Digital Briefing

→ Frequentis is actively involved in the Digital NOTAM and Digital Briefing Projects within SESAR

→ Frequentis delivered a prototype for Digital NOTAM to the SESAR (Project 13.2.2) using the smartAIM framework

→ The contribution was related to the Obstacle events
→ Digital NOTAM / System NOTAM

System NOTAM

Digital NOTAM

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Dokumentennamen.pptx

Presentation Date: 2012-08-29
Author: Vorname Zuname
Digital NOTAM screenshot (prototype)
→ Digital NOTAM events (prototype)

→ New Obstacle
→ Airspace Creation
→ Airspace Activation
→ Airport Closure
→ Runway Closure
From SESAR to Product

Specification → Prototyping → Verification → Validation → Prototyping → Verification → Validation → Industrialisation → Product

SESAR

smartAIM
SESAR Demo at WorldATM
SWIM Demonstration during World ATM Congress

- The demonstrations involved 10 different ATM organizations interconnecting 31 instances.

- Information about airspace, flights, airports and weather was successfully exchanged.

- Proved the collaborative decision making capabilities of the SWIM technical infrastructure.

- Tested SWIM capacities win terms of information sharing, service orientation, federation, open standards and information & service lifecycle management.

- Proved the benefits of SWIM and the maturity of the prototypes are getting closer to deployment.
2 active Flights (incl. EFB)
2 planned Flights
SWIM Partners
COMMUNICATION AND INFORMATION SOLUTIONS FOR A SAFER WORLD

SWIM & AMHS
SWIM (1)

- SWIM is set of interoperable communication technologies, security and governance, data and services, which constitutes an application layer on the top of TCP/IP network infrastructure.
- SWIM is going to be used to provide access to Digital NOTAM (AIXM), Flight Objects (FIXM), MET (WXXM) data including communication among airport towers and ATC centres.
- It will also support connection to aircrafts (EFB).
- It can work with public internet without specific provider or on an IP network with special QoS characteristic such as European PENS.
- SWIM is based on interconnected “nodes”, which are basically SWIM compatible standard middleware appliances (hardware and software).
- SWIM uses standard internet based addressing like every other internet application.
The communication is based on REST & SOAP/WS-* over HTTP and DDS (with options to extend basic wire protocol set for AMQP).

Data and services are based on standard defined by OGC (Open Geospatial Consortium) Eurocae (ED-133 -Flight Object Interoperability Specification), AIXM5.1, etc…

SWIM technologies are classified into subsets (technology stacks) called profiles for the sake of interoperability and for design and development simplification.

Every ATM operational service will fit to at least one SWIM profile considering their operational and non-functional requirements (performance, reliability, security, supervision, non-repudiation).

Because of the profiles, SWIM can be tailored to fulfil specific needs - some ATM services are not that mission critical and does not request expensive and high complex communication solutions (AIM) where other does (ATC).
AMHS

- AMHS is designed for the exchange of ATS Messages (NOTAM, FPL, MET) using the ITU-T400 Technology.
- AMHS follows a specific data exchange profile intended for strategic planning.
- AMHS Messaging is reliable; the messages are transmitted via predictable paths through the network.
- AMHS uses its own addressing schema.
- AMHS supports different types of payload such as text, XML, and binary data.
- AMHS can be integrated with other communication technologies via Special Gateways (i.e., AMHS/Email).
- It does not provide support for Request/Response or Public/Subscribe message exchange patterns.
AMHS and SWIM

- AMHS could theoretically be specified as one of wire protocols of SWIM but there are no activities in that direction so far.

- Both SWIM projects in Europe and USA do not include AMHS into their technical infrastructure.

- The only solution when communication between AHMS and SWIM is required to implement a SWIM/AMHS Gateway.

- The SWIM/AMHS Gateway will allow SWIM services to be available to AHMS clients.

- The SWIM/AMHS Gateway could also be used to provide access to SWIM common services such as service registry to AMHS clients.

- There is no technical specification for SWIM/AMHS gateway.
SWIM and AMHS
SWIM/AMHS Gateway (1)

- SWIM/AMHS Gateway
- SWIM environment (PENS)
- AMHS / AFTN
- AMHS user
- AFTN user
SWIM/AMHS Gateway (2)
smartMessenger v5 - SWIM/AMHS Gateway
Questions