

International Civil Aviation Organization

ASBU/SIP/Lima/2012-WP/24 B


## Aviation System Block Upgrades Module N° B0-35/PIA3

### Improved Flow Performance through Planning based on a Network-Wide view

Workshop on preparations for ANConf/12 – ASBU methodology  
(Lima, 16-20 April 2012)

## Module N° B0-35

### Improved Flow Performance through Planning based on a Network-Wide view



<b>Summary</b>	Air Traffic Flow Management (ATFM) is used to manage the flow of traffic in a way that minimizes delay and maximizes the use of the entire national airspace. ATFM can regulate traffic flows involving departure slots, smooth flows and manage rates of entry into airspace along traffic axes, manage arrival time at waypoints or FIR/Sector boundaries and re-route traffic to avoid saturated areas. ATFM may also be used to address system disruptions including crisis caused by human or natural phenomena.														
<b>Main Performance Impact</b>	-KPA-01 Access & Equity - KPA-05 Environment	- KPA-02 Capacity - KPA -09 Predictability	- KPA-04 Efficiency												
<b>Operating Environment/Phases of Flight</b>	Pre-flight phases, some action during actual flight.														
<b>Applicability Considerations</b>	Region or sub-region														
<b>Global Concept Component(s)</b>	DCB – Demand-Capacity Balancing      TS – Traffic Synchronisation AOM – Airspace Organisation and Management														
<b>Global Plan Initiatives</b>	GPI-1 Flexible use of airspace      GPI-6 Air traffic flow management GPI-8 Collaborative airspace design and management														
<b>Global Readiness Checklist</b>	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 80%;"></th><th style="width: 20%; text-align: center;">Status</th></tr> </thead> <tbody> <tr> <td>Standards Readiness</td><td style="text-align: center;">2013</td></tr> <tr> <td>Avionics Availability</td><td style="text-align: center;">N/A</td></tr> <tr> <td>Ground Systems Availability</td><td style="text-align: center;">Ready</td></tr> <tr> <td>Procedures Available</td><td style="text-align: center;">2013</td></tr> <tr> <td>Operations Approvals</td><td style="text-align: center;">2013</td></tr> </tbody> </table>				Status	Standards Readiness	2013	Avionics Availability	N/A	Ground Systems Availability	Ready	Procedures Available	2013	Operations Approvals	2013
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## Module N° B0-35 - Baseline



- It is difficult to describe an exact baseline. The need for ATFM emerges as traffic densities increased
- This need is now spreading progressively over all continents
- Even where overall capacity is not an issue, the efficient management of flows through a given volume of airspace deserves a specific consideration

## Module N° B0-35 – Change Brought by the Module



- In order to regulate flows, ATFM may take measures of the following nature:
  - Departure slots; Rate of entry; Requested time; Miles-in-trail figures;
  - Re-routing; Sequencing of flights;
  - Delaying of specific flights on the ground by a few minutes
- These measures are not mutually exclusive

## Module N° B0-35 – Intended Performance Operational Improvement



<b>Access and Equity</b>	Improved access by avoiding disruption of air traffic in periods of demand higher than capacity; ATFM processes take care of equitable distribution of delays.
<b>Capacity</b>	Better utilisation of available capacity, network-wide; ability to anticipate difficult situations and mitigate them in advance.
<b>Efficiency</b>	Reduced fuel burn due to better anticipation of flow issues; Reduced block times and times with engines on.
<b>Environment</b>	Reduced fuel burn as delays are absorbed on the ground, with shut engines; rerouting however generally put flight on a longer distance, but this is generally compensated by other airline operational benefits.
<b>Participation by the ATM community</b>	Common understanding of operational constraints, capabilities and needs.
<b>Predictability</b>	Increased predictability of schedules as the ATFM algorithms tends to limit the number of large delays.
<b>Safety</b>	Reduced occurrences of undesired sector overloads.
<b>CBA</b>	The business case has proven to be positive due to the benefits that flights can obtain in terms of delay reduction.

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## Module N° B0-35 – Necessary Procedures (Air & Ground)



- An ICAO manual on ATFM is available in draft version and need to be completed and approved. US/Europe experience is enough to help initiate application in other regions.
- New procedures are required to link much closer the ATFM with ATS in the case of using miles-in-trail or Arrival management or Departure management

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## Module N° B0-35 – Necessary System Capability



- **Avionics**
  - No avionics requirements
- **Ground Systems**
  - When serving several FIRs, ATFM systems are generally deployed as a specific unit, system and software connected to the ATC units and airspace users to which it provides its services. Regional ATFM units have been the subject of specific developments.

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## Module N° B0-35 – Training and Qualification Requirements



- Flow managers in the flow management unit and controllers in ACCs need specific training and airline dispatchers using the remote flow management information or applications need training.
- Training in the operational standards and procedures are required for this module.
- Likewise, the qualifications requirements are identified in the regulatory requirements

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## Module N° B0-35 – Regulatory/standardization needs and Approval Plan (Air & Ground)



- **Regulatory/Standardization:**
  - New standards and requirements is required for standard ATFM messages
- **Approval Plans:**
  - To Be Determined.

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## Module N° B0-35 – Reference Documents



- **Standards:** TBD
- **Procedures:** TBD
- **Guidance Material**
  - ICAO Global Collaborative Decision Making (CDM) Guidelines (under development).
- **Approval Documents**
  - ICAO Global Collaborative Decision Making (CDM) Guidelines (under development).

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Module N° B0-35 Implementation  
- Benefits and Elements



**Improved Flow Performance through  
Planning based on a Network-Wide view**

- **Benefits: Access, Capacity, Efficiency, Environment, Participation by the ATM community, Predictability and Safety**
- **Element:**
  - **Collaborative ATFM****To be reflected in ANRF**

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