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Part 3: Conformance and reference software

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Partie 3: Conformité et logiciel de référence

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/IEC JTC 1, *Information technology*, SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

This third edition cancels and replaces the second edition (ISO/IEC 23006-3:2013), which has been technically revised.

A list of all parts in the ISO/IEC 23006 series can be found on the ISO website.

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Introduction

The ISO/IEC 23006 series is a suite of standards that has been developed for the purpose of enabling the easy design and implementation of media-handling value chains whose devices interoperate because they are all based on the same set of technologies, especially MPEG technologies, accessible from the middleware APIs, elementary services and aggregated services.

The ISO/IEC 23006 series is referred to as MPEG Extensible Middleware (MXM) in its first edition, and it specifies an architecture (ISO/IEC 23006-1), an API (ISO/IEC 23006-2), a conformance and reference software (ISO/IEC 23006-3) and a set of protocols which MXM Devices had to adhere (ISO/IEC 23006-4). It specifies also how to combine elementary services into aggregated services (ISO/IEC 23006-5).

The ISO/IEC 23006 series is subdivided in five parts:

Part 1 — Architecture: specifies the architecture that can be used as a guide to an MPEG-M implementation;

Part 2 — MPEG Extensible Middleware (MXM) Application Programming Interface (APIs): specifies the middleware APIs;

Part 3 — Conformance and Reference Software (the present document): specifies conformance criteria and a reference software implementation with a normative value;

Part 4 — Elementary Services: specifies elementary service protocols between MPEG-M applications;

Part 5 — Service Aggregation: specifies mechanisms enabling the combination of Elementary Services and other services to build Aggregated Services.

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Information technology — Multimedia service platform technologies —

Part 3: Conformance and reference software

1 Scope

This document describes the reference software implementing the normative clauses of ISO/IEC 23006-1, ISO/IEC 23006-2 and ISO/IEC 23006-4 and specifies conformance criteria. The information provided are applicable for determining the reference software modules available for ISO/IEC 23006-1, understanding the functionality of the available reference software modules and utilizing the available reference software modules.

The conformance profiles are applicable to MPEG-M Services as defined in ISO/IEC 23006-4 and in ISO/IEC 23006-5.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 23006-2:2016, *Information technology — MPEG-M (Multimedia Service Platform Technologies) — Part 2: MPEG extensible middleware (MXM) API*

ISO/IEC 23006-4:2013, *Information technology — MPEG-M (Multimedia Service Platform Technologies) — Part 4: Elementary services*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1.1
Aggregated Service
service resulting from the combination of *Elementary Services* (3.1.2)

3.1.2
Elementary Service
basic unit of *service* (3.1.13)

3.1.3
content
Digital Item and its component elements, namely resources (e.g. media, scripts, executable), identifiers, descriptions (e.g. metadata), event reports

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3.1.4
contract
set of metadata, *license* (3.1.8), promises and signers agreed by users of a multimedia value chain, where a promise is a signed collection of statements about, e.g. obligations, prohibitions and assertions, and a signer is a *user* (3.1.15) whose signature makes the contract valid

3.1.5
device
hardware/software or simply software apparatus that enables a *user* (3.1.15) to play a role in multimedia *value chains* (3.1.16)

3.1.6
event
performance of a specified set of functions or operations

3.1.7
entity
one of the following elements in the multimedia value chain: *content* (3.1.3), *contract* (3.1.4), *device* (3.1.5), *event* (3.1.6), *license* (3.1.8), *service* (3.1.13), and *user* (3.1.15)

3.1.8
license
collection of authorizations, conditions and payment terms granted by a *user* (3.1.15) to other users

3.1.9
protocol
set of rules and data format used by two *devices* (3.1.5) to communicate

3.1.10
resource
individually identifiable asset or a sequence of assets such as a video or audio clip, a 3D synthetic scene, an image, a textual asset, a 2D LASeR scene, a web page, a single program or a full 24 h programming of a TV broadcast, a script or executable, etc.

3.1.11
right
ability of a *user* (3.1.15) to perform an operation in the multimedia *value chain* (3.1.16)

3.1.12
role
ability of a *user* (3.1.15) to perform a set of operations in the multimedia *value chain* (3.1.16)

3.1.13
service
operation performed on an *entity* (3.1.7) by a *user* (3.1.15) on behalf of other users

3.1.14
service provider
user (3.1.15) offering *services* (3.1.13) to other users

3.1.15
user
participant in multimedia *value chains* (3.1.16)

3.1.16
value chain
collection of users , including creators, end users and service providers, that conform to this document

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3.1.17
MPEG-M Application
application that runs on an *MPEG-M Device* (3.1.18) and makes calls to the MPEG-M Application API and *MPEG-M Engine* (3.1.19) APIs

3.1.18
MPEG-M Device
device (3.1.5) equipped with a selected set of *MPEG-M Engines* (3.1.19)

3.1.19
MPEG-M Engine
collection of specific technologies that are bundled together to provide a specific functionality that is needed by *MPEG-M Applications* (3.1.17)

3.1.20
MPEG-M Engine API
API of a single *MPEG-M Engine* (3.1.19)

3.1.21
MPEG-M Orchestrator API
API of the *MPEG-M Orchestrator Engine* (3.1.22).

3.1.22
MPEG-M Orchestrator Engine
special *MPEG-M Engine* (3.1.19) capable of creating chains of *MPEG-M Engines* (3.1.19)

EXAMPLE To set-up a sequence of connected *MPEG-M engines* (3.1.19) for the purpose of executing a high-level application call, such as Play.

3.1.23
MPEG-M Technology
technology that is required to implement (a profile of) MPEG-M

3.2 Abbreviated terms

AIT	Advanced IPTV Terminal
AS	Aggregated Service
BBL	Bitstream Binding Language
BPMN	Business Process Model and Notation
CEL	Contract Expression Language
DI	Digital Item
DIA	Digital Item Adaptation
DID	Digital Item Declaration
DIDL	Digital Item Declaration Language
DII	Digital Item Identification
DIS	Digital Item Streaming
ER	Event Report
ERR	Event Report Request

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ES	Elementary Service
IPMP	Intellectual Property Management and Protection
IPTV	Internet Protocol Television
MDS	Multimedia Description Schemes
MPEG	Moving Picture Experts Group
MPEG-21	Multimedia Framework [see ISO/IEC 21000 (all parts)]
MPEG-A	Multimedia Application Format [see ISO/IEC 23000 (all parts)]
MPEG-M	Multimedia Service Platform Technologies [see ISO/IEC 23006 (all parts)]
MPEG-V	Multimedia Context and Control [see ISO/IEC 23005 (all parts)]
MPQF	MPEG Query Format
REL	Rights Expression Language
RTP	Real Time Protocol
RTSP	Real Time Streaming Protocol
SE	Sensory Effect
SEM	Sensory Effect Metadata
URI	Uniform Resource Identifier
URL	Uniform Resource Locator
WSDL	Web Services Description Language
XML	Extensible Markup Language
XSD	XML Schema Definition
XSLT	Extensible Stylesheet Language Transformations

4 Namespaces and conventions

For clarity, throughout this document, consistent namespace prefixes are used.

"`xml:`" and "`xmlns:`" are normative prefixes defined in W3C XMLNAMES. The prefix "`xml:`" is by definition bound to "http://www.w3.org/XML/1998/namespace". The prefix "`xmlns:`" is used only for namespace bindings and is not itself bound to any namespace name.

"`xsi:`" prefix is not normative. It is a naming convention in this document to refer to an element of the http://www.w3.org/2001/XMLSchema-instance namespace. All other prefixes used in either the text or examples of this specification are not normative, e.g. "`mpegm:`", "`dia:`".

In particular, most of the informative examples in this document are provided as XML fragments without the normally required XML document declaration and, thus, miss a correct namespace binding context declaration.

Unless specified otherwise, all unqualified descriptions fragments assume the default namespace "`urn:mpeg:mpegM:schema:02-service-NS:2012`".

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