

**STRATEGY FOR IMPLEMENTATION OF COMMUNICATION SYSTEMS
TO SUPPORT AIR NAVIGATION SERVICE
IN THE ASIA/PACIFIC REGION**

Considering that:

- 1) legacy AFTN circuits are required until the ground systems of ATM Service Providers (ASP) and Airspace Users (AU) in reliant states are compatible with ATS Message Handling Service (AMHS), the successor implementation of the Aeronautical Fixed Service (AFS);
- 2) the Aeronautical Telecommunication Network (ATN) is specified in ICAO SARPs and technical manuals as the network supporting AFS implemented using either OSI protocols (ATN/OSI) or the Internet Protocol Suite (ATN/IPS) for both ground-ground and ground-air services;
- 3) many states have implemented ATN and AMHS in accordance with ICAO guidance (regional BBIS providing dual OSI/IPS stack routing at the AMHS level);
- 4) AN Conf/12 endorsed the Global Air Navigation Plan version 4 including the Aviation System Block Upgrades of the Globally Interoperable Services and Data improvement area based on System-Wide Information Management (SWIM) message exchange patterns (specified in the SWIM Operational Concept as IP-based web services);
- 5) APANPIRG adopted the Seamless ATM Plan (Version 2) in 2016 which includes the regional objective for SWIM and Common **aeRonautical** VPN (CRV) implementation; and
- 6) operational precedents of slightly different implementations of this SWIM concept exist in North America and Europe.

THE GENERAL STRATEGY FOR THE IMPLEMENTATION OF THE NECESSARY INTER-STATE COMMUNICATION SERVICES TO SUPPORT THE GLOBAL AIR NAVIGATION PLAN IN THE ASIA/PACIFIC REGION IS AS FOLLOWS:

- a) **Initiate transition ATSMHS and other applications to Internet Protocol Suite (IPS) based CRV. This would allow ATSMHS to be compatible to other regions using either CRV or other IP based networks.**
- b) continue deploying the ground-ground ~~ATN~~ backbone network of AMHS Message Transfer Agents (MTA) needed to support operational ground-ground services (as the infrastructure supporting AFTN such as X.25 becomes obsolete) and the air-ground services expected to migrate to ATN/IPS.
- c) acknowledge ICAO's acceptance of IP sub-networking and the precedent of PENS in Europe and FTI in North America and consider the consequent potential for superior approaches to APAC's ATN which is deployed as an aggregation of private leased point-to-point and other circuits including the Public Internet;
- d) apply guidance from ICAO technical panels primarily the Information Management and Communications panels in progressing regional planning and co-ordination in terms of inter-state exchange of aeronautical, meteorological, flight information, voice communication services and surveillance data;

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- e) permit **BBIS** and **BIS** ~~and non-backbone~~ States, and States in other regions with connections to the Asia/Pacific region, to connect their Message Transfer Agents (MTA) to ~~backbone~~ **BBIS** States using either the OSI-based ATN Internet Communications Services (ICS) or the ATN IPS on a bilateral basis;
- f) permit States with limited traffic to operate only UA terminals connected to the MTA of another State, subject to bilateral agreement. Such connections should use the CRV's IP VPN. In cases where is not practical, use of the public Internet subject to appropriate security provisions and access control is acceptable;
- g) complete migration from AFTN to AMHS within the time frame specified in the Regional Air Navigation Plan;
- h) once a robust ATN has been established, transition from the OSI-based ATN ICS to the AMHS MTA network using the ATN/IPS as specified in ICAO Doc 9896;
- i) consider options for augmenting the operational regional ATN to meet future operational requirements (including virtualizing the ATN over generic sub-networking infrastructure/services capable of supporting other higher-level communication services in addition to the ATN).

IN ORDER TO ACHIEVE THE ABOVE STRATEGY THE FOLLOWING ACTIONS ARE REQUIRED:

- i) Enhance AMHS to include the File Transfer Body Part (FTBP) sub-set of extended AMHS in order to support the exchange of IWXXM data using FTBP;
- j) Australia, Fiji, New Zealand and USA to replace their obsolete South Pacific AFS Network equipment with a subscription to the CRV managed service. In addition to sustaining operational voice and ground-ground data services, validate the 10 key points of the CRV proof-of-concept;
- k) Remaining APAC states to monitor outcomes of the proof of concept and consider subscription to the CRV service if it is beneficial given their particular circumstance;
- l) When CRV pilot is completed and service is accepted, BBIS States should prioritize the transition of AMHS MTA to CRV as well as coordinate with BIS States to join. Conversion of legacy interfaces (X.25, X.25 SNDCEF, and IP SNDCEF) to IPS should be utilized to support the AMHS transition to CRV.
- m) States and ASP/AU to participate in the SWIM Task Force and nominate subject matter experts to implement Phases 2 and Phase 3 of the Seamless ATM plan Version 2 adopted by APANPIRG in 2016. ~~Three phases are identified in the SWIM Task Force's work plan:~~
 - a. ~~Definition phase~~
 - b. ~~Implementation phase 1—expansion of services and preparation of phase 2~~
 - c. ~~Implementation phase 2—generalization.~~
- n) Support the transition to FIXM with initial focus on the regional ATFM.
