

# ICAO GLOBAL AIR NAVIGATION PLAN

GANP@ <https://www4.icao.int/ganportal>

## MULTILAYER STRUCTURE OF THE GANP

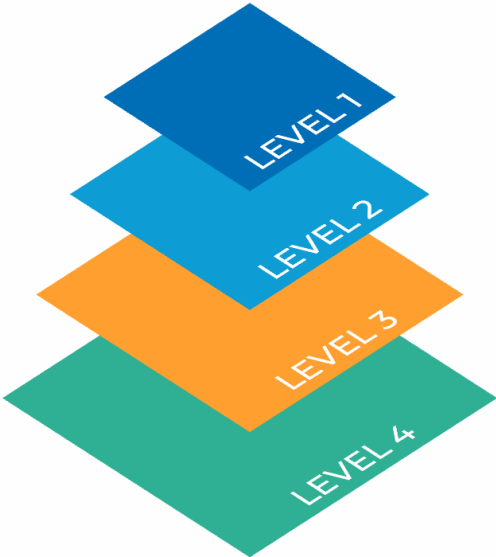
Click a level to navigate

GLOBAL STRATEGIC

GLOBAL TECHNICAL

REGIONAL

NATIONAL



**GLOBAL STRATEGIC** ✕

Provides high-level strategic directions for decision makers to drive the evolution of the global air navigation system towards a common agreed vision.



GANP DOCUMENT

**GLOBAL TECHNICAL** ✕

Supports technical managers in planning the implementation of basic air navigation services and new operational improvements in a cost-effective manner.



ASBUs AN-SPA BBBs

**REGIONAL** ✕

Addresses regional and sub-regional needs aligned with the global objectives.

- AFI ANP
- APAC ANP
- EUR ANP
- MID ANP
- NAM ANP
- NAT ANP
- CARSAM ANP

**NATIONAL** ✕

Development by States, in coordination with relevant stakeholders, of air navigation plans aligned with regional and global plans.



NANP TEMPLATE



CBA CHECKLIST

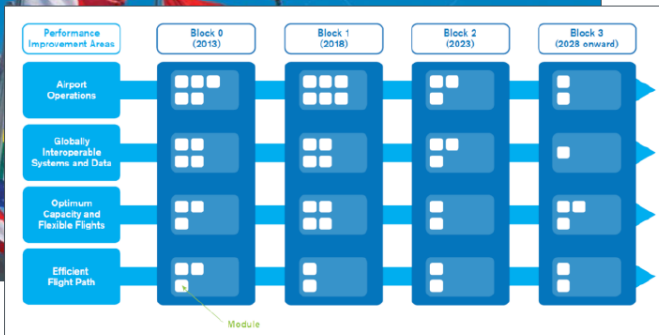
# ICAO's Role in ATM Modernization

## STRATEGIC OBJECTIVE ②



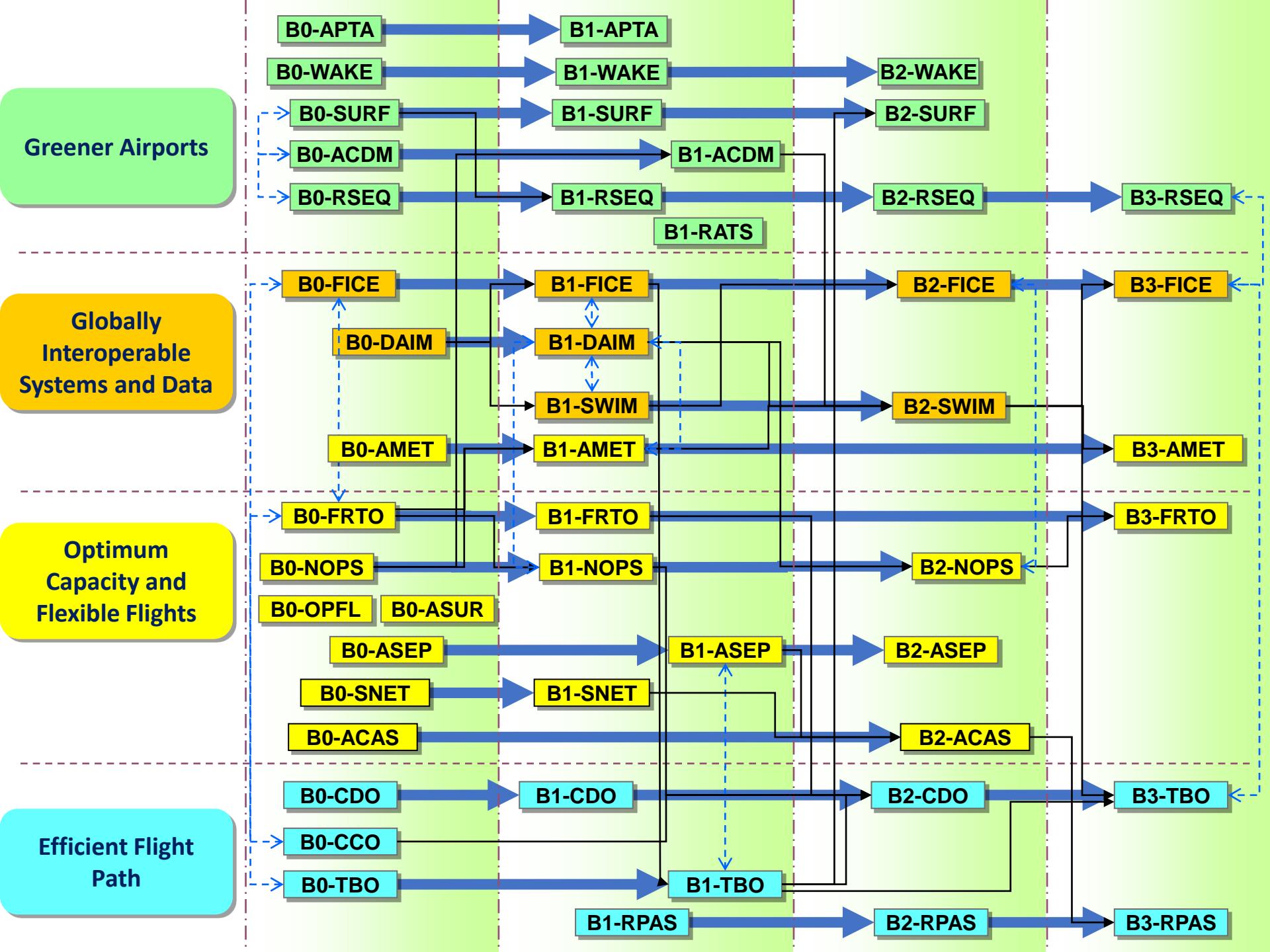
CAPACITY AND EFFICIENCY

2013–2028  
Global Air Navigation Plan

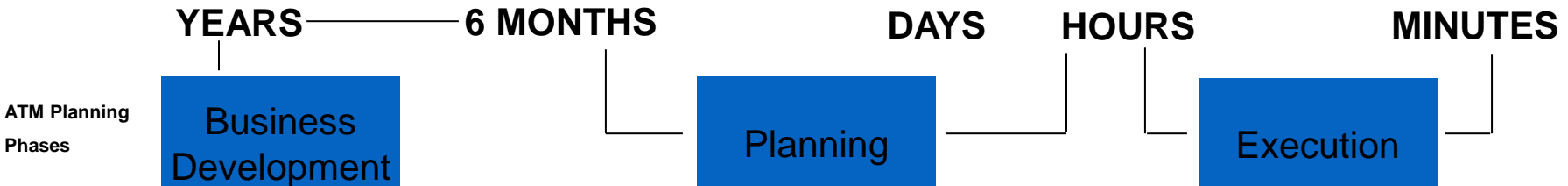


*“Increase the **capacity** and improve the **efficiency** of the global civil aviation system”*

- Through the **GANP**, offer a **long-term vision** to assist **all aviation stakeholders**, and ensure **continuity** and **harmonization** among modernization programmes
- Through the **Aviation System Block Upgrades (ASBU)**, provide a consensus-driven **modernization strategy** for integrated planning



# The need for sharing ATM information



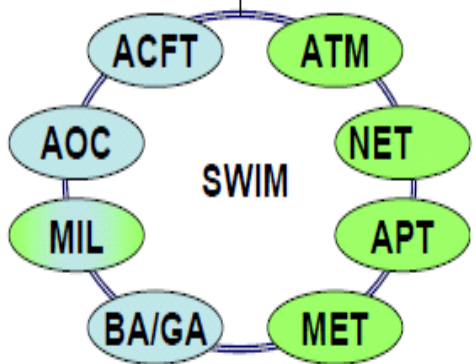
**Sharing Information**  
**a Key enabler for**  
**planning – executing - analysis**

Business Development Trajectory

Shared Business Trajectory

Reference Business Trajectory

Lifecycle of Business Trajectory



# Overview of ICAO history on SWIM



Work initially done by  
**ATMRPP**

**SWIM operational concept developed  
(Doc 10039 available)  
A/G components to be added to the  
concept**



**Information Management Panel**  
established (ANC 194th session)

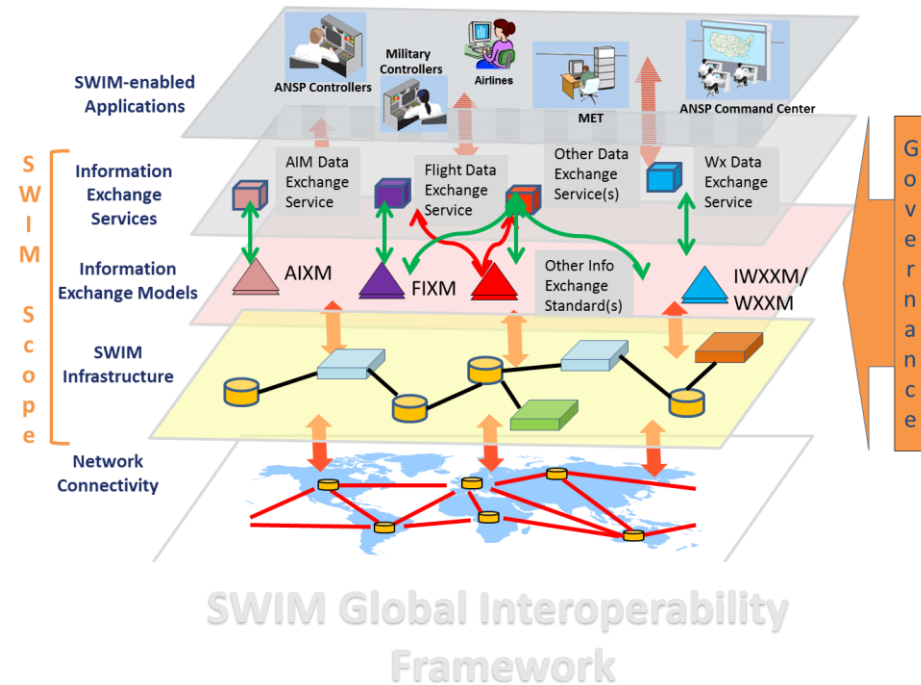
**Building Global SWIM  
Assisting Secretariat as focal  
point for integration of all its  
components**



**SWIM enablers** being worked out by various Panels  
(Flight and Flow, COM, AIM and MET)

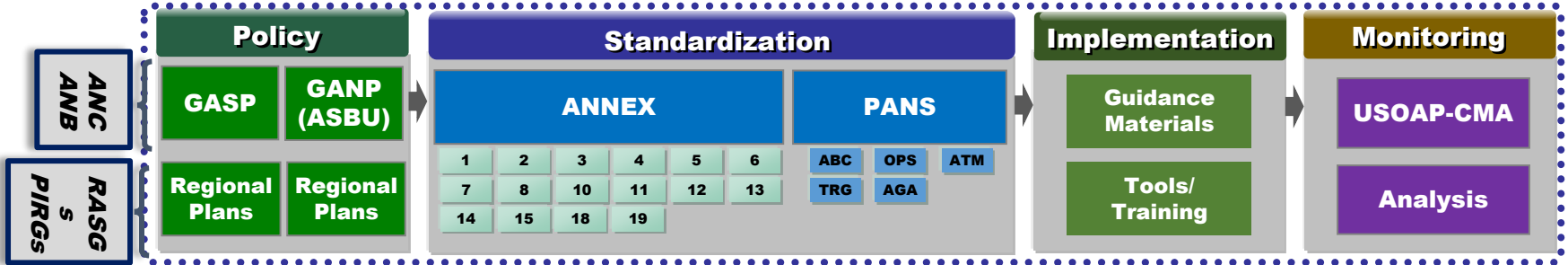
# System-Wide Information Management (SWIM) Vision

- SWIM is an integral part of the **Global Air Navigation Plan (GANP) (Doc 9750)** and is covered in a number of the aviation system block upgrades (ASBU) modules
- **The Manual on Air Traffic Management System Requirements (Doc 9882)** explicitly identifies the implementation of SWIM as a requirement for the future ATM System
- **The Manual on SWIM Concept (Doc 10039)** provided a vision for interoperable global information management while addresses the transition to a mixed operational environment



# ICAO AIR NAVIGATION WORK SYSTEM

## Air Navigation Work Programmes



### INTEGRATION

**ATMRPP**  
Air Traffic Management Requirements and Performance Panel

**RPASP**  
Remotely Piloted Aircraft Systems Panel

C2-WG    DAA-WG

C2-WG: Command and Control Working Group, DAA-WG: Detect and Avoid Working Group

### OPERATIONS

**FLTOPSP**  
Flight Operations Panel  
FLIREC-WG

**ATMOPSP**  
Air Traffic Management Operations Panel  
WTS-WG

**SASP**  
Separation and Airspace Safety Panel

**ADOP**  
Aerodrome Design and Operations Panel  
Design-WG    Operations-WG

**IFPP**  
Instrument Flight Procedures Panel

FLIREC-WG: Flight Recorder Working Group, WTS-WG: Wake Turbulence Specific Working Group

### ENABLERS

**FSMP**  
Frequency Spectrum Management Panel

**CP**  
Communication Panel  
OPDL-WG    DCI-WG    VC-WG

**NSP**  
Navigation Systems Panel

**SP**  
Surveillance Panel  
AIRBS-WG

**IMP**  
Information Management Panel

**METP**  
Meteorology Panel

OPDL-WG: Operational Datalink Working Group, DCI-WG: Data Communications Infrastructure Working Group, VC-WG: Voice Communications Working Group, AIRBS-WG: Airborne Surveillance Working Group

### SPECIALIST

**SMP**  
Safety Management Panel

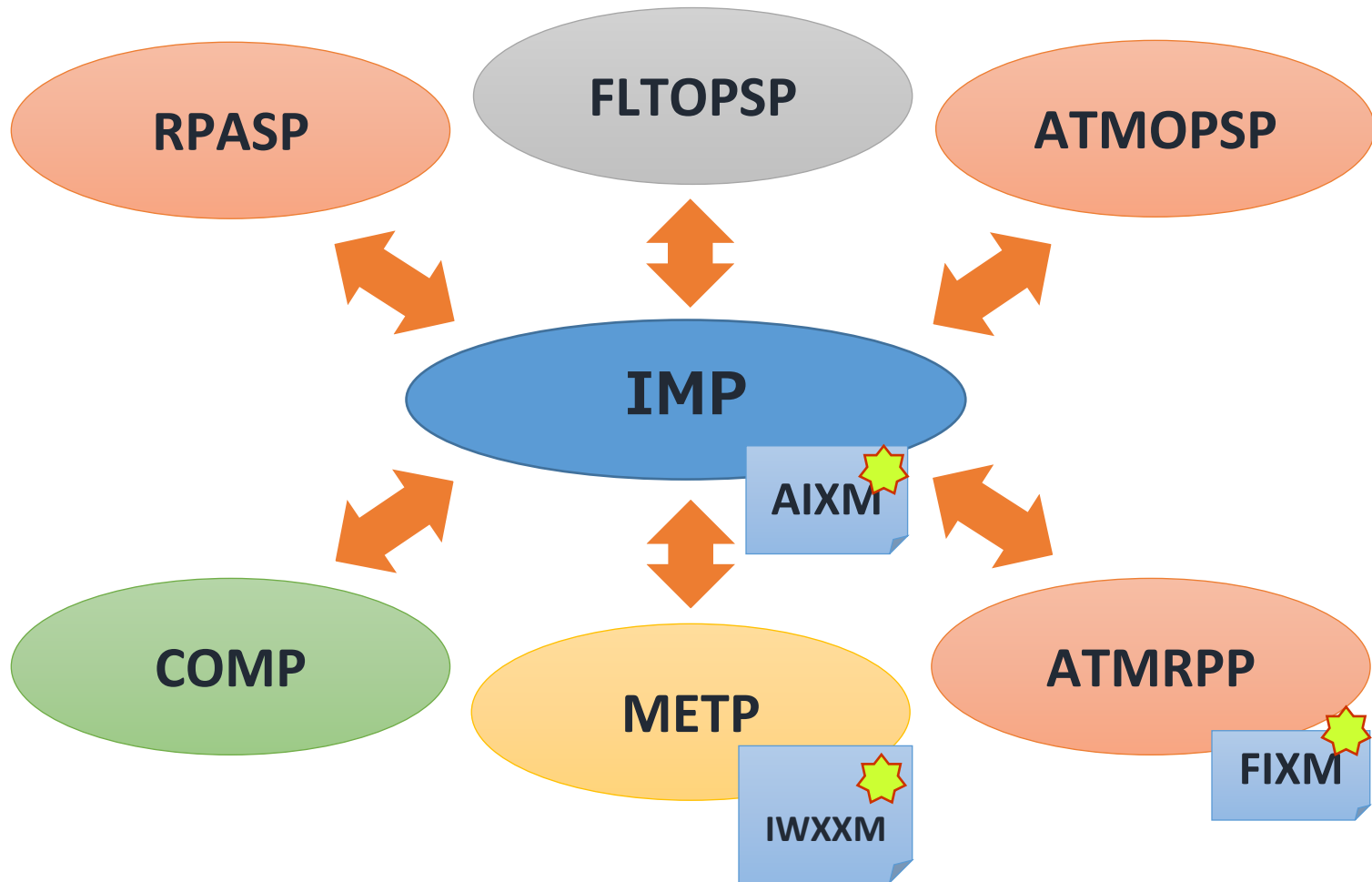
**DGP**  
Dangerous Goods Panel

**AIRP**  
Airworthiness Panel

**AIGP**  
Accident Investigation Panel

Panels and their Specific Working Groups

# SWIM@ICAO - a multidisciplinary approach





ICAO

# INTERNATIONAL CIVIL AVIATION ORGANIZATION

A UN SPECIALIZED AGENCY

## Information Management Panel (IMP)



# THE INFORMATION MANAGEMENT PANEL (IMP)

## Chair and Co-Chair

- *Jean-François Grout* IATA
- *Joanna Llewellyn-Santkiewicz* UK

## Membership

- *19 States, 7 international organizations, 1 observer*

## Reporting line

- *Air Navigation Commission*

## Activities undertaken in the cybersecurity field

- *Information security framework referenced in PANS-IM*

## Meetings

- *IMP1 January 2015*
- *IMP2 September 2021*
- *WG meeting once or twice a year,*
- *Next meeting April 2024*
- *Sub-group per job cards that progress the work via teleconferences*

# ICAO Information Management Panel

## States

- Australia
- Brazil
- Canada
- China
- France
- Germany
- India
- Ireland
- Japan
- Russian Federation
- Saudi Arabia
- Singapore
- South Africa
- Sweden
- Switzerland
- Thailand
- Turkey
- United Arab Emirates
- United Kingdom
- United States



## International organizations

- ASECNA
- CANSO
- EUROCONTROL
- IATA
- ICCAIA
- IFAIMA
- IFALPA

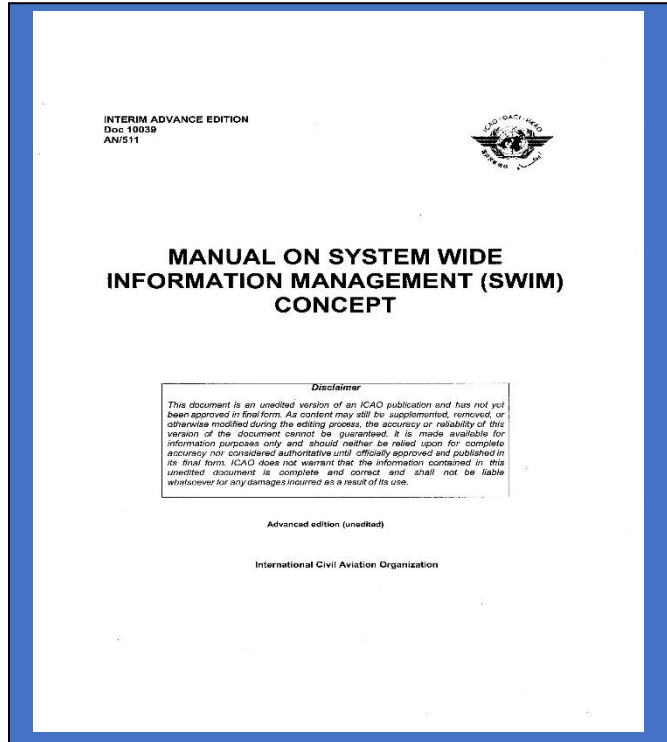
# Panel Objectives (TOR)

- Define a global interoperability framework describing the functions, architectures and system design requirements.
- Define and elaborate on the ATM information management concepts:
  - functions and processes required,
  - including a business model to provide accredited, quality-assured and timely information required by actors within the air navigation system and used to support operations (including full FF-ICE, digital MET information exchange and NOTAM system review) on a system-wide basis, including avionics.
- Identify the quality of service requirements necessary to maintain ATM information security, integrity, confidentiality and availability, and to mitigate the risks of intentional disruption and/or changes to safety-critical ATM information

## Panel Objectives (TOR) – Part 2

- Develop an ATM information service architecture.
- Identify the requirements for SARPs and changes to existing SARPs to support the information requirements in accordance with the Global Air Navigation Plan and:
  - develop those SARPs necessary to enable SWIM'
  - update and maintain the information management roadmap.
- Develop transition strategies and guidance necessary for the implementation of global SWIM and new information exchange formats, including future avionic requirements.
- Identify and plan for anticipated data and information flows in relation to future ATM requirements and capabilities and assess the capacity of appropriate Facilities to support them.

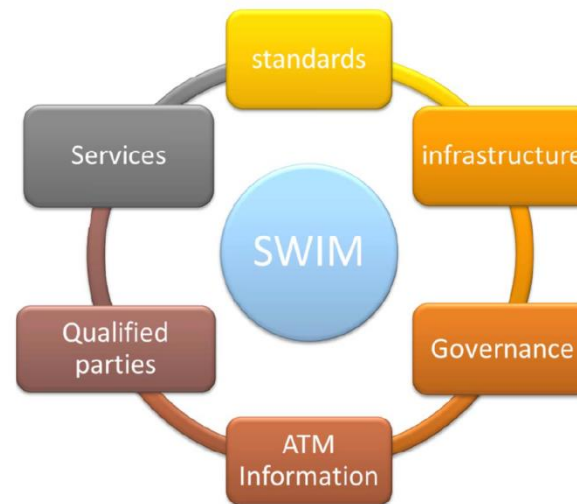
# IMP did not start from scratch...



## ICAO Doc 10039

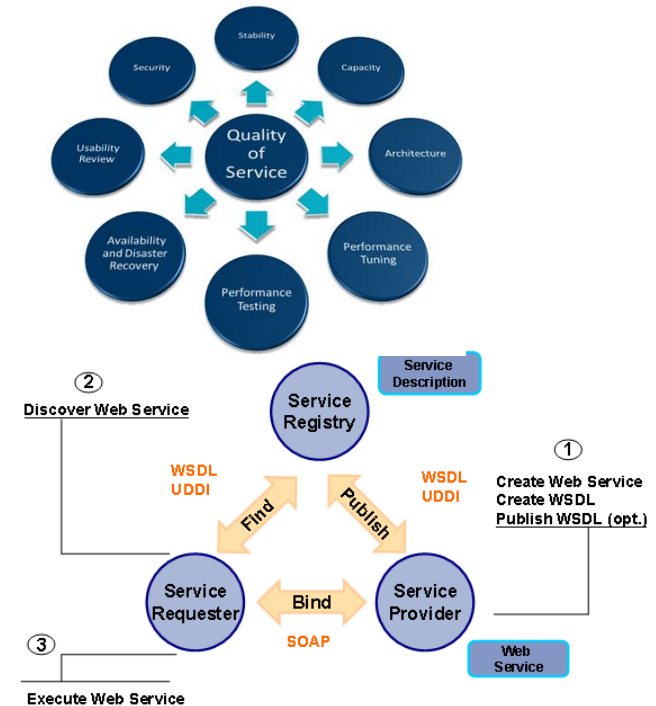
The **concept for SWIM** necessary to:

- achieve global interoperability.
- describe a common framework to facilitate discussion and promote interoperability.

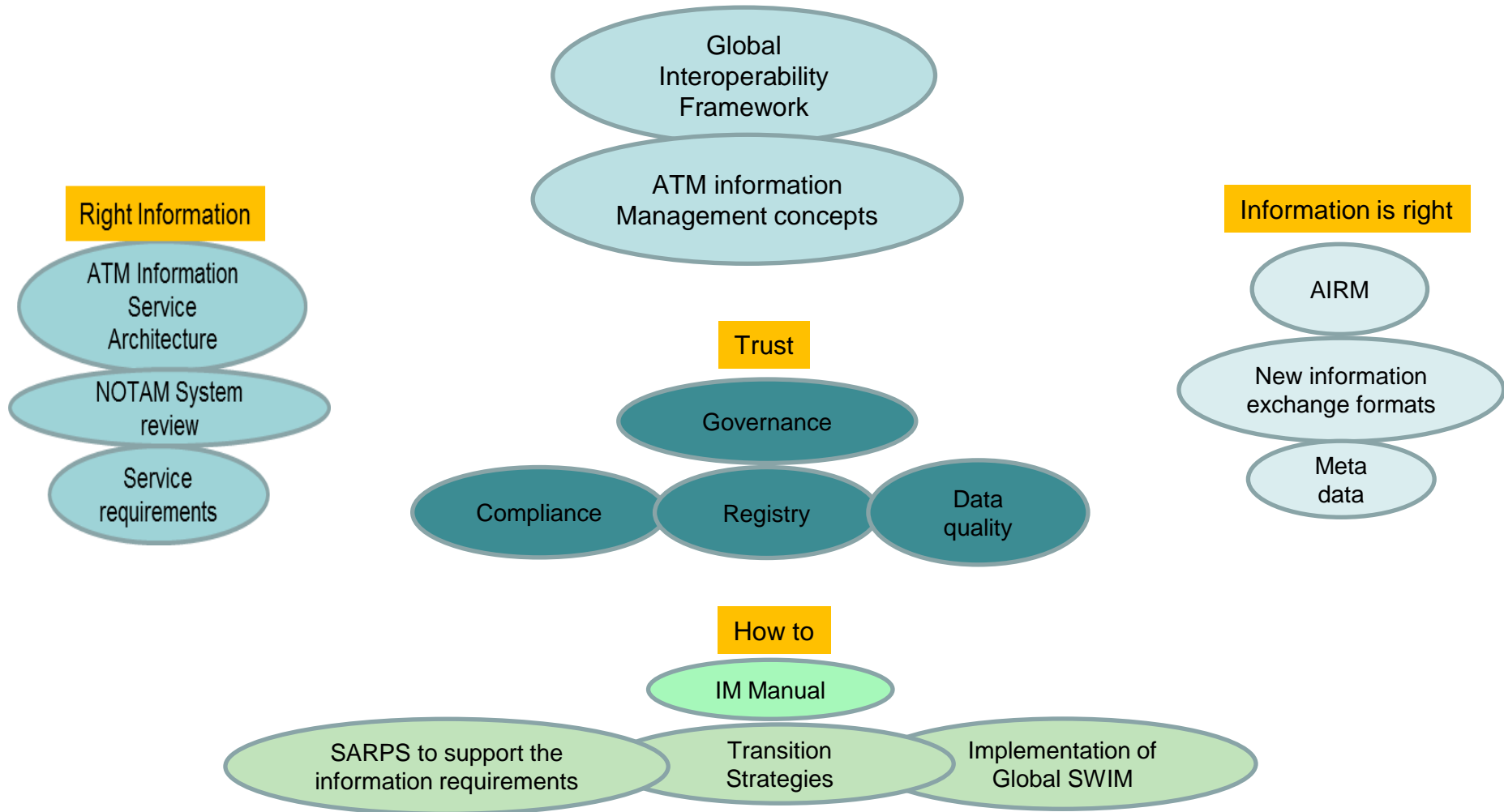


# IMP Objectives

- Define a **global interoperability framework** describing the functions, architectures and system design requirements.
- Define and elaborate on the **ATM information management concepts**:
- Identify the **quality of service requirements** necessary to maintain ATM information security, integrity, confidentiality and availability
- Develop an **ATM information service architecture**.



# IMP SCOPE



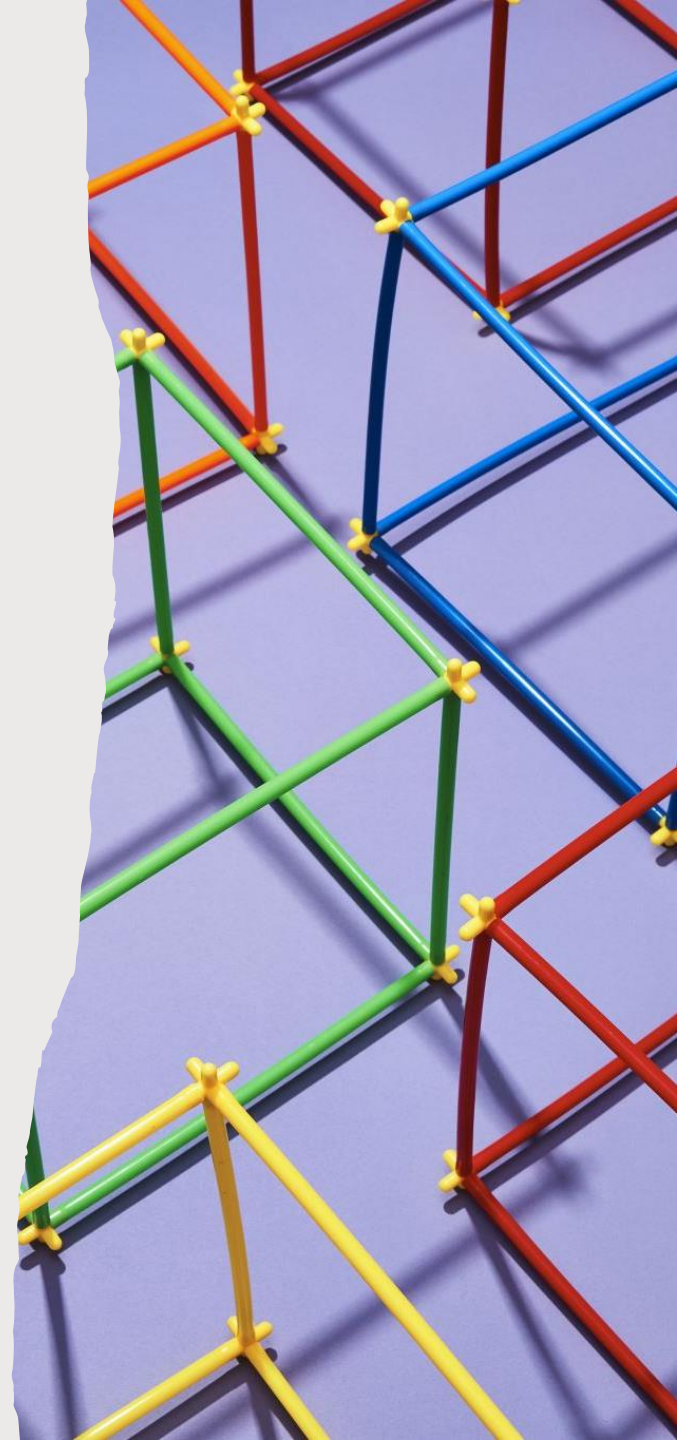
# IMP FOCUS

- Focus is on all required global interoperability aspects around (initially ground to ground) **exchange of data through information services** between providers and consumers of information.
  - Aeronautical;
  - Meteorological;
  - Flight & Flow (including airport ops); and Surveillance



# IMP Structure

- **WG-I Information Architecture & Management**
  - *to develop provisions and guidance material to describe information management concepts, functions and processes and the architectural information framework*
- **WG-S Information Services**
  - *to develop a concept for Information Services, including a SWIM Service Description Template and associated provisions and guidance material*
- **WG-G SWIM Governance**
  - *to develop provisions and guidance material to describe governance rules within the future SWIM*



# ICAO IMP

## Working Groups and Leadership

**Services**

*Diana Liang - FAA*

**Information**

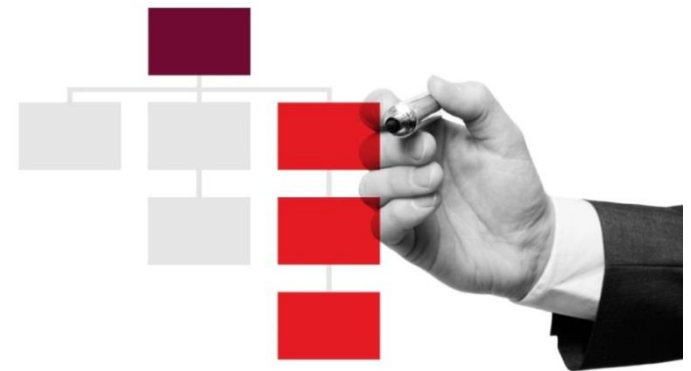
*Dennis Hart - Eurocontrol*

**Governance**

*Stephane Dubet - France*

# IMP WG-I: Information Architecture & Management

- Update of Doc.10039, Manual on SWIM Concept
  - ✓ Addressing SWIM Concept, governance and interoperability architecture
  - ✓ Including Implementation Guidance
- Define SWIM Terminology and definitions
- Introduce AIRM for semantic interoperability
- Consider SWIM technical infrastructure



# IMP WG-S: Information Services

- Formal Description of the Service (Service Overview)
  - ✓ To help service consumers discover and select information services
- Information Service Quality
  - ✓ Quality characteristics that apply to the provision of information services, e.g. availability
- Terminology used regarding Information Services



# IMP WG-G: SWIM Governance

- SWIM quality requirements to enable data quality across all SWIM data domains
  - ✓ Data, Information and Service quality
  - ✓ Quality Management
- SWIM Information services validation
  - ✓ Identifying different validation methods
- SWIM Registry for service discovery
- Governance of information exchange models (e.g. AIXM, iWXXM, FIXM)





## IMP Deliverables

- DOCUMENTS
  - PANS-Information Management
  - Updated Doc 10039 SWIM Manual New SWIM Implementation Manual
  - Air Traffic Management Information Reference Model (AIRM)

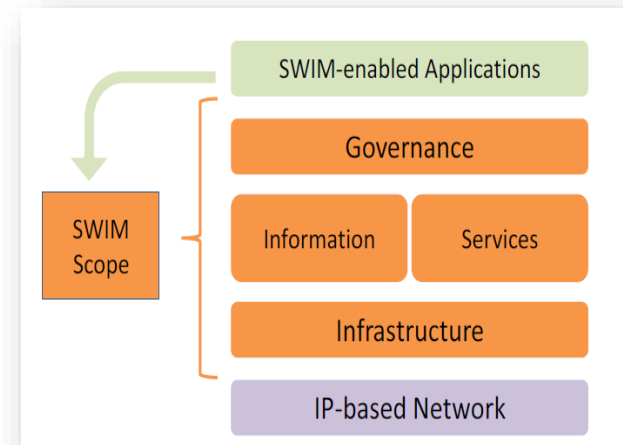
# PANS-IM

- **Contents**

- **Definitions**
- **General**
- **Governance**
- **Information**
- **Information services**
- **Technical infrastructure**

- **Latest steps carried out**

- **Inter-panel coordination**
- **ICAO (Secretariat + ANC) review**
- **State Letter**
- **Final approval and publication**



# Manual on SWIM Concept (Doc 10039)



## Doc 10039 Manual on the System-wide Information Management Concept

First Edition (Advance unedited) — 2023

### Notice to users

*This document is an unedited version of an ICAO publication and has not yet been approved in final form. As its content may still be supplemented, removed, or otherwise modified during the editing process, ICAO shall not be responsible whatsoever for any costs or liabilities incurred as a result of its use.*

Approved by and published under the authority of the Secretary General

INTERNATIONAL CIVIL AVIATION ORGANIZATION

## CONTENTS

Glossary.....	
<b>Chapter 1. General</b> .....	
1.1 Purpose and scope of the document .....	
1.2 Organization of the document .....	
1.3 Relationship to other publications .....	
<b>Chapter 2. SWIM Paradigm shift</b> .....	
2.1 The need for SWIM .....	
2.2 SWIM and service orientation .....	
2.3 Definition .....	
2.4 Interoperability principles .....	
2.5 Benefits .....	
<b>Chapter 3. SWIM Concept description</b> .....	
3.1 Components, context and scope .....	
3.2 SWIM Stakeholders and roles .....	
3.3 Information domains .....	
3.4 Global Interoperability .....	
3.5 Quality management .....	
3.6 Performance improvement .....	
<b>Chapter 4. Governance</b> .....	
4.1 Introduction .....	
4.2 Governance of Information .....	
4.3 Governance of Information services .....	
4.4 Governance of technical Infrastructure .....	
<b>Chapter 5. Information</b> .....	
5.1 Introduction .....	
5.2 ATM Information reference model .....	
5.3 Information exchange models .....	
5.4 Metadata .....	
<b>Chapter 6. Information services</b> .....	
6.1 Introduction .....	
6.2 Information service performance characteristics .....	
6.3 Information service classifications .....	
6.4 Information service overview .....	
6.5 SWIM registry .....	
<b>Chapter 7. Technical Infrastructure</b> .....	
7.1 Introduction .....	
7.2 Information security considerations .....	

# SWIM IMPLEMENTATION MANUAL



AGREED EDITION OF THE SWIM IMPLEMENTATION MANUAL

Doc XXXXX

Manual on System Wide Information  
Management Implementation

Version: |



- **Contents**
  - **Definitions and acronyms**
  - **Service orientation and architecture of SWIM**
  - **Governance**
  - **Information**
  - **Information services**
  - **Technical infrastructure**
  - **Evolution into SWIM**

