System Wide Information Management (SWIM)

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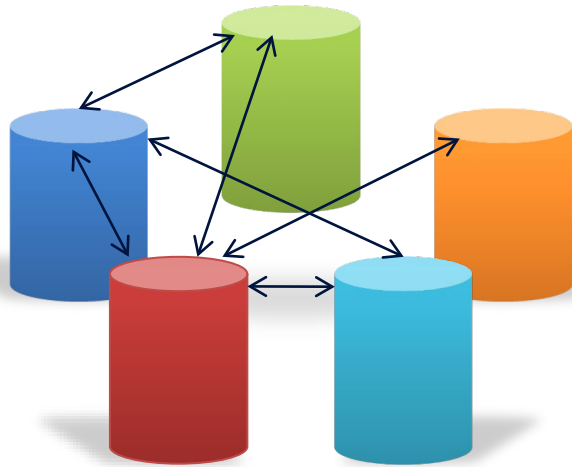
AIM Regional Officer

NACC Office/Aug-2023

Content

- Identification of requirements

- Possible action

- Topology analysis

- Main Concept

- Conclusions

The current requirements of air navigation are the information and data systems in addition to the infrastructure
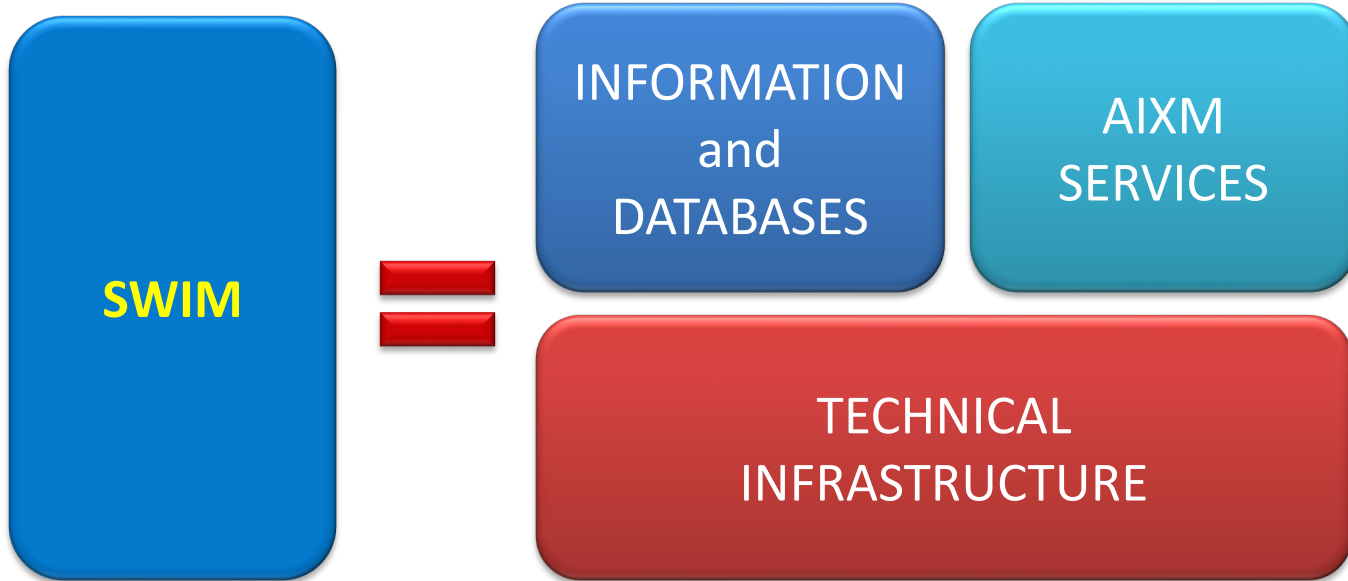
Some are:

- No Duplicity
- Validated source data and information
- Risk monitoring
- Updated Databases
- Data integrity registration
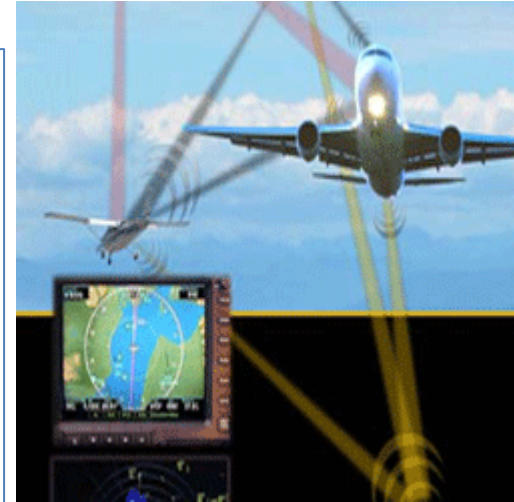
Data Sets → **Navigation Systems**

Basic requirements of SWIM

SWIM =
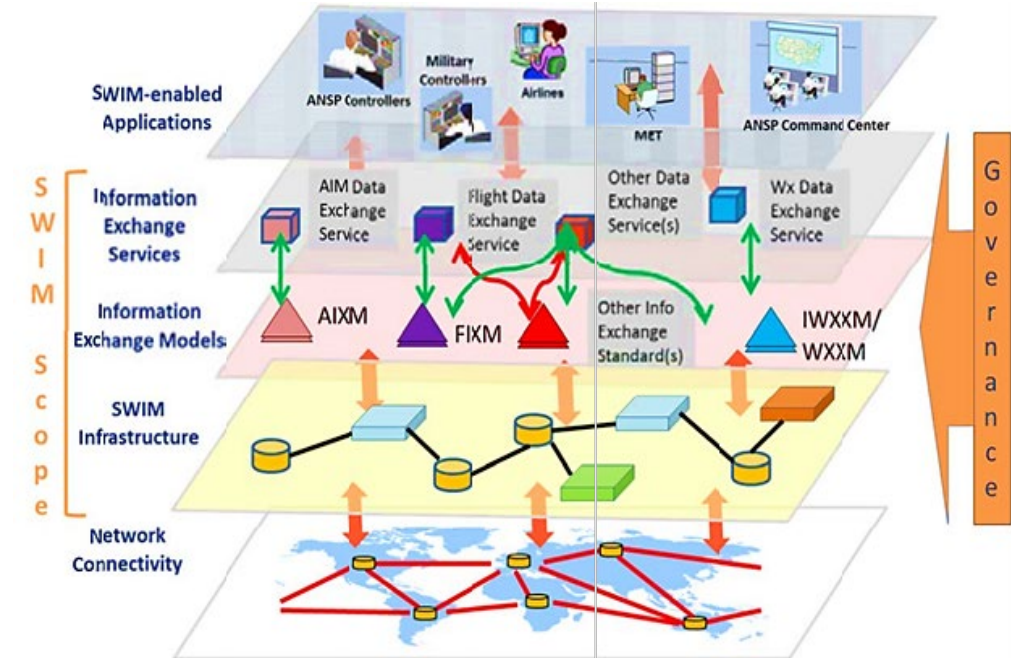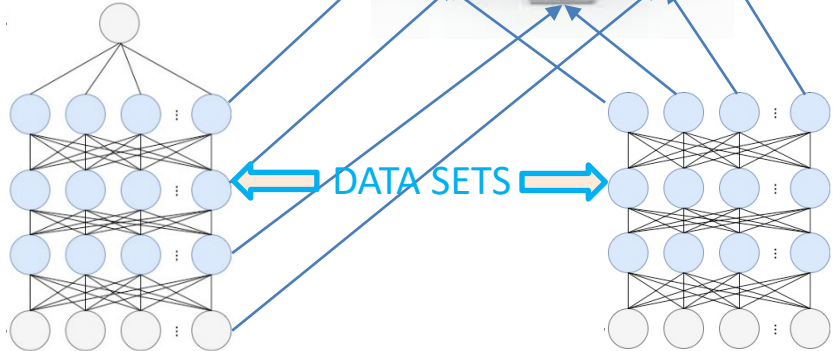
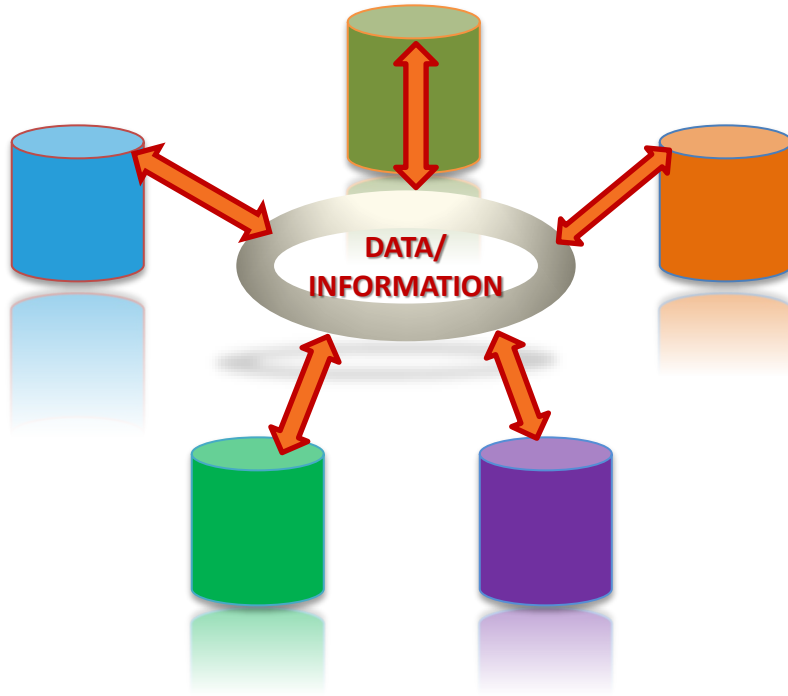INFORMATION and DATABASES

AIXM SERVICES

TECHNICAL INFRASTRUCTURE

Possible Action

SWIM Data/information

- ✓ **Administrar**
- ✓ **Accesar**
- ✓ **Publicar**
- ✓ **Actualizar**
- ✓ **Intercambiar**
- ✓ **...**

Data Set management

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MANUAL ON SYSTEM WIDE INFORMATION MANAGEMENT (SWIM) CONCEPT

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Advanced edition (unedited)

International Civil Aviation Organization

WORK IN PROGRESS

TABLE OF CONTENTS

Basic Scheme SWIM

SWIM among Regions

Data Sets
Application - 1
SWIM Region 1
Hub – Centralized message broker
Data Sets
Application - 2
Interfase
Application
Interfase
Data Sets
SWIM Region
FF-ICE Services
Custom messages
Adaptor
FF-ICE Management
BUS
Data Sets
Interfase
Application - 1
SWIM Region 2

SWIM PROGRAMS

SESAR

NextGen

CARATS
Collaborative Actions for Renovation of Air Traffic Systems
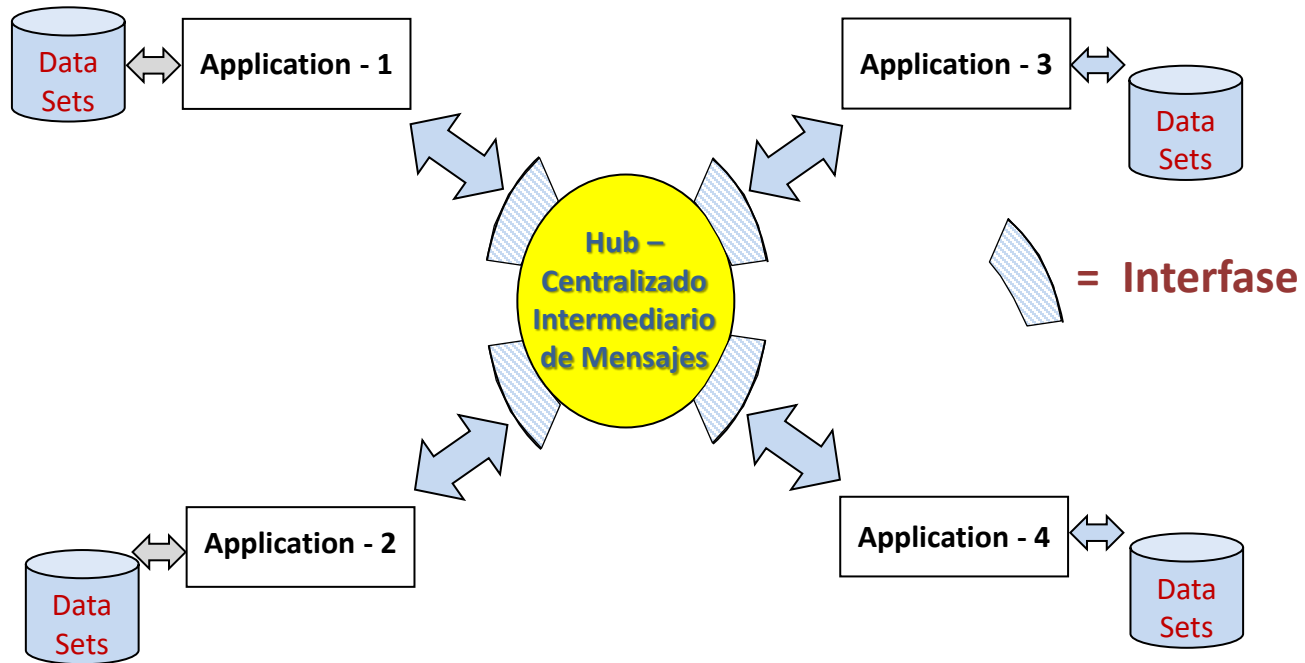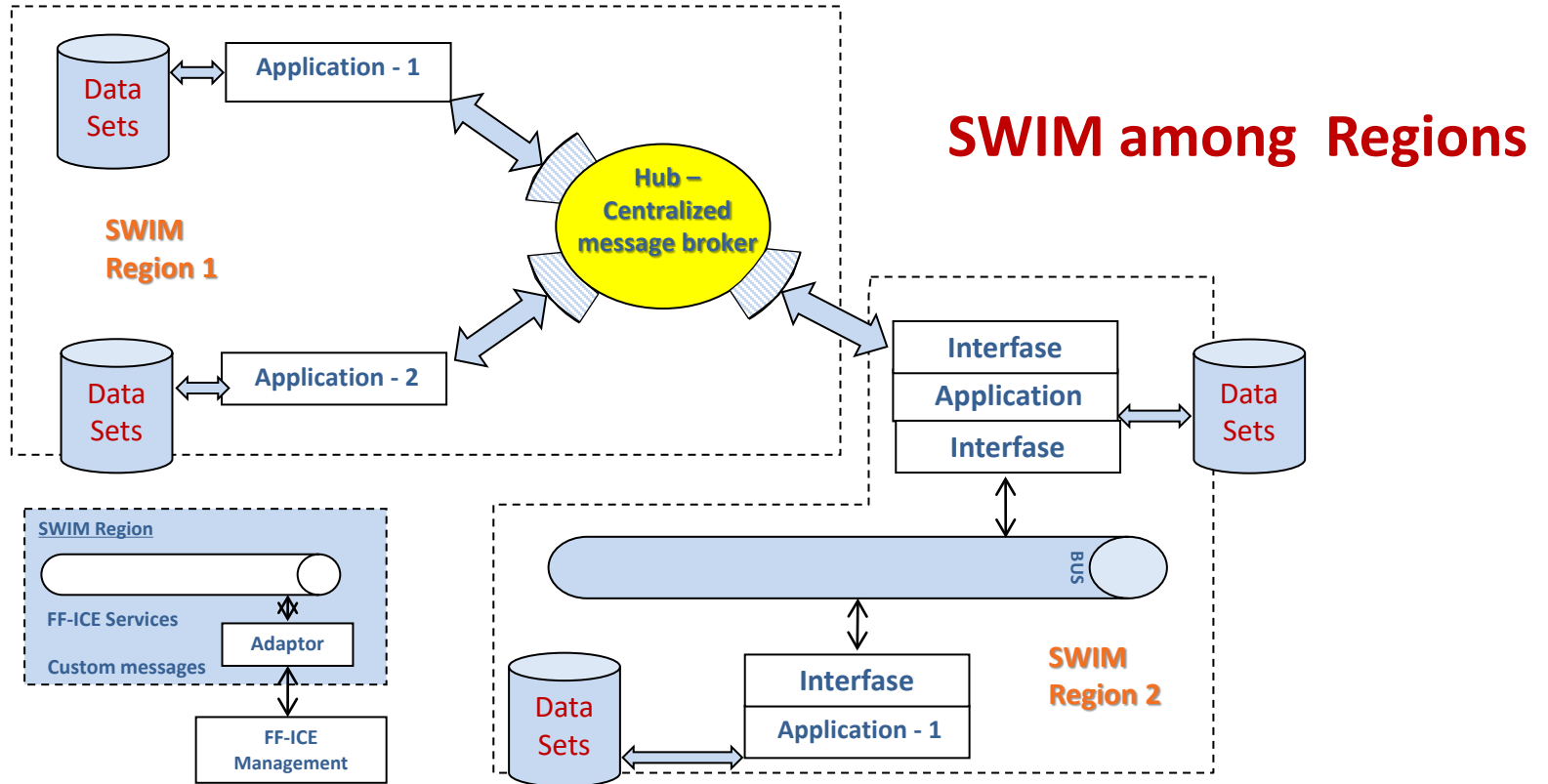
✈They also exist in :

✈Australia

✈Republic of Korea…

Aeronautical Information
- **AIXM**

Aerodrome Information
- **AMXM**

Flight Information
- **FIXM**

Surveillance Information
- ...

Meteorology Information
- **WXXM**

ATM Information
- ...

Ámbito de aplicación SWIM

Metodología común

(SWIM Habilitado) Aplicaciones

Información
Gobierno, Copyright, derechos de propiedad intelectual, carga, responsabilidad
Datos / modelos de servicio

Infraestructura
Mensajería, seguridad, supervisión, disponibilidad...
Uso máximo de capacidad

CNS Infra-estructura
IP basado en Red (IT PENS, Internet)

Tecnología y Sistemas

Compartir datos e información es un factor clave para:

- **Planificación**
- **Ejecutar**
- **Análisis**

- **The SWIM will allow better techniques. These enhancements will in turn enable operational enhancements such as better situational awareness**

- **Operational improvements will contribute to ATM Key Performance Areas (KPAs).**

SWIM enables better financial performance

Technologies with open formats and standardized interfaces

The standardization of the service will facilitate the use of information in other contexts

The interoperability of data formats and interfaces will make possible a systems architecture, ATM systems from different manufacturers can connect without restrictions

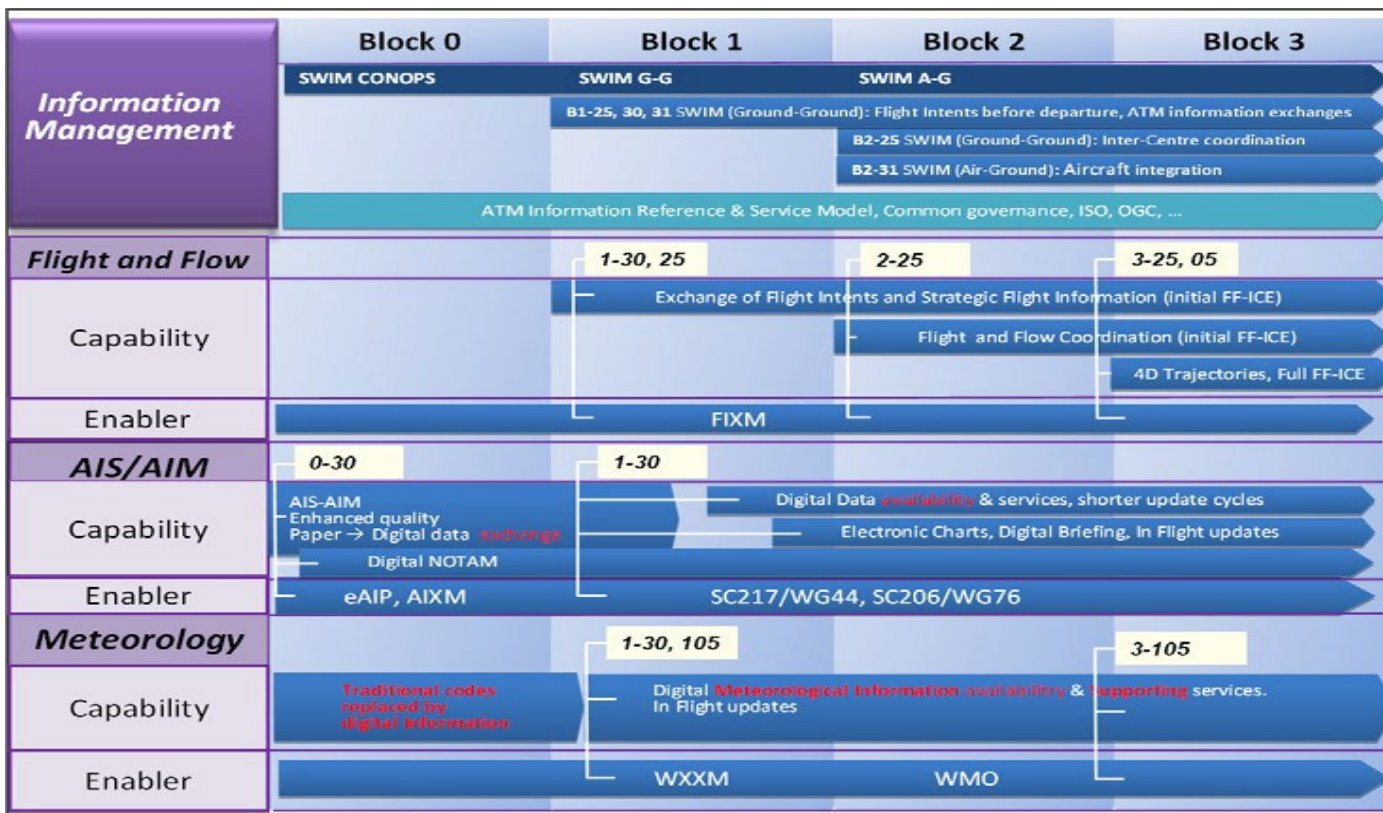|	Block 0	Block 1	Block 2	Block 3
Information Management	SWIM CONOPS	SWIM G-G	SWIM A-G	
		B1-25, 30, 31 SWIM (Ground-Ground): Flight Intents before departure, ATM information exchanges		
			B2-25 SWIM (Ground-Ground): Inter-Centre coordination	
			B2-31 SWIM (Air-Ground): Aircraft integration	
	ATM Information Reference & Service Model, Common governance, ISO, OGC, …			
Flight and Flow		1-30, 25	2-25	3-25, 05
Capability		Exchange of Flight Intents and Strategic Flight Information (initial FF-ICE)		
			Flight and Flow Coordination (initial FF-ICE)	
				4D Trajectories, Full FF-ICE
Enabler		FIXM		
AIS/AIM	0-30	1-30		
Capability	AIS-AIM Enhanced quality Paper → Digital data exchange	Digital Data availability & services, shorter update cycles		
		Electronic Charts, Digital Briefing, In Flight updates		
	Digital NOTAM			
Enabler	eAIP, AIXM	SC217/WG44, SC206/WG76		
Meteorology		1-30, 105		3-105
Capability	Traditional codes replaced by digital information	Digital Meteorological Information availability & supporting services. In Flight updates		
Enabler		WXXM	WMO	

Conclusion

- SWIM in a reality

- Information management, data and information models, registry...

  - New concepts to integrate ATM
  - Very natural in an Enterprise Architecture (EA)/Service Oriented (OS)

- Service Oriented Architecture (SOA)

- Regarding the SWIM implementation

  - AIXM/WXXM are safe investments (but it's only half the job)
  - SOA - Publish/consume services

- A truly global and interoperable ATM atmosphere is given