



ICAO

**The First Meeting of Air Traffic Management  
Automation System Task Force of APANPIRG  
(ATMASTF/1)**

Web-conference, 28 – 30 October 2020

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**Agenda Item 5:** Integration of Airport Collaborative Decision Making (ACDM) and Air Traffic Flow Management (ATFM) in India**ATFM-ACDM INTEGRATION**

(Presented by India)

**SUMMARY**

This paper presents a case study of the actual integration of Airport Collaborative Decision Making (ACDM) and Air Traffic Flow Management (ATFM) in India. 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 continued to grow rapidly before the COVID 19 pandemic and trends are likely to continue to expand into the future. Increased traffic is expected at many of the existing airports. This increase in demand requires a corresponding effort to utilize systems capacity efficiently. Air Traffic Flow Management is an excellent tool having capabilities for effective Demand and Capacity Balancing (DCB) 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 optimizing 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, Central ATFM at New Delhi serves the nation's airspace. The 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 the integration of A-CDM and ATFM.

**2. DISCUSSION**

2.1. Project Description:

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**2.1.1.** 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. Simple Object Access Protocol (SOAP) web service has been used for data exchange. Data exchange has been achieved using two Web services running simultaneously. ATFM web service, where ATFM is running Server program and A-CDM is running Client Program. A-CDM web service, where A-CDM is running The server program and ATFM is running the Client program. All messages are being exchanged in the ATS data exchange presentation (ADEXP) Format.

**2.1.2.** 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 TOBT
- d) Modification on TSAT
- e) Modification on TTOT
- f) Update of AOBT
- g) Update of ATOT
- h) Update of ALDT
- I) Update of AIBT

**2.1.3.** ATFM client program is configured to send automatically following DPI messages to A-CDM Server: a) Route point update in more than 3 minutes: ELDT. b) Application of ATFM measure: CTOT.

**2.1.4.** The development of 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 systems and send as DPI messages in almost real-time.

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

**2.3.** 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.

**2.4.** Testing: Testing has been carried out successfully using A-CDM Kolkata server/client to send and receive DPI messages. The same software has been installed in Mumbai A-CDM and in Chennai and necessary customization has been carried out. After successful testing, it has been deployed in the production environment at Kolkata/Mumbai/Chennai Airport. Later on, the application will be deployed in Ahmedabad/Jaipur/Trivandrum and Guwahati Airports where A-CDM Systems have been developed by Team A-CDM.

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

**2.6.** Proposal to improve the present integration process:

**2.6.1.** Some ACDM milestone data, generally available with ATFM can be shared to ACDM like “-3 hours FPL activation”, “Take off from outstation”. These data will be either a primary source or redundant source for capturing those Milestone Data.

**2.6.2.** Weather data and Runway, Taxiway data can be shared by ACDM.

**3. ACTION BY THE MEETING**

3.1 The meeting is invited to:

- a) note the information contained in this paper; and
- b) discuss any relevant matter as appropriate

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