International Civil Aviation Organization

Eighth Meeting of Aeronautical Communication Service Implementation Co-ordination Group of APANPIRG (ACSICG/8)

Video Tele-Conference, 21 – 23 June 2021

Agenda Item 5: Review and update the AMHS/ATN Implementation Status
5.1 Update status of AMHS implementation

AMHS TO SWIM TRANSITION AND MIXED ENVIRONMENT OPERATION IMPLEMENTATION

(Presented by Fiji/Fiji Airports)

SUMMARY

This paper presents the AMHS to SWIM transition and mixed environment operations using staged approach implementation and service interoperability.

1. INTRODUCTION

1.1 The AMHS – SWIM transition is expected to generate a new era in exchanging of aeronautical messages from the normal Message Switching System (MSS) like AFTN & AMHS to the new Information Management System (IMS) using SWIM.

1.2 The ICAO Doc 10039, Manual on System Wide Information Management (SWIM) Concept has provided staged approach implementation that will ensure service interoperability in the AMHS to SWIM Transition and Mixed environment operation.

2. DISCUSSION

2.1 Prior to the AMHS- SWIM transition and mixed environment operation it is expected that the AMHS supporting Extended ATS Message services using File Transfer Body Parts (FTBP) for AIXM/FIXM/IWXXM has been implemented between BBIS & BIS State ANSP over the CRV network for ATM operations.

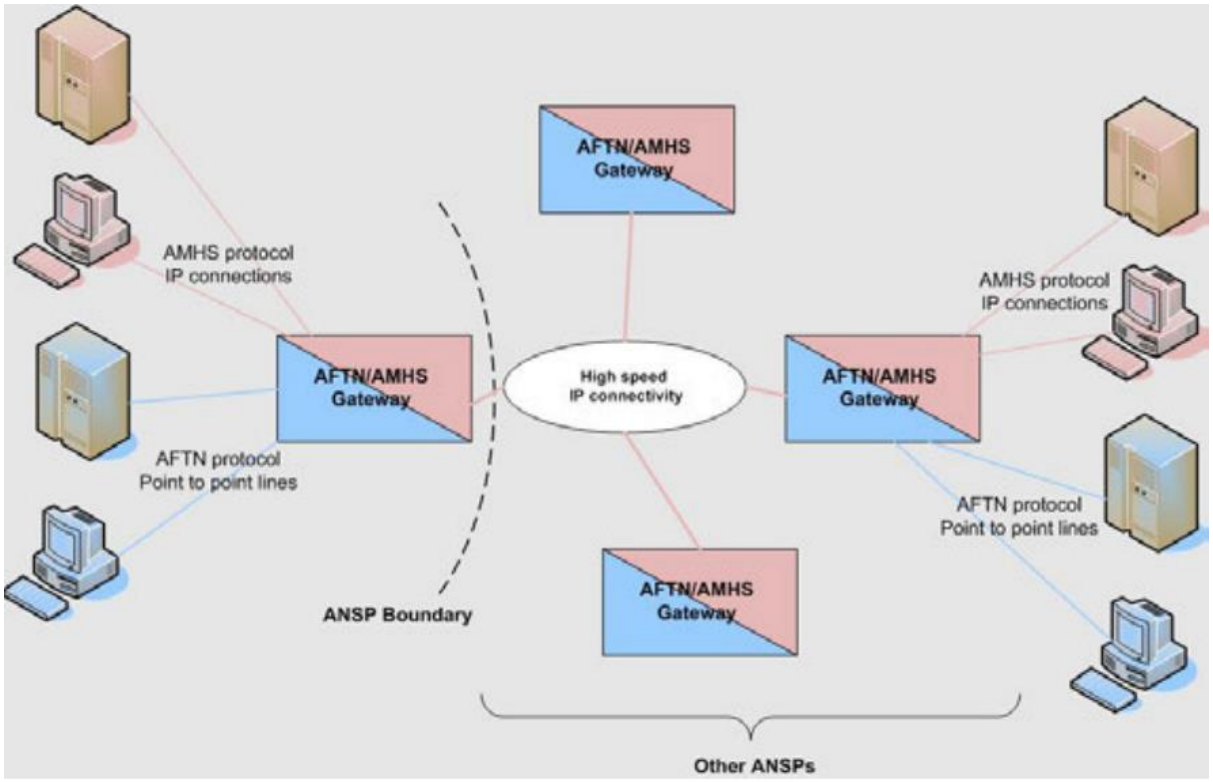
2.2 Chapter 4 of ICAO Doc 10039, Manual on System Wide Information Management (SWIM) Concept describes the AMHS to SWIM Transition and mixed environment operations using the phase approach implementation from the current AFTN/AMHS environment to a full SWIM platform. Interoperability is needed, whether using existing legacy systems or planning a transition for the long term. This is made possible via specialized gateways for messaging and a staged transition as follows:

a) Current AFTN/AMHS Environment
b) Interoperability at Application – level in the mixed environment
c) Interoperability in the Gateway in the mixed environment
d) Full SWIM environment

2.2.1 **Current AFTN/AMHS Environment**

In the current environment interoperability services between ANSP AMHS is provided using AMHS Basic ATS message services for exchange of AFTN messages and AMHS Extended ATS message services for XML message like AIXM/FIXM/IWXXM using File Transfer Body Parts (FTBP). The roll out of the IWXXM service over AMHS has now been implemented by ROBEX and RODB center for the exchange of OPMET bulletin.

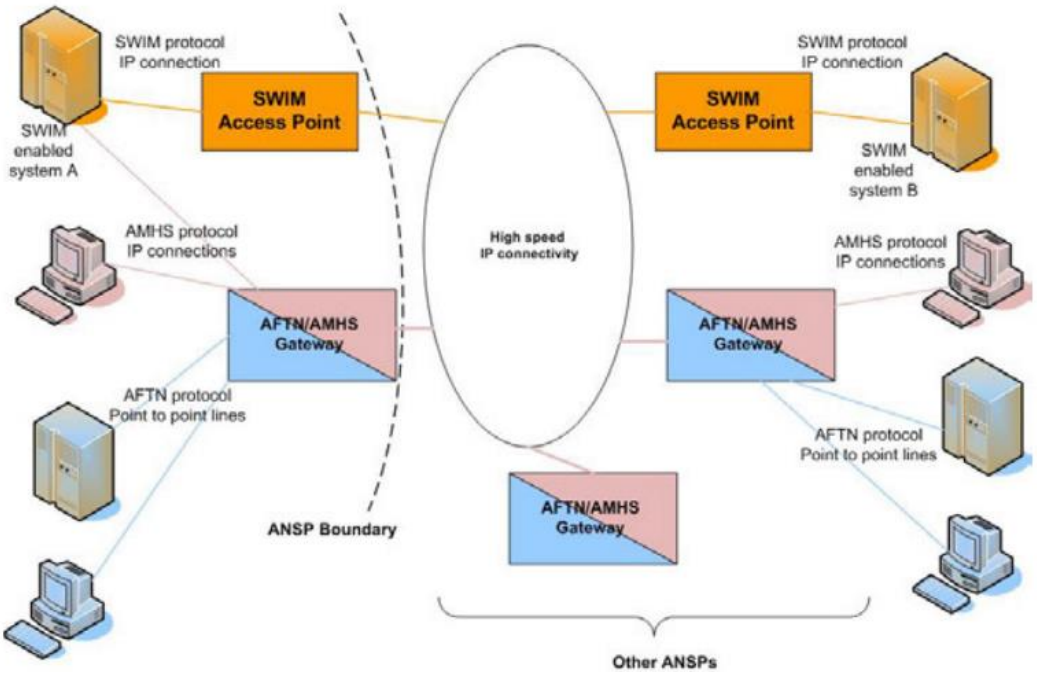
This is depicted in the diagram below.



2.2.2 **Interoperability at Application – level in the mixed environment**

This is one of the two types of staged approach proposed in the SWIM transition in the mixed environment using one of the service application through an upgrade or a replacement of a legacy system like the implementation of IWXXM for ROBEX system where the new system would both support the 'legacy' TAC as well as a new SWIM service for IWXXM. Other SWIM-enabled systems (e.g. system B) will be able to take advantage of advanced functionality provided by the IWXXM service. Other 'legacy' systems will still be able to interoperate with the system A using 'legacy' OPMET TAC as before, but they will not be able to benefit from the advanced functionality.

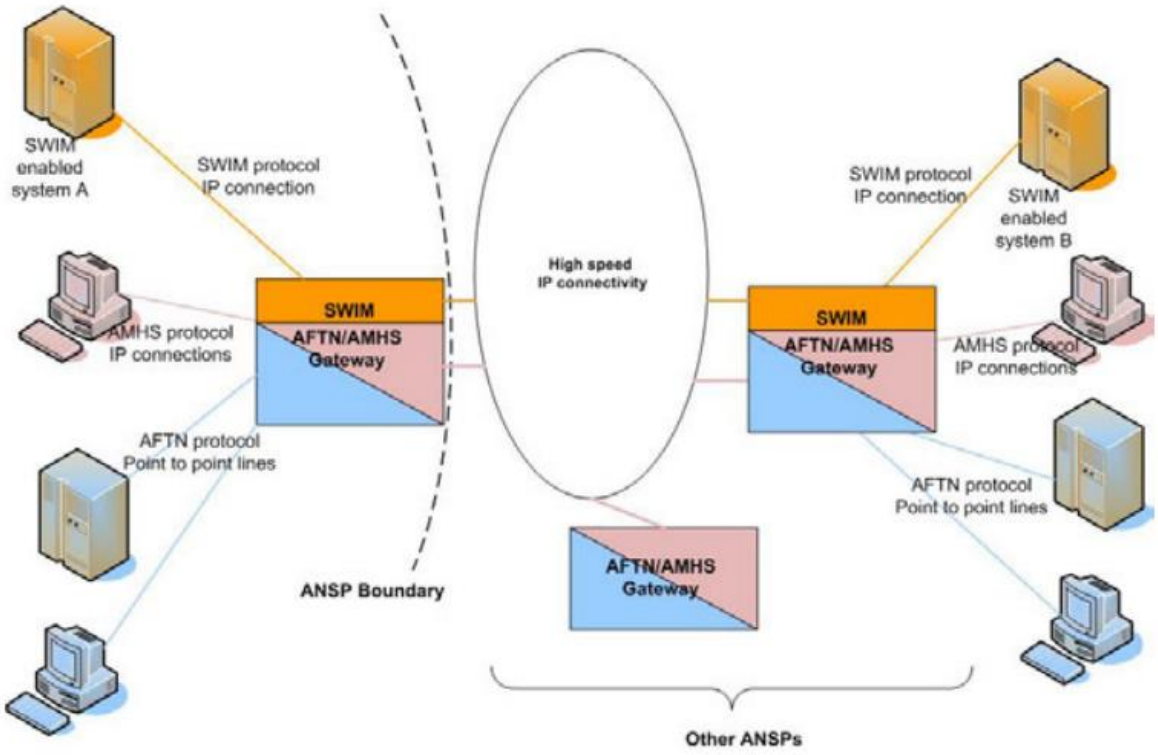
This is depicted in the diagram below.



2.2.3 **Interoperability in the Gateway in the mixed environment**

The second type of staged approach in the SWIM transition in the mixed environment can be achieved through an upgrade or replacement of a legacy system and implementation of gateways between SWIM and AFTN/AMHS. This new system would implement a SWIM service (or several SWIM services). Other SWIM-enabled systems (e.g. system B) will be able to take advantage of advanced functionalities provided by such services. In this case, such SWIM service will have a straightforward mapping with AFTN/AMHS messages with the implementation of gateways between SWIM and AFTN/AMHS which would allow other 'legacy' systems to exchange information with system A.

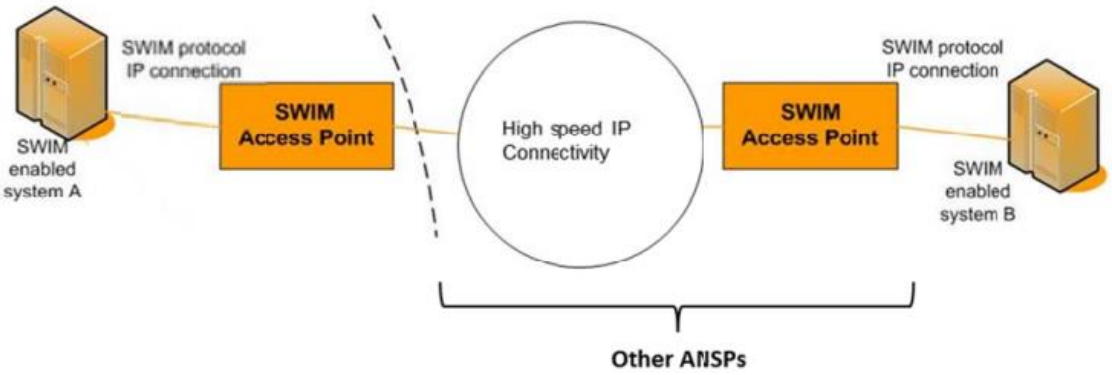
This is depicted in the diagram below.



2.2.4 **Full SWIM environment**

This represent the full implementation of SWIM for the exchange of SWIM services for which there will be no interoperability with 'legacy' systems. Such services will be just provided and consumed by SWIM-enabled systems.

This is depicted in the diagram below



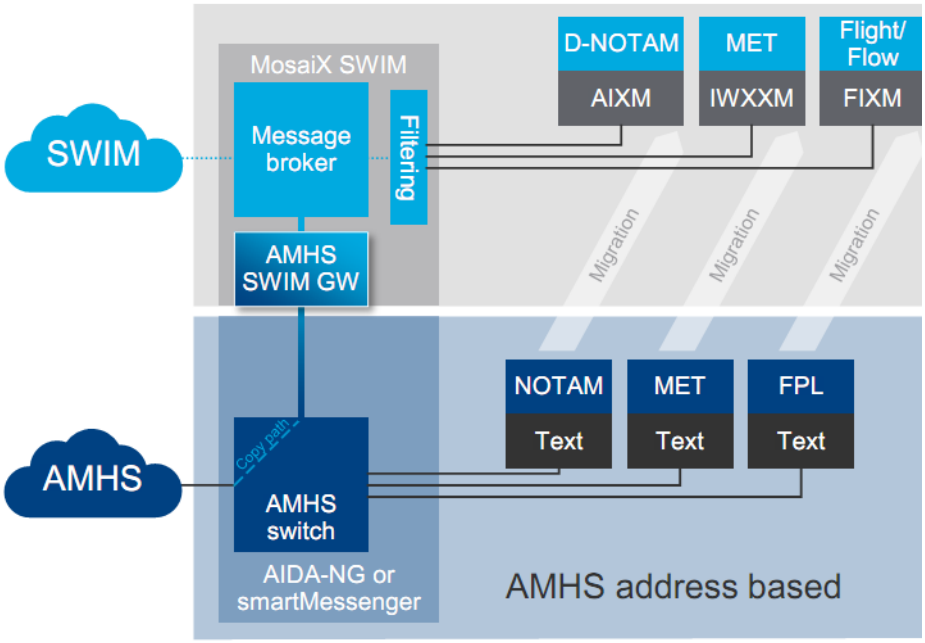
2.3 **Proposed Way Forward for APAC Region AMHS – SWIM Transition & Mixed Environment Operation**

2.3.1The APAC region AMHS implementation requires AMHS to support Extended ATS Message Services using File Transfer Body Parts (FTBP) for the exchange of AIXM/FIXM/IWXXM prior to the

full implementation of SWIM. The integration between the ACSICG and the SWIM TF group works will be crucial in the planning and during the AMHS – SWIM transition and mixed environment operation in defining how the two systems will interoperate using the AMHS /SWIM gateways. The challenges in migrating from a messaging exchange service using AMHS routing based on point to point connection in the delivery of messages to a service oriented system for SWIM Providers and SWIM Consumers through subscribers will need to be studied for best solution to implement.

2.3.2Interoperability of services during the AMHS – SWIM transition and Mixed Environment operation is critical to ensure that continuity of ATM services is not affected. The staged transition approach of implementing gateway between the SWIM and AFTN/AMHS will allow ANSP that still operate AMHS that support FTBP to exchange AIXM/FIXM/IWXXM with SWIM Providers (ANSP or Global). In using this staged transition approach, the location where the gateway will reside is important for interoperability of services. Given that the number of operational AMHS system will be far more than the SWIM Providers at the beginning of the implementation it would be logical and justify (operational & economic term) to have the gateway resides with the SWIM Provider until the full SWIM services is implemented.

2.3.3 This is depicted below showing Frequentis AMHS/SWIM Gateway as a example.



3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper; and

b) discuss any relevant matter as appropriate

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