ATFM/TF/2
WP/08
21/06/06

International Civil Aviation Organization
UNDP/ICAO Regional Project RLA/98/003
Transition to CNS/ATM Systems in the CAR and SAM Regions

SECOND MEETING OF THE GREPECAS ATM/CNS SUBGROUP ATM COMMITTEE AIR TRAFFIC MANAGEMENT TASK FORCE (ATFM/TF/2)

(Bogotá, Colombia, 6 to 8 July 2006)

Agenda Item 3: ATFM data bank

Review of data bank functions related to the ATFM service, especially those required in each State, and other matters, such as data format and data integration at the Regional Centre.

(Presented by Brazil)

Summary

This working paper presents the experience of Brazil regarding the installation of a data bank made up by various tables to support ATFM activities, mainly the difficulties identified in the data integrity and consistency analysis.

1. Introduction

1.1 The first air traffic flow management studies in Brazil only covered airport management, and did not assess the consequences of air traffic flow on the airspace. It was thought that airports were the big limitation for air traffic demand, and that airport management was necessary for ATFM. It was then realised that airport management was necessary, but not sufficient, for ATFM. It was concluded that the ATFM would need automated systems, supported by a broad, integrated, and consistent database.

1.2 Available data analyses of mapping or aeronautical information showed that even broad databases have low integrity indices and are inconsistent, especially with respect to the format.

2. Desired situation

2.1 Considering data bank complexity, development should at all times reflect the needs of ATFM implementation stages, allowing progressive evolution to add knowledge for future developments. To this end, it would be advisable to create a specific group to analyse the data available in the CAR/SAM Regions and their integration with ATFM.

The data bank prototype

2.2 As should be envisaged in the CAR/SAM Air Traffic Flow Management Centre operational concept, all activities will result from a data bank containing basic information on:

a) Flight intentions (as reflected in flight schedules--such as OAG--and flight plans);

b) Mapping information (about airports, airspace, SIDs, STARs, airways, aids, fixes, and EAC); and

c) Aircraft (concerning performance data).

2.3 In a future ATFM stage, supplementary radar information must be added to permit a better analysis of tactical demand and a better application of ATFM measures.

2.4 It will be essential to automate data collection and update procedures to permit immediate assessment of data consistency. Furthermore, provisions should be made for future interconnection with the ATCSCC-FAA data bank and the EUROCONTROL CFMU, as well as with airborne flight management systems (FMS).

Specific situation

Airport demand

2.5 Although the whole conceptual proposal must aim at a single integrated and centralised ATFM unit, the CAR/SAM States will have at their disposal, since the initial stage, the means and processes that will allow them to conduct, using their own databases, a preliminary analysis of demand/capacity balancing for their airports.

Airport slot

2.6 Upon establishing the demand/capacity balancing for a given airport, it will be possible, if necessary, to develop a supplementary tool for automatic airport slot reservation.

Airport fees

2.7 Reports will be issued comparing foreseen and actual air traffic movement, with a view to standardising air traffic fee collection procedures.

3 Operational description

Reporting

3.1 With the incorporation of radar information from the data banks, it will be possible to develop statistical flight reports and data, including a graphical representation of values. In general terms, it will be possible to obtain air traffic demand information for an aerodrome, point, marker, fix, ATS route segment, flight level, control area or sector, for planning or safety monitoring purposes (including RVSM and RNP requirements).

Reception of information

3.2 The data bank should be prepared to receive all flight information, be it pre-scheduled (RPL/OAG), non-scheduled (FPL), or other information involving military and general aviation, as well as flight update messages.

Data update

3.3 The bank should permit flight data updates, be it manually through the ATFM, FMU operator, or "on-line", through the radar processing system.

3.3.1 The Aircraft Situation Display, created on the basis of statistical data on air traffic movement and dynamic data, in addition to data from the synthesis of radar images, is one of the main outputs of this update, together with the issuance of the reviewed reports.

Demand assessment

3.4 Data processing available at the bank will provide airport demand information. However, an accelerated simulation system (or something similar) will provide airspace demand information. This process will be implemented in several stages--which can run parallel until the final integration--, namely:

a) Strategic model to analyse air traffic demand at airports

b) Tactical model to analyse air traffic demand at airports

c) Strategic model to analyse air traffic demand in ATC sectors

d) Tactical model to analyse air traffic demand in ATC sectors

4 Operational requirements

ATFM data bank

4.1 The ATFM data bank should be capable of conducting consistent data insertion, deletion, modification, and update operations required for retrieving information on air traffic flow and capacity management activities.

Data consistency

4.2 The bank shall employ the necessary techniques to maintain data consistency with respect to collation or content.

Inquiries

4.3 It should be possible to make direct individual or related inquiries in the fields contained in the various tables of the data bank.

Display

4.4 It should be possible to display traffic forecasts for a given time interval and for an airspace portion in microcomputers or other systems.

Data communications

4.5 Means of data communication compatible with ATFM requirements should be available.

Access to other data banks

4.6 Data already existing in other sectors should not be duplicated. ATFM should only have access to such information for the purpose of building the ATFM data bank (for example: mapping, AIS, airlines, airports, and other similar centres).

5. Suggested action

5.1 The meeting is invited to:

a) take note of the information provided in this working paper;

b) urge the members of the ATFM Task Force of the ATM Committee to begin the activities and tasks assigned by GREPECAS on this matter, and to participate in task force activities concerning ATFM data bank functions, especially those required in each State, and other related matters, such as data formatting and integration in the Regional Centre.