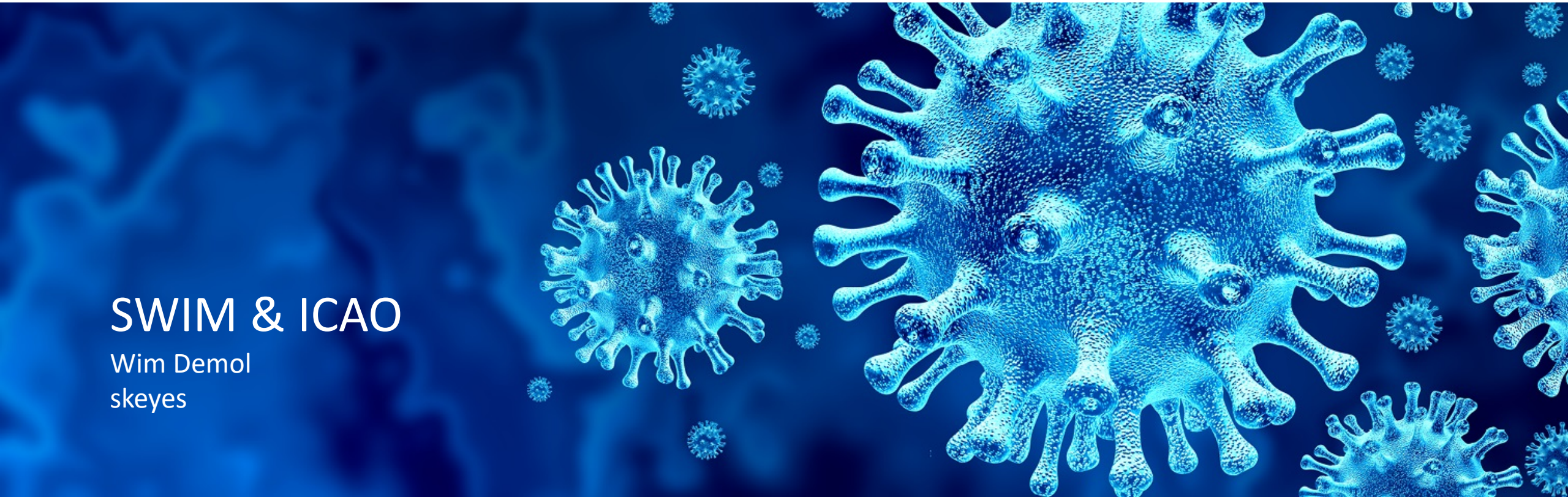
ICAO MID

ICAO MID IWXXM Implementation
WEBINAR
26-27 May 2021



SWIM & ICAO

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ICAO MID IWXXM Implementation Webinar

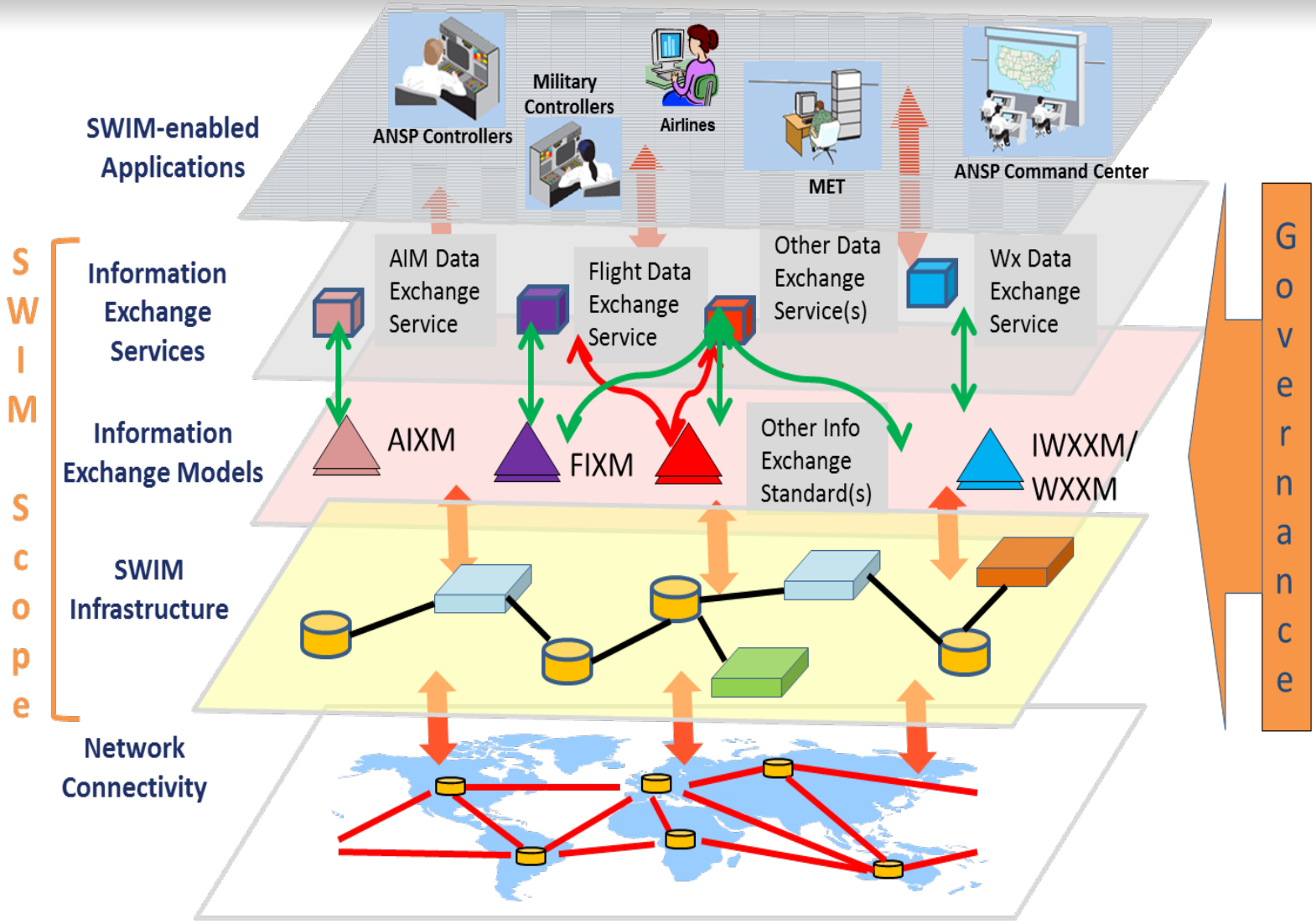
PROVISIONAL AGENDA

Agenda Item 2: Background information

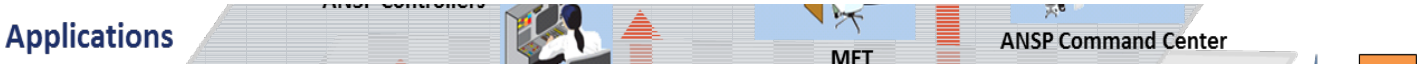
SWIM & ICAO (ASBU)

SWIM: scope & standards

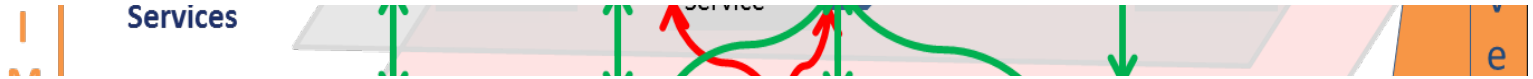
SWIM consists of standards, infrastructure and governance enabling the management of ATM related information and its exchange between qualified partners via interoperable services



SWIM-enabled Applications of information providers and information consumers around the globe that publish and/or use information. Individuals and organizations, such as air traffic managers and airspace users, will interact through applications interoperating through SWIM.



Information Exchange Services, defined for each ATM Information Domain and for cross domain purposes where opportune, following governance specifications, and agreed upon by SWIM stakeholders. SWIM-enabled applications will use information exchange services for interaction.



Information Exchange Models, using subject-specific standards for sharing information for the above Information Exchange Services. The information exchange models define the syntax and semantics of the data exchanged by applications.

SWIM Infrastructure provides the infrastructure for sharing information. It provides the core services such as interface management, request-reply and publish-subscribe messaging, service security, and enterprise service management.

Network Connectivity provides consolidated telecommunications services, including hardware. This infrastructure is a collection of the interconnected network infrastructures of the different stakeholders. These will be private/public Internet Protocol (IP) networks.

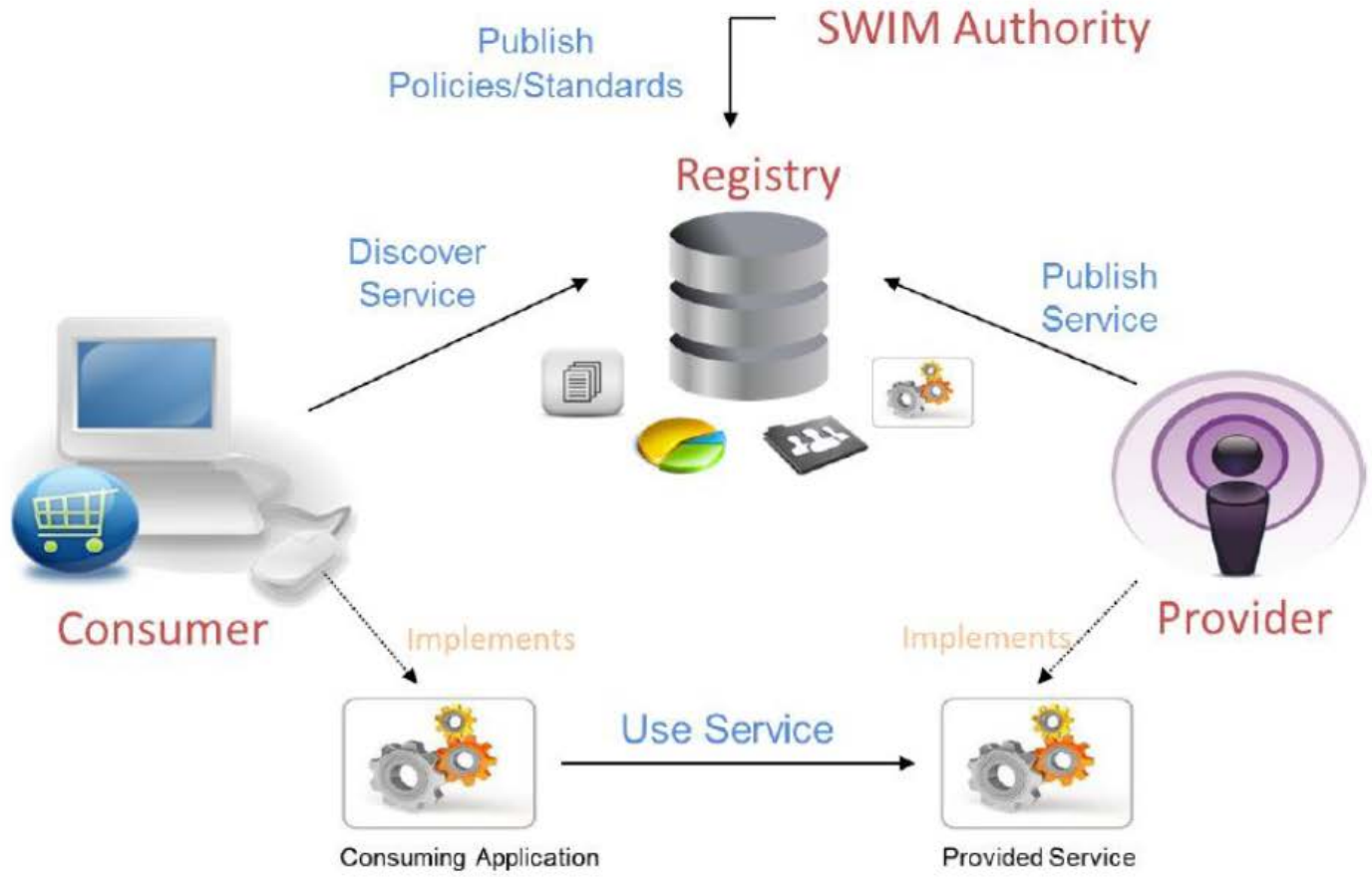
SWIM governance: SWIM Service provisioning policy

SESAR Common SWIM Components project
Status: draft doc

The SWIM Service Provisioning Policy addresses three aspects of service provisioning:

1. Service registration: Enabling SWIM Service Providers to publish their Information Services in the SWIM Registry.
2. SWIM Compliance Assessment: Enabling SWIM Service Providers to demonstrate the conformance of their Information Services to SWIM Compliance criteria.
3. Alignment of Service Designs: Enabling SWIM Service Providers of similar SWIM Services to align their Service Designs.

Information services made available by providers need to be discoverable for consumers. Here the concept of SWIM registry comes into play (ref. *ICAO Doc 10039 – Manual on System Wide Information Management (SWIM) Concept*):



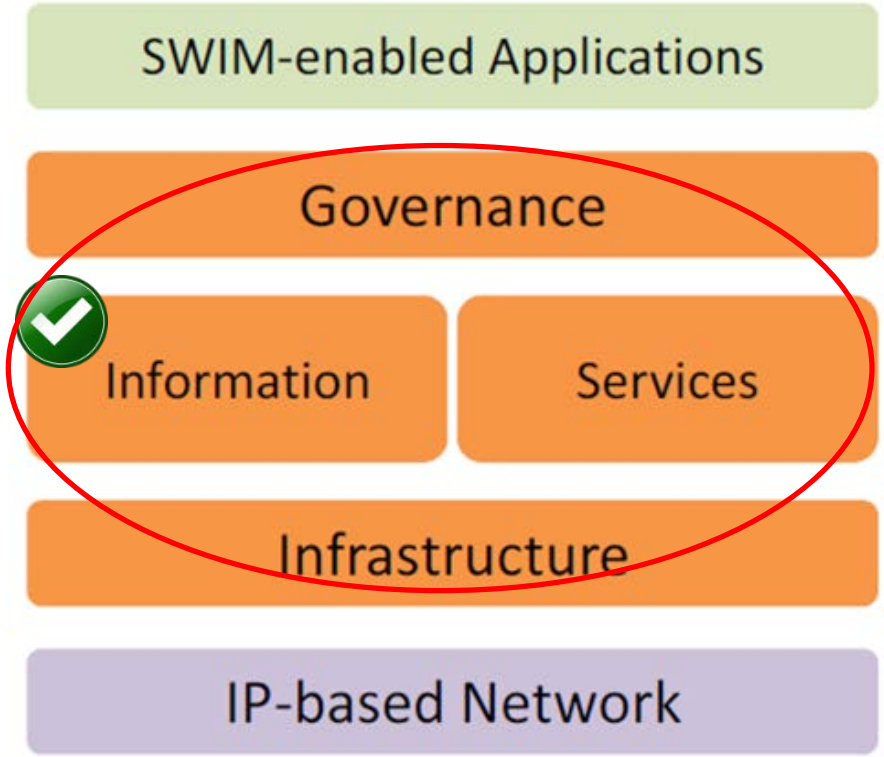
- Separation of information provision and information consumption
- Loose system coupling
- Using open standards
- Using Service Oriented Architecture

IWXXM & SWIM

→ **IWXXM is a key enabler of SWIM**

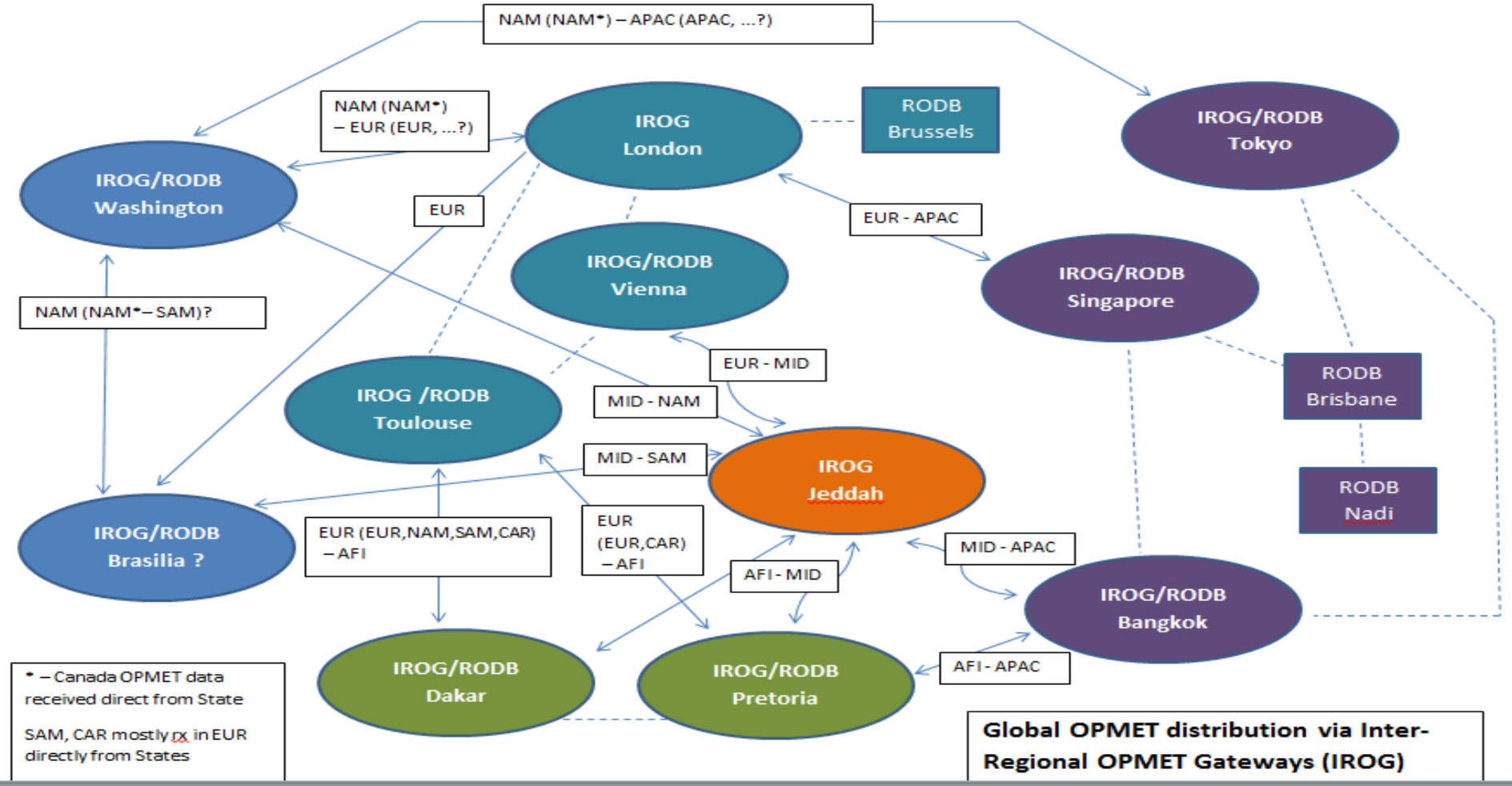
→ **SWIM core services will enable systems:**

- ❑ Request and receive information when needed
- ❑ Subscribe to services for automatic receipt
- ❑ Publish information & services
- ❑ Promote sharing of information across different systems

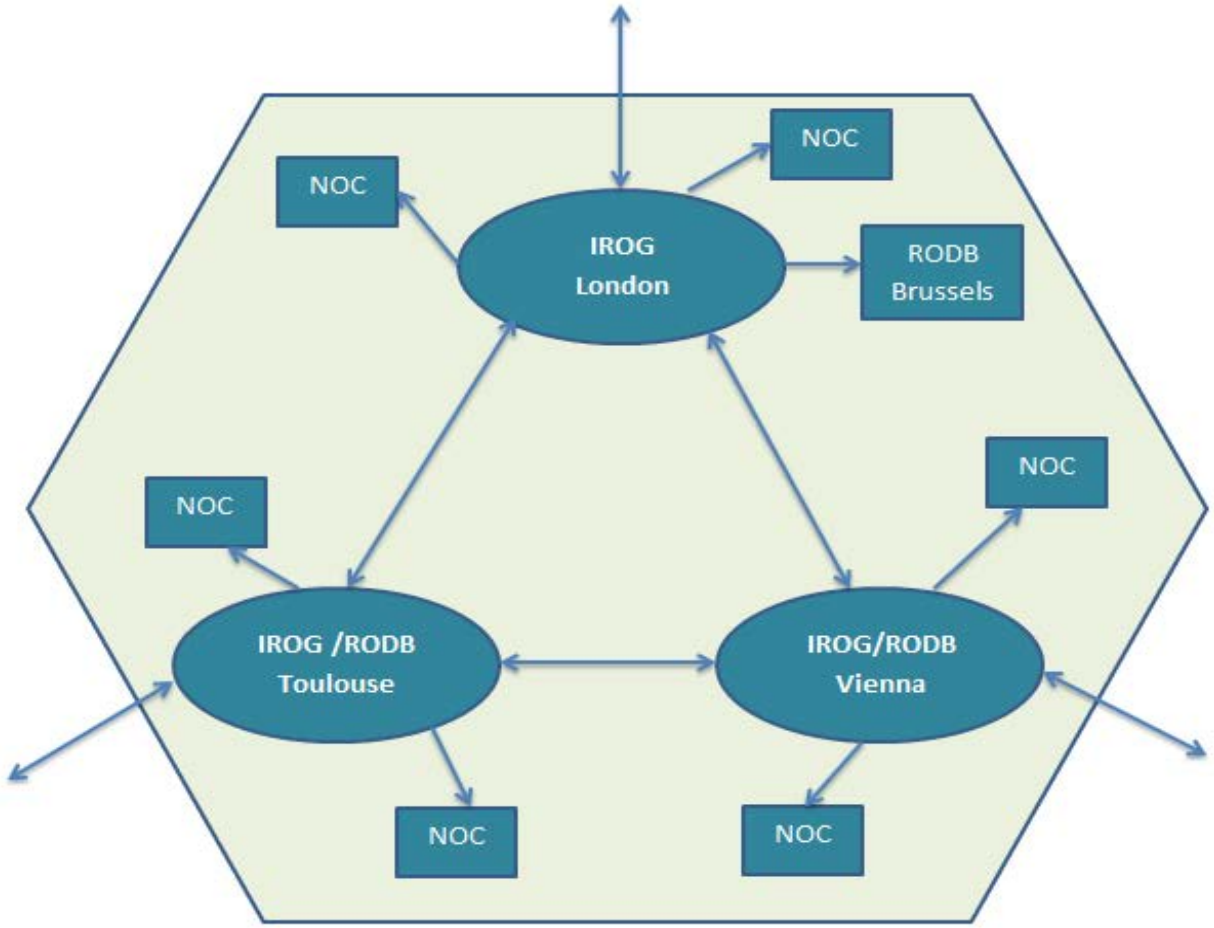


SWIM & ICAO: OPMET data distribution

ICAO OPMET data distribution



ICAO OPMET data distribution



managed by the
data management group (DMG)
of EUR METG

→ How to swimify ???

ICAO: IWXXM OPMET data distribution

→ **ICAO EUR Doc 33:**
Guidelines for the Implementation of OPMET Data Exchange using IWXXM in the EUR Region

new message formats: gml
new communication technology: (compressed) AMHS File Transfer Body Part

- **BUT: still "old school" message distribution → "RODEX" scheme**
- **Only a (painful but necessary) first step towards SWIM**

SWIM & ICAO (global)

→ 2 global groups:
  → IMP: Information Management Panel (not only MET)
  → WG MIE: MET Information Exchange (only MET); sub-group of ICAO MET Panel

→ IMP documents:
- Manual on System Wide Information Management: ICAO Doc 10039
  - Volume 1: SWIM Concept (draft ready)
  - Volume 2: SWIM Implementation (end 2023)

- ICAO SWIM Provisions: PANS-IM Vol 1 - SWIM (end 2023)

→ Phased implementation according to the Global Air Navigation Plan (ICAO Doc 9750)

→ Still many unknowns !

SWIM & ICAO (EUR)

1. SWIM Project Team → responsible for regional implementation of SWIM
   - → Not only MET
   - → 5 tasks identified:
     - Regional roadmap
     - Services & registration
     - Enablers (infrastructure, trusted data sources,…)
     - State Implementation Support
     - Communication
   - → Focuses currently on a SWIM implementation roadmap + tracking of implementation
   - → Plans provide a « SWIM kit »

2. AFS SWIM Transition Task Force (AST TF): mainly networking (newPENS,…)

3. DMG work program: « Follow SWIM developments from WG/MIE and EUR SWIM PT and assist in deriving an implementation plan in the EUR region for SWIM »

ICAO GANP 2019: new timeline

Thread	Block 0	Block 1	Block 2	Block 3
AMET	B0-AMET	B1-AMET	-	B3-AMET
DATM	B0-DATM	B1-DATM	-	-
FICE	B0-FICE	B1-FICE	B2-FICE	B3-FICE
SWIM	-	B1-SWIM	B2-SWIM	-

GANP 2016

Thread	Block 0	Block 1	Block 2	Block 3	Block 4
AMET	B0-AMET	B1-AMET	B2-AMET	B3-AMET	B4-AMET
DATM	-	B1-DAIM	B2-DAIM	-	
FICE	B0-FICE		B2-FICE	B3-FICE	B4-FICE
SWIM	-	-	B2-SWIM	B3-SWIM	

GANP 2019

2013 2019 2025 2031 xxx

https://www4.icao.int/ganpportal/

2013 Block 0 | 2019 Block 1 | 2025 Block 2 | 2031 Block 3

AMET-B0/4	DISSEMINATION OF METEOROLOGICAL PRODUCTS
Main purpose	Dissemination of meteorological products in support of flexible airspace management, improved situational awareness, collaborative decision-making and dynamically optimized flight trajectory planning
New capabilities	Commencement of the exchange of meteorological information using the ICAO Meteorological Information Exchange Model (IWXXM), being the conversion of Traditional Alphanumeric Code (TAC), using an IWXXM schema, into XML/GML.
Description	This element represents the dissemination of meteorological products using a variety of formats and means.

AMET-B1/4	DISSEMINATION OF METEOROLOGICAL INFORMATION
Main purpose	Dissemination of meteorological information in support of automated decision process or aids, involving meteorological information, meteorological information translation, ATM impact conversion and ATM decision support.
New capabilities	Meteorological information in ICAO Meteorological Information Exchange Model (IWXXM) form starts to replace traditional alphanumeric code (TAC) products. Human-readable products will start to be derived from the IWXXM information (rather than the other way around). The introduction of web services allows for progressive replacement of fixed line dissemination systems.
Description	This element represents the dissemination of meteorological products using a variety of formats, including:

AMET-B2/4	METEOROLOGICAL INFORMATION SERVICE IN SWIM
Main purpose	Integrated meteorological information service in the SWIM environment in support of enhanced operational ground and air decision-making processes, particularly in the planning phase and near-term.
New capabilities	Implementation of a data-centric meteorological information service, integrated into the System Wide Information Management (SWIM) environment. User-defined products derived from meteorological information in ICAO Meteorological Information Exchange Model (IWXXM) form. Wider use of secure web
Description	

AMET-B3/4	METEOROLOGICAL INFORMATION SERVICE IN SWIM
Main purpose	Integrated meteorological information service in the SWIM environment in support of enhanced operational ground and air decision-making processes, for all flight phases and corresponding air traffic control operations.
New capabilities	Implementation of a data-centric meteorological information service, integrated into the System Wide Information Management (SWIM) environment. Enhancement of ICAO Meteorological Information Exchange Model (IWXXM) with further schemas and formats for meteorological information exchange. User-defined products automatically derived from meteorological information in ICAO Meteorological Information Exchange Model (IWXXM) form. Extensive use of secure web services, in particular business-to-business services that allows full integration of meteorological information
Description	The establishment of standards for global exchange of the MET information within the SWIM environment. This element represents the full integration of meteorological information into the System Wide Information Management (SWIM) environment. Extensive use of MET-SWIM services will support flexible airspace management, airborne re-routing, improved situational awareness, collaborative decision-making, including in terminal areas and at airports, dynamically optimized flight trajectory planning, ATM impact conversion and ATM decision support, hazard avoidance. Meteorological information to be more readily exchanged with the aircraft to improve operational awareness and decision making using air/ground data connectivity and aircraft on-board systems. MET-SWIM information services will support request/reply or publish/subscribe access mechanisms and will provide quality & timely information to users in a range of formats to best enable their optimal decision making.

IWXXM & SWIM related AMET elements

ICAO

North American Central American and Caribbean (NACC) Office Mexico City
South American (SAM) Office Lima
ICAO Headquarters Montréal
Western and Central African (WACAF) Office Dakar
European and North Atlantic (EUR/NAT) Office Paris
Middle East (MID) Office Cairo
Eastern and Southern African (ESAF) Office Nairobi
Asia and Pacific (APAC) Sub-office Beijing
Asia and Pacific (APAC) Office Bangkok
THANK YOU