



International Civil Aviation Organization

**The Second Meeting of ICAO Asia/Pacific Air Traffic Flow Management Steering Group (ATFM/SG/2)**

Bangkok, Thailand, 1 – 4 October 2013

**Agenda Item 5: Development of Regional ATFM Framework**

**FRAMEWORK FOR EFFICIENT C-ATFM IMPLEMENTATION**

(Presented by **INDIA**)

**SUMMARY**

This paper presents a brief review of the C-ATFM implementation in India and the need for establishing a collaborative aviation environment in order to fully realize the benefits of such a system.

The paper also discusses the road ahead for an International ATFM effort as envisaged by India and recommends States/Administrations to duly consider adopting a similar road map to achieve a truly seamless ATM network across APAC region

This paper relates to –

**Strategic Objectives:**

- A: *Safety – Enhance global civil aviation safety*
- C: *Environmental Protection and Sustainable Development of Air Transport – Foster harmonized and economically viable development of international civil aviation that does not unduly harm the environment*

**Global Plan Initiatives:**

- GPI-1 Flexible use of airspace
- GPI-4 Alignment of upper airspace classifications
- GPI-5 RNAV and RNP (Performance-based navigation)
- GPI-6 Air traffic flow management
- GPI-7 Dynamic and flexible ATS route management
- GPI-8 Collaborative airspace design and management
- GPI-9 Situational awareness
- GPI-10 Terminal area design and management
- GPI-11 RNP and RNAV SIDs and STARs
- GPI-13 Aerodrome design and management
- GPI-14 Runway operations
- GPI-15 Match IMC and VMC operating capacity
- GPI-17 Data link applications
- GPI-19 Meteorological Systems
- GPI-21 Navigation systems
- GPI-22 Communication infrastructure

## 1. INTRODUCTION

1.1 With the present and forecast growth at Indian airports and airspace, an Air Traffic Flow Management (ATFM) system is necessary to optimize the capacity vs. demand both strategically and dynamically by integrating various operational constraints and weather parameters in the ATM system.

1.2 India has accordingly decided to implement Central ATFM system covering entire Indian airspace which will integrate various subsystems for collaborative decision making and to ensure regulated flow of traffic to minimize delays and congestion.

1.3 While ATFM is proven to enhance safety and provide measurable efficiency gains, it is also viewed as a transformational concept that introduces new levels of collaborative decision making and offers potential for harmonizing seamless airspace operations.

1.4 Effective implementation of ATFM requires the active participation of all affected stakeholders. ATFM should be performed as a collaborative decision making process, where airports, ANSPs and airspace users work together to improve the performance of the network.

## 2. DISCUSSION

### Indian ATFM Concept

2.1. The proposed C-ATFM System would provide ANSP and Aircraft Operators with a decision support capability to safely, efficiently, and predictably manage demand when it exceeds capacity at constrained resources within the ANSP area of responsibility. Capacity/Demand imbalances can be identified and addressed in the Strategic, Pre-Tactical, and Tactical phases of ATFM. The C-ATFM system will be progressively implemented in three stages as follows.

2.2. **Stage 1:** The C-ATFM baseline would be in place by end of 2013. This would provide AAI (the ANSP in India) and Aircraft Operator users with significant capabilities to perform strategic, pre-tactical, and tactical ATFM and CDM encompassing six major airports in the country.

2.3. **Stage 2:** Nationwide ATFM system covering airports throughout India will be made gradually operational. The future functionality of the ATFM system would depend on customer needs and advances in ATFM system. The evolution of the system will complement the basic ATFM system from Stage 1.

2.4. **Stage 3:** The Indian C-ATFM system will have capabilities to expand as a sub-regional/regional ATFM system. The system will also have scope for interfaces for seamless data exchange with other ATFM systems in the sub-region and region, thus supporting evolution of an international ATFM system. The specific functionality will be developed in collaboration with the States/ANSPs coming together for international ATFM integration.

### Framework for Efficient ATM and ATFM

2.5. The application of the ATFM concept involves collaborative decision-making (CDM), the definition of processes for demand-capacity balancing within the context of air traffic control (ATC), aerodrome operations, airspace design and management and developing close collaboration between the Civil and Military ,providing for a flexible use of airspace (FUA). An adaptive regulatory environment plays a key role in the development of a mature ATFM system.

2.6. **Collaborative Participation** –A key part of the future ATFM concept is Collaborative Decision Making (CDM) which helps ATC achieve its goal of managing the ATC system and the operators achieve their goal of managing their schedules. The result of CDM is a shared situational awareness and collaborative resolutions for “win-win” solutions for both ATC and stakeholders. Collaboration leads to enhanced options, resulting in improved decision making, stakeholder acceptance and support, and increase service performance.

2.7. **Flexible Use of Airspace** - The civil and military are the prime users of the national airspace which is a finite asset and under the existing system the airspace is used by both in isolation from each other. However, with increased demand from both military and civil aviation sector of the available airspace needs to be effectively optimized to enhance the airspace capacity and to facilitate the demands of both the sectors. The active promotion of the Flexible Use of Airspace (FUA) in the country’s airspace is a pre requisite to a successful ATFM system operation.

2.8. **Airspace Management** – The ANSP manages an efficient airspace management processes to accommodate dynamic flight trajectories and provide optimum system solutions. Airspace use will be need to be coordinated and monitored in order to accommodate the conflicting legitimate requirement. Active involvement of regulator, ANSP and the military can result into dynamic air space management which can be planned in advance with changes made dynamically whenever possible. The system can also accommodate unplanned requirements such as contingencies.

2.9. **Data Sharing and Confidentiality** – The ATFM system involves participation from stakeholders with active data sharing. A data confidentiality policy is therefore necessary to assure the participating agencies about data protection. The provision, retention and distribution of ATFM data should be covered by an ATFM Data Policy. Examples of such data include Traffic Data, Flight Data, Air Traffic Delay Data, and capacity data. Necessary regulations and procedures should be put in place for sharing of ATFM data with appropriate safeguards for its correct use. In the case of international ATFM activities the ATFM data policy should reflect the data polices of all national entities involved.

2.10. **ATFM Operating procedures** – The ATFM procedures shall include the role and relationships among ATFM participants such as aircraft operators, aerodrome operators, ANSP, military and the regulator in establishing transparent process at strategic, pre-tactical and tactical level. The procedures should take account of:

- i) Traffic demand (forecast) and available resources of airspace, ATS and aerodrome capacity.
- ii) The requirements of the affected aerodrome operators including their traffic handling priorities; and
- iii) The needs of the aircraft operators, and other ANS providers, who will be affected by the procedures; and
- iv) The requirements of the aeronautical information service, including advance notice, and information on the method of activation and de-activation.

2.11. **Progressing to a trans-national ATFM system** - The ATFM system develops initially to balance inequalities of demand and capacity at certain points in the ATM system. It should however be recognised that due to the global nature of aviation, the ATFM system will eventually develop to encompass a larger airspace across many States.

2.12. India foresees an international ATFM system through the creation of harmonized service levels in the upper airspace, wherein common procedures, uniform separation, interoperable ATM system, etc. would be in place to enable optimization of available capacity on a sub-regional/regional basis. It is foreseeable that small volumes of airspace not having adequate ATM infrastructure may face difficulties in participating in the development of ATFM system/activities which in turn may create lot of constraints in the provision of seamless traffic flow across major ARs. A proactive and participatory framework reaching across the national boundaries in the creation of harmonized service levels in airspace structure, therefore, is necessary for implementation of a trans-national and seamless ATFM system. This will also enable States/ANSP to share information and collaborate with neighbours facilitating efficient seamless regional traffic flow.

### **3. ACTION BY THE MEETING**

3.1. The meeting is invited to

- i) note the information contained in this paper and;
- ii) Support the creation of harmonized service levels in the upper airspace facilitating efficient seamless regional traffic flow through the implementation of ATFM and;
- iii) Suggest/recommend further points for the enhancement of functional efficiency of the ATFM system from the sub-regional and regional perspectives.

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