Global Information Management

IMP WG-B
Information
Architecture
&
Management
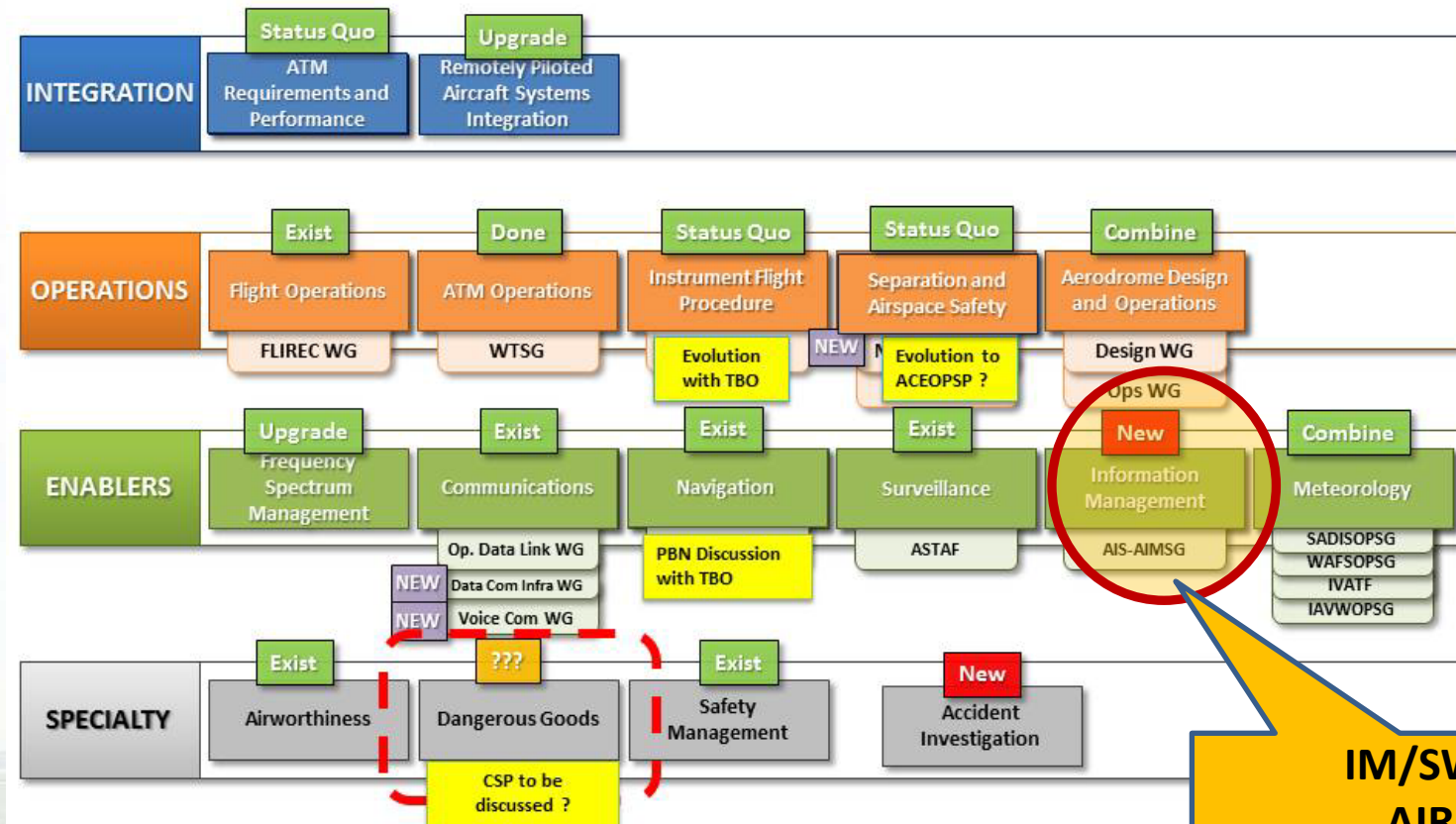
Presented By: *Paul Bosman*

Date: *August 25, 2015*

Federal Aviation Administration

EUROCONTROL

AIR TRANSPORTATION INFORMATION EXCHANGE CONFERENCE

Global Information Management

August 25-27, 2015
NOAA Auditorium and Science Center • Silver Spring, MD

ICAO - Panel structure

**IM/SWIM
AIRM
NOTAM Review
...
(AIS-AIMSG)**

Federal Aviation
Administration

EUROCONTROL

IMP Working Groups

- WG-A : Information Services and NOTAM (Abigail Smith, FAA)
- WG-B : Information Architecture & Management (Paul Bosman, ECTRL)
- WG-C : SWIM Awareness & Communication (Richard Williams, CANSO)
- WG-D : SWIM Governance (Stephane Dubet, SIA-France)

Federal Aviation
Administration

EUROCONTROL

WG-B Job Card
Air Navigation Commission approved

ANWP Job-card

Title	Information Architecture & Management		Reference:	IMP.xxxx
Source	ANC12			
Problem Statement	In today's world ATM implementations and associated digital data and information exchanges require the translation of textual descriptions of common core concepts and operational ... ting from these concepts are currently captured differently across regions, industries, ... es. Unstructured and ambiguo ... Initiatives have been deve ... AMDB et cetera. However, these models are not cross-harmonised. Specifically, the following ... • In some cases ke ... • Uncertainty of the ... • Inconsistent units of measurements, ranges of values, formatting (time & date, latitude/longitude, …), unique identifiers et cetera			
Specific Details (including impact statements)	The envisaged solution inc ... • An architectural i ... form of an ATM Information Reference Model (AIRM). It will provide a structu ... entation based on standard modelling notation. The AIRM scope will, as a m ... perability. • Common informat ... , model extensibility and technical conventions. • Usage guidance i ...			
Expected Benefit	Optimised / fit for purpose ... stent and reliable data leading to a positive effect on safety and cost effectiveness: • The reference model will enable system architects and developers to build system solutions in a more cost-effective fashion. • The reference mod ... onfiguration Control Boards. • Seamless informat ... rs. • Allow for further ev ... ous way.			
Reference Documents	GANP/B1-DATM → ATM In ...		Attachments	
Primary Expert Group:	IMP			

Federal Aviation Administration
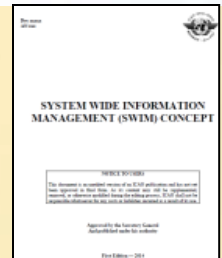
EUROCONTROL

Problem statement

As-Is

– ICAO provisions are mostly textual

– Valued domain specific initiatives like AIXM, WXXM, FIXM (….)

– Global interoperability with still a lot of 'friction'

ICAO SWIM Concept (Doc10039)

– Promoting transversal information management & architecting

To-Be

– Capture & promote common concepts via ICAO **Information Management Manual** & ICAO **ATM Information Reference Model**
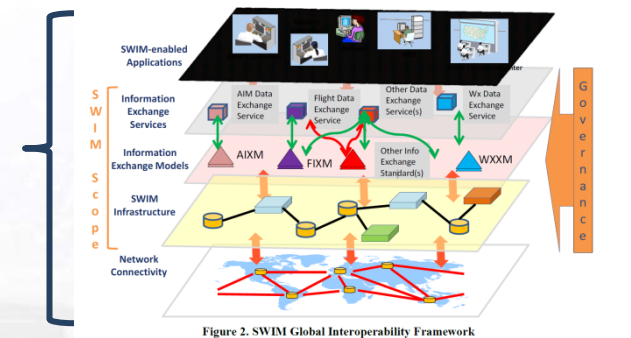
2018 !!

Federal Aviation Administration

EUROCONTROL

IM Manual ToC? First ideas

1. Introduction to Information Management
2. Intended Readership
3. References
4. Glossary
5. ICAO Global Interoperability Framework (IGIF)
6. Collaborative Information Management
7. Benefits of Information Management
8. Quality of Information
9. Information Management in ATM
10. ATM Information Reference Model
11. Aviation Metadata
12. Registration and Discovery of Information
13. Governance of Information
14. Information Management Guidance
15. Exchange of Information
16. Use cases

Appendix - Controlled Vocabulary (CV)

Figure 2. SWIM Global Interoperability Framework

Federal Aviation Administration

EUROCONTROL

ICAO ATM Information Reference Model

- Structured, traceable, unified, harmonised, common, digital **reference representation** of the aviation terms based on standard modelling notation

- **Guidance** allowing alignment with and between domain specific models & communities of interest

- **Transparently & formally governed**

- **Collaborative approach** AIRM & XM CCBs

Federal Aviation Administration

EUROCONTROL

A(TM)IRM: RM<->XM?

- Different purposes
  - RM contains what is agreed transversally (builds vastly from existing XMs)
  - XM contains what is needed for implementation work (narrower context)

- **A Reference Model does not replace an Exchange Model but complements it**

Benefits

The promise : Information exchange design providing interoperable, consistent and reliable data leading to a positive effect on safety and cost effectiveness

How

- More consistent **formalised expression** of IM related ICAO concepts, SARPs and Guidance

- Provide **unique content** to unambiguously refer to and re-use

- Enabling system architects and developers to **build system/service solutions in a more cost-effective fashion**

- Seamless ATM information **interoperability, quality & reliability**

- Allow for **further evolution of exchange models** in a more consistent and non-ambiguous way

How realistic is this all ?
Example of ICAO AIM Data Catalogue

Air Transportation Information
Exchange Conference –
Global Information Management

Subject	Property	Sub-Property	Type	Description	Reference	Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
Runway				A defined rectangular area on a land aerodrome prepared for the landing and take-off of aircraft. (Annex 14)						
	Designator		Text	The full textual designator of the runway, used to uniquely identify it at an aerodrome/heliport which has more than one. E.g. 09/27, 02R/20L, RWY 1.	Annex 15 App 1 AD 2.12 1) Annex 14 I 2.5.1 a)					
	Nominal length		Distance	The declared longitudinal extent of the runway for operational (performance) calculations.	Annex 15 App 1 AD 2.12 3) Annex 14 I 2.5.1 a)	1m	critical	surveyed	1 m or 1 ft	1 m
	Nominal width		Distance	The declared transversal extent of the runway for operational (performance) calculations.	Annex 15 App 1 AD 2.12 3) Annex 14 I 2.5.1 a)	1m	essential	surveyed	1 m or 1 ft	1 m
			Polygon	Geometries of RunwayElement, RunwayDisplacedArea and RunwayIntersection	AMDB					
			Point	The geographical location of runway centre line at each end of the runway, at the stopway and at the origin of each take-off...	Annex 4 Ch 3 and 4, 5	1m	critical	surveyed		
					AMDB					
				corresponding centre line				surveyed		
	Geoid undulation		Height	The geoid ondulation at the corresponding centre line point	AMDB					
	RWY exit line			geographical location of the runway exit...	AMDB		essential	surveyed	1/100 sec	1 sec
		Colour	Text	Colour of runway exit line	AMDB					
		Style	Text	Style of runway exit line	AMDB					
		Directionality	Code list							
	Surface type									
	Strength				Annex 15 App 1 AD 2.12 4)					

Aerodromes
Airspaces
ATS Routes
Instrument Flight Procedures
Navigation Aids / Systems
Obstacles
Geographic Information

Usage:
Common language
One-stop-shop
SLA with DOs

About to be published
AIRM is next logical step !

Airport-Heliport | **Runway** | TLOF-FATO | Apron-Taxiway | Communication Facilities

Conclusions

ICAO Information Architecture Management has started

Fruitful first meetings with excellent contributions

ICAO IM Manual & AIRM considered ambitious yet realistic

Note : Starting as guidance only

All support welcomed !

http://www.icao.int/airnavigation/IMP/Pages/default.aspx

MeetingDocs ▸ WP ▸ All Documents ▾

	Type	Name
	📄	IMP-1 WP-01 Agenda
	📄	IMP-1 WP-02 - Work Program and Deliverables
	📄	IMP-1 WP-03 SWIM Readiness (CANSO)
	📄	IMP-1 WP-04 IATA Information management
	📄	IMP-1 WP-05 IATA Notam paper-v2
	📄	IMP-1 WP-06 SESAR SWIM state-of-play
	📄	IMP-1 WP-07 SWIM in the US

MeetingDocs ▸ IP ▸ All Documents ▾

	Type	Name
	📄	IMP IP-1 Meeting Arrangements
	📄	IMP-1 IP-03 ATMRPP supplement on information management
	📄	IMP-1 IP-2 Global NOTAM Increase
	📄	IMP-1 Order of Business

paul.bosman@eurocontrol.int

Federal Aviation Administration

EUROCONTROL