

SESAR SWIM

Global Demonstration



8-9 June 2016

ENAV @ Prototype Systems Center
Rome ACC, Italy

AGENDA & EVENT GUIDE



Hosted by:



WELCOME



Florian Guillermet,

Executive Director, SESAR Joint Undertaking

“SESAR fully subscribes to the adage “seeing is believing”. The 2016 SESAR SWIM Global Demonstration shows that system-wide information management (SWIM) is no longer a concept on paper, but is progressively becoming a reality that will propel aviation into a new era of global connectivity. Thanks to the global cooperation demonstrated through this event as well as those organised with the framework of ICAO and the FAA, we can together deliver the performance necessary to meet the growing demand for air transport from a worldwide perspective”.

System-wide information management (SWIM) is about sharing the right information with the right stakeholders at the right time. SWIM represents a seismic shift in how information management is done in ATM, moving away from custom-built point-to-point systems to solutions that support system-wide interoperability, information access and exchange. This change is critical to efficiently handle the expected increase in global air traffic in the coming years.

This two-day event brings together more than 150 visitors to see first-hand more than 40 organisations demonstrating SWIM global interoperability capabilities in accordance with regional plans as well as ICAO provisions, such as the Global Air Navigation Plan, Aviation System Block Upgrades, and the SWIM Concept Manual. It will also show what SWIM data is already accessible today as well as some innovative SWIM services and applications.

The demonstration will feature the following:

- **Joint interoperability** between world regions, including Europe, United States, Australia, United Arab Emirates, Mongolia and Brazil. These will show the **technical feasibility** of connecting different local implementations of SWIM and the exchange in areas such as aeronautical, meteorological, and flight and network information;
- **A showcase** of innovative SWIM **business solutions** already in operation, such as in the areas of global tracking and information validation;
- **Panel discussions** on the **benefits** that SWIM is already delivering to ATM, as well as a look at the **lessons learned and next steps** for global cooperation on SWIM;
- **Network opportunities** with peers and experts in the SWIM domain.

AGENDA DAY 1

8th June 2016

10:00 - 10:30	Registration	Welcome coffee	Ground floor
10:30 - 10:50	Welcome	Iacopo Prissinotti , Head of International Strategies, ENAV Florian Guillermet , Executive Director, SESAR Joint Undertaking	Main conference room “
10:50 - 11:00	Keynote addresses	Stephen Creamer , Director, Air Navigation Bureau, ICAO Jim Eck , Assistant Administrator to NextGen, FAA	“
11:00 - 11:30	Introduction	Ruben Flohr , SWIM Expert, SESAR Joint Undertaking	“
11:30 - 12:15	■ Demo #1	FAA's NextGen – SESAR Joint interoperability demonstration	“
12:15 - 12:45	Lunch		Ground floor
12:45 - 15:30	■ Showcase	<i>The audience is divided in groups and guided through the Showcase.</i>	1 st floor
15:30 - 16:30	■ Panel #1	SWIM collaboration moderated by Michael Standar	Main conference room
16:30 - 17:15	■ Demo #2	Globally-available SWIM data sources	“
17:15 - 18:15	■ Panel #2	SWIM benefits moderated by Michael Standar	“
18:15 - 18:25	■ Closing remarks day 1	Philippe Merlo , Eurocontrol	“
18:25 - 19:30	Networking drink	Aperitif with wine and snacks	Ground floor

AGENDA DAY 2

9th June 2016

08:30 - 09:00	Welcome and registration	Welcome coffee	Ground floor
09:00 - 09:15	Day 1 recap and introduction to day 2	Ruben Flohr SWIM Expert, SESAR Joint Undertaking	Main conference room
09:15 - 10:30	■ Demo #3	Australia - United Arab Emirates - Europe Joint interoperability demonstration	“
10:30 - 13:15	■ Showcase	<i>The audience is divided in groups and guided through the Showcase.</i>	1 st floor
13:15 - 13:45	Lunch		Ground floor
13:45 - 14:30	■ Demo #4.1	Brazil – Europe Joint interoperability demonstration	Main conference room
	■ Demo #4.2	Mongolia – Europe Joint interoperability demonstration	“
14:30 - 14:45	Lessons learned	Ruben Flohr SWIM Expert, SESAR Joint Undertaking Paul Bosman Head of ATM Strategies Division, Eurocontrol	“
14:45 - 15:45	■ Panel #3	SWIM next steps moderated by Michael Standar	“
15:45 - 15:55	Closing remarks	Massimo Garbini , Managing Director, SESAR Deployment Manager	
15:55 - 16:00	Event closure	Ruben Flohr SWIM Expert, SESAR Joint Undertaking	“

JOINT INTEROPERABILITY DEMONSTRATIONS

The event features four technical demonstrations on information exchange between stakeholders in different world regions. The demonstrations will show that global interoperability improves all ATM stakeholders' situational awareness and planning when information is shared and continuously updated via SWIM.

The demonstrations will exchange recorded data in real time between operators/stakeholders over secure VPN Internet connections. In several cases operational systems are used, thus demonstrating the global interoperability of SWIM.

The demonstrations will simulate several kinds of information exchange related to different phases of the flight, such as flight planning, departure, cruise and arrival. During each phase, events will be demonstrated by publishing information in standard SWIM formats: AIXM for aeronautical information, iWXXM for meteorological information and FIXM for flight and network information. The demonstrations will involve different types of stakeholders including information providers, network managers and airspace users.

DEMO 1 Day 1: 11:30 – 12:15

Joint interoperability demonstration: FAA's NextGen-SESAR

FAA, SESAR Joint Undertaking, DSN, ENAV, NAV Portugal, EUMETNET, Meteo France, Thales, Leonardo - Finmeccanica

The demonstration scenario is based on two simulated flights: one from Hartsfield - Jackson Atlanta International Airport to Milan - Malpensa Airport and a return flight from Milan back to Atlanta. During the flights a number of events including all three types of information will be shown. The focus of this demonstration is on the interoperability between the US and EU systems through the use of common SWIM methods and mechanisms.

DEMO 2 Day 1: 16:30 – 17:15

Globally-available SWIM data sources

Eurocontrol and the SESAR Joint Undertaking

In this demo we will focus on what ATM relevant information is already today globally available, through SWIM services building on the globally adopted FIXM, AIXM and iWXXM data exchange formats. Data will be received and visualised from many different providers throughout the world. Through the system platform "Jumpstart", previously used in support of the SESAR SWIM Master Class, we will show how automated filtering, combining and visualizing can be used to improve the efficiency of ATM and airline operations.

DEMO 3 Day 2: 09:15 – 10:30

Joint interoperability demonstration: Australia - United Arab Emirates - Europe

Air Services Australia, Austro Control, UAE General Civil Aviation Authority (GCAA), Dubai Air Navigation Services (DANS), Emirates Airlines, Qantas, EUMETNET, Eurocontrol, UAE National Centre for Meteorology and Seismology (NCMS), Frequentis, Honeywell, Ingegneria Dei Sistemi S.p.A. (IDS), Thales, TOPLINK, Boeing Jeppesen, Comsoft

This demonstration is based on two flights. The first flight is from Sydney Airport to Dubai International Airport while the second flight is from Dubai to Vienna International Airport. Information exchanges in support of flight preparation and flight execution will be demonstrated, as well as messages between the airline operations centre (AOC) and the electronic flight bag (EFB) on-board the aircraft. The demonstration will also illustrate the advantages of using digitally-formatted data by showing how this information can be automatically filtered based on its relevance and displayed graphically to the end-user without any human intervention.

PANELS

Three panel discussions will take place during the event, covering the benefits that SWIM is already delivering to ATM, as well as looking at the lessons learned and next steps for global cooperation on SWIM.

DEMO 4.1 Day 2: 13:45 – 14:10

Joint interoperability demonstration: Brazil - Europe

Atech, Brazilian Department of Airspace Control (DECEA), Brazilian Airspace Control System Implementation Commission (CISCEA), Eurocontrol, EUMETNET, Saipher ATC, TAP Portugal, TOPLINK

The demonstration will feature two flights from São Paulo–Guarulhos International Airport, one to Paris Charles de Gaulle Airport and one to Lisbon Portela Airport. In the scenario, the Brazilian Air Navigation Service Provider and Flow Manager interact with the airline as well as with the European Network Manager. The demonstration will focus on the usage of the globally standardised format for aeronautical information including the new D-NOTAM - enabling flexible and machine readable dynamic publication of aeronautical events. It will also present the exchange of flight and network information between Brazil and Europe, moving towards global network management.

DEMO 4.2 Day 2: 14:10 – 14:30

Joint interoperability demonstration Mongolia – Europe

Civil Aviation Authority of Mongolia (MCAA), Eurocontrol, Avitech, Luciad

The demonstration is based on two scenarios. The first is a flight planning event involving an airspace user who plans a flight into Chinggis Khaan International Airport (ZMUB) with an estimated arrival time (ETA) close to an AIRAC cycle change. This cycle defines the dates and requirements at which aeronautical information becomes effective.

An application using digital NOTAM will graphically show how this rather complex flight planning situation can be visually experienced. In the second scenario, a graphical tool will demonstrate how controllers' situational awareness of several NOTAM can be enhanced through the use of SWIM-compliant digital NOTAM.

Panel 1 Day 1: 15:30 – 16:30 moderated by Michael Standar

SWIM collaboration

Oliver Schrempf (DFS); Thien Ngo (FAA NextGen); Jan Van Meenen (Eurocontrol); Kamel Rebai (EUMETNET); Mike Riegler (Qantas)

The panel will discuss why it is important to cooperate on SWIM and the different means for global collaboration. The SWIM Global Demonstration is one such way and can be considered a test case for the applicability of ICAO's SWIM manual. The panel will discuss the practical experience of preparing the technical demonstrations to further strengthen global coordination for the SWIM common methods and mechanisms (e.g. technical exchange models).

Panel 2 Day 1: 17:15 – 18:15 moderated by Michael Standar

SWIM benefits

Ekkehard Gutt (Emirates Airlines); Brian Flynn (Eurocontrol); Luigi Mazzucchelli (ENAV); Steve Bradford (FAA NextGen); Ariungerel Purev (MCAA); Tony Vaudrey (NATS)

The panel will discuss the value of SWIM for the ATM community from a business, technical and operational perspective. Panellists will cover topics such as agility in future evolution, flexibility in global uptake, global interoperability, cost efficiency, secured information and the operational improvements that are enabled by SWIM.

Panel 3 Day 2: 14:45 – 15:45 moderated by Michael Standar

SWIM next steps

Heiko Teper (SESAR Deployment Manager); Wim Post (SESAR Joint Undertaking); Siegfried Schaeffer (EUROCAE WG-104); Steve Bradford (FAA Nextgen); Urban Weisshaar (LIDO); Stephane Dubet (DSNA)

The panel will discuss the lessons learned from the preparation of the SWIM Global Demonstrations, summarising the current state of SWIM in Europe and in the world,. Together panellists will look at the next steps that should be taken in accordance with ICAO provisions (Information Management Panel, AIRM, governance), different exchange standards, and SWIM deployment planning in Europe and the US.

SWIM SHOWCASE

The showcase features 12 innovative SWIM business solutions already in operation, such as in the areas of global tracking and information validation.

Showcases: Day 1: 12:45 - 15:30 - Day 2: 10:30 - 13:15

■ A vision for global collaborative ATFM - A network of networks live in action!

Eurocontrol, DSNA, RocketRoute

The showcase presents how the Network Manager's latest systems release brings operational reality to two key ICAO GANP performance improvement areas, namely globally interoperable systems and data, and optimum capacity and flexible flights. It also demonstrates how it contributes to the digital transformation of ATM. Supported by a state-of-the-art service oriented architecture, and making use of low cost mainstream technologies, the Network Manager is a pioneer in the operational deployment of the SWIM yellow profile, engaging stakeholders from the whole world, making global interoperability a reality and enabling a truly global collaborative air traffic flow management.

■ Aeronautical data validation and business rule evaluation platform

m-click.aero

Data validation is typically used to make sure that incoming data has a certain quality. Validation can occur for various reasons, for example, if it is suspected that the incoming data does not have good quality or because there is a certain service level agreement (SLA) in place. The Data Validation Platform is showcased and allows aviation stakeholders to define rules in order to describe what the aviation data exchanged via SWIM should look like. This can be a value range, a distinct list of values or data lengths, but also more complex semantic-based rules.

■ CRONOS - Aeronautical NOTAM system

Ingegneria Dei Sistemi - IDS

CRONOS is the IDS solution for an aeronautical 'dynamic' data management system that involves operational processes and is intended to be used by NOTAM offices (NOF) and aeronautical information services (AIS).

The solution is based on a centralised, time-enabled aeronautical datastores logical layer for storing and managing aeronautical data in compliance with the aeronautical information conceptual model (AICM) 5.1. CRONOS is a web application solution for the collection of all NOTAM proposals, for the management of all traditional and digital NOTAMs, and dissemination and exchange of official national and/or international information.

■ Flight data downlink system (LANE)

Waxwing avionics

Imagine a solution that can take the proposed methods on global tracking, surveillance and monitoring to a whole new level and that can create a sense of security while boarding an aircraft, knowing that the aircraft can predict an issue and can help avert any disruptions. LANE is such a solution that can change the whole outlook on global flight tracking. It can provide real time flight data, downlinked and made available to authorised personnel. This data can be used for multiple purposes like creating an efficient flight plan, maintenance purposes, emergency situations and catastrophic events.

■ Geodetic Calculation Services (GCS)

SOLITEC Software Solutions GesmbH

The Geodetic Calculation Service (GCS) is an OGC-compliant web processing service (WPS). GCS provides several calculation routines documented in FAA TERPS (8260.58) such as direct, "inverse" and "intersection". As a result of these calculations, GCS offers a range of processes for retrieving and validating geographical aeronautical data. The calculations take into account magnetic variations based on the world magnetic model (WMM). GCS supports data processing in AIXM 5.1 format and it complies with the metadata requirements of Commission Regulation (EU) 73/2010: Aeronautical Data Quality Implementing Rule.

■ Global flight tracking with ADS-B

FlightAware

FlightAware will demonstrate how it tracks real-time global flight positions as well as real-time surface movement data. FlightAware operates a network of automatic dependent surveillance – broadcast (ADS-B) ground stations track the ADS-B equipped aircraft worldwide and is continuously being expanded. Worldwide, live ADS-B data is licensed as a data feed or application program interface (API) to aviation users and application developers. The network operated by FlightAware consists of over 5,200 ground stations in over 120 countries, which tracks approximately 140,000 unique aircraft each day. Aircraft that are not equipped with ADS-B, but have Mode-S capability, can be tracked by FlightAware using multilateration (MLAT). The data feed is updated continuously and provided via HTTP GET request or TCP socket.

■ Heathrow cross-border arrival management (XMAN)

Direction des Services de la Navigation Aérienne (DSNA), Eurocontrol - Maastricht Upper Area Control Centre (MUAC), Irish Aviation Authority (IAA), NATS, Snowflake Software Ltd and Harris Orthogon

The award-winning Heathrow XMAN is the world's first multi-partner, systemised, cross-border, arrival management capability. The demonstrator comes equipped with an arrival manager (AMAN) supplied by Harris Orthogon, which provides an interactive arrival sequence service. It has a virtualised platform supplied by NATS with Snowflake's GO Publisher software that hosts the London Heathrow arrival sequence service subscribed to by a number of clients provided by NATS, DSNA, MUAC and the IAA. Operationally representative interfaces are used to showcase how SWIM service orientated ATM technology has been implemented in an operational environment. The demonstrator is accompanied by pop-ups, videos and leaflets. In addition, the XMAN portal will be available which is fed with operational data for live operational arrival sequence information.

■ Integrated digital briefing

Frequentis/Honeywell

The Integrated Digital Briefing produces and provides SWIM compliant, enhanced pilot briefing information on the ground and en-route. This showcase shall demonstrate the benefits of introducing digital NOTAM and iWXXM weather information into an integrated digital briefing package on the ground and en-route, which makes intensive use of graphically presented information on aeronautical charts.

■ SWIM and drones

Unifly

"Can I fly here and what are the rules?" Is a key question unmanned aerial system (UAS)! This can be answered by combining information from different ATM sources. This information is not presented in an intuitive manner and is destined for pilots who have gone through rigorous training. However the average UAS pilot does not have this extensive training or knowledge. Unifly demonstrates several different types of intuitive, easy-to-use and interactive interfaces to integrate UAS safely into the low level aviation system. Enabling UAS pilots to check whether they are allowed to fly according to the existing rules, regulations and aerial activities in their vicinity. Authorities and safety services also have supervising and communication capabilities, such as creating no-drone zones.

■ SWIM-enabled airport solutions

Leonardo-Finmeccanica (in collaboration with ENAV and SEA)

A number of airport tower applications can benefit from information and services exchanged via SWIM. These include a complete airport tower system composed of multiple sub-systems allowing support to different functionalities. As an example, the system includes, among others, a flight data processor, a route planner, a runway manager, a surface manager, multiple controller working positions, an airport performance monitoring system and a meteo system for the provision of airport-related weather information which is provided by dedicated operator human-machine interfaces. The platform also demonstrates how it can interface with a local (simulated) airport (A-CDM) system and is therefore capable of providing/consuming relevant A-CDM information.

■ The SWIM Enabling Agent

Boeing Jeppesen

While the growing amount of information being made available through SWIM globally offers potential opportunities for operational improvements and cost savings to airspace users, it is important to show how these information services can be used in a coherent and interoperable manner to improve efficiency in realistic operational scenarios. In this demonstration we propose an architecture that would enable airlines to tap into the potential of global SWIM. To achieve this, we will show how a prototype software module called SWIM Enabling Agent (SEA) seamlessly connects the airline to a set of SWIM services offered by stakeholders in different regions of the world, illustrating the potential benefits to airspace users of global SWIM interoperability. SEA will access, process and deliver to the right client within the airline relevant information from the SWIM services and present it in the format and context expected by the final client (FMS, EFB, flight planning).

■ TOPLINK application over 4D WeatherCube

Austro Control, Aéroports de Paris, Brussels Airlines, DSNA, Deutscher Wetterdienst (DWD), EUMETNET, Finnish Meteorological Institute (FMI), METEO FRANCE, Qantas, TAP Portugal, THALES, UK Met Office

The TOPLINK demonstration project aims to show the benefits of deploying new SWIM-enabled services related to meteorological, aeronautical services, cooperative network and flight information (for non-safety-critical aspects). Featured in the TOPLINK project, the 4DWeatherCube delivers regulated and innovative meteorological information through SWIM-compliant web services. Based on an end-to-end supporting infrastructure, TOPLINK aims to demonstrate how air traffic flow management controllers, airport operators, commercial airlines and general aviation staff (ground flight dispatchers, as well as pilots) could improve their operational performance in terms of safety, efficiency, and capacity by using new SWIM information services.

CONNECT WITH YOUR PEERS

The 2016 SWIM Global Demonstration gathers a broad range of ATM experts from all over the globe representing worldwide renowned companies and organisations. This presents the perfect opportunity to connect with your peers and meet new colleagues.



Networking

Get to know your peers around some food and drinks, no better way to connect in a relaxed atmosphere.



SWIM Global Demo App

The app allows you to view the agenda and presentations, find out more about the speakers, connect with your peers and find your way around the ENAV premises.



Twitter

Spread the word through **#SESAR** **#SWIMGlobalDemo** in order to make this event truly global.



Internet

www.sesarju.eu

About the ENAV Prototype System Center

ENAV is hosting the SGD event @ the Prototype Systems Center in Rome ACC site.

The ENAV Prototype Systems Center is supporting the company engineering activities for development, integration, testing, verification and validation of a range of air traffic control systems. The Center has a cloud-based virtualised infrastructure over a (software defined) data centre which serves SESAR as well as (pre)-operational activities. It includes a portfolio of simulation systems, real-time and live trial capabilities and interconnected with the operational environment.

The ENAV Prototype Systems Center is integrated with all major European simulation facilities by standardised simulation interoperability, including SWIM. The Center will grow to support the virtual centre concept for the future ATM systems and will integrate all data sources including satellite-based ADS-B via AIREON. It will also include a cloud management system for unified resource operations, management and service continuity and the base of systems as a service Concept.

In collaboration with our partners:





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