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Information Management The next stage

ICAO-NACC Regional Office

Presented by RO-AIM

Antigua/18-03-2016.





ICAO Information Management Panel (IMP)

✈ The Information Management Panel (**IMP**)
investigates and develops:

- ✈ a **global interoperability information** sharing framework for international air navigation
- ✈ as well as investigating **solutions to support the planning framework on information management** contained in the Global Air Navigation Plan (GANP)



IMP

✈ The Panel's initial work includes the further development of the **System-Wide Information Management (SWIM)** concept in collaboration with the Air Traffic Management Requirements and Performance Panel (**ATMRPP**)



INFORMATION MANAGEMENT PANEL (IMP) MEMBERS

State	Name
Australia	Mr. Pierre Truter
Brazil	2nd Lt. Luiz Carlos Mendes Souza
Canada	Ms. Kelly Ann Hicks
China	Ms. Meng Aimin
France	Mr. Stephan Dubet
Germany	Dr. Susanne Bierman-Höller
India	Mr. Sunil Kumar Oberoi
Japan	Mr. Hiroyasu Shirasaki
Russian Federation	Ms. Yelena Nikolayevna Stepanova
Saudi Arabia	Mr. Ghorman Zahir Alshehri
Singapore	Mr Kuah Kong Beng
South Africa	Mr. Francois Coetzee
Sweden	Ms. Eva Noreus
Turkey	Mr. Saffet Öztürk
United Arab Emirates	Mr. Abdalla Al Rashidi
United States	Ms. Abigail Smith

ICAO Secretariat Mr.
Michael Hohm

Organization	Name
ASECNA	Mr. Athanse Ahouangan
CANSO	Mr. Richard Williams
EUROCONTROL	Mr. Paul Bosman
IATA	Mr. Jean- Francois Grout
ICCAIA	Mr. David Almeida



IM Challenges & Opportunities

✈ Air Traffic Information Management and SWIM will complement:

- ✈ human-to-human communication with machine-to-machine communication
- ✈ and improve data distribution and accessibility in terms of quality of the data exchanged



IM Challenges & Opportunities

- ✈ SWIM implementation will be the basis as the ATM community move from a product-centric to an **information-centric** environment in the future
- ✈ SWIM implementation Concept must address the challenge of creating an “**interoperability environment**”
- ✈ SWIM information technology (IT) systems to cope with the full complexity of **operational information exchanges**



Cont...

- ✈ SWIM will introduce a significant change in the business practices regarding how information is managed during the entire life cycle of ATM processes
- ✈ SWIM implementation seeks to **provide quality information** to “*the right people and the right systems at the right time*”
- ✈ SWIM environment will shift the ATM information architecture paradigm from point-to point data exchanges to **system-wide interoperability**



Cont...

- ✈ New issues that require significant global development and co-ordination:
 - ✈ modernization of the **NOTAM** system
 - ✈ definition of a **global interoperability framework** for system architecture
 - ✈ identifying service requirements to maintain ATM information with:
 - ✈ Security
 - ✈ Integrity
 - ✈ Confidentiality
 - ✈ Availability
 - ✈ Economy.



Integrated Information Management First Phase Enablers 2016

✈ Provisions on the collection, use and exchange of information:

✈ MET-AIM

✈ ATM-AIM

✈ *Annex 15*

✈ *Manual on the SWIM concept*

✈ *PANS-AIM*



Integrated Information Management Second Phase Enablers 2018

✈ Provisions on the collection, use and exchange of information:

✈ MET-AIM

✈ ATM-AIM

✈ *Annex 15*

✈ *Annex 4*

✈ *AIS Manual*

✈ *PANS-AIM*



Integrated Information Management Second Phase Enablers 20...

- ✈ –System Wide Information Management (SWIM) concept and provisions
 - ✈ *(Annex 15, Manual on the SWIM Concept)*
- ✈ –ATM Information Reference Model
 - ✈ *(Manual on the Air Traffic Management Reference Model)*
- ✈ –Provisions and guidance on the use of improved NOTAM system
 - ✈ *(Annex 11, Annex 15, PANS-ATM, PANS-AIM)*

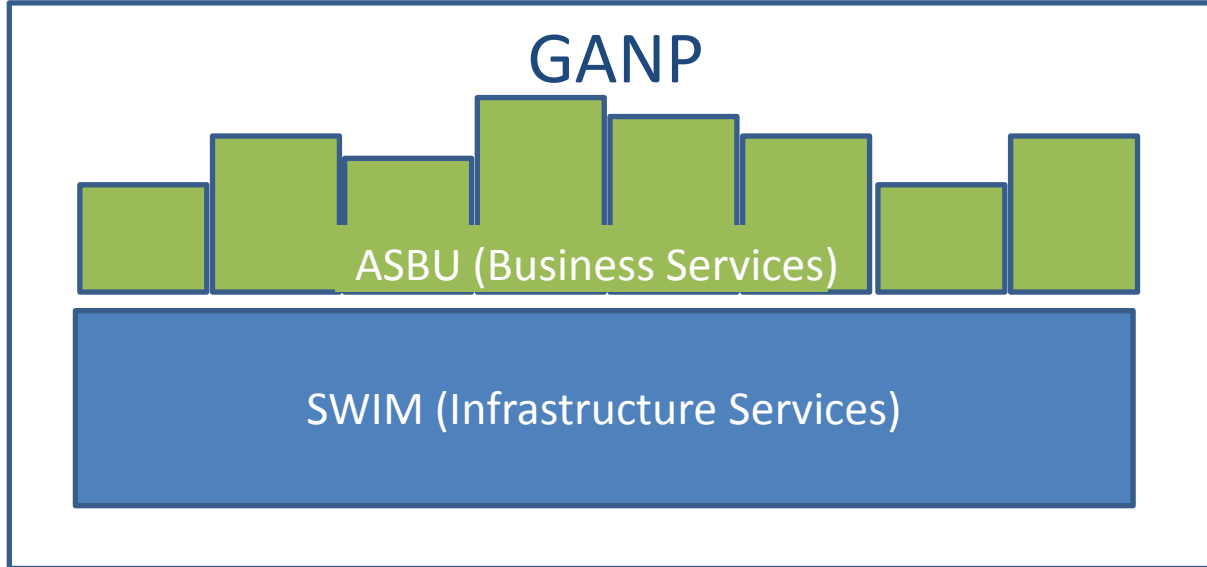


SWIM - Interoperable services

Like building blocks we require reusable services that are interoperable

“...We all need to play with the same type of set...”

Simplified View



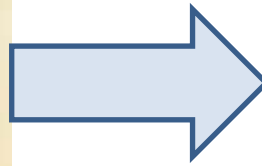
Infrastructure is useful as an enabler for the provision of customer valued business services. Without the business services there is limited value.

Service creation requires more than concepts

Effective service creation is supported by **Processes**



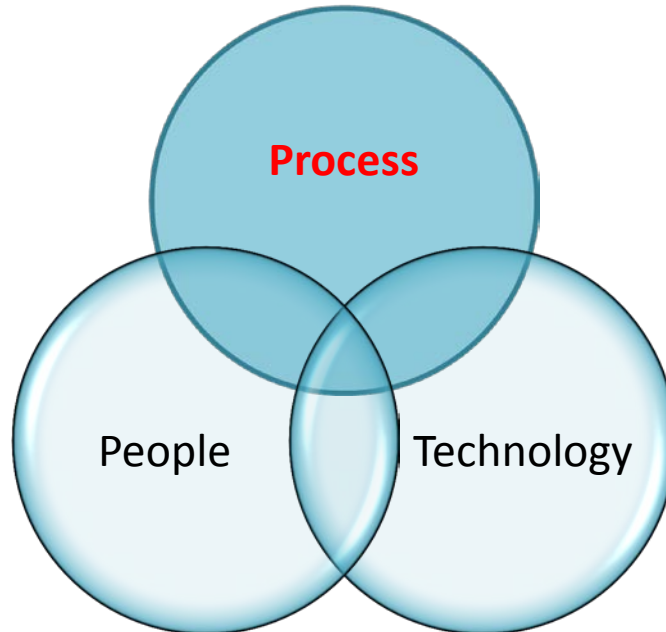
Concept

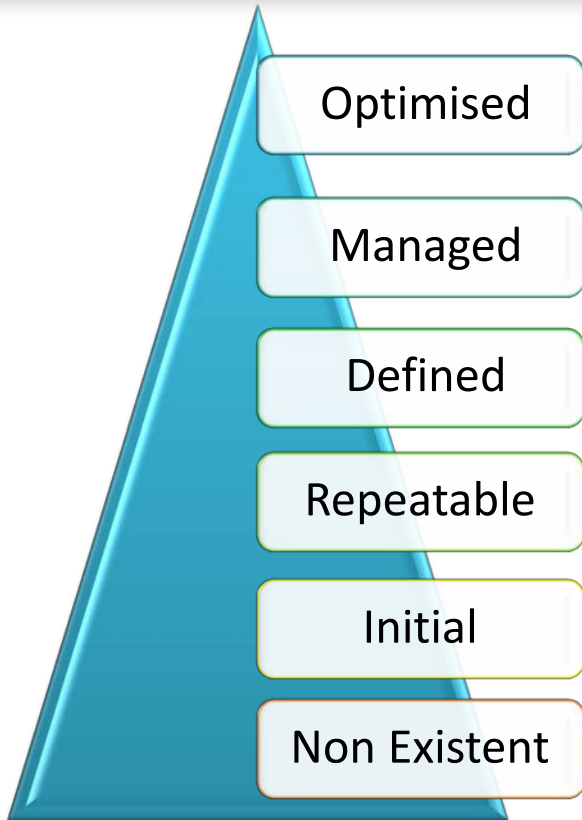


Service

Why Process?

Processes provide standard methods for the co-ordination of people and technology to deliver business valued services.





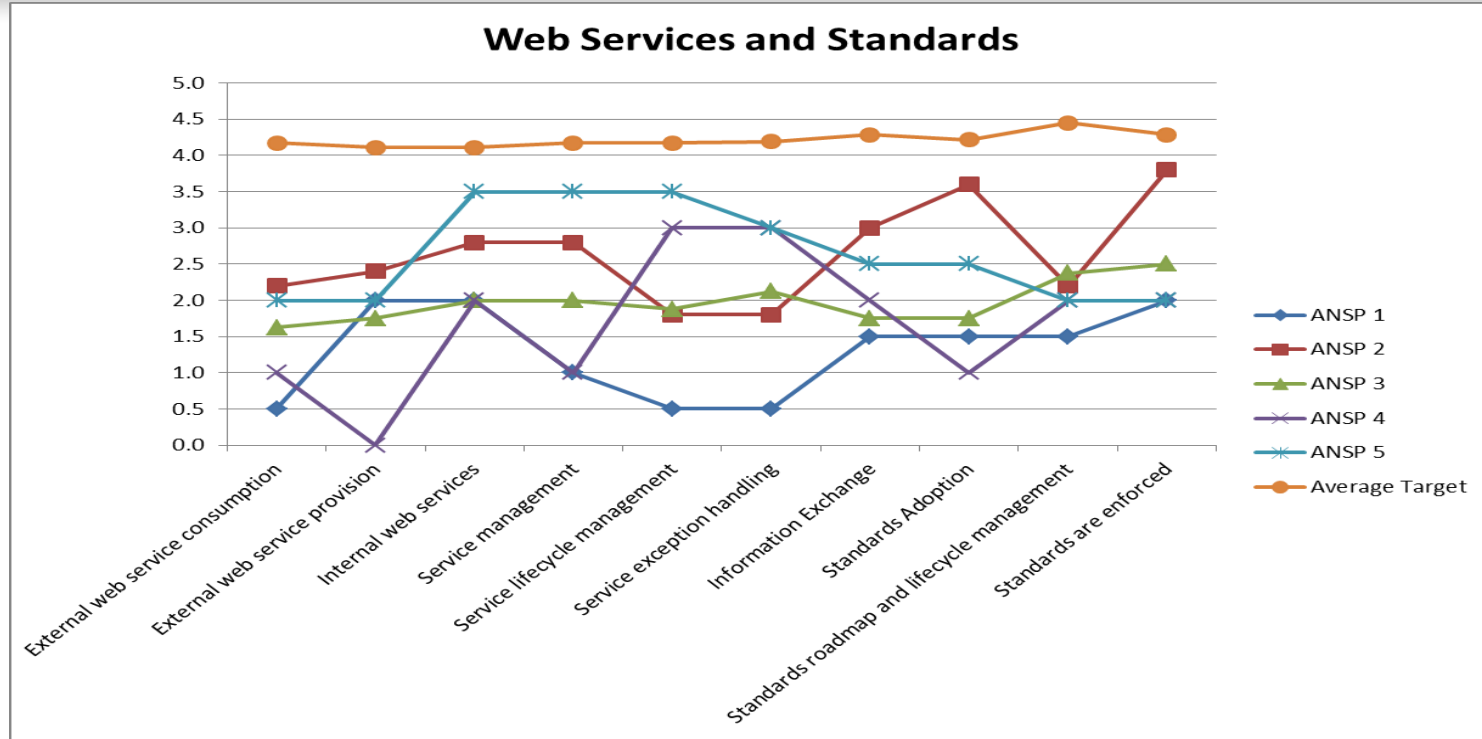
✈ SWIM relies on processes to: Govern, Design, Build & Operate Services



Control Objectives for Information and Related Technology (COBIT) provides a proven good practice model for process maturity assessment.

Process Maturity Assessment

Where are you and where do you want to be?



Comparison against a common target shows **no** respondents are fully prepared for web service adoption.



Exploratory Investigation Preliminary Conclusions

- ✈ There are substantial gaps between current and target process maturity.
- ✈ All of the ANSP respondents have different levels of process maturity and immaturity.
- ✈ Each ANSP respondent has a different perspective of what level of process maturity is required.
- ✈ No ANSP respondent appears fully prepared for adoption of web services.



Further Discussion Raised Concerns

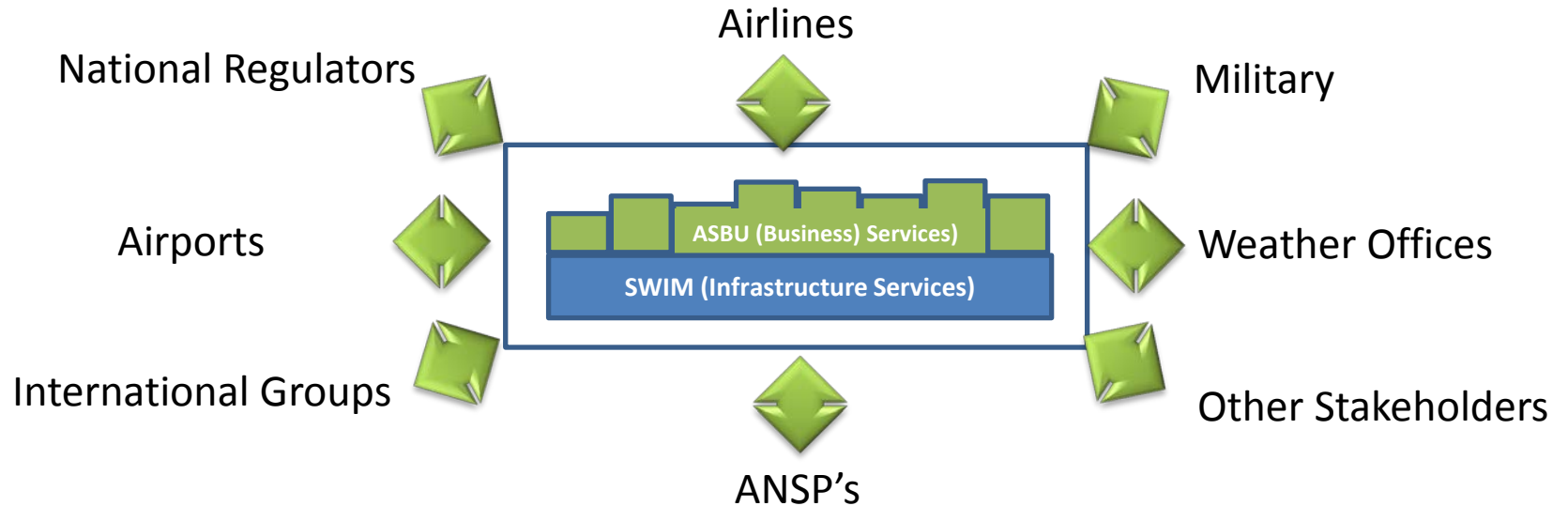
Investment in infrastructure (SWIM) could be impacted by:

- ✈ Slow adoption by different parties
- ✈ Business service applicability
- ✈ Replacement Cycles (when we get funding)
- ✈ Scale of infrastructure required
- ✈ Risk appetite for adopting new ways of working
- ✈ Cost as a barrier to adoption

These concerns need to be addressed by the IM Panel

Slow Adoption

– if no-one is prepared to adopt SWIM and use the services, why offer them?



Business Service Applicability

Some services are more applicable to different ANSP's



OR



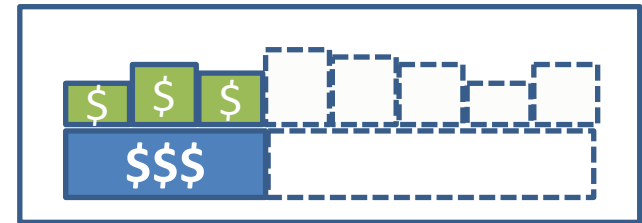
e.g. Some State is geographically distant and has few flights, Europe has heavy volume and shorter distances, impacting the selection of which services to adopt and when.

Replacement Cycles

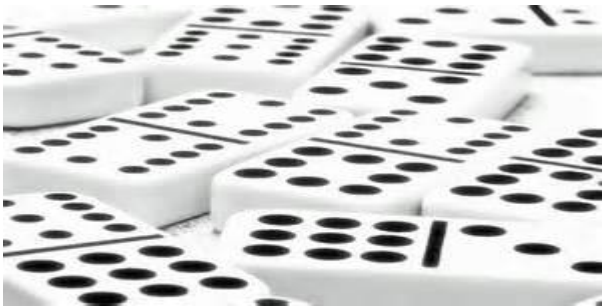
- ✈ When to transition to SWIM?
- ✈ Hard or soft transition?
- ✈ ANSP's Need to Build Infrastructure to Scale
- one size does not fit all
- ✈ What really matters is interoperability ...



OR



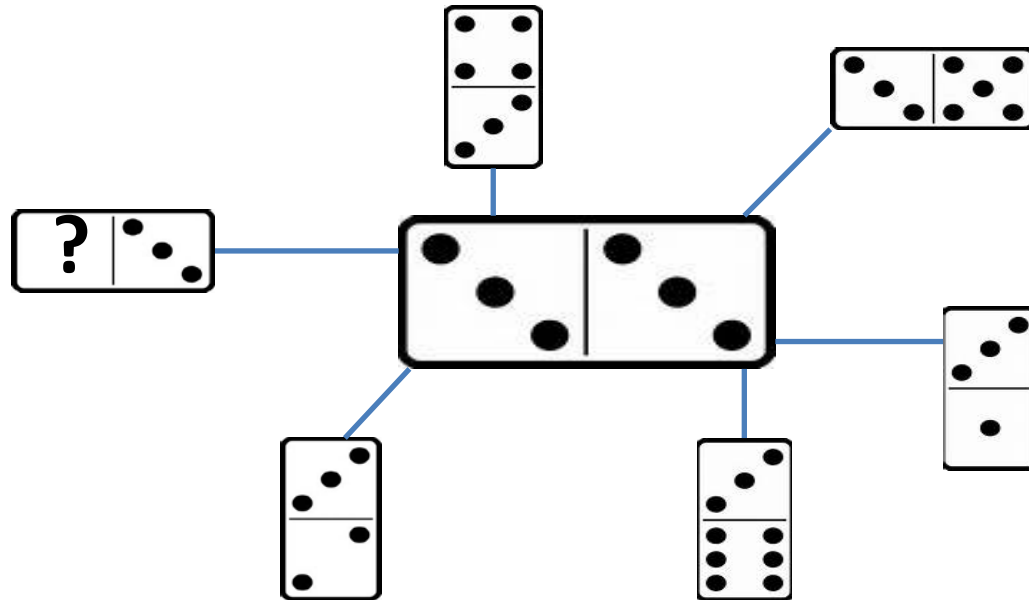
The Interoperability Game



Point to Point –
Existing systems do not
work together effectively

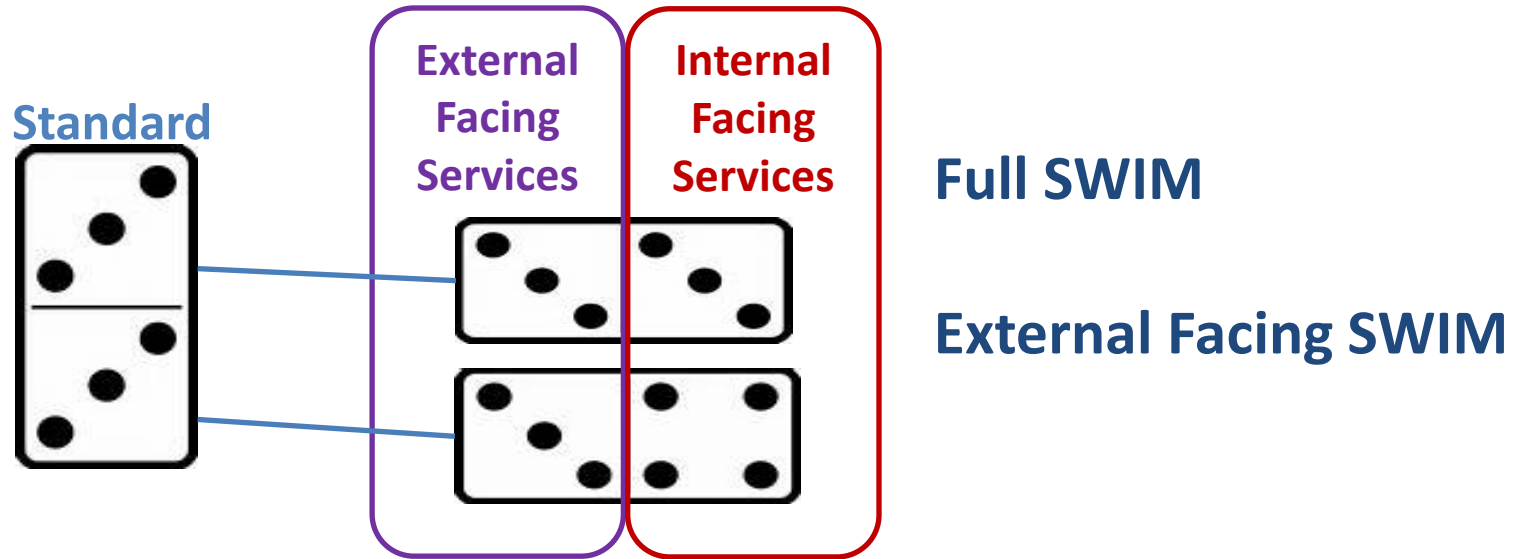
SWIM - Interoperability

Interoperable
services through
standards



Interoperability Models

Fully compliant or Externally compliant





Recommendations

It is recommended by the ICAO Information Management Panel:

- **Note the differences between ANSP current and target maturity.**
- **Note the lack of respondent readiness to adopt Web Services.**
- **Use the proposed maturity model to assess a wider sample of ANSP current and future maturity across all ICAO regions**
- **Modify the model to assess current and future maturity for other groups including airlines, regulators, vendors etc.**
- **Discuss and address the conclusions and concerns raised in this presentation.**
- **Adopt the building block and domino interoperability models.**





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Asia and Pacific
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email: rmartinez@icao.int