



The European Organisation for Civil Aviation Equipment
L'Organisation Européenne pour l'Équipement de l'Aviation Civile

AIRPORT-CDM INTERFACE SPECIFICATION

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October 2008

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FOREWORD

1. The document ED-145 Airport-CDM Interface Specification was prepared by EUROCAE Working Group 69 and was accepted by the Council of EUROCAE on 6 October 2008.
2. EUROCAE is an international non-profit making organisation. Membership is open to manufacturers and users in Europe of equipment for aeronautics, trade associations, national civil aviation administrations and non-European organisations. Its work programme is principally directed to the preparation of performance specifications and guidance documents for civil aviation equipment, for adoption and use at European and world-wide levels.
3. The findings of EUROCAE are resolved after discussion among its members and, where appropriate, in collaboration with RTCA Inc, Washington D.C. USA and/or the Society of Automotive Engineers (SAE), Warrendale, PA, USA through their appropriate committee.
4. The document represents "CDM Interface Specification - EUROCAE Standard for Airport-CDM-Interface".
5. EUROCAE performance specifications are recommendations only. EUROCAE is not an official body of the European governments; its recommendations are valid statements of official policy only when adopted by a particular government or conference of governments.
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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Airport Collaborative Decision Making (CDM) is an important enabler of Air Traffic Management (ATM) capacity and efficiency. The concept of Airport CDM does not imply any particular system or architecture. Rather, it is an approach to using aeronautical data, based on sharing data between all Partners, ensuring a common view of the ATM and airport environment on all levels. Airport CDM also addresses the need for operational decisions to be made collaboratively thus providing a substantial contribution to maximising capacity and efficiency.

Although Airport CDM is applicable to all phases of flight, the Airport CDM concept has seen its first prototypes and trials at airports and this document is therefore dedicated to Airport CDM. An Airport CDM Task Force was created under the EATM Airport Throughput Business Division (APT) of EUROCONTROL, and documents created by this Task Force have contributed significantly to the development of this document.

Airport Collaborative Decision Making is about improving the way operational Partners at airports and the European ATM network work together at an operational level.

Airport CDM allows an Airport CDM Partner to make the right decisions in collaboration with other Airport CDM Partners, knowing their preferences and constraints and the actual and predicted situation. The decision making by the Airport CDM Partners is totally dependent upon the sharing of accurate and timely information and upon adapted Airport CDM procedures, mechanisms and tools.

While the implementation of the Airport CDM concept requires first and foremost a change in culture regarding the way that data is used and decisions are made, it nevertheless requires that the Airport CDM Partners¹ possess certain capabilities or systems that enable them to share data and make and implement decisions collaboratively.

The EUROCONTROL: Airport CDM Implementation Manual [doc ref. [3]] points out that..."To enable the operational use of Airport CDM, Partners' existing systems will have to be adapted at least to a level where they can seamlessly communicate with each other".

1.2 AIRPORT CDM DOCUMENTS

Much of the key development work in the Airport CDM field has been conducted by EUROCONTROL and in particular the EUROCONTROL Airport CDM Task Force. This document therefore builds upon the key outputs of the Task Force, namely the EUROCONTROL: Airport CDM Operational Concept Document [doc ref. [1]], the EUROCONTROL: Airport CDM Functional Requirements Document [doc ref. [2]] and the EUROCONTROL: Airport CDM Implementation Manual [doc ref. [3]], to derive this set of EUROCAE standards (comprising this document, ED-145 and ED-146).

The principle input to this work is the EUROCONTROL: Airport CDM Functional Requirements Document [doc ref. [2]], which has continued to develop in parallel with this document, the former identifying functionalities and the latter identifying technical means of achieving these functionalities.

¹ For terms definition please refer to section 1.5 Glossary of Defined Terms. Airport CDM Partner is defined in Appendix A.

The first document of the EUROCAE Airport CDM set is the Minimum Specifications for Airport CDM systems (ED-141).

The second document of the EUROCAE Airport CDM set is the Airport CDM Interface Specification (ED-145). It describes the minimum requirements on the data exchanged with an Airport CDM system.

The final document of the EUROCAE Airport CDM set is the Test and Validation Document (ED-146) that provides a basis from which an Airport CDM implementer can develop testing specifications to ensure his/her installation is compliant with ED-141 and ED-145.

The relationship between the relevant documents described above is captured in the figure below.

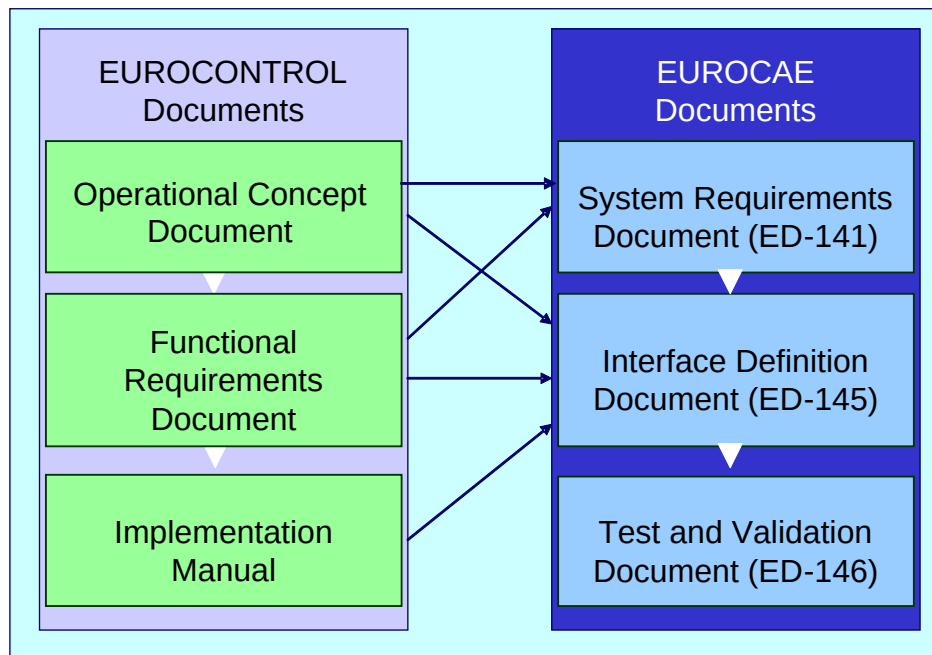


FIGURE 1: AIRPORT-CDM DOCUMENTS

1.3 PURPOSE, SCOPE, APPLICABILITY

This document sets minimum requirements on the data exchanged between an Airport CDM system, which is regarded hereon as a single system, and the logical elements that provide information to the system. These logical elements are denoted by the figure below.

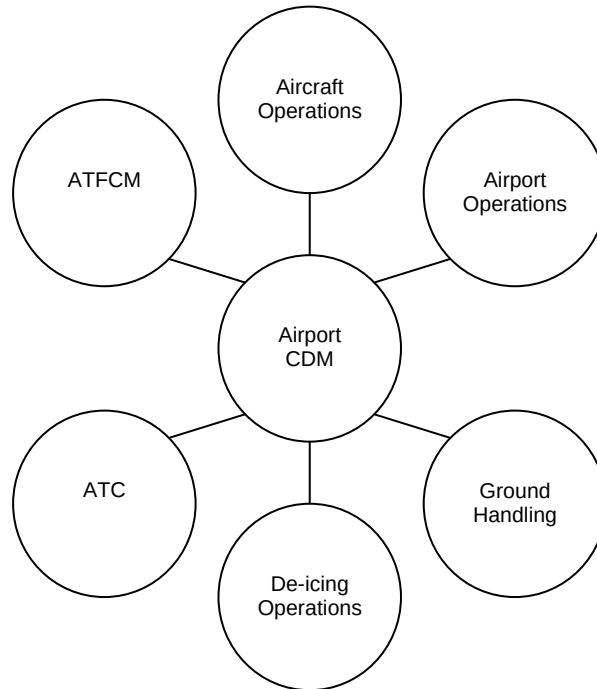


FIGURE 2: LOGICAL ELEMENTS

The intended audience includes developers of generic Airport-CDM systems (industry) and developers of specific implementations for Airport-CDM at airports: designers, installers, manufacturers, service providers, and users. This document assumes knowledge of Airport CDM.

This document describes the minimum requirements on the exchanged data to provide the basis for interoperability and compatibility between different implementations of Airport CDM systems.

Wherever possible this document supports freedom of design and therefore only sets requirements where considered necessary for reasons of interoperability. For example interfaces between elements within the Airport-CDM system itself and who has the responsibility for sending the data are considered beyond the scope of this document as they may differ from one implementation to another whilst still enabling the overarching requirement that logical elements be able to connect to the Airport-CDM system in a consistent manner.

It is expected that this document will be used as a basis for developing a more detailed interface design specification (such as an interface control document) that can be applied at a local level for a specific implementation.

Chapter 1, this chapter, presents an overview of Airport CDM, the document set relating to the subject and the purpose and scope of this document. The remainder of this chapter is dedicated to the terminology, terms, conventions, and references used.

Chapter 2, data exchange with logical elements, introduces the logical elements to the Airport-CDM system and introduces the milestones approach. The chapter concludes with the identification of interfaces per partner and milestone.

Chapter 3, data model, describes the interfaces by name and their format. For this, a generic description method is used, that is compliant with the existing data exchange presentation ADEXP [6] but can also easily be transformed to XML.

Annex A contains a matrix with all Airport-CDM Data Items referenced to its type, the recommended sender, and the CDM milestone where the data item could occur.

Requirements in this document are denoted by a unique number and preceded by “**IR.**” to represent the fact that they are Interface Requirements. The following section denotes the strength of each requirement used.

1.4 TERMINOLOGY

When used in this document, the following words have the meaning specified hereunder:

Shall – Denotes a mandatory requirement that must be met in order to comply with this standard.

Should – means that this requirement constitutes good practice and is therefore recommended but is not necessary for compliance with this standard.

Note – Denotes explanatory text that supports the requirement to which it belongs but is not part of the requirement.

Abbreviations – Abbreviations and acronyms used in this document have the meaning specified in the glossary of defined terms in section 1.5.

Annex – Annexes contain text supporting this document but are not considered to be part of the requirements necessary to claim compliance with it.

Figures and Diagrams – Figures and diagrams in this document are used to illustrate a concept and/or relationships and data flows. In NO case do they imply a particular architecture or implementation solution.

1.5 GLOSSARY OF DEFINED TERMS

1.5.1 Airport CDM Definitions

Please refer to Annex B.

1.5.2 General Definitions

For general definitions, please refer to EATM glossary of terms (See <http://www.eurocontrol.int/eatm/gallery/content/public/library/terms.pdf>).

1.6 ABBREVIATIONS

1.6.1 Airport CDM Abbreviations

Please refer to Annex C.

1.6.2 General Abbreviations

For general abbreviations, please refer to EATM glossary of acronyms and abbreviations (See <http://www.eurocontrol.int/eatm/gallery/content/public/library/acronyms.pdf>).

1.7**APPLICABLE DOCUMENTS**

- [1]** EUROCONTROL: Airport CDM Operational Concept Document, Final Edition, October 2005.
- [2]** EUROCONTROL: Airport CDM Functional Requirements Document, Final Edition, October 2005 – *Note: A new version will be available by the time this document is released.*
- [3]** EUROCONTROL: Airport CDM Implementation Manual – *Note: A new version will be available by the time this document is released.*

1.8**REFERENCE DOCUMENTS**

- [4]** EUROCONTROL: CFMU Flight Progress Messages V1.5, 31 Jan 2008, Hans Koolen, Ref.: URB/USD/MSG_INTF. (Note that this document is being updated on a regular basis)
- [5]** DPI summary document, V1.2, CFMU, June 2006.
- [6]** EUROCONTROL, ATS Data Exchange Presentation (ADEXP), Edition 3.1
- [7]** Safety Assessment of Airport Collaborative Decision Making (Airport-CDM), V1.2, December 2006
- [8]** EUROCONTROL Experimental Centre, Munich AIRPORT CDM, EEC Note No. 03/06, February 2006
- [9]** ICAO DOC7910 - ICAO Location Indicator
- [10]** ICAO DOC8585 - ICAO Designator for Aircraft Operation Agencies and Aeronautical Authorities and Services
- [11]** ICAO DOC8643 - ICAO Aircraft Type Designator

CHAPTER 2

DATA EXCHANGE WITH LOGICAL ELEMENTS

2.1 INTRODUCTION

This chapter describes the external interfaces of the Airport-CDM system i.e. between the Airport-CDM system and the six logical elements. Internal interfaces are not considered further as it should be a design decision for each implementation. The reason for standardising the external interfaces is to enable the logical elements to connect to any airport CDM system without having to tailor their communications links to each implementation.

As this document is specifying only the minimum requirements for Airport-CDM interfaces, no specific implementation is assumed and it is therefore not appropriate to standardise from which logical element data should be provided because each airport is different and it will be a local decision which logical element is best placed to provide information.

The format and requirements on how the information is exchanged can be found in chapter 3, whilst this chapter primarily deals with who the Airport-CDM system must connect to and what, if any, requirements apply to that interface connection. This chapter therefore sets few requirements.

Annex A does however provide an example of data exchange including the recommended sender and receivers of data.

2.1.1 Milestones

Airport CDM commonly considers a flight in terms of a series of sequential events that mark key 'Milestones' in the aircraft turnaround process. Specifically the Milestones:

- *Facilitate an improvement in the awareness of all airport partners.*
- *Trigger updates of downstream information.*
- *Help identify potential delays of the aircraft, triggering re-planning.*
- *Enable collaborative decisions to be made.*

This Airport-CDM document, as with the rest of the Airport-CDM document set (see section 1.2), reflects 16 milestones in the Airport-CDM process, which are presented in the table below.

Other Milestones may be added according to particular needs and local circumstances, however the remainder of this document assumes a 16 stage process.

NUMBER	MILESTONE
MST1	ATC Flight Plan Activation
MST2	EOBT-2 hr
MST3	Take off from outstation
MST4	Local Radar Update
MST5	Final approach
MST6	Landing
MST7	In-block
MST8	Ground handling starts
MST9	TOBT update prior to TSAT issue
MST10	TSAT Issue
MST11	Boarding starts
MST12	Aircraft ready
MST13	Start up request
MST14	Start up approved
MST15	Off-block
MST16	Take Off

TABLE 1: MILESTONES

2.2

GENERAL INTERFACE REQUIREMENTS

- [ED145-01]** The appropriate logical element from/to which data is received/sent **shall** be determined locally.
- [ED145-02]** The Airport-CDM system **shall** be able to communicate with the Aircraft Operations logical element.
- [ED145-03]** The Airport-CDM system **shall** be able to communicate with the Airport Operation logical element.
- [ED145-04]** The Airport-CDM system **shall** be able to communicate with the Ground Handling logical element.
- [ED145-05]** The Airport-CDM system **shall** be able to communicate with the De-icing Operations logical element.
- [ED145-06]** The Airport-CDM system **shall** be able to communicate with the ATC logical element.
- [ED145-07]** The Airport-CDM system **shall** be able to communicate with the ATFCM logical element.