

# IMP – Information Architecture (WG-I)

## Update

Presented to: ATIEC 2017

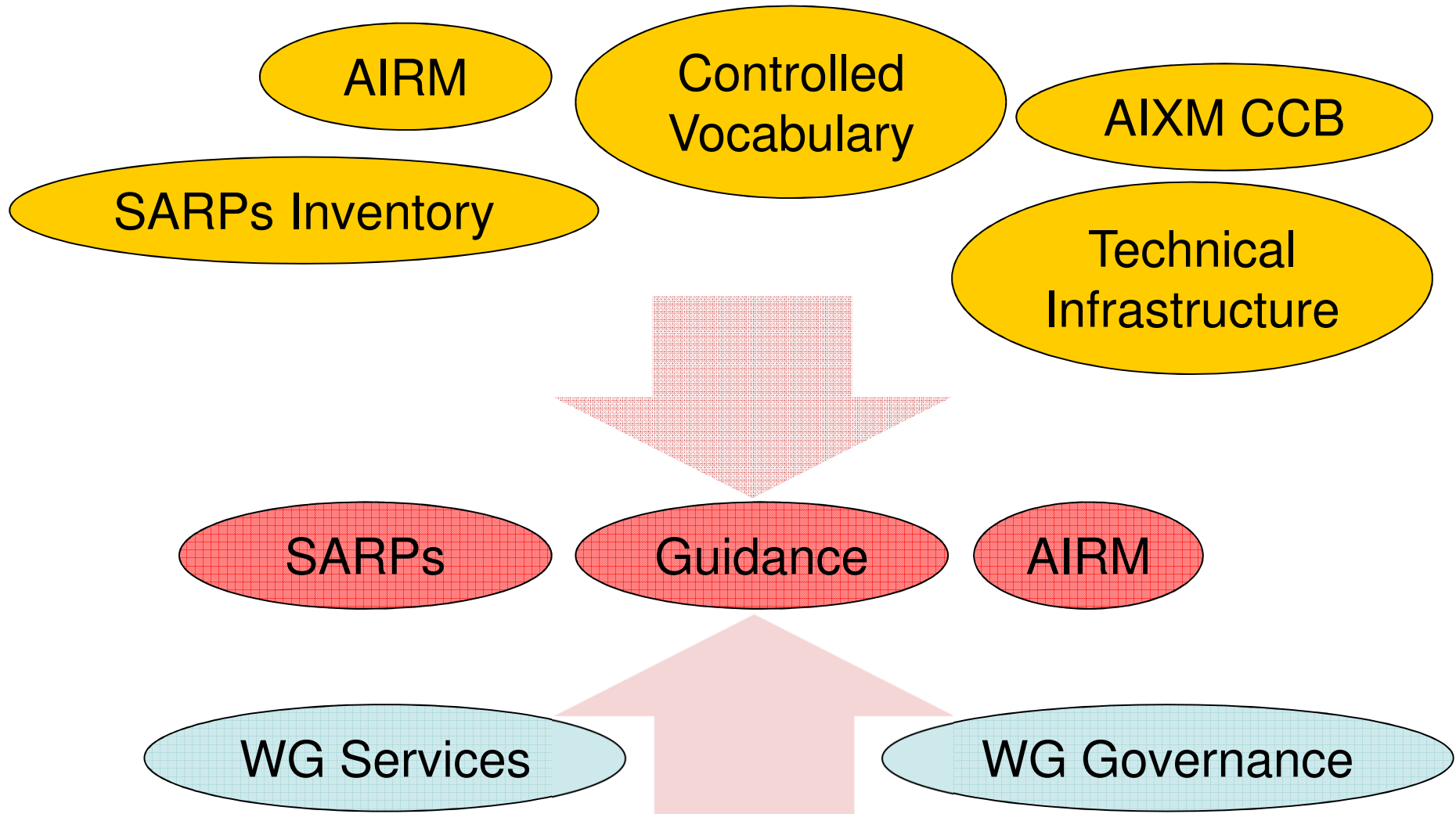
By: Paul Bosman

Date: October 5, 2017





# Architecture Activities

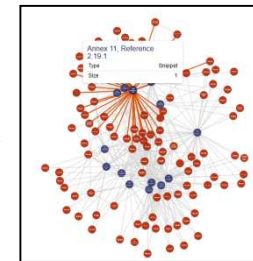
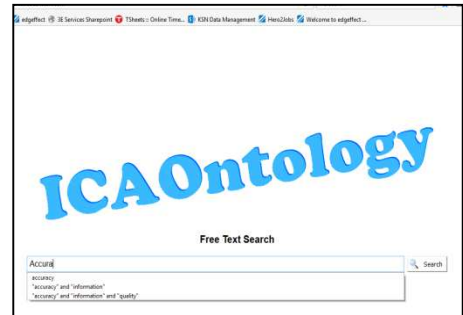


# SARPS inventory (an early IMP activity)



SARP ID	ICAO Reference	FAA Reference	ICAO Title	FAA Title
1.1	1.1	1.1	1.1	1.1
1.2	1.2	1.2	1.2	1.2
1.3	1.3	1.3	1.3	1.3
1.4	1.4	1.4	1.4	1.4
1.5	1.5	1.5	1.5	1.5
1.6	1.6	1.6	1.6	1.6
1.7	1.7	1.7	1.7	1.7
1.8	1.8	1.8	1.8	1.8
1.9	1.9	1.9	1.9	1.9
1.10	1.10	1.10	1.10	1.10
1.11	1.11	1.11	1.11	1.11
1.12	1.12	1.12	1.12	1.12
1.13	1.13	1.13	1.13	1.13
1.14	1.14	1.14	1.14	1.14
1.15	1.15	1.15	1.15	1.15
1.16	1.16	1.16	1.16	1.16
1.17	1.17	1.17	1.17	1.17
1.18	1.18	1.18	1.18	1.18
1.19	1.19	1.19	1.19	1.19
1.20	1.20	1.20	1.20	1.20

**FAA RDF/SKOS Ontology**



- **Findings**
  - Many different verbs used for +- same thing
  - Suggestions for 'ICAO – Guide to drafting of SARPs & PANS
  - First idea of all existing 'information service' related provisions
  - Ontology -> Semantic technology



# ATM Information Reference Model



- **AIRM is not**
  - × A database
  - × An application
  - × An exchange model

- **AIRM is**
  - + Reference material (say building blocks) for all these
  - + Based on ICAO SARPs



- **Progressive build-up**
  - Alpha – Nov 2016, Beta – Nov 2017, V1 – Nov 2018



# Controlled Vocabulary

# (Dictionary)



Service	A mechanism to enable access to one or more capabilities using a prescribed interface.
Information Service	A type of service that provides an ATM business information sharing capability.
Service Overview	The information about a service enabling service discovery and initial evaluation.
SWIM Service Registry	A directory containing entries with the information necessary to discover and access services.
Loose-coupling	Definition: A characteristic of software systems, in which dependencies among a system's constituting parts have been minimized.

Reference Model	Definition: An abstract framework for understanding significant relationships among the entities of some environment.
-----------------	---



# AIXM CCB reporting



- XMs are getting more and more popular
- Price of fame 😊
- **Some reported issues**
  - AIXM specific - Vendor related interoperability
  - XM generic – Overlap / Duplication
  - Need for more business rules

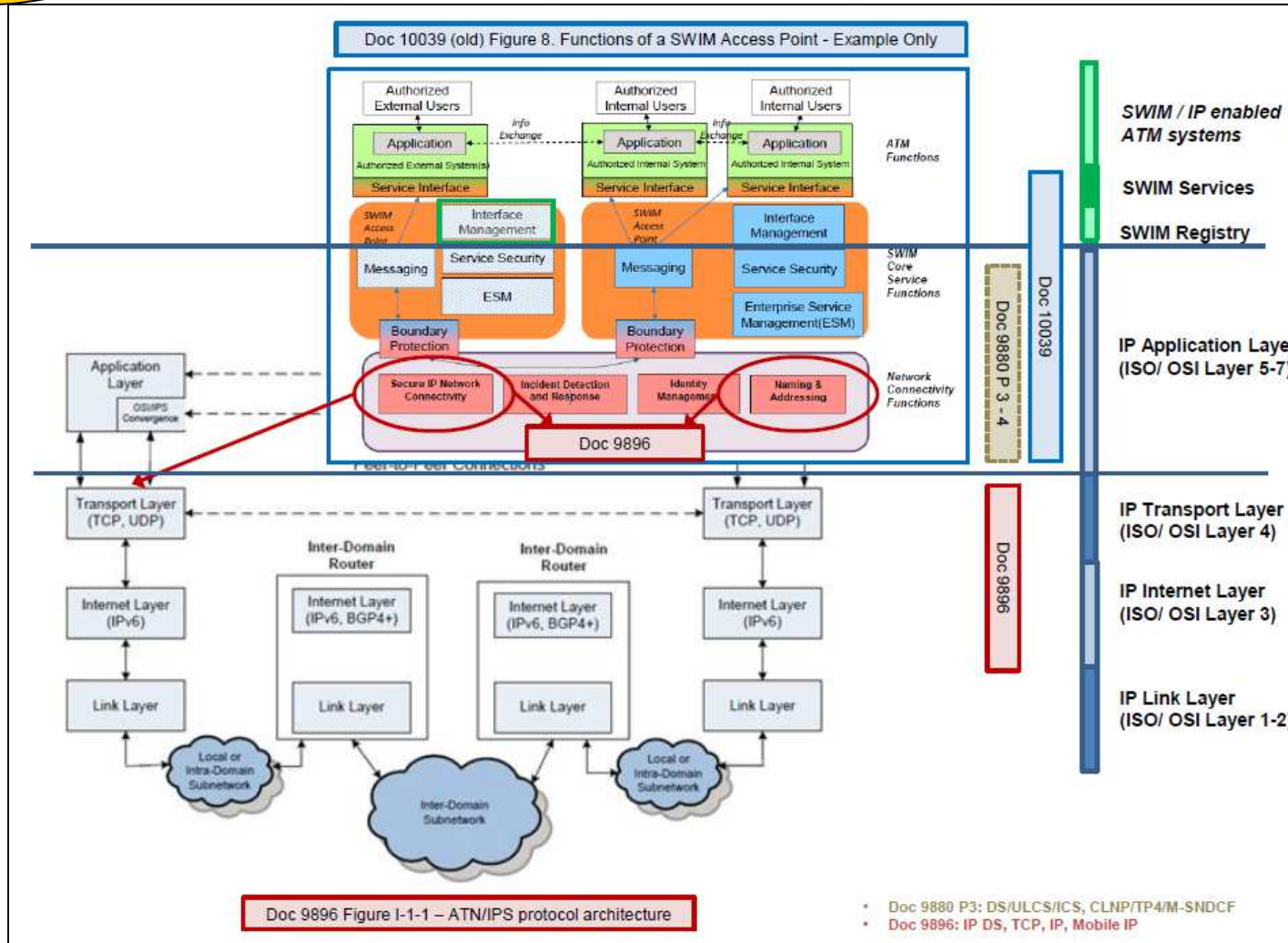
## Formalising XM – ICAO relationship

**FIXM via ATMRPP, iWXXM via METP & WMO, AIXM via IMP**

**Your first port of call : XM CCB**



# TI – Problem statement



# SARPs

# SWIM SARPs



**Very early days !!!**

**Definitions = Controlled Vocabulary = Terminology**

**Governance**

- How to publish Information Services Usage & Principles
- An ICAO registry ? General registry provisions ?

**Information**

- SWIM information AIRM referenceable
- If/When information is exchanged via SWIM services, the information shall be exchanged via global interoperable models ?
- Global interoperable models shall/should adhere to following characteristics ... ?

**Services**

- SWIM exchanges shall be done via information services / SOA
- Information Services Description template
- Minimum list of ICAO prescribed services ?
- Service Quality characteristics incl validation

**Technical Infrastructure**

- Performance based COTS / Open standards ... approach
- Techno profiles at max as guidance or a XM-style industry driven approach ?



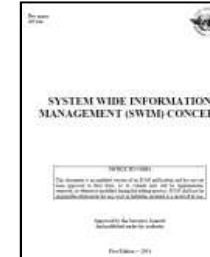


Guidance

# SWIM Manual



Manual on SWIM (Doc 10039)



Being split into different Volumes

Volume I = SWIM Concept (G-G & A-G)

Volume II = SWIM Implementation Guidance





# Benefits

**The IMP 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 **unified/harmonised content** to unambiguously refer to & re-use
- Enabling system architects and developers to **build system/service solutions in a more cost-effective fashion**
- Seamless ATM information **interoperability, quality & reliability. Trust !**
- Allow for **further evolution of exchange models** in a more consistent and non-ambiguous way



# Conclusions



- **SWIM Information Architecture is now happening**
- **Initial SWIM SARPS, Updated Manual & AIRM considered ambitious yet realistic**
- **All support welcomed !**

## ICAO plans for SWIM standards by 2018

Posted on September 13, 2016



**Air Traffic  
Management**.net

**ATC Global 2016** The International Civil Aviation Organisation (ICAO) is working to develop global standards for system wide information management (SWIM) governance standards and architectural performance by 2018, said ICAO secretary general Dr Liu Fang in a keynote opening address to the conference at ATC Global.

→ 2019/20

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

[paul.bosman@eurocontrol.int](mailto:paul.bosman@eurocontrol.int)

