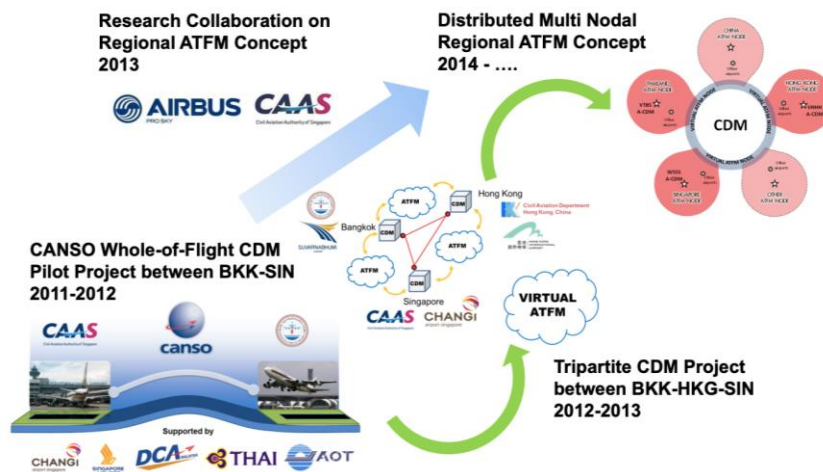


AMNAC

Collaboratively building a regional ATFM network

AMNAC – the *Asia-Pacific Cross-Border Multi-Nodal ATFM Collaboration* – is a regional initiative to implement air traffic flow management (ATFM) network in the Asia-Pacific region. Taking into consideration the regional environment and relying on strong collaborative decision making (CDM) spirit among regional ANSPs, the initiative facilitates cross-border demand-capacity balancing to ensure the region is continuously able to cope with ever-growing traffic demand and when faced with capacity constraints.

How the project came about



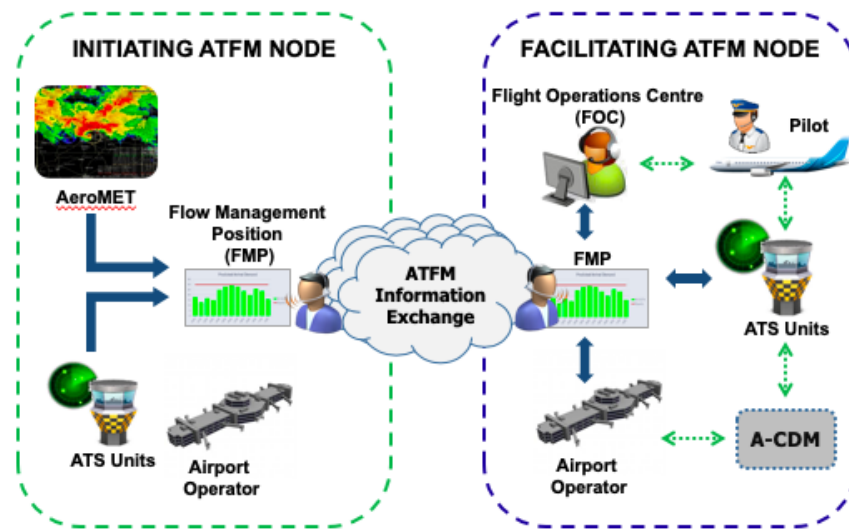
Since the early 2000s, Asia-Pacific has experienced sustained increase in air traffic demand with the emergence of many new aviation markets in the region. The growth led to increased demand being placed on ATM resources that may already be operating at or near maximum capacity, and disruptions such as adverse weather or airport/airspace constraints and closures that could create severe demand-capacity imbalances. Tactical reactive responses to these imbalances would often produce downstream “knock-on effects” on other ANSPs, sometimes resulting in excessive and unpredictable delays for aircraft operators.

Recognising the region’s needs for a collaborative means to manage increased traffic demand at constrained resources, CANSO initiated the *Whole-of-Flight CDM Project* co-led by Aeronautical Radio of Thailand Ltd. (AEROTHAI) and Civil Aviation Authority of Singapore (CAAS) and supported by other ANSPs and aviation stakeholders in 2011. The project introduced enhanced flight information sharing and CDM to the region, paving the way for Hong Kong Civil Aviation Department (HKCAD) to later join and together seed the idea of a distributed network to enable cross-border ATFM in the region. The idea was further developed into the **Distributed Multi-Nodal ATFM Network** concept which became the foundation for ATFM operations in the region.

Following concept development, Air Traffic Management Bureau of the Civil Aviation Administration of China (CAAC ATMB) joined AEROTHAI, CAAS, and HKCAD to establish an operational trial project in 2014. The key objectives were to turn the concept into a common operating procedure and to implement it in live operations. The trial received strong support from CANSO and IATA, and in time garnered strong participation from ANSPs around the region, enabling progressive evolution from a trial to a full implementation effort.

The implementation project, now known as the **Asia-Pacific Cross-Border Multi-Nodal ATFM Collaboration (AMNAC)**, has brought regional ANSPs and stakeholders from first exposure to ATFM concept to thorough understanding of ATFM in live operations. It has enabled effective use of ATFM solutions by ANSPs facing constraints and has helped the region move away from conventional reactive restrictions to a more collaborative approach to traffic management.

How the concept works



AMNAC formulated its operating procedures and processes based on the ICAO endorsed **Distributed Multi-Nodal ATFM Network** concept, which enables cross-border ATFM operations without a centralised ATFM centre for the region. The concept is based on a *network of ANSPs leading independent ATFM operations within their domains while being connected to other ANSPs and stakeholders through an effective information exchange and collaborative decision-making mechanism*. This is achieved with two operational bases:

1. *Common Operating Procedure* – common ATFM operational guidelines and procedures, prescribing responsibilities to be borne by the ANSPs and stakeholders involved; and
2. *Interconnected Information Sharing Framework* – a fully interconnected information sharing mechanism or protocols between stakeholders that ensure efficient communication of ATFM information. The communication channels range from e-mails

and AFTN messages to automated system-to-system exchange based on SWIM technologies.

With these bases, an (*initiating*) ANSP can implement ATFM measure to regulate both domestic and international traffic into constrained or congested resources, while other (*facilitating*) ANSPs and stakeholders can effectively comply with the measure by following the Common Operating Procedure. An effective communication network will ensure stakeholders are involved in the decision-making process and receive required information in a timely manner.

This regional Concept of Operations developed in Asia-Pacific is also recognised as a viable solution for regional ATFM implementation elsewhere in the world. It is being used as a basis for the regional ATFM development in the Middle East and is being considered in Africa as well.

ANSPs involved

AMNAC is led by the following core ANSPs:

- AEROTHAI
- Air Traffic Management Bureau, CAAC (ATMB)
- CAAS
- HKCAD

and involves the following participating ANSPs:

- AirNav Indonesia
- CAAM (Malaysia)
- CAAP
- CATS
- DCA Myanmar
- VATM
- Lao ANS.

Additionally, Airservices Australia lent their ATFM expertise as an advisor during the early part of the project.

AMNAC is not a “closed” project, however, and the group is continuously engaging with more ANSPs in Asia-Pacific to participate in the network to ensure a harmonised ATFM development across the entire region.

Contributions from AMNAC

AMNAC remains one of the major ATM enhancement initiatives in Asia-Pacific, bringing ANSPs and stakeholders together to implement an ATFM network that can help ensure efficiency and resiliency of the regional air traffic system. Since the beginning of the project, leading ANSPs have implemented hundreds of rounds of ATFM measures – primarily Ground Delay

Programmes – to alleviate demand-capacity imbalance caused by a range of situations such as planned airport and airspace closures to adverse weather conditions and emergency infrastructure outages. By transitioning from reactive tactical ATC restrictions to pre-tactical and tactical ATFM measures, not only have ANSPs benefited from a smoother response to disruptions but stakeholders have also benefited from increased predictability and situational awareness.

That the project is based on a distributed network and relies on efficient ATFM information exchange has also pushed the Asia-Pacific region to become more active in the development of System-Wide Information Management (SWIM) technologies. The most notable contribution in this area is AMNAC's early contribution to what became the region's digital information exchange model (*APAC Flow Extension to FIXM*) that would support SWIM-based ATFM *and A-CDM* data exchanges.

AMNAC has also introduced and strengthened CDM spirit among members. Through AMNAC, ANSPs in the network are able to regularly discuss ATM and ATFM situation and outlooks via regular teleconferences, and to quickly share situational outlook via ATFM Daily Plans (ADPs) with all stakeholders. The regular teleconferences have also been used during the COVID-19 pandemic, with participating ANSPs sharing their pandemic-related information, resulting in regularly updated regional *ATM/ATFM Status Update* document distributed by ICAO Asia/Pacific (accessible [here](#)).

From the onset of the project, CANSO played a key role as an enabler in bringing together leading ANSPs in Asia-Pacific to seed the initiative. Since then, CANSO has lent support through the participation of CANSO's ATFM subject matter experts in the project and through the advocacy work to ensure the project receives support from the highest executive levels. CANSO will continue to support AMNAC in its long road ahead to continuously improve ATM and ATFM performance in the Asia-Pacific region.