



ICAO

International Civil Aviation Organization

First Meeting of the APAC ANSP Committee (AAC/1)

Bangkok, Thailand, 17 – 18 April 2023

**Agenda Item 3: Work Program**

**ASIA PACIFIC CONNECTED AVIATION THROUGH DIGITALISATION AND  
POLICY RECOMMENDATIONS TO  
ASIA PACIFIC MINISTERIAL CONFERENCE**

(Presented by CANSO)

**SUMMARY**

This paper recommends steps to accelerate ANS modernisation in the region under the overarching theme of “**Asia Pacific Connected Aviation through Digitalisation**”. It is timely for this ANSP Committee to brainstorm alternative pathways to regional ANS modernisation. This committee can offer ANS policy recommendations to the coming Asia Pacific Ministerial Conference. In addition to the Asia Pacific Seamless ANS Plan, the region needs easier ways on how to implement the plan. There is room for greater digitalisation and new business models in ANS. This can be an equaliser as shared services drive down costs, and the resultant connectivity drives up value. There will be a need to work closely with the industry on the supply side for easier solutions. The network of ATM research entities in the region can also be strengthened. CANSO Asia Pacific is prepared to work closely with ICAO Regional Office and Regional Sub-Office to champion this shift to easier ANS implementation.

**1. INTRODUCTION**

1.1 The ICAO reports of the Asia Pacific Seamless ANS Plan have shown the urgent need for a review of regional ANS modernisation strategy. As airports expand their capacity, insufficient ANS capacity is highly consequential. The region faces an inflection point and cannot maintain business as usual.

1.2 This ANSP Committee can reframe the challenge and recommend alternative pathways to regional ANS modernisation. The Seamless ANS Plan has defined an ideal target end state and takes a top-down approach. The ANSP Committee’s work can take a problem-solving approach and start with the current realities. The existing regional ANS forums are limited to the defined terms of reference and scope. We can go beyond the boundaries and adopt a more holistic approach, more out-of-the-box brainstorming, including the involvement of the technology industry. Rather than focusing on what to do, the question is about how to make modernisation easier for everyone.

1.3 There is ample room for digital technology and information-centric network to be further employed to meet ANS goals. **Digitalisation** is an equaliser for the region because costs can decrease due to shared services. The resultant **connected aviation** drives up the value. At the regional level, we

can leverage on one another to better fulfil the Seamless ANS Plan. Greater digitalisation can open more opportunities for collaboration as there are less boundaries in digital space. Working collectively helps us to accomplish more with less. CANSO is conducting a study of new ANS collaboration opportunities in the Asia Pacific arising from greater digitalisation. CANSO can contribute the study findings to this Committee. This ANSP Committee can exercise leadership to realise Asia Pacific digital ANS.

1.4 Among other follow up actions, this Committee can offer substantive policy recommendations to the coming Asia Pacific Ministerial Conference. There will be expectations from the Ministers for actions to address the slow progress. High-level support is necessary, especially with the provision of resources. This will be part of a series of multi-level and multi-path efforts.

1.5 Apart from ANSPs, we need to engage ATM and technology companies. ATM companies are important in the ANS ecosystem in the deployment of solutions into operation. Supply side transformation is also needed to make regional ANS easier. We need to influence ATM companies on their service offerings that encourage collaboration and are cost-effective.

## **2. DISCUSSION**

2.1 While there is wide consensus on the Seamless ANS vision and concept of operation, there seems to be friction in implementation. Not using the optimal solutions could mean higher costs and hence ANS charges, making us uncompetitive. An uneven state of ANS development in the region has a negative multiplier effect on everyone. ATM is an interdependent network, this is increasingly so in the future with capabilities like CRV, SWIM, FF-ICE, and eventually TBO. Implementation gaps in the region could mean suboptimal result from individual investment. Achieving a connected regional ATM can bring synergy. Network effect can drive up the value of ANS, while economies of scale drive down the costs.

### Analysis

2.2 Analysis of some of the causes and plausible solutions are the following:

#### 2.2.1 Structural.

Vision statement like Seamless ANS is the antithesis of the problem we aim to overcome – i.e. the baggage of fragmentation. While some degree of ANSP independence and separation is inevitable, it is in our interest to harness the benefits of collective regional solutions. However, the conventional way practiced elsewhere is not always applicable in this region. For instance, a physical brick and mortar regional ATFM centre for the Asia Pacific like Europe's Network Manager will not be viable here. Instead, a different multi-nodal collaborative approach was devised some years ago. With the advent of digital solutions, this approach can further evolve to be truly regional, overcoming current limitations. One of the challenges as traffic increases is compliance to local ATFM solutions. One check and balance against non-compliance is transparency. Region-wide information sharing, and situational awareness are missing today. This can now be achieved without any sovereignty concerns. A virtual regional "situation room" or even a virtual "network manager" can be developed as building block for a seamless regional network. Such regional situational awareness can also enhance early warning for resilience against contingencies.

#### 2.2.2 Resources.

If the obstacle to ANS growth is the lack of financial and human resources by ANSPs, the situation will get worse from the impact of COVID. We need to share costs and avoid duplication. For instance, the current multi-nodal collaborative ATFM approach requires individual ANSP to acquire or build an ATFM system. This is duplication of costs when one ATFM system can serve

the whole region or sub-region. Potentially, the provision of ATFM system can be a service over the cloud provided by a vendor, subject to legal contracts and proper governance. The overheads, including maintenance and continual upgrades, can be shared among all users, delivering economies of scale. Progress would require changes on the supply side too. ANSPs need to collectively work with technology companies.

### 2.2.3 Process.

The current convention of acquiring capabilities is through Capex procurement. It is manpower intensive to draw up technical specifications, and sometimes this requires special expertise. Future systems would demand even higher level of in-house technical expertise. This is not achievable for many ANSPs. The Common Aeronautical VPN (CRV) project and space-based ADS-B by Aireon through subscription have provided an alternative model. For CRV, ICAO facilitated the tender to select one service provider and each State/ ANSP has a separate commercial contract with the provider, PCCW Global. Now PCCW Global has partnered Frequentis to provide SWIM as a managed service. This can quicken the adoption of SWIM. We can explore more centrally facilitated procurement for common services. This will save much time and resources. Apart from CRV and SWIM, even the platform for digital AIM can be a service.

### Digitalisation, Connected Aviation

2.3 The acceleration of regional ANS modernisation can be realised through a shift to greater digitalisation. Related to digital solutions is also a business model shift to the convention of paying for services rather than acquiring capital equipment. Paying for digital services levels the playing field to achieve “no country left behind.” With negotiation, charges can even be tiered based on usage. This will help less well-resourced ANSPs. It will lead to faster proliferation of capabilities. The burden of continual technological upgrading is moved to the industry while ANSPs focus on operational ATS provision. Digitalisation is a great equaliser.

2.4 Connected aviation can be a reality through digitalisation. This is not limited to ANSPs, since airlines and airports are also participants in many instances. While laying the foundation for future capabilities like TBO, digitalisation can allow more efficient sharing of information even today. Today, there is no common regional situation picture. As a result, there are limits to how the region can collectively respond to contingencies. There is a safety aspect to this lack of operational coordination. Connected aviation will allow the region to respond expeditiously to any contingencies and facilitate the sharing of resources. Connectivity has value as a regional public good.

2.5 ATM technology companies provide last-mile capability deployment. Real transformation happens with changes on the supply side. ANSPs in the region need to signal to the ATM technology companies this paradigm shift.

### Recommended follow up actions

2.6 It is timely that the second Asia Pacific Ministerial Conference is taking place this year. This committee can recommend that the Ministerial Conference and Ministerial Statement ANS focus be on the theme of “**Asia Pacific Connected Aviation through Digitalisation.**” The goal is to speed up modernisation and manage costs through a regional digital network. This will reassure the Ministers that the region is thinking and looking ahead. The Statement will recognise the shift to easier digital implementation and greater region-wide connections. It will highlight the need for supply side changes and be a message to the technology industry. Among other things, it can include:

- a) Use of digital solutions as ways to accelerate regional ANS modernisation.
- b) Use of new business process like managed services for ATFM, SWIM, AIM as a norm.

- c) Increased use of centrally facilitated procurement to select a service provider.
- d) Establishment of a regional virtual situational picture for ATFM to improve regional connectivity.
- e) Review of the existing ICAO processes if necessary.
- f) Establishment of an ANS digitalisation start-up fund from State contributions. This can be used to fund common infrastructure for the region or help ANSPs not to be left behind.
- g) Establishment of an Asia Pacific ATM technology collaboration framework focusing on easier digital implementation.

2.7 The Asia Pacific has various ATM technology centres in the region. These centres can collaborate with a sharper focus on applying digitalisation to quicken ANS modernisation for the region. Some potential candidates are Japan’s Electronics Navigation Research Institute (ENRI), India’s Civil Aviation Research Centre (CARO) at Hyderabad, and Singapore’s Centre of Excellence for ATM consisting of several entities. This alliance will depend on voluntary in-kind or cash contributions from regional States. The members to the alliance will operate on a gratis basis.

2.8 Committees have limitations, standing institutional arrangements are necessary to see through real transformation. In Europe, ATM modernisation is driven by the Single European Sky ATM Research (SESAR) Joint Undertaking and the SESAR Deployment Manager. Ideally, we should create a new regional establishment with a mission to facilitate implementation and greater regional connectivity, but this may not be feasible. A fallback alternative is to leverage on existing arrangements and make practical adjustments. There are various Asia Pacific ICAO working groups. We should do a review to merge, or sun-set, or re-focus the priorities of some of them. This can include a re-balancing of the tasks between the ICAO Bangkok Office and the Regional Sub-Office in a way to attract more secondee contributions from the States. For instance, one can focus on policies and plans, and the other on implementation.

### 3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) Discuss **Asia Pacific Connected Aviation through Digitalisation** as the strategy to accelerate ANS modernisation in the region.
- b) Discuss the recommended follow up actions including:
  - i) ANS enhancements to be included in the coming Ministerial Statement.
  - ii) Asia Pacific ATM technology collaboration framework.
  - iii) Review of existing processes to focus on making ANS implementation easier.

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