Presentation of the initial proposal:

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AERONAUTICAL MOBILE SERVICE (AMS) STRATEGY FOR THE ASIA/PAC REGION

The AMS strategy for the Asia/Pac Region is to:

a) Ensure that all communications are provided within the Aeronautical Mobile (R) Service AM(R)S and the Aeronautical Mobile Satellite (R) Service -AMS(R)S, and protect the use of all radio frequency bands allocated for AM(R)S and AMS(R)S;

b) Retain the VHF voice service as the primary medium for air-ground communication;

(*Comment: According to Doc 9750 Global Air Navigation Plan COMI concept of operations block 1 and block 2, a major shift toward greater use of Data link in the en-route and surface domains is envisioned in the next five to ten year. Actually, the shift is happening in some countries and areas, such as the USA and Europe.)*

c) Supplement voice communication with data-link Flight Information Service (DFIS) applications including D-VOLMET, D-ATIS ~~and~~ , DCL and other new applications related to the safety and regularity of flight to reduce congestion of the VHF spectrum, reduce workload, and enhance safety;

(Comment: *The DFIS applications have been widely used in areas of ASIA/PAC region. For example, data-link CDM service trial based on D-VOLMET has been conducted in 133 airports in China.)*

d) Retain 25 kHz as the minimum channel spacing in the band 118 – 136 MHz by 2025;

(Comment: *The simulation of VHF COM frequency requirements by SR/WG of APAC indicated that 25kHz could fulfill the needs of VHF COM in APAC at least by 2025.)*

e) Use the frequency band 136 – 137 MHz exclusively for the air-ground VHF data-link applications;

f) Use ~~CPDLC~~ PBCS approved CPDLC to provide DCPC (Direct controller pilot communications) for more efficient communication and enhanced ATM, especially to improve the capability of Trajectory Based Operation and enhance en-route situation awareness;

(Comment: According to Doc9750 Global Air Navigation Plan COMS concept of operations block 0, block 1, block 2 and TBO Tree.）

g) Retain HF voice for communication in areas where VHF coverage is not available;

(Comment: Where VHF coverage is not available, we could not only retain HF voice but also satellite voice for communication.)

h) Provide satellite voice (SATVOICE) where appropriate. States providing SATVOICE service should publish relevant details in their AIP;

i) ~~plan for~~ Enhance AM(R)S and AMS(R)S applications within a performance-based communication and surveillance (PBCS) framework;

(Comment：PBCS specifications have already been implemented globally since March 29, 2018. It is necessary to make efforts to enhance the AM(R)S and AMS(R)S applications.)

~~j) plan and implement new communication technologies and applications to meet the demands of aviation in the ASIA/PAC Region with the involvement of all stakeholders and taking account of costs and benefits; and~~

~~k) protect all radio frequency bands allocated for AM(R)S and AMS(R)S.~~

j) Strengthen the PBCS monitoring and improve its specifications as well as relevant safety assessments on emerging technologies for communication and surveillance supporting ATM operations in accordance with ICAO DOC 9869 and DOC 10037;

(Comment: PBCS specifications have been implemented globally since March 29, 2018. Considering the development and applications of the data-link-based technologies facilitating the ATM operation, stakeholders should work on the improvement of PBCS specifications and strengthen the safety assessments and monitoring.)

k) Encourage applying Satellite Communications (SATCOM) with the performance of class A, B, and C on safety data or voice applications in accordance with ICAO Annex 10 and DOC 10037;

(Comment: According to Doc9750 Global Air Navigation Plan COMS concepts of operation block 1 and block 2.)

l) Conform to the regional implementation priorities of ASBU, plan and implement new ATS communication services to meet the demands of aviation in the ASIA/PAC Region with the involvement of all stakeholders and taking account of costs and benefits. Taking Trajectory Based Operation (TBO) as thread, promote the ASBU operational concept and technology at the regional level.

(Comment: According to Doc9750 Global Air Navigation Plan Aviation System Block Upgrade (ASBU) framework and TBO Tree.)

Note:

Doc 10037: Global Operational Data Link (GOLD) Manual

Doc 9869: Performance-Based Communication and Surveillance (PBCS) Manual

Doc 9750: Global Air Navigation Plan

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STRATEGY FOR IMPLEMENTATION OF THE AIR-GROUND DATA LINK IN THE ASIA/PAC REGION

Considering that:

a) The benefit of data communications to improve safety, efficiency and capacity through the reduction of voice communications and process automation to meet the operational requirement and consistent with the Air Traffic Management Operational Concept;

b) Current operation application of data link to support CPDLC, ADS-C, ~~PDC and D-FIS,~~ Data link Flight Information Service (DFIS) including D-VOLMET, D-ATIS and DCL, the need to maintain the functional service of these applications;

(*Comment: extend some other ATC applications*)

c) Current technology such as ~~VHF ACARS, VDL-Mode 2 AoA (ACARS over Aviation VHF Link Control), VDL-Mode 2 ATN,~~ Satellite data link, HF data link, AeroMACS being acceptable for operations and standardized in SARPs and/or industry standards;

(Comment: include AeroMACS)

d) ~~availability of standardized VDL-Mode 3, VDL-Mode 4, Mode S data links and future standardized technology such as Universal Access Transceiver (UAT);~~
Ongoing implementation of VHF ACARS, VDL-Mode 2 AoA (ACARS over Aviation VHF Link Control), VDL-Mode 2 ATN and the need to improve data link communication coverage and capacity;

(Comment: VHF data link is still important in ATC COM, VDLM2 has 2 protocols, AoA and ATN)

e) The need for PBCS implementation is prescribed in the Performance-Based Communication and Surveillance (PBCS) Manual (Doc 9869) to ensure that data communications operations are carried out in a safe and efficient manner;

(Comment: The PBCS has been globally implemented from 29th March 2018. The PBCS concept provides a framework for managing communication and surveillance performance in accordance with globally accepted RCP and RSP specifications. Doc 9869 provides guidance and information concerning PBCS operations and is intended to facilitate the uniform application of the SARPs contained in Annex 6, Annex 11, Annex 15, PANS-ATM, PANS-ABC and, when necessary, the Regional Supplementary Procedures (Doc 7030). All the stakeholders should follow the uniform standard in this manual to improve operational safety and efficiency.)

f) The Global Operational Data Link (GOLD) Manual (Doc 10037) provides the globally harmonized guidance on data link service, CPDLC and ADS-C implementation, PBCS specifications and post-implementation monitoring and analysis;

(Comment: The GOLD Manual provides guidance on ATS data link services, namely data link initiation capability (DLIC), automatic dependent surveillance – contract (ADS-C) and controller-pilot data link communications (CPDLC). It is intended to improve safety and maximize operational benefits by promoting seamless and interoperable data link operations throughout the world.)

g) Trajectory-Based Operations is fundamental for realizing the ICAO Global ATM Operational Concept and the evolution towards TBO is expected to align with the deployment of Aviation System Block Upgrades (ASBU) as described in the *Global Air Navigation Plan*, (ICAO Doc. 9750);

(Comment: emphasize concept on TBO)

h) Development of standardized LDACS (L-Band Digital Aerospace Communication System);

(Comment: ICAO PT-T is working on the standard of LDACS)

i) ~~e)~~The future growth of data communications to improve operations and the exchange of information including graphical meteorological information; and

j) ~~f)~~ The need to assure global interoperability and harmonization.

THE GENERAL STRATEGY FOR THE IMPLEMENTATION OF THE AIR-GROUND DATA LINK INFRASTRUCTURE IN THE ASIA/PAC REGION SHOULD BE AS FOLLOWS:

~~a)~~ a) Maintain or ensure compatibility of existing data links to support all current ATM and meteorological applications without change to the application or application specific system.

~~b)~~ b) New ~~installation~~ deployment of VHF data link ground systems should be capable of supporting VDL-Mode 2 ~~and as an interim step provide the bridging application of AoA.~~ based on ASBU Block Implementation.

(Comment: VDL mode 2 should be considered in priority)

~~c)~~ c) In the near term there is no intent to implement VDL-Mode 3, VDL-Mode 4 ~~or Mode S.~~

(Comment: There is no demand to promote VDL mode 3 and mode 4, but the promotion and application of mode S is conducted in APAC area.)

~~d) undertake and monitor research and development of communications technology for the future evolution of data link services.~~

~~e)~~ d) States are encouraged to work co-operatively to assist each other on a multinational basis to implement the air-ground ATN/IPS based on their operational requirements while maintaining service to support ATN/OSI during the transition period. Among ATN systems utilizing both OSI and IPS (Internet Protocol Suite) dual stack allows for a high level of interoperability. States should be encouraged to develop dual stack functionality; ~~compliant VDL-Mode 2 service and ensure system inter-operability.~~

(Comment: ATN/OSI is compliant with VDL mode 2, recommend to develop ATN/OSI and ATN/IPS dual stack system. States have the responsibility to ensure all the systems inter-operability.)

~~f)~~ e) HF voice services used in remote continental and oceanic areas should be transitioned to datalink communications.

(Comment: Encourage states to use datalink communications in remote continental and oceanic areas outside the range of VHF coverage)

~~g)~~ f) Deploy new applications on aerodrome surface, terminal and full stage of flight which related flight safety and security based on current and new datalink technology in accordance with ICAO Annex10 and Doc 10037 to reduce congestion of the VHF spectrum, reduce workload, and enhance safety.

(Comment: Data link communication reduces the workload of the controller and flight crew by supporting automatically transmitted reports. It is a great benefit to reduce human error during the ATC service and increase ~~the~~ operational efficiency.)

~~h)~~ g) Apply an RCP specification related to the data link systems for relevant airspace complying with Doc 9869, and establish PBCS monitoring programs to assess against the RCP specification.

(Comment: The RCP specification provides subsystem allocations to support the initial compliance processes, ANSPs should establish local and regional PBCS monitoring programs to monitor actual performance against the operational criteria provided in Doc 9869, and take any necessary action to resolve unacceptable performance.)

~~i)~~ h) Encourage states to provide the service of VHF ACARS, VDL-Mode 2 AoA, VDL-Mode 2 ATN and the deployment of class A, B, and C Satellite communications (SATCOM) on safety data or voice applications in accordance with ICAO Annex 10 and Doc 10037.

(Comment: VHF ACARS, VDL-Mode 2 AoA, VDL-Mode 2 ATN and the performance class A, B, and C Satellite communications need to be considered in priority.)

~~j)~~ i) undertake and monitor the research and development of communications technology for the future evolution of data link services in line with ICAO Global Air Navigation Plan (GANP).

(Comment: According to GANP, pay attention to the new data link technology.)

Note:

Near-Term: now to 10 years

Long-Term: 15+

Doc 10037: Global Operational Data Link (GOLD) Manual

Doc 9869: Performance-Based Communication and Surveillance (PBCS) Manual

Doc 9750: Global Air Navigation Plan

Doc 7030: Regional Supplementary Procedures

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