



International Civil Aviation Organization

MIDANPIRG Air Traffic Flow Management Task Force

First Meeting (ATFM TF/1)

(Muscat, Oman, 23 – 25 September 2018)

Agenda Item 3: Regional ATFM Framework

PRE-REQUISITES FOR A REGIONAL ATFM SERVICE IMPLEMENTATION

(Presented by United Arab Emirates)

SUMMARY

The purpose of this Working Paper is to present the importance of specified and aligned pre-requisites as basis for the implementation of a Regional ATFM service. Such specified pre-requisites and a phased approach for the implementation of a Regional Collaborative ATFM service are crucial for a successful implementation

Action: The Conference is invited to agree to the conclusion as suggested in paragraph 3.1.

1. INTRODUCTION

1.1 Several Regional and national ATFM services are implemented around the world. All these ATFM services have been introduced due to traffic demands that frequently exceeded existing capacities and these services were designed to address the specific traffic patterns. After initial implementation, the ATFM services then further evolved over time addressing the specific needs of all involved stakeholders.

1.2 The maturity of the individual ATFM services vary from basic ATFM procedures without the support of data processing systems to advanced ATFM solutions with full integration of all stakeholders. A non-exhaustive list of advanced ATFM implementations includes the ATFM services in the European Network, formerly named Central Flow Management Unit CFMU, the United States, India, New Zealand, Australia, and the Multi Nodal ATFM in Asia Pacific.

1.3 All advanced ATFM services are the result of individual implementation programs that are fully integrated and incorporated with the ATM planning. The projects included the assessments of critical pre-requisites and established that all stakeholders have aligned objectives when implementing the ATFM service. This starts with the ATM strategy of stakeholders with aligned performance objectives and targets. Only if all stakeholders individually have similar ATM strategic planning the implementation of a Collaborative ATFM can succeed.

2. DISCUSSION

*Pre-requisite 1 for a Regional ATFM Service:
Common performance objectives for a Regional ATFM service needs to be defined*

2.1 ATFM is not an isolated service that can be implemented without alignment to the existing ATM environment. All stakeholders have to actively support the ATFM service. In return, cooperating stakeholder expects the ATFM service to support them in addressing their operational challenges.

2.2 To achieve the implementation of an effective Regional ATFM service, all stakeholders have to work towards common objectives for performance. Conflicting objectives would lead to a counter-productive Regional ATFM service that cannot maximise the utilisation of the capacities.

2.3 It is therefore of great importance that the stakeholders identify and agree right from the beginning on the performance objectives for the Regional ATFM service. These objectives have to be aligned with the individual ATM strategic plans of the States cooperating in the implementation of the Regional ATFM service. The alignment of the objectives is fundamental to support the definition of unequivocal key performance indicators for the Regional ATFM service.

2.4 The performance objectives are the basis for the collaborative ATFM service to assure that the service delivers the enhancements of efficiency and provides the ATM benefits for all cooperating states. Therefore, the performance objectives for the Regional ATFM service have to be jointly identified by the cooperating states before the development of a concept of operation for the service.

*Pre-requisite 2 for a Regional ATFM Service:
A large percentage of traffic causing unbalanced demand and capacity is subject to the service.*

2.5 Along with the common objectives, it is important that the performance objectives of the ATFM service can actually be achieved. Therefore, it is necessary to confirm that the flights that predominantly cause the demand challenges can actually be managed through the service. Unless a critical percentage of these flights can be addressed by any ATFM measure to balance demand and capacity will be consumed by non-managed traffic. As a result, managed traffic will be penalised through delays where un-managed traffic can operate without restrictions. This would constitute a violation of the equity principle.

2.6 Only when a large percentage of air traffic that is causing excessive traffic demands and/or delays can be managed by a Regional ATFM service and is shared amongst the participating States, the benefits can be expected from the implementation of a collaborative service.

*Pre-requisite 3 for a Regional ATFM Service:
Uniformity of traffic flow characteristics of the managed flights*

2.7 An evaluation of the existing successful ATFM service in the world reveals that the service is provided in widely homogeneous airspaces with uniform flight profiles. This applies to the United States, European Network, Australia and Asia Pacific. As a consequence, the individual ATFM services identified effective measures to manage the challenges by focusing on the right fraction of air traffic, such as domestic, long hauls, city pairs, etc. The individual existing ATFM solutions differ significantly amongst each other.

2.8 The uniformity and characteristics of traffic flows determine which ATFM measures are available to effectively implement a successful ATFM service. As large fractions of the traffic are consistently creating the excessive demand in defined areas and at certain times, ATFM becomes predictable and plannable allowing for the implementation of pre-tactical ATFM measures. This then also contributes to the impact assessment of sporadic environmental events that can cause disruptions and are an additional challenge for the ATFM service.

2.9 It is our view that the implementation of a Regional ATFM shall start with the joint confirmation of the Pre-requisites for a Regional ATFM at an early stage of the implementation process. These can be divided to the following phases:

2.10 **Phase 1:** (Assessment and Evaluation Team) Perform a joint assessment and confirmation of the Pre-requisites for a Regional ATFM. This shall include:

- a) Assessment of the performance objectives of the individual cooperating States and definition of common performance objectives for a Regional ATFM service.
- b) Perform a data collection and analysis to identify the hot-spot areas and critical times in a Regional ATFM service area where demand consistently exceeds capacity. The reasons and contributing factors for unbalanced demand and capacity are to be identified.
- c) Analysis of air traffic flows within the designated area of the Regional ATFM service that is causing unbalanced demand and capacity. The analysis shall identify the traffic fractions that due to their uniformity are candidates for effective ATFM measures to increase the efficiency without violating the equity principle.

2.11 **Phase 2:** (Design and Implementation Team) Develop a Concept of Operations for a Regional ATFM service. The Concept of Operations has to establish which ATFM measures will be applied and how the performance objectives will be met. The involvement and roles of all stakeholders have to be defined throughout the phase. The Concept of Operation also has to cater for sporadic environmental events and how ATFM services will address collaboratively with all stakeholders.

2.12 **Phase 3:** (Research and Technology Team) Design a Collaborative ATFM solution that facilitates the Concept of Operations of the Regional ATFM service. Such a design shall consider the use of latest technologies and concepts in ATM industry based on the ASBU roadmap to assure inter-Regional interoperability as part of global air traffic management.

2.13 **Phase 4:** (Research and Technology Team) Implementation and rollout of the ATFM system based on the consideration of the Concept of Operations. As per best practices the rollout has to cater for a validation of the service including pre-operational tuning stages prior implementation of live operation to build up expertise in managing the traffic flows.

2.14 **Phase 5:** (All Teams) Operational Phase that include constant performance assessments of the ATFM service together with continuous improvement planning.

3. ACTION TO THE MEETING

3.1 The meeting is invited to:

- a) note the information in this Working Paper and take action as appropriate; and
- b) agree to the following Draft Conclusion:

Why	The successful implementation of a Regional ATFM service requires that prior implementation certain pre-requisites are specified and established.
What	Agree on a phased implementation plan utilising the Expert teams to assure that the Regional ATFM service allows all stakeholders to gain benefits in accordance with their individual ATM strategy.
Who	All States involved in the implementation of a Regional ATFM service.
When	

DRAFT CONCLUSION

The meeting recognises the need for and agrees to the following phases for the implementation of the MID Region ATFM service utilising teams of Experts nominated by the MID States to achieve the phases:

- a) *Phase 1 (Assessment and Evaluation Team): Perform a joint assessment and confirmation of the Pre-requisites for a Regional ATFM. This shall include*
- b) *Assessment of the performance objectives of the individual cooperating States and definition of common performance objectives for a Regional ATFM service,*
- c) *Perform a data collection and analysis to identify the hot-spot areas and critical times in a Regional ATFM service area where demand consistently exceeds capacity. The reasons and contributing factors for unbalanced demand and capacity are to be identified.*
- d) *Analysis of air traffic flows within the designated area of the Regional ATFM service that is causing unbalanced demand and capacity. The analysis shall identify the traffic fractions that due to their uniformity are candidates for effective ATFM measures to increase the efficiency without violating the equity principle.*

2.11 *Phase 2: (Design and Implementation Team) Development of a Concept of Operations for a Regional ATFM service. The Concept of Operations has to establish which ATFM measures will be applied and how the performance objectives will be met. The involvement and roles of all stakeholders have to be defined throughout the phase. The Concept of Operations also has to cater for sporadic environmental events and how ATFM services will address collaboratively with all stakeholders.*

2.12 *Phase 3: (Research and Technology Team) Design of a Collaborative ATFM solution that facilitates the Concept of Operations of the Regional ATFM service. Such a design shall consider the use of latest technologies and concepts in ATM industry based on the ASBU roadmap to assure inter-Regional interoperability as part of global air traffic management.*

2.13 *Phase 4: (Research and Technology Team) Implementation and rollout of the ATFM system based on the consideration of the Concept of Operations. As per best practices, the rollout has to cater for a validation of the service including pre-operational tuning stages prior implementation of live operation to build up expertise in managing the traffic flows.*

2.14 *Phase 5: (All teams: DIT, AET and RTT) Operational Phase that include constant performance assessments of the ATFM service together with continuous improvement planning.*

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