



International Civil Aviation Organization

**THE TWELFTH WORKING GROUP MEETING OF  
AERONAUTICAL TELECOMMUNICATION NETWORK  
(ATN) IMPLEMENTATION CO-ORDINATION GROUP OF  
APANPIRG (ATNICG WG/12)**



5 – 8 August, Renton, WA, USA

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**Agenda Item 5: SWIM**

**SYSTEM WIDE INFORMATION MANAGEMENT (SWIM) OVER AMHS**

(U.S.A./Federal Aviation Administration (FAA))

**SUMMARY**

This presentation presents Asia/Pacific region's proposed recommendation in implementing SWIM over AMHS.

**ACTION BY THE MEETING**

The meeting is invited to:

- a) provide feedback on the information contained presented in this presentation;  
and
  - b) discuss any relevant matters as appropriate.
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# System Wide Information Management (SWIM) over AMHS

Presented by: Vic Patel, FAA

Presentation to: ATNICG WG#12  
Renton, 5 – 8 August 2013



Federal Aviation  
Administration



# Topics

- **SWIM**
  - **State of the System, Conceptual Overview**
- **Asia/Pac Backbone**
- **Options for SWIM in Asia/Pac**
  - **AMHS Network Infrastructure**
- **SWIM Messaging over AMHS**
  - **Typical Web services, Web services with an “HTTP to AMHS Gateway”**
- **Recommendation for the ATNICG**



# System Wide Information Management (SWIM)

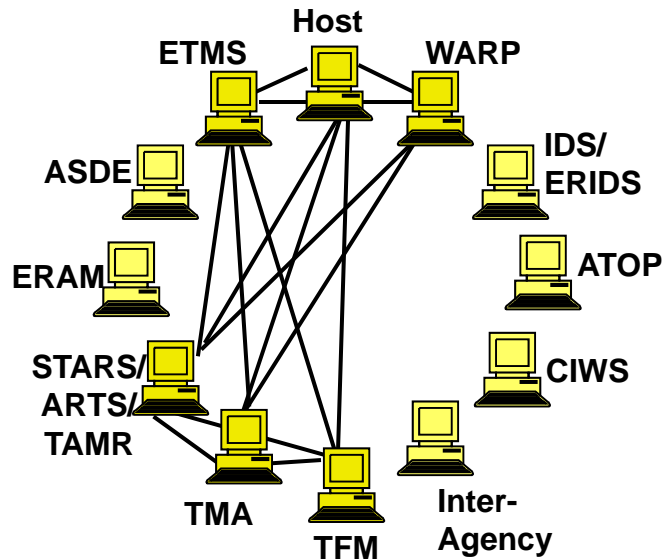
## SWIM will:

- Implement a Service-Oriented Architecture (SOA) in the NAS
- Lower information costs
- Increase speed to establish new interfaces
- Increase common situational awareness
- Increase NAS agility

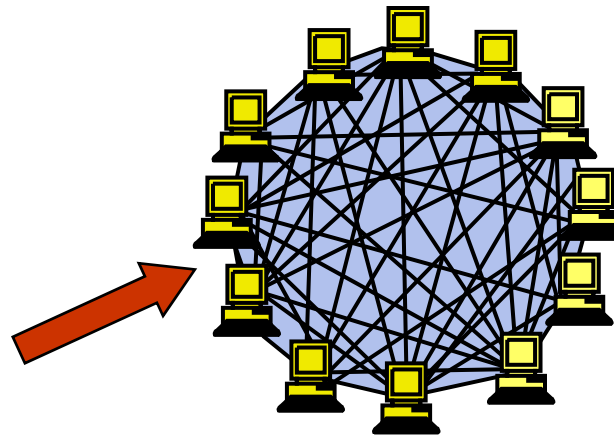


# State of the System

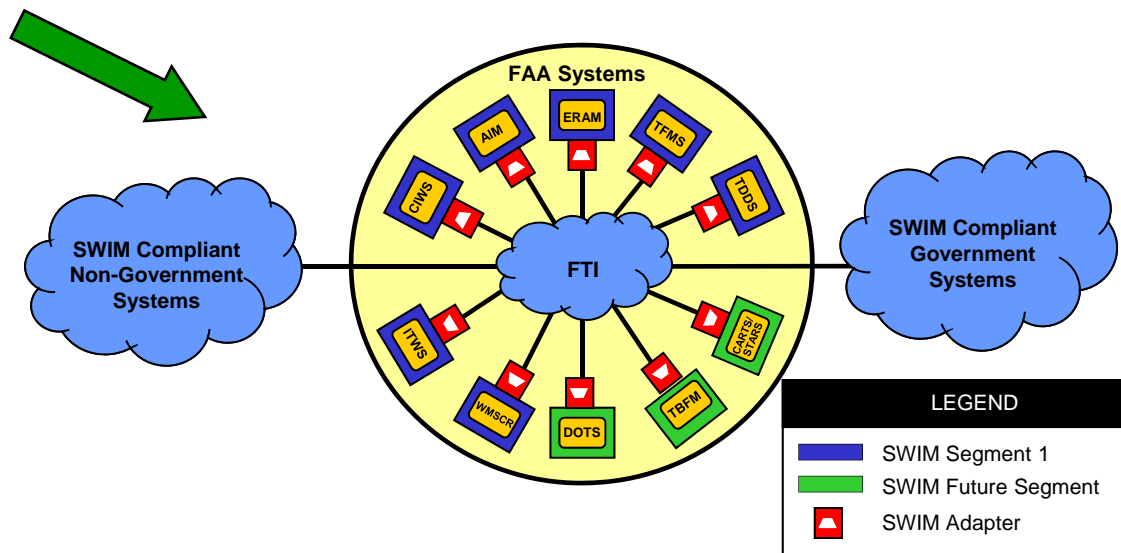
Business as Usual



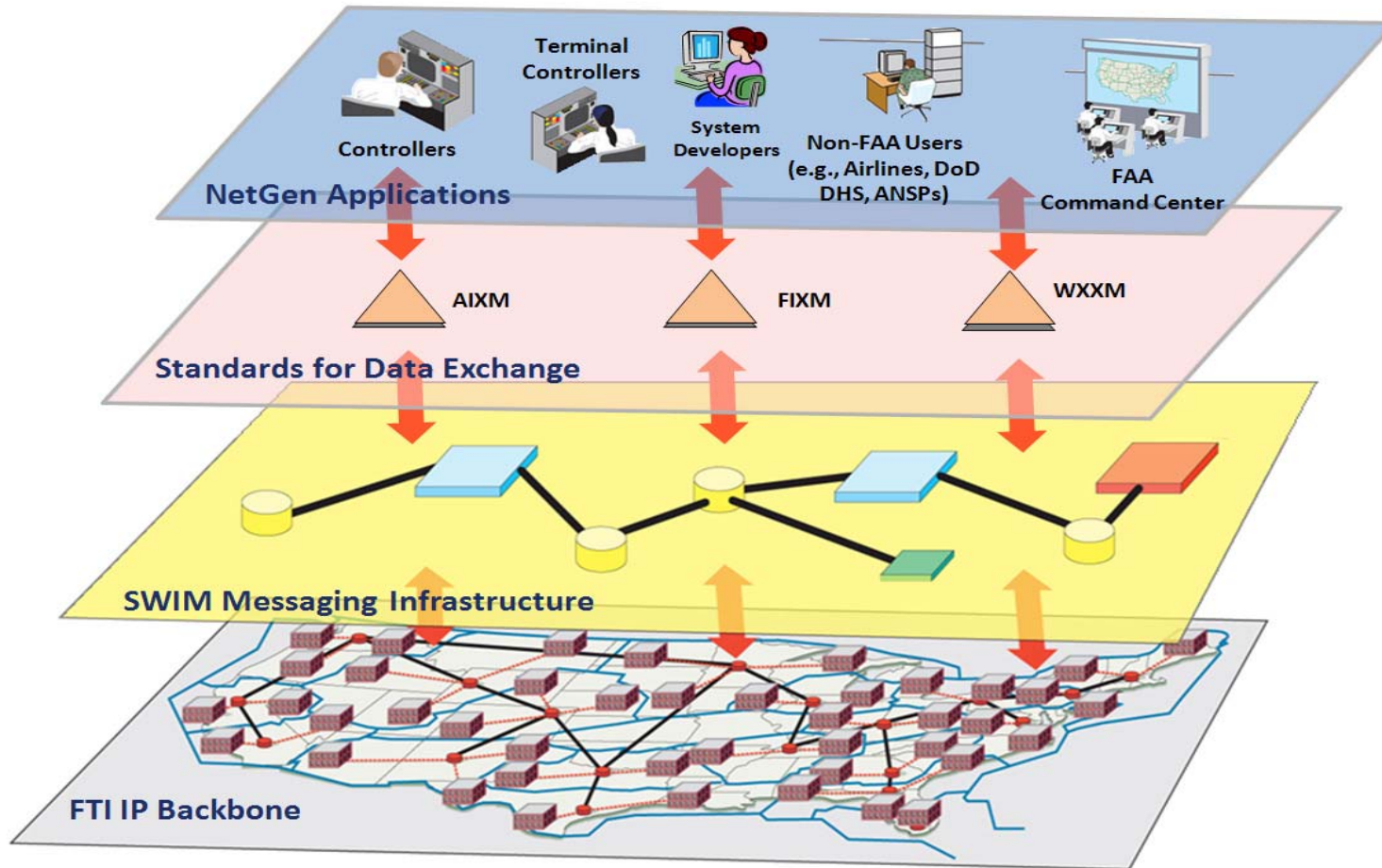
- Existing point-to-point hardwired NAS
- Unique interfaces, custom designs



- More point-to-point unique interfaces
- Costly development, test, maintenance, CM
- New decisions linked to old data constructs
- Cumbersome data access outside the NAS



# Conceptual Overview

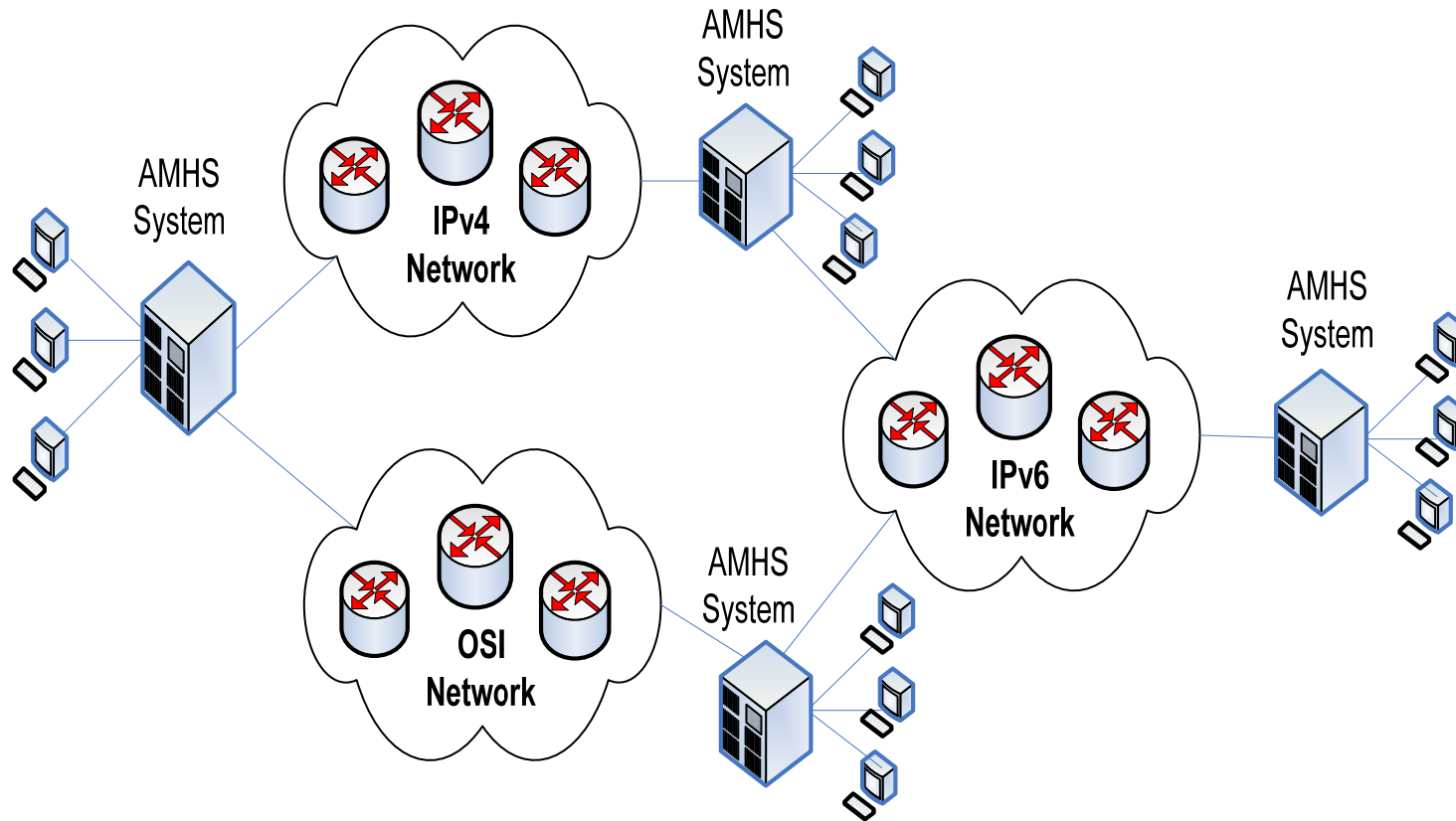


# Options for SWIM in Asia/Pac

SWIM in Asia/Pac could be done in several ways:

- Over the CLNP Sub-network
  - An IPv4 to CLNP gateway would be needed
  - However, CLNP is planned to eventually be replaced
  
- Over the planned IP Sub-network
  - If IPv6 (following ICAO Montreal in Doc 9896) then a IPv4 to IPv6 gateway would be needed
  
- Over AMHS
  - For SOAP and REST Request/Response an HTTP Gateway would be needed
  - For JMS Pub/Sub a JMS Gateway would be needed

# AMHS Network Infrastructure

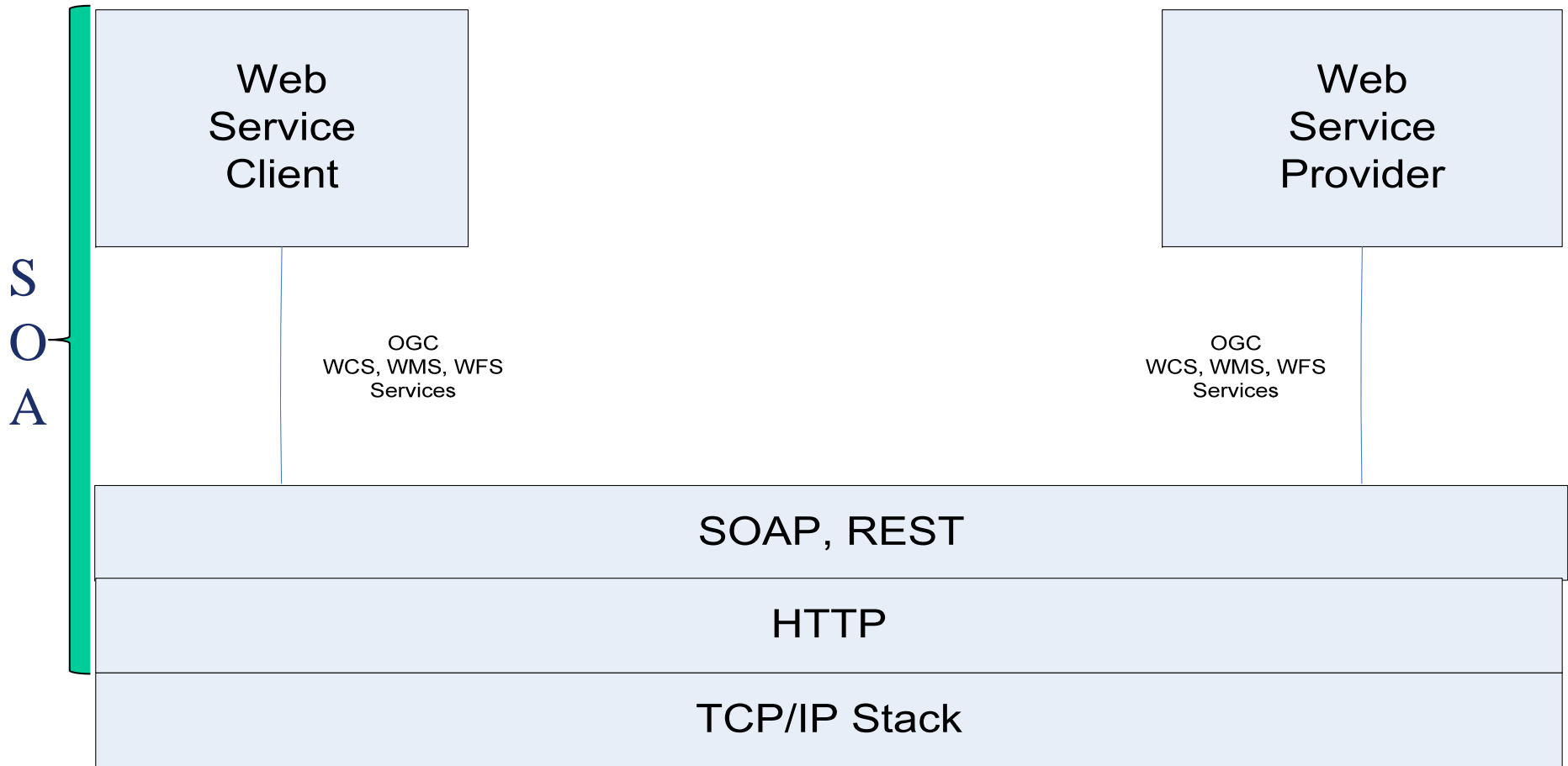




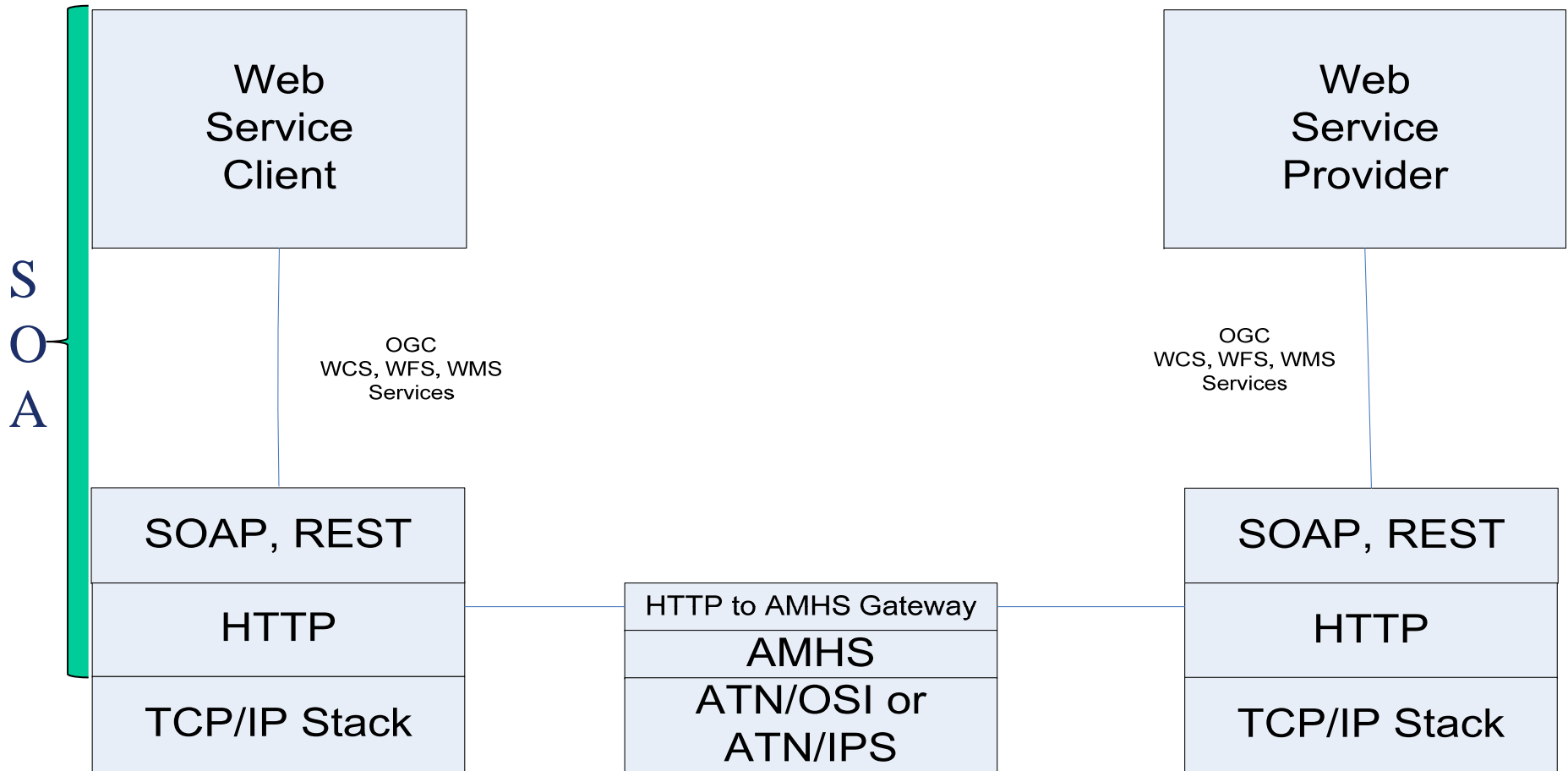
# SWIM Messaging over AMHS

- SWIM Messaging over AMHS could be implemented through the introduction of a SWIM/AMHS Gateway.
  - This would provide Inter-Regional connectivity since AMHS is the next generation Messaging System for Aviation
- The SWIM/AMHS Gateway should definitely exchange SOAP and REST Request/Response exchanges over HTTP.
  - XML encoding should be straight-forward
  - SOAP will attachments will require additional investigation
- In the future, the SWIM/AMHS Gateway might also support Publish/Subscribe exchanges.
  - Given the limitations of JMS, this requires further investigation.
  - Note that the Open Geospatial Consortium (OGC) has initiated an activity to look into Pub/Sub

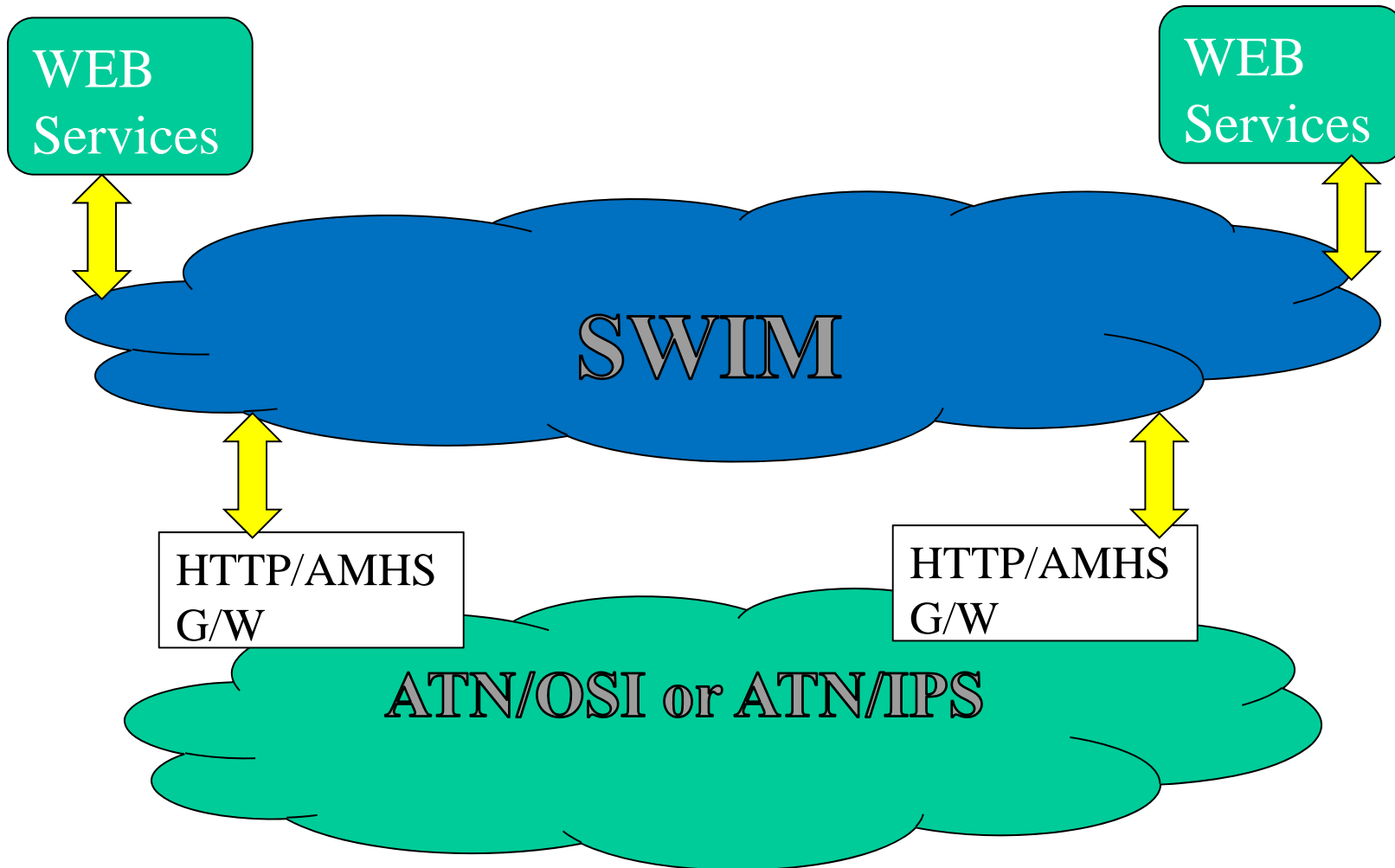
# Typical Web Services Communications



# Web Services with an “HTTP to AMHS Gateway”



# SWIM in ASIA/PAC Region



# Recommendation for ATNICG

The ATNICG Working Group should take SWIM over AMHS (or ATN) as a Task Item

Assuming the initial services will be focused on Text Weather products, in addition to the general items in the task list, there are three technical activities to be initiated:

1. Specify a HTTP over AMHS Function.
2. Define profiles for OGC WFS and WMS to carry text weather (eventually OGC WCS for raster products can be defined).
3. Define WXXM profile/extensions for initial text weather products.