



*International Civil Aviation Organization*

**EIGHTEENTH MEETING OF THE COMMUNICATIONS/NAVIGATION  
AND SURVEILLANCE SUB-GROUP (CNS SG/18) OF APANPIRG**

Asia and Pacific Regional Sub-Office, Beijing, China  
(21 – 25 July 2014)

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**Agenda Item 2.2: Review Follow up to AN Conf/12 Recommendations**

**SYSTEM WIDE INFORMATION MANAGEMENT (SWIM) CONCEPT OF OPERATION  
AND IMPLEMENTATION REQUIREMENT**

(Presented by United States of America)

**SUMMARY**

This paper presents the first attempt to gain more understanding of operation and implementation of service based on the SWIM Concept – DRAFT Version 0.9 developed by ICAO Air Traffic Management Requirements and Performance Panel (ATMRPP), dated 30 November 2013. This paper is also limited in its scope to Aeronautical Fixed Service (AFS). This paper focuses on the SWIM concept and presents the implementation issues/requirements for the meeting for information only since the SWIM Concept document is still in draft version and there is no request from ATMRPP for support.

**1. INTRODUCTION**

1.1 ICAO Air Traffic Management Requirements and Performance Panel (ATMRPP) released a System Wide Information Management (SWIM) Concept document, Draft Version 0.9 for review. As specified in the document, SWIM shall address (a) the need to increasingly complement human-to-human communication with machine-to machine communication, and (b) the need to emphasize better data distribution and accessibility in terms of quality and timeliness.

1.2 Most State Members, if not all, are requested to provide comments and recommendations to the SWIM Concept Document.

1.3 This document is the first attempt to define the SWIM concept and its objective. The SWIM objective has not yet been defined sufficiently for ICAO member States to consider for implementation planning.

1.4 The document states SWIM is an integral part of the Global Air Navigation Plan (GANP) and it is covered in a number of Aviation System Block Upgrades (ASBU) modules.

1.5 The SWIM Concept document shows a transition from the current environment of point-to-point Aeronautical Fixed Telecommunication Network (AFTN) and Air Traffic Service Message Handling System (AMHS) to SWIM.

1.6 The content of this paper was discussed at the first ACSICG/1 in May but no action is planned due to continuing effort in updating the SWIM Conops document by ATMRPP.

## 2. DISCUSSION

2.1 Even though the SWIM concept is still under development, the ASBU called for SWIM implementation beginning 2018.

2.2 The SWIM concept should define if SWIM service is planned for “background” operation to enhance existing system/service to be more efficient or a replacement of existing systems/service or both. These distinctions should be made clearly to avoid any confusion.

2.3 It is expected that after a Concept Operation Document is adopted, a Standard and Recommended Practice (SARP) or a Technical Manual will be created to address the issues as shown at the table

<b>Subjects</b>	<b>Comments</b>
<p><b>Requirements</b></p> <ol style="list-style-type: none"> <li>1. Type of data/message applied for SWIM distribution</li> <li>2. Data/message delivery priority</li> <li>3. Data/message distribution timing</li> <li>4. Message/data addressing scheme/format</li> </ol>	<ol style="list-style-type: none"> <li>1. Flight plan/clearance/transfer/OPMET/?</li> <li>2. Which type of data/message has priority in the service</li> <li>3. Time delay set for each type of data/message</li> <li>4. Type of address (NSAP/IP). Currently ICAO sets AFTN header and AMHS addressing schemes (CAAS/XF)</li> </ol>
<p><b>Architecture</b></p> <ol style="list-style-type: none"> <li>1. Provide “SWIM access Point” requirement/architecture</li> <li>2. What is underlying IP network (public internet or private IP network)</li> <li>3. How is SWIM used within private domain in association with ICAO SWIM between member States?</li> </ol>	<ol style="list-style-type: none"> <li>1. How “SWIM Access Point” interfaces with local systems. Currently AFTN/AMHS serve as central point between domains that integrate data/messages between applications. Will SWIM provide a gateway to these systems?</li> <li>2. The public internet is the only global network. All other private IP networks are divided by region. Integration between regional private IP networks is difficult due to different “core networks” managed by many vendors. The public internet cannot guarantee the delivery of data and performance due to many vendors’ core networks.</li> <li>3. Need a clear architecture as SWIM within domain is managed and operated differently from ICAO SWIM, based on individual organization local law and regulations</li> </ol>
<p><b>Governance and Management</b></p> <ol style="list-style-type: none"> <li>1. What entity/entities are authorized to manage SWIM since this service requires streamlined distribution by centralizing the service?</li> <li>2. Ownership of data/message</li> </ol>	<ol style="list-style-type: none"> <li>1. How are SWIM Governance entity/entities selected? Is it one global entity or many regional entities?</li> <li>2. Data/message generators or SWIM Governance entity/entities?</li> </ol>

<ul style="list-style-type: none"> <li>3. Unknown/corrupted data/message Coordination</li> <li>4. Legal Recording and Tracking of data/message</li> <li>5. SWIM Subscribers approval process: Who is allowed to subscribe and process to ensure identity or proper usage</li> <li>6. Criteria to be eligible as a subscriber and type of subscribed data/message</li> </ul>	<ul style="list-style-type: none"> <li>3. Current AFTN/AMHS coordinate between AFTN/AMHS sender and receiver. Under SWIM environment, the message is distributed from SWIM server(s), SWIM Governance entity/entities will be responsible?</li> <li>4. AFTN/AMHS requires data/message sequencing and recording up to 30 days.</li> <li>5. Management of approving process and update of information in a timely manner are critical. Subscriber could sub-address or distribute user name/password to others. Subscribers could leave the organizations. The POC of each organization approving subscription could be changed without informing the SWIM Governance body/bodies.</li> <li>6. Need criteria for selection and approval. Also an appeal procedure for approval reconsideration is needed.</li> </ul>
<p><b>Security</b></p> <ul style="list-style-type: none"> <li>1. Sensitive data/message distribution</li> <li>2. Security procedure</li> </ul>	<ul style="list-style-type: none"> <li>1. Example: VIP/military flight plans sensitive timing distribution</li> <li>2. Authentication/static IP address?</li> </ul>
<p><b>Transition</b></p> <ul style="list-style-type: none"> <li>1. Other data/messages not covered under SWIM</li> <li>2. AFTN/AMHS in SWIM</li> </ul>	<ul style="list-style-type: none"> <li>1. Need to know of other type of messages not generated by ANSPs or airline, such as International Search and Rescue, administrative message coordination, such as maintenance notice, unknown messages, etc.</li> <li>2. AFTN/AMHS headers are mandated by Annex 10 and ICAO Doc. 7910/8585.</li> </ul>

2.4 It is recommended that the meeting consider the proposed SWIM Implementation plan as defined in ASBU and the implementation issues presented in this paper for future planning.

**3. ACTION BY THE MEETING**

3.1 The meeting is invited to:

- a) note the information contained in this paper; and
- b) plan for SWIM service beginning in 2018 as specified in ASBU.

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