



ICAO

*International Civil Aviation Organization*
**Thirty-Fifth Meeting of the Asia/Pacific Air Navigation  
Planning and Implementation Regional Group  
(APANPIRG/35)**
*Bangkok, Thailand, 25 to 27 November 2024*
**Agenda Item 3: Performance Framework for Regional Air Navigation Planning and  
Implementation**
**3.2: ATM**
**NEXT GENERATION ATFM FOR ASIA PACIFIC**
*(Presented by CANSO)*
**SUMMARY**

CANSO has raised the need for the region to start preparing for the Next Generation ATFM at the Asia Pacific Cross-Border Multi-Nodal ATFM Collaboration (AMNAC) meeting in October. With rising traffic and increased number of ATFM participants, there will be greater complexities. Today, AMNAC has pain points and there are other ATFM groupings besides AMNAC. However, there is a convergence of technological possibilities, industry solutions, research interests to offer the Next Generation ATFM that can deliver quantitative and qualitative enhancements. The region should aspire to full participation from all regional members, and to a more joined-up regional ATFM network. This can be achieved with new digital and virtualisation technology. The AMNAC group is prepared to further explore and evolve this idea. CANSO will raise awareness of the Next Generation ATFM leading to AMNAC 2.0 at appropriate regional forums and seek feedback and interest from members.

*Strategic Objectives:*

**B: Air Navigation Capacity and Efficiency** — *Increase the capacity and improve the efficiency of the global aviation system*

**1. INTRODUCTION**

1.1 In past surveys among Asia Pacific ANSPs, ATFM has consistently been recognised as a priority cross-border ATM operation for the region. Cross-border ATFM is the leading edge of regional ATM. At the Asia Pacific Cross-Border Multi-Nodal ATFM Collaboration (AMNAC) meeting in October, CANSO raised the need for the region to start preparing for the Next Generation ATFM, and the AMNAC group is prepared to further explore and evolve this idea.

1.2 AMNAC has a modest beginning more than 10 years ago. In the 2013 APANPIRG report and the 2nd ATFM SG report of the same year, there were already discussions about the concept work of AEROTHAI, CAAS, HK CAD, and the CANSO and IATA paper on a subregional ATFM approach. Today 12 States/ Administrations are involved in AMNAC and is a success story in the region.

1.3 However, AMNAC has its pain points. With rising traffic and an increased number of ATFM participants, there will be greater complexities. Cross-border ATFM in the Asia Pacific will soon approach an inflection point. There are new technological possibilities that were not mature 10 years ago. There is interest from technology companies and research institutes to work on the Next Generation ATFM. This can potentially bring AMNAC to the next level of AMNAC 2.0.

## 2. DISCUSSION

2.1 ATFM is one ATM operation that can be truly regional. But AMNAC is not yet a regional solution, and there are other ATFM groupings besides AMNAC. AMNAC has three tiers of participation, viz. level 3 participants can generate, deliver, and comply with ATFM solution, level 2 cannot generate solution but can comply, level 1 is for observers. Today, AMNAC has the following pain points:

- a) Many AMNAC participants lack ATFM equipage. They are unable to calculate ATFM solutions for their local situations. They remain as observers or undertake ground delays in response from requests by other ANSPs. In other words, they are not progressing to level 3.
- b) For those that participate fully at level 3, AMNAC is focused on local optimisation rather than regional optimisation. There can potentially be multiple ATFM solutions that contradict one another. AMNAC has no visibility of regional situations, and hence not yet a regional ATFM solution.
- c) The AMNAC arrangement is non-binding. As more players come onboard, there will be a prisoner's dilemma situation and compliance are not assured.

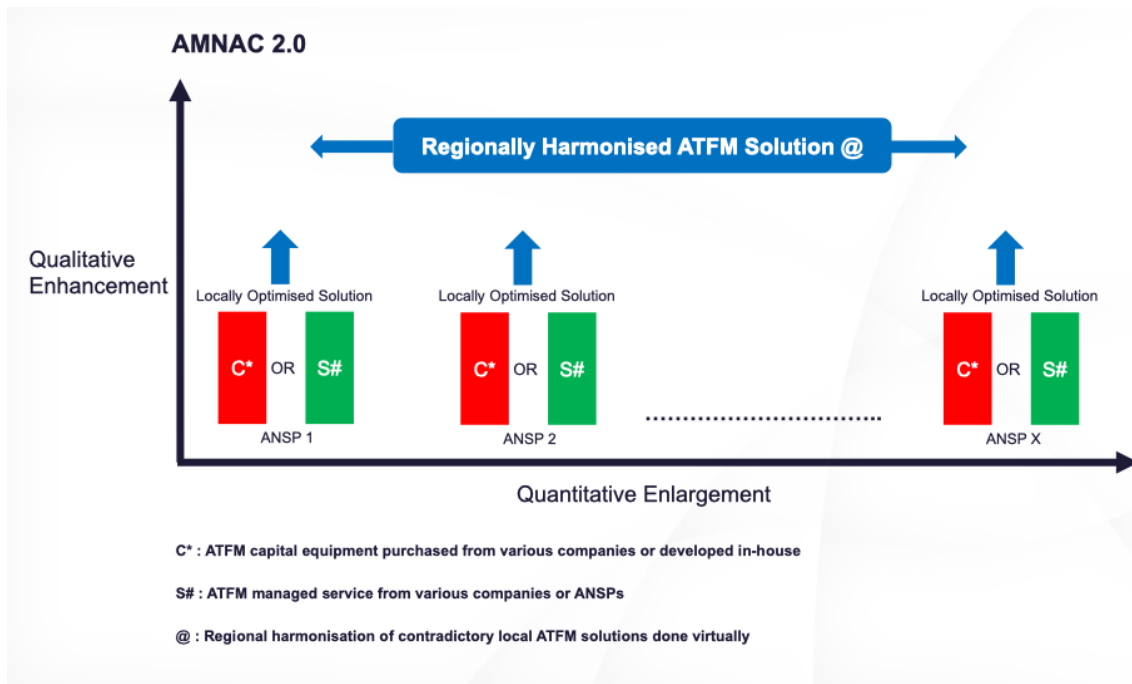
2.2 Today, there are opportunities for us to address these pain points. There is a convergence of technological possibilities, industry solutions, research interests, and operational needs. The following quantitative enlargement and qualitative enhancement are possible.

2.3 The region should aspire to full participation from all regional members. In other words, all participants can be at level 3. However, it is not realistic to expect each ANSP to acquire or build an ATFM system. Capital equipment acquisition is not the most cost-effective solution. A better option is sharing. Today, it is possible to access ATFM solutioning as a managed service. The cost of maintaining such a system including the regular software updates will then be divided among the participants. This is an economically viable way to meet operational and technical requirements and increase the number of level 3 AMNAC participants quickly.

2.4 Apart from the quantitative improvement, the region can aspire to a more joined-up regional ATFM network. It is not enough to just do ATFM, but we need quality ATFM. The distributed multi-nodal concept was mooted more than 10 years ago when the level of traffic and technology were different. Going forward there will be more complexities and multiple constraints in ATFM solutioning. ATFM needs to broaden the scope of optimisation to solve multiple constraints. With some development effort, this qualitative enhancement of ATFM can be achieved.

2.5 Virtual ATFM has the advantage of providing regional ATFM solutions that go beyond just local optimisation. Significantly, this is done without a brick-and-mortar establishment, hence avoiding any political sensitivities. The virtual system can be a system of systems that unifies other ATFM solutions. To achieve this will take a multi-step process and it can start with the reconciliation of conflicting or suboptimal local solutions virtually. Surveillance data can be added to help improve the accuracy of trajectory predictions resulting in better efficacy.

2.6 Regional optimisation goes beyond technology. Trust is important, not just among ANSPs but also for the airlines. To achieve trust, this regional arrangement can be subject to a higher regional policy body to establish the relevant ground rules for equity and transparency. CANSO can facilitate this trust-building process as a neutral body. The diagram below illustrates what AMNAC 2.0 can be like:



2.7 There will be concerns about the transition. ANSPs may fear that they will lose control, or they must disband their existing ATFM units. While the tool for ATFM calculations is virtual, there will be humans in the loop, the roles of existing ATFM units will evolve. The ultimate control that individual participants have is that it is totally voluntary. This arrangement will only work if it is mutually beneficial.

2.8 As multiple parties are involved in ATFM, the proven approach to new ideas is for interested parties to start with a study group. This can be done within the current AMNAC group. The AMNAC group is prepared to evolve the current approach with new possibilities. CANSO will raise awareness about the Next Generation ATFM at the next ATFM Steering Group meeting and other appropriate regional forums to gather feedback and interest for participation.

### 3. ACTION BY THE MEETING

3.1 The Meeting is invited to:

- Consider the idea of the Next Generation of ATFM leading to AMNAC 2.0.
- Provide feedback and interest to CANSO at appropriate forums or directly.
- Actively support and participate in the study group for Next Generation ATFM.

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