



International Civil Aviation Organization

Runway and Ground Safety Working Group

Fourth Meeting (RGS WG/4)
(Cairo, Egypt, 05-07 November 2017)

Agenda Item 4: Coordination between RASG-MID and MIDANPIRG in the area of Aerodromes

**SAFETY AND EFFICIENCY ISSUES ASSOCIATED WITH
ASBU MODULE 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

- ANSIG/2
- MID Air Navigation Strategy (MID Doc 002)
- MID eANP Volume III
- MIDANPIRG/16 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 MIDANPIRG/15 as MID Doc 002 to be the framework identifying the regional air navigation priorities, performance indicators and targets.

2. DISCUSSION

2.1 Performance Improvement Area 1 (Airport Operations) includes five (5) Modules in Block 0 from which B0-APTA, B0-SURF and B0-ACDM have been considered priority 1 for implementation in the MID Region.

2.2 B0-ACDM aims at Improved Airport Operation through Airport Collaborative Decision Making (A-CDM). It is to be highlighted that A-CDM implementation 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.

Benefits

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

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.

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.

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

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

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.

2.3 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".

2.4 The following A-CDM implementation elements have been underlined: Information Sharing, Milestone Approach, Variable Taxi Time, Pre-departure Sequencing, Adverse Conditions, and Collaborating Management of Flight Updates.

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

- 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;
- 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; and

- 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.

2.6 The Three (3) main elements related to A-CDM implementation that have been included in the MID Region Air Navigation Strategy, the international airports which need to implement A-CDM that have been identified/agreed upon and 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**.

2.7 Detailed information on the monitoring of B0-ACDM is contained at Volume III of the MID eANP, including necessary supporting enablers (i.e. tables, databases, etc.), in order to be used as planning tools for the measurement of the air navigation systems performance. Related MID eANP Tables including Name of applicable airports and implementation Performance Indicators/Supporting Metrics and Targets are included to monitor the status of implementation of the different B0-ACDM elements.

2.8 For the purpose of performance monitoring and reporting, six (6) elements have been included in the MID Region Air Navigation Strategy: Information Sharing (IS), Milestone Approach (MA), Variable Taxi Time (VTT), Pre-departure Sequencing (PDS), Adverse Conditions (AC), and Management of Flight Updates. Performance Indicators/Supporting Metrics, Targets and status of their implementation are detailed in **Appendix B**.

2.9 MIDANPIRG/16 meeting noted the outcome of the ICAO A-CDM Seminar (Bahrain, 11-13 October 2015) that was organized in order to support the implementation of B0 ACDM in the MID Region and agreed to the following Conclusion emanating from the MSG/5 meeting:

CONCLUSION 16/6: ACTION PLAN FOR A-CDM IMPLEMENTATION

That, in line with the MID Air Navigation Strategy, States concerned:

- *be urged to develop their A-CDM implementation plan, with the support of ICAO MID Office, if required; and*
- *provide the ICAO MID Office with a copy of their plan before 1 November 2017.*

2.10 The meeting is invited to note that a follow-up State Letter Ref.: AN 5/23 – 17/184 dated 27 June 2017 was sent to MID States to provide information on status of implementation of Conclusion 16/6. Only two (2) States (Sudan and UAE) have responded. ACDM is not a requirement for Sudan and; UAE response is reflected at **Appendix B**.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) review and update the status of implementation of B0-ACDM;
- 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 Management	ATM-Aerodrome Coordination	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)	N	N	N	2018	
EGYPT	Cairo/Cairo Intl (HECA)	N	N	N		
IRAN	Tehran/Mehrabad Intl (OIII)	N	N	N		
KUWAIT	Kuwait/Kuwait Intl (OKBK)	N	N	N		
OMAN	Muscat/Muscat Intl (OOMS)	N	N	N		
QATAR	Doha/Doha Intl (OTBD)	N	N	N		
QATAR	Doha/Hamad Intl (OTHH)	N	N	N		
SAUDI ARABIA	JEDDAH/King Abdulaziz Intl (OEJN)	N	N	N		
SAUDI ARABIA	RIYADH/King Khalid Intl (OERK)	N	N	N		
UAE	Abu Dhabi/Abu Dhabi Intl (OMAA)	Y	Y	Y	2017	
UAE	Dubai/Dubai Intl (OMDB)	Y	Y	Y	2017	
UAE	DUBAI/Al Maktoum Intl (OMDW)	N	N	N	No	No operational requirement
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

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- 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)	Y	Y	Y	Y	Y	Y		Final Operational test Q4 2017 Full implementation Q1 2018
UAE	Dubai/Dubai Intl (OMDB)	Y	Y	Y	Y	Y	Y		
UAE	DUBAI/Al Maktoum (OMDW)	N	N	N	N	N	N		