ATM SYSTEM ENHANCEMENT IN OMAN

(Presentation to Supplement Oman CAA's Information Paper on above subject matter)

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OMAN'S ATM SYSTEMS

INTRODUCTION

Provision of air traffic services was always a cumbersome and stressful job.

Introduction of radar and voice systems provided much needed measures of control to the task.

As aviation industry grew, so did the challenges of handling of aircraft and ensuring their safe operations in the airspace.

Therefor, the world has been in a constant endeavour to establish procedures and formulate processes that ensure a safe guidance for aviation operations.

Under the directives of His majesty (late) Sultan Qaboos Bin Said, the government was directed to develop and enhance its aviation operational capabilities to meet the ICAO requirements.

Brief History

The first air traffic system in Oman consisted of the
- Marconi radar used for Area Control
- Plessey radar for Approach Control.

These were very cumbersome and old-generation systems that required a lot of concentration and handling without any safety nets for operation levels.

Not to mention that these early generation radars were CRTs *(Cathode Ray Tubes)* compared to the new generation smart screens.

Plessey

Marconi

RAYTHEON

It was not before 1996 when Oman embarked on acquiring the advanced Raytheon system (radars & monitors) that made a big difference in the air traffic management application. This was a big leap into a world of new features and applications that would lessen the controller workload by far.

- We are not here to discuss particular specifications of the Oman INDRA system, but we would like to highlight the success we had accomplished with the development of this system.

- In 2010, We had managed in collaboration with the INDRA engineers to incorporate all the GANP requirements into our system specification plus some tools and additional safety net features.

- This included for example:

  - MTCD

  - MSAW

  - LB (Level Bust)

  - Area Warning (ZN)

  - What-if Function

  - CPDLC

  - ADS-B/C

  - OLDI/AIDC

WHAT REALLY MADE THE DIFFERENCE?

The most critical factor of any air traffic controller is the

- *Ability to detect conflict of traffic with enough time to take necessary actions.*

- *Being alerted to flight level discrepancies.*

This was a very tedious task and required vigilant eyes to continuously track flight strips, times and levels via the conventional strip boards and the corresponding data displayed on the screens.

Medium Term Conflict Detection {MTCD}

The introduction of these tools was a monumental workload and stress reliever for ATC.
Controllers are now able to concentrate on managing & facilitating traffic needs and with a highly developed system SAFETY NET tools that provide them with enough info & lead time to sort out conflicts.
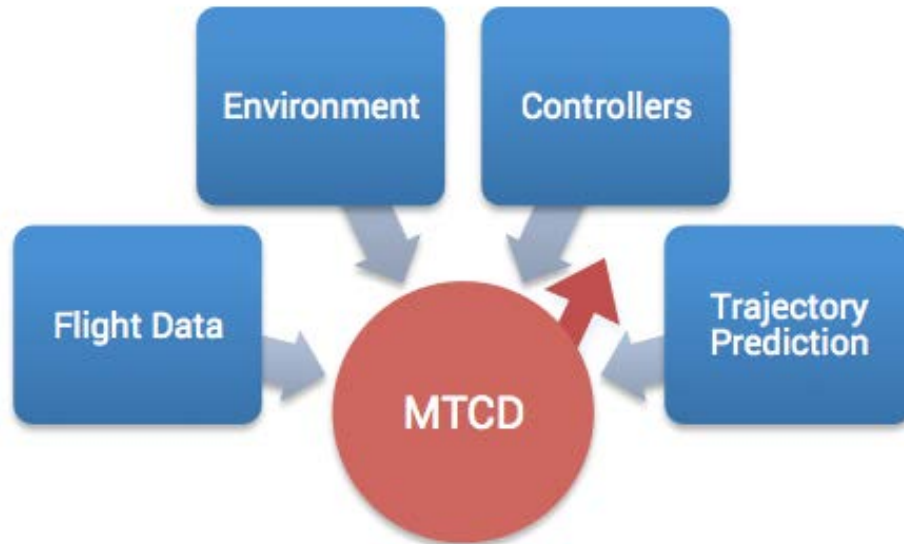
▪**Flight Data:** flight data is provided to MTCD for all eligible flights.

▪**Trajectory Prediction:** Predicted Trajectories are provided to MTCD and form the basis upon which the detection of conflicts is performed.

▪**Environment Data Distribution:** the airspace configuration and sectorization are used to determine the responsibility of detected encounters.

▪**Planner & Tactical Controllers:** interactions are displayed to the controllers and are coordinated and managed by them.

THE PATH TO USING MTCD

- MTCD implementation was not only time consuming but stressful and strenuous as well , a lot of resources and tests were required.
- We had neither experience nor external user experience or help.
- We had to test every possible scenario.
- Fine tuning MTCD parameters.

ACTION BY THE MEETING

a) NOTE THE INFORMATION CONTAINED IN THIS PAPER; AND

b) DISCUSS ANY RELEVANT MATTERS AS APPROPRIATE.

THANK YOU