



ICAO

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**Fourth Meeting of the Asia/Pacific Air Traffic
Management Automation System Task Force (APAC
ATMAS TF/4)**

Bangkok, Thailand, 28 – 30 June 2023

Agenda Item 4: ATM Automation System Implementation Experience by States

4.1 ATM Automation System Implementation Issues sharing

4.3 Integration with External Systems

ATM AUTOMATION SYSTEM IMPLEMENTATION AT ISLAMABAD

(Presented by Pakistan)

SUMMARY

This paper presents experiences on ATM Automation System implementation at Islamabad Airport including the issues and integration with external systems.

1. INTRODUCTION

1.1 Pakistan Civil Aviation Authority (PCAA) operationalized new Islamabad International Airport Pakistan (IIAP) in May 2018 replacing Benazir Bhutto International Airport (BBIAP) for civil aviation operations. The newly redesigned airspace structure, operational requirements and future expansion necessitated complete revamp of various Air Traffic Systems including ATM Automation System. As IIAP is situated at new location, therefore, the airspace structure is redesigned and associated PBN and ATM procedures are revised. The controllers and technical staff went through comprehensive training process on newly designed systems/procedures.

1.2 This paper presents the experiences of implementation of ATM Automation System at new Islamabad Airport including shifting of operations from old setup to new one. In addition, issues faced during the integration of ATM system with the ACDM system, PCAA Flight Information and Revenue Management (FIRMS) billing system is also presented in this Information Paper.

2. DISCUSSION

ATM Automation System Background

2.1 PCAA procured ATM Automation System from Si ATM AB Sweden for installation and operations for IIAP. Si ATM system already included many features for enhancement of safety and automation proposed in ATM AIGD, including, inter alia, safety nets (STCA, MSAW, APW, APM), DAP monitoring and warnings, AIDC, CPDLC etc.

2.2 New ATM Automation System also included a completely independent Test Development and Simulation System (TDSS) for testing and configuration of ATM DBM parameters using either simulated flights or live traffic without disrupting or affecting the main ATC and ATM System operations. This system is also used as simulator for training Air Traffic Controllers deployed at IIAP for both on job training and familiarization with the ATM system.

2.3 The main ATM system has redundancy built in with two servers running independently with both SDPs and FDPs (each with their own DBM configuration) and performs continuous automatic synchronization, with automatic switchover in case of a server failure. A separate Bypass server is also included which is completely independent of the main ATM servers. The main ATM system also allows updating of some ATM DBM parameters independently of each server without downtime. However, changes to some ATM DBM parameters (for example, airspace model and sectorization, jurisdiction related parameters) does require downtime of both servers to perform a logical sync on some critical ATM parameters.

2.4 The main ATM system and TDSS are integrated with four surveillance sensors to cover all of the region under the control of Islamabad Area Control.

Implementation for Approach and Tower

2.5 The ATM System was installed and configured from June 2017 to September 2017 for providing approach control service for BBIAP control zone. Initially, it was operated for 6 hours per day (rest of the time was provided using old setup) for gradual shifting of ATC operations to new location and new ATM system before being deployed for full round the clock ATC operations in November 2017. Partial operation of the new ATM system allowed us to make continuous changes and optimizations in the ATM DBMs based on controller feedback and allowed us to work with ATM system OEM during the non-operation.

2.6 Upon operationalization of IIAP, ATM configuration was changed to new airspace and airport and the switch/shifting went smoothly based on the previous work as major issues and hurdles were already fixed. The ATM Automation system worked efficiently to provide approach and aerodrome control service for the new Islamabad TMA and CTR.

2.7 The ATM system was also integrated with IIAP ACDM system for optimized automatic allocation for airport resources (parking bridges, gates, and allied facilities etc.) for further automation.

Implementation for Area Control

2.8 Islamabad Area Control Center (ACC) was established under Lahore FIR in June 2020 by assuming control of part of airspace previously under control of Lahore ACC. By this time, the ATM automation system was already running smoothly for over two years and OEM DLP had ended.

2.9 During the configuration and operationalization of Islamabad ACC, it was observed that the advantage we had of partial day operation during the implementation of Approach, was not available, since ATM system had to be running continuously for ATC operations. This limited the amount of continuous fine-grained changes based on controller feedback. Changes had to be done coarse grained since the amount of downtime available was required to be minimal. A possible idea, in future, to overcome this limitation can be to allow ATM system to run in a reduced redundancy mode and allow each server to run truly independent for different controller working positions/units with different DBM parameter configurations and thus allowing continuous updating of parameters. Bypass server would be available in case of a main server failure.

2.10 It was observed that airspace sector/subsector based (instead of simple polygon based) STCA region definition would be more efficient to use based on our airspace structure.

2.11 Printing of flight progress strip was limited during initial planning and special procedures had to be developed to overcome the limitations.

2.12 Thorough AIDC testing was successfully conducted with Karachi ACC (Lahore ATM used older version of AIDC) however it was found that Aircon2100 was not able to handle flight plan route truncation/termination indicator. It is therefore pending till upgradation of Lahore ATM system. AIDC implementation with China is under progress.

2.13 After establishment of Islamabad ACC, the ATM system was also integrated with PCAA indigenous FIRMS software for ATS revenue and billing and is working smoothly.

3. CONCLUSION

3.1 The IP contained a brief overview of the ATM automation system as implemented at IIAP with various features proposed by the ATM IGD. The system was gradually implemented with operationalization of Approach and Aerodrome control initially, followed-up with Area control later on. The ATM system is also integrated with ACDM and FIRMS for further automation. The ATM system is working efficiently for the provision of safe, orderly and smooth flow of air traffic.

4. ACTION BY THE MEETING

4.1 The meeting is invited to:

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