



International Civil Aviation Organization

WORKING PAPER

A39-WP/318

TE/137

25/8/16

(Information paper)

English only

ASSEMBLY — 39TH SESSION

TECHNICAL COMMISSION

Agenda Item 37: Other issues to be considered by the Technical Commission

COLLABORATIVE ATFM MEASURES FOR TRAFFIC INTO HIGH DENSITY AREAS

(Presented by the United Arab Emirates)

EXECUTIVE SUMMARY

Converging air traffic streams in disproportionately high growth traffic regions requires the implementation of practicable flow measures using today's infrastructure.

Prediction of traffic situations and collaborative decision making based on per-flight flow measures can be achieved by ATSU/ATFMUs and Airline Operation Centres (AOCs).

Doc 9750, *Global Air Navigation Plan* envisages the implementation of ASBU B1-TBO to improve the synchronization of traffic flows and to optimize the approach sequences through the use of 4DTRAD capability and airport applications in 2023.

An ICAO concept for Collaborative ATFM across ATM boundaries should be developed consistent with the ICAO Global ATM Concept, the FF-ICE and other concepts such Trajectory Based Operations.

<i>Strategic Objectives:</i>	This working paper relates to Safety, Air Navigation Capacity and Efficiency and Environmental Protection Strategic Objectives.
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<i>Financial implications:</i>	Not applicable.
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<i>References:</i>	Doc 9971, <i>Manual on Collaborative Air Traffic Flow Management</i> Doc 9750, <i>Global Air Navigation Plan</i>
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1. INTRODUCTION

1.1 Global air traffic does not grow equally in all regions. Instead, traffic figures for some regions experience a continuous and sustained rapid growth over many years.

1.2 The business model of hub airlines is based on an attractive network connectivity involving a significant number of inter-regional feeder flights. In order to offer passengers convenient connectivity, the demand at such hub airports leads to a number of peaks in traffic which often can exceed airport capacity.

1.3 The accelerated growth of hub airlines (*see Figure 1*) within the region is leading to an increasing of number occurrences of periods with extensive high traffic demands. Conventional regional ATFM measures that balance between demand and capacity are of limited effect as soon as many long distance, inter-regional flights are involved. These flights are airborne in different regions without information and predictions about the traffic demand information in the destination region.

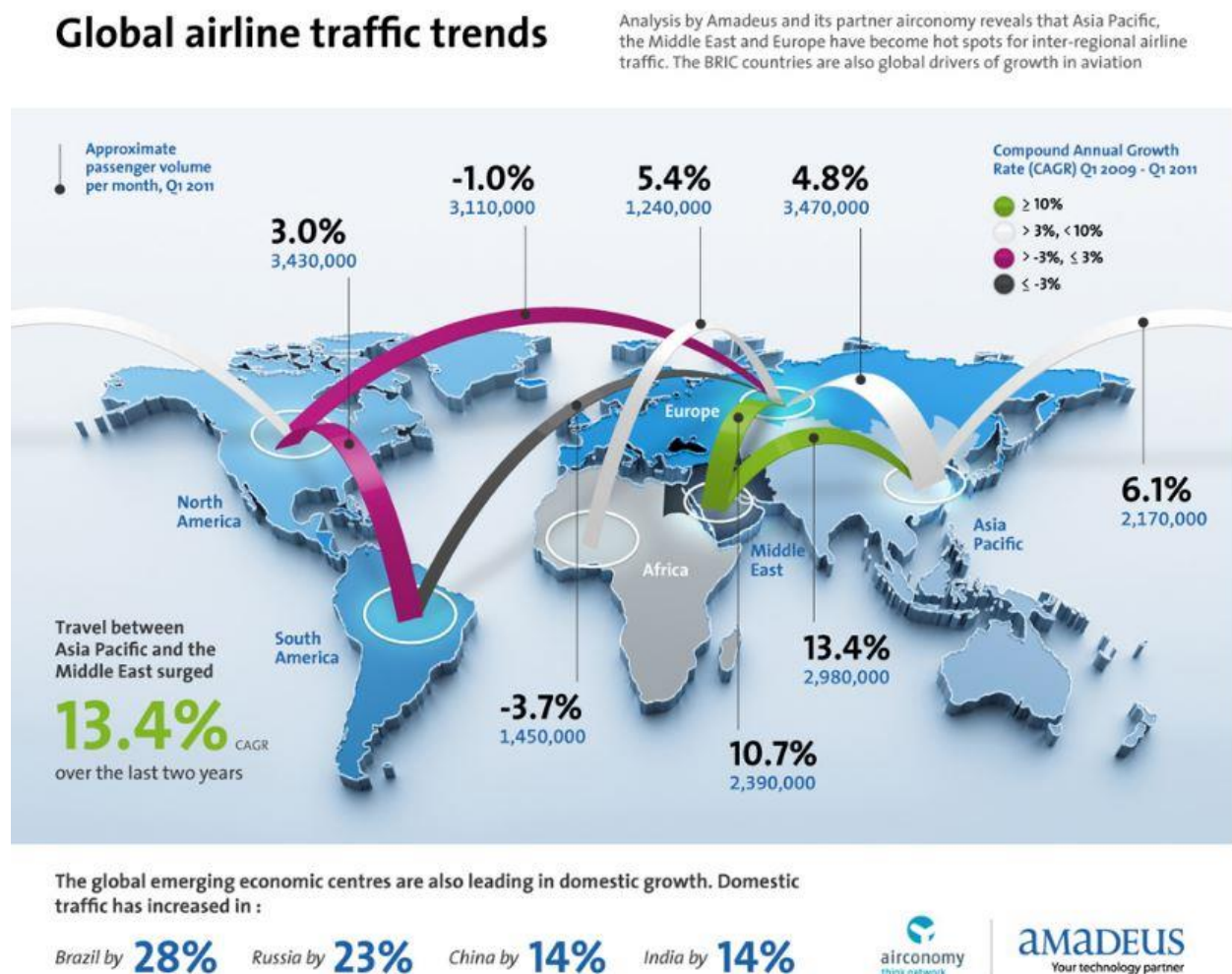


Figure1-Source IATA

1.4 The impact of the creation of these mega-hub operations generates high density traffic patterns in the areas where the traffic converges from various regions. The ATSU/ATFMU managing the hub airports already has the necessary and accurate information of demand and capacity. However, currently there are no effective measures for inter-regional or upstream ATFM measures and traffic congestion and over delivery are the consequence on a daily basis.

2. DISCUSSION

2.1 The implementation of ASBU B1-TBO addresses the challenges envisaged for 2023. It will require substantial infrastructure investments and developments to allow inter-regional upstream coordination and collaboration. Currently, airline operations are able to communicate with their flights on a regular basis, potentially enabling further data to be available. Traffic prediction based on flight progress information has proven to be a valuable source for forecasting congestions and expected delays. Enhancements in collaborative information sharing and coordination also provide significant benefits in better managing periods of disruption to operations.

2.2 The efficient management from merging major traffic flows into high demand areas requires collaboration across ATM regions. Success of such collaboration depends upon the availability of a precise real-time information exchange including the possibilities to constrain individual flights. The process of collaboratively involving the Air Operator's Certificate (AOCs) for more effective ATFM measures could be established today. AOCs and ATSU/ATFMUs are able to collaborate and implement Required Time of Arrival (RTA) on a per flight basis. This needs to be supported by upstream ATSU.

2.3 Real-time access to accurate information about each flight including all constraints across ATM region boundaries are the basis of a successful collaborative management of traffic flows. For this purpose, ATFM regions need to extend their area of interest beyond their area of responsibility. An example of such collaboration is the exchange of real-time flight data between the General Civil Aviation Authority of the UAE (GCAA) and EUROCONTROL implemented on the 6th of June 2016. Achieving this concept will only be possible if ATSU actively support RTA constraints in order to manage the flows into areas which actively balance the capacity and demand by means of cooperative flow management.

2.4 The States shall take all practicable measures for the purpose of preventing airspace congestion in areas with traffic convergence from various regions and shall encourage ATSU/ATFMUs and AOCs to work closely together to support accurate prediction and measures to prevent traffic congestion at mega-hubs.

2.5 The ATSU/ATFMU and airlines AOC jointly have information about predicted traffic situations in high density areas of merging traffic streams. This information is available today and can be utilized for collaborative decision making to coordinate the merging traffic streams. Through AOCs current aircraft connections, they are able to contact their aircraft and relay RTAs which have been jointly agreed between ATSU/ATFMU and airlines AOC. Through this coordination, the access of capacity through converging traffic streams can be balanced already on a procedural level and can be utilized as an intermediate step towards the implementation of ASBU B1-TBO.

2.6 The suggested approach builds upon the results of the implementation of the Cross-border Arrival Management (XMAN) concept. However, it uses the RTA of a flight which is coordinated with the AOC to implement a flow for airborne flights.

2.7 The States should encourage ATSU/ATFMUs and AOCs to communicate RTAs through available AOC communication channels. However, the implementation/support of RTA through an AOC may lead to conflicting understanding of ATC and airline interests where the ATC intends to expedite traffic flow by increasing aircraft speeds while specific flights intend to slow down to meet required times.

2.8 ICAO provisions are needed to enable and facilitate a timely harmonized evolution towards a Collaborative ATFM across ATM regions. A collaborative ATFM concept is to be developed consistent with the ICAO Global ATM Concept, the concept for FF-ICE and the concept for TBO.

2.9 Collaborative ATFM across ATM regions should be explicit on requirements for real-time data exchange across ATFM regions and requirements on collaborative decision making processes.

3. CONCLUSION

3.1 The Assembly is invited to:

- a) note the information contained within this paper;
- b) note the need for States to assess and explore the use of required time of arrival (RTA) for cross-regional flights to enhance air traffic safety and efficiency;
- c) note the need to assess and explore the exchange within and between ATFM areas to efficiently manage major traffic flows;
- d) note the need to assess and explore possibilities for collaborative management of traffic flows between regions when disruptive factors threaten normal traffic patterns; and
- e) support and encourage cross-regional exchange of data to allow for further testing of Global ATFM Concepts.

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