



International Civil Aviation Organization

AIR NAVIGATION SYSTEMS IMPLEMENTATION GROUP

First Meeting (ANSIG/1)
(Cairo, Egypt, 10 – 12 February 2015)

Agenda Item 4: Performance Framework for Regional Air Navigation Implementation

IMPLEMENTATION OF B0 ACDM

(Presented by the Secretariat)

SUMMARY

This paper presents the status of implementation of the B0 ACDM elements in the MID Region and the associated performance monitoring. It provides also some guidance material related to ACDM and seeks ways and means to expedite the implementation in order to meet the agreed performance targets.

Action by the meeting is at paragraph 3.

REFERENCES

- AIM SG/1 Report
- ICAO ASBU Working Document
- ICAO Manual on Collaborative ATFM (Doc 9971).
- Eurocontrol Manual on Airport CDM Implementation
- MID Region Air Navigation Strategy
- MSG/4 Report

1. INTRODUCTION

1.1 Airport Collaborative Decision Making (ACDM) is a concept which aims at improving Air Traffic Flow and Capacity Management (ATFCM) at airports by reducing delays, improving the predictability of events and optimising the utilisation of resources.

1.2 B0-ACDM (Improved Airport Operation through Airport-CDM) is a priority one ASBU module in the MID Air Navigation Strategy. Implementation of ACDM will enhance surface operations and safety by making airspace users, ATC and airport operators better aware of their respective situation and actions on a given flight

1.3 The MID Region Air Navigation Strategy was endorsed by the fourth meeting of the MIDANPIRG Steering Group (MSG/4, Cairo, Egypt, 24-26 November 2014) as the framework identifying the regional air navigation priorities, performance indicators and targets. The Strategy includes Tables for all twelve priority 1 ASBU Modules along with their associated elements, applicability, performance Indicators, supporting Metrics and performance Targets.

2. DISCUSSION

2.1 Airport-CDM is a set of improved processes supported by the interconnection of various airport stakeholders information systems. It includes application designed to “Implement collaborative procedures that will allow the sharing of surface operations data among the different stakeholders at the airport”.

2.2 ACDM is not just a system, hardware or software, meeting or telephone call; it involves culture change, handling of sensitive data, procedural changes and building confidence and understanding of each partners operational processes. With the help of airport stakeholders the European airport CDM concept has matured significantly over the years from a high level concept into a process that is delivering real operational benefits

2.3 EUROCONTROL has developed and performed trials of a number of airport CDM elements and is currently proactively encouraging European airports to implement ACDM locally. The EUROCONTRO Manual on Airport CDM Implementation (version, April 2012), which is available at: <https://www.eurocontrol.int/publications/airport-cdm-implementation-manual-version-4> provides a detailed guidance on A-CDM implementation.

2.4 The ICAO Doc 9971 and EUROCONTRO Manual on Airport CDM Implementation (version 4, April 2012) suggest the following ACDM implementation concept elements:

1. Information Sharing
2. Milestone Approach
3. Variable Taxi Time
4. Pre-departure Sequencing
5. Adverse Conditions
6. Collaborating Management of Flight Updates

2.5 Many States and organizations are currently working on Airport-Collaborative Decision Making (ACDM) and ICAO/ANB included in its work programme a task to develop guidance material on the ACDM implementation.

Benefits

2.6 Airport operators – ACDM improves the efficient use of stands/gates and increase airport capacity.

2.7 Aircraft operators – ACDM will help them reduce surface movement costs due to lower fuel consumption as a result of reduced taxiing and runway end holding times, also reducing environmental impact.

2.8 Ground handling service providers – ACDM will make data available more in advance, permit better planning of tasks, and improve, inter alia, awareness of aircraft status on the ground, thus reducing delays.

2.9 Air traffic service providers – ACDM can improve flow control and increase airspace capacity.

2.10 Air traffic controllers – ACDM can assist in the development of runway improvements and capacity planning.

2.11 Passengers – Passengers will also obtain significant benefits since it will improve punctuality, increase customer satisfaction, reduce lost connections, and they will have better information and service when incidents occur.

Implementation and Monitoring

2.12 Three (3) main elements related to A-CDM implementation have been included in the MID Region Air Navigation Strategy. The international airports which need to implement A-CDM have been identified/agreed upon. Name of applicable airports and implementation Performance Indicators/Supporting Metrics and Targets are included in Volume III of the MID eANP as at **Appendix A**.

2.13 The agreed B0 ACDM implementation main elements are: Apron management; ATM-Aerodrome coordination; and Declared terminal and runway capacity where:

2.13.1 Apron Management: airport should provide an appropriate apron management service in order to regulate entry of aircraft into and coordinate exit of aircraft from the apron. This element is related to the milestone approach and the pre-departure sequencing as detailed by the Eurocontrol A-CDM Implementation Manual;

2.13.2 ATM-Aerodrome Coordination: airport should have appropriate ATM coordination on airport development and maintenance planning; coordination with local authorities regarding environmental, noise abatement, and obstacles; and ATM/PBN procedures for the aerodrome. This element is related to the Information Sharing and Variable Taxi Time as explained by the Eurocontrol A-CDM Implementation Manual

2.13.3 Declared aerodrome capacity: airport should have a declared airport terminal and runway capacity based on all the stakeholders' plans and resources. This element is related to the Adverse Conditions and the Collaborative Management of Flight Updates as explained by the Eurocontrol A-CDM Implementation Manual.

2.14 Information on the B0 A-CDM implementation needs to be reported by the States to the ANSIG for necessary monitoring and update.

2.15 Implementation challenges include lack of guidance materials and awareness, lack of coordination procedures, financial constraints and unavailability of IT supporting systems in the airports, training needs and lack of qualified human resources.

2.16 Based on a survey carried out in September 2014, the ICAO MID Regional Office received information related to States' plans for ACDM implementation. It was confirmed that the following airports have plans to implement ACDM: OMDB, OMAA, OMDW, OTBD, and OTHH.

2.17 Detailed table has been developed to monitor the implementation status of the B0 A-CDM elements with guidance on the elements that need to be implemented as at **Appendix B**.

2.18 In order to support the implementation of B0 ACDM in the MID Region, the ICAO MID Regional Office will organize a workshop on A-CDM implementation. The tentative date is 11-13 October 2015 and the venue will be the ICAO MID Regional Office in Cairo unless a State is willing to host it.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) review and update the status of implementation of the different B0 ACDM elements;
- b) identify the difficulties faced in the implementation of B0 ACDM elements; and
- c) recommend measures to expedite the implementation process and meet the agreed performance targets.

APPENDIX A

B0 – ACDM: Improved Airport Operations through Airport-CDM**Description and purpose**

To implement collaborative applications that will allow the sharing of surface operations data among the different stakeholders on the airport. This will improve surface traffic management reducing delays on movement and manoeuvring areas and enhance safety, efficiency and situational awareness.

Main performance impact:

| KPA- 01 – Access and Equity | KPA-02 – Capacity | KPA-04 – Efficiency | KPA-05 – Environment | KPA-10 – Safety |
|-----------------------------|-------------------|---------------------|----------------------|-----------------|
| N | Y | Y | Y | N |

Applicability consideration:

Local for equipped/capable fleets and already established airport surface infrastructure.

B0 – ACDM: Improved Airport Operations through Airport-CDM

| <i>Elements</i> | <i>Applicability</i> | <i>Performance Indicators/Supporting Metrics</i> | <i>Targets</i> |
|------------------------|--|---|-----------------------|
| A-CDM | OBBI, HECA, OIII, OKBK, OOMS, OTBD, OTHH, OEJN, OERK, OMDB, OMAA, OMDW | Indicator: % of applicable international aerodromes having implemented improved airport operations through airport-CDM Supporting metric: Number of applicable international aerodromes having implemented improved airport operations through airport-CDM | 40% by Dec. 2017 |

TABLE B0-ACDM

EXPLANATION OF THE TABLE

Column

- 1 Name of the State
- 2 Name of City/Aerodrome and Location Indicator
- 3 Status of implementation of Apron Management, where:
Y – Yes, implemented
N – No, not implemented
- 4 Status of implementation of ATM-Aerodrome coordination, where:
Y – Yes, implemented
N – No, not implemented
- 5 Terminal & runway capacity is declared, where:
Y – Yes, declared
N – No, not declared
- 6 Action plan — short description of the State's Action Plan with regard to the implementation of B0-ACDM.
- 7 Remarks

| State | City/ Aerodrome Location Indicator | Apron Managem ent | ATM- Aerodro me Coordina tion | Terminal &runway capacity declared | Action Plan | Remarks |
|-----------------------------|---------------------------------------|-------------------------|---|---|-------------|----------|
| <i>1</i> | <i>2</i> | <i>3</i> | <i>4</i> | <i>5</i> | <i>6</i> | <i>7</i> |
| BAHRAIN | Bahrain/Bahrain Intl (OBBI) | | | | | |
| EGYPT | Cairo/Cairo Intl (HECA) | | | | | |
| IRAN | Tehran/Mehrabad Intl (OIII) | | | | | |
| KUWAIT | Kuwait/Kuwait Intl (OKBK) | | | | | |
| OMAN | Muscat/Muscat Intl (OOMS) | | | | | |
| QATAR | Doha/Doha Intl (OTBD) | | | | | |
| QATAR | Doha/Hamad Intl (OTHH) | | | | | |
| SAUDI ARABIA | JEDDAH/King Abdulaziz Intl (OEJN) | | | | | |
| SAUDI ARABIA | RIYADH/King Khalid Intl (OERK) | | | | | |
| UAE | Abu Dhabi/Abu Dhabi Intl (OMAA) | | | | | |
| UAE | Dubai/Dubai Intl (OMDB) | | | | | |
| UAE | DUBAI/Al Maktoum Intl (OMDW) | | | | | |
| Total Percentage | | | | | | |

APPENDIX B

Table B0 A-CDM Implementation

EXPLANATION OF THE TABLE

Column:

- 1 Name of the State.
- 2 Name of City/Aerodrome and Location Indicator
- 3 **Information Sharing (IS):** The Information Sharing Element defines the sharing of accurate and timely information between the Airport CDM Partners in order to achieve common situational awareness and to improve traffic event predictability. The Airport CDM Information Sharing Platform (ACISP), together with defined procedures agreed by the partners, is the means used to reach these aims.
Implementation status of (IS) is indicated by:
Y – Yes, implemented
N – No, not implemented
- 4 **Milestone Approach (MA) :** The Milestone Approach Element describes the progress of a flight from the initial planning to the take off by defining Milestones to enable close monitoring of significant events. The aim is to achieve a common situational awareness and to predict the forthcoming events for each flight with off-blocks and take off as the most critical events. The Concept Element Information Sharing needs to be implemented at the airport before it can successfully implement the Milestone Approach The Milestone Approach combined with the Information Sharing element is the foundation for all other Concept Elements.
Implementation status of (MA) is indicated by:
Y – Yes, implemented
N – No, not implemented
- 5 **Variable Taxi Time (VTT):** The Variable Taxi Time Element consists of calculating and distributing to the Airport CDM Partners accurate estimates of taxi-in and taxi-out times to improve the estimates of in-block and take off times. The complexity of the calculation may vary according to the needs and constraints at the CDM Airport. The aim is to improve the traffic predictability.
Implementation status of (VTT) is indicated by:
Y – Yes, implemented
N – No, not implemented
- 6 **Pre-departure Sequencing (PDS):** The pre-departure sequencing is the order that aircraft are planned to depart from their stands (push off-blocks) taking into account partners' preferences. It should not be confused with the pre-take off order where ATC organise aircrafts at the holding point of a runway. The aim is to enhance flexibility, increase punctuality and improve slot-adherence while allowing the airport partners to express their preferences.
Implementation status of (PDS) is indicated by:

Y – Yes, implemented

N – No, not implemented

- 7 **Adverse Conditions (AC)** : Adverse Conditions Element consists of collaborative management of the capacity of an airport during periods of a predicted or unpredicted reduction of capacity. The aim is to achieve a common situational awareness for the Airport CDM Partners, including better information for the passengers, in anticipation of a disruption and expeditious recovery after the disruption.
Implementation status of (AC) is indicated by:
 Y – Yes, implemented
 N – No, not implemented
- 8 **Management of Flight Updates (MFU)**: The Collaborative Management of Flight Updates Element consists of exchanging Flight Update Messages (FUM) and Departure Planning Information (DPI) messages with the CDM Airport, to provide estimates for arriving flights and improve the ATFM slot management process for departing flights. The aim is to improve the coordination between Air Traffic Flow and Capacity Management (ATFCM) and airport operations at a CDM Airport.
Implementation status of (MFU) is indicated by:
 Y – Yes, implemented
 N – No, not implemented
- 9 Action Plan: short description of the State’s Action Plan with regard to the provision of A-CDM elements and services.
- 10 Remarks — additional information,.

TABLE B0-ACDM
Provision of A-CDM Elements

| State | City/Aerodrome Location Indicator | IS | MA | VTT | PDS | AC | MFU | Action Plan | Remarks |
|-----------------|--|-----------|-----------|------------|------------|-----------|------------|--------------------|----------------|
| <i>1</i> | <i>2</i> | <i>3</i> | <i>4</i> | <i>5</i> | <i>6</i> | <i>7</i> | <i>8</i> | <i>9</i> | <i>10</i> |
| BAHRAIN | Bahrain/Bahrain (OBBI) | | | | | | | | |
| EGYPT | Cairo/Cairo Intl (HECA) | | | | | | | | |
| IRAN, | Tehran/Mehrabad (OIII) | | | | | | | | |
| KUWAIT | Kuwait/Kuwait Intl (OKBK) | | | | | | | | |
| OMAN | Muscat/Muscat Intl (OOMS) | | | | | | | | |
| QATAR | Doha/Doha Intl (OTBD) | | | | | | | | |
| QATAR | Doha/Hamad Intl (OTHH) | | | | | | | | |
| SAUDI ARABIA | JEDDAH/King Abdulaziz Intl (OEJN) | | | | | | | | |
| SAUDI ARABIA | RIYADH/King Khalid Intl (OERK) | | | | | | | | |
| UAE | Abu Dhabi/Abu Dhabi (OMAA) | | | | | | | | |
| UAE | Dubai/Dubai Intl (OMDB) | | | | | | | | |
| UAE | DUBAI/Al Maktoum (OMDW) | | | | | | | | |

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