



ICAO

Fifth Meeting of the Asia/Pacific Airport Collaborative Decision Making Task Force (APA-CDM/TF/5)  
Video Conferencing, 15 to 17 June 2020

**Agenda Item 5: Integration of A-CDM with ATFM**

**INTEGRATION OF AIRPORT COLLABORATIVE DECISION MAKING (A-CDM) SYSTEM WITH AIR TRAFFIC FLOW MANAGEMENT (ATFM) IN INDIA**

(Presented by India)

**SUMMARY**

This paper presents a case study of actual integration of ACDM and ATFM in India and proposes some measures to improve the present integration process for achieving greater benefits for both systems.

ATFM-ACDM integration is a process to achieve data exchange between these two systems without the need for any manual intervention.

**1. INTRODUCTION**

1.1 Air traffic in India continues to grow rapidly and this trend is likely to continue to expand into the future in spite of temporary disturbance due to COVID 19 pandemic. Increased traffic is expected at many of the existing airports. This increase in demand requires a corresponding effort to utilize systems capacity efficiently. This will require Air Traffic Flow Management (ATFM) capabilities for effective Demand and Capacity Balancing (DCB). The ATFM tools will enable improved management of demand and capacity and will help system stakeholders to deal with the increased complexity of the nation's air routes.

1.2 Airport CDM (A-CDM) aims at improving the overall efficiency of airport operations by optimising the use of resources and improving the predictability of events of operation. Increased predictability can be of significant benefit for all major airport and ATFM operations; it raises both productivity and cost-efficiency and also eco-friendly.

1.3 The scope of A-CDM is Airport specific whereas ATFM caters to wide airspace comprising several Airports. In India, CATFM at New Delhi serves the nation's airspace. Integration of A-CDM and ATFM will benefit both the system by exchanging relevant, timely and reliable data. Collaborative Flight Update, an important concept element of A-CDM, will require integration of A-CDM and ATFM.

**2. DISCUSSION**

Project Description:

2.1 Integration of data between A-CDM and ATFM has been carried out as per Interface Control Document (ICD) between C-ATFM and A-CDM, developed by M/S, Atech, Brazil. SOAP 1.1 based web service has been used for data exchange.

2.2 A-CDM Client program is configured to send automatically following Departure Planning Information (DPI) messages to ATFM Server:

- a) Modification of the aircraft type
- b) Modification of the aircraft registration
- c) Modification on estimated Target Off Block Time (TOBT)
- d) Modification on estimated Target Start up Approval Time (TSAT)
- e) Modification on estimated Target Take Off Time (TTOT)
- f) Update of Actual Off Block Time (AOBT)
- g) Update of Actual Take Off Time (ATOT)
- h) Update of Actual Landing Time (ALDT)
- I) Update of Actual In Block Time (AIBT)

2.3 ATFM client program is configured to send automatically following DPI messages to A-CDM Server:

- a) Route point update in more than 3 minutes: Estimated Landing Time (ELDT).
- b) Application of ATFM measure: Calculated Take Off Time (CTOT).

2.4 Development of the Business logic has been the main challenge for this project. Generating DPI messages for ATFM and utilizing received DPI messages from ATFM require detail and careful planning. Both systems generate a continuous stream of data. Both Systems generate customized data based on the requirement of other system and send as DPI messages in almost real time.

Benefit:

2.5 Integration between A-CDM and ATFM will benefit both the systems. A-CDM will be generating TSAT taking into account any ATFM measure from ATFM. Similarly, timely and reliable data from ACDM systems will benefit ATFM system to generate more accurate ATFM measures and to deal with Demand and Capacity Balancing.

Implementation:

2.6 Integration of A-CDM and ATFM systems has been done in a phased manner. Kolkata A-CDM has been used as a testbed for testing and development.

- a) First phase: Establishment of connectivity between ATFM Server and A-CDM Client.
- b) Second Phase: Development of business logic to send data from the database using a polling mechanism.
- c) Third Phase: Development of A-CDM Server program. Establishment of connectivity between A-CDM Server and ATFM Client.
- d) Fourth phase: Development of monitoring system to check data exchange.

Testing and Deployment:

2.7 Testing has been carried out successfully using A-CDM Kolkata server/client to send and receive DPI messages. Same software has been installed in Mumbai and Chennai A-CDM and necessary customization has been carried out. After successful testing, Web Services have been deployed in the production environment at Kolkata/Mumbai and Chennai Airport.

Later on, the application will be deployed in Jaipur, Ahmedabad, Guwahati and Trivandrum Airports where A-CDM Systems have been installed by Team A-CDM.

Monitoring:

2.8 Monitoring of Data exchange is an important element in the integration process. A web based monitoring tool has been deployed to ascertain correct data format, to collect errors for debugging program and server responses.

Proposal to Improve the Present Integration Process:

2.9 Some ACDM milestone data, generally available with ATFM, can be shared to ACDM like “-3 hours FPL activation”, “Take off from out station”. These data will be either primary mode or redundant mode of capturing those Milestone Data. Weather data and Runway/Taxiway data can be shared by ACDM.

Proposal to Standardize Data Format and Protocol:

2.10 Presently data exchange has been developed based on the ICD provided by the vendor. Vendor has followed Euro Control guidelines. There is a need to specify ICAO Guidelines for data format and data exchange protocol for harmonising data format and protocol over APAC Region.

**3. ACTION BY THE MEETING**

3.1 The meeting is invited to:

- a) Note the information contained in the paper;
- b) Discuss requirement of standardized data format and data exchange protocol for ACDM and ATFM integration; and
- b) Discuss any relevant matter as appropriate.

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