
**Information technology — Multimedia
Middleware —**

**Part 2:
Multimedia application programming
interface (API)**

iTeh STANDARD PREVIEW
Technologies de l'information — Intergiciel multimédia —
(standards.iteh.ai) Partie 2: Interface de programmation d'application multimédia (API)

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 23004-2 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

ISO/IEC 23004 consists of the following parts, under the general title *Information technology — Multimedia Middleware*:

- *Part 1: Architecture* <https://standards.iteh.ai/catalog/standards/sist/85f5738d-237e-4de4-bbe5-4e22ebb93f/iso-iec-23004-2-2007>
- *Part 2: Multimedia application programming interface (API)*
- *Part 3: Component model*
- *Part 4: Resource and quality management*
- *Part 5: Component download*
- *Part 6: Fault management*
- *Part 7: System integrity management*

Introduction

MPEG, ISO/IEC JTC 1/SC 29/WG 11, has produced many important standards (MPEG-1, MPEG-2, MPEG-4, MPEG-7, and MPEG-21). MPEG feels that it is important to standardize an application programming interface (API) for Multimedia Middleware (M3W) that complies with the requirements found in the annex to the Multimedia Middleware (M3W) Requirements Document Version 2.0 (ISO/IEC JTC 1/SC 29/WG 11 N 6981).

The objectives of Multimedia Middleware (M3W) are to allow applications to execute multimedia functions with a minimum knowledge of the middleware and to allow applications to trigger updates to the middleware to extend the middleware API. The first goal can be achieved by standardizing the API that the middleware offers. The second goal is much more challenging, as it requires mechanisms to manage the middleware API and to ensure that this functions according to application needs. The second goal can support the first, by reducing the needed standard API to those that provide middleware management. Consequently, applications can use these standard management APIs to generate the multimedia system they require.

ISO/IEC 23004 provides the following:

1. a *vision* for a multimedia middleware API framework to enable the transparent and augmented use of multimedia resources across a wide range of networks and devices;
2. a method to facilitate the integration of APIs to software components and services in order to harmonise *technologies* for the creation, management, manipulation, transport, distribution and consumption of content;
3. a *strategy* for achieving a multimedia API framework by the development of specifications and standards based on well-defined functional requirements through collaboration with other bodies.

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Information technology — Multimedia Middleware —

Part 2: Multimedia application programming interface (API)

1 Scope

This part of ISO/IEC 23004 defines the Multimedia application programming interface (API) of MPEG Multimedia Middleware. The context of this Multimedia API is described in ISO/IEC 23004-1.

2 Organization of this document

This part of ISO/IEC 23004 has the following high level structure:

- Clause 1 defines the scope of this part of ISO/IEC 23004.
- Clause 3 gives an overview of documents that are indispensable for the application of this part of ISO/IEC 23004.
- Clause 4 gives the terms and definitions used in this part of ISO/IEC 23004.
- Clause 5 gives an overview of the interface suites that are part of the Multimedia API of Multimedia Middleware (M3W).
- Clause 6 contains the specification of the general interface suites used for navigation between interfaces, configuration of IO and verification that objects are still alive.
- Clause 7 contains the specification of the interface suites that are part of the Multimedia API and which deal with audio.
- Clause 8 contains the specification of the interface suites that are part of the Multimedia API and which deal with video.
- Clause 9 contains the specification of the interface suites that are part of the Multimedia API and which deal with security and governance.

3 Normative references

The following referenced documents are indispensable for the application 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 23004-1, *Information technology — Multimedia Middleware — Part 1: Architecture*

ISO/IEC 23004-3, *Information technology — Multimedia Middleware — Part 3: Component model*

4 Terms, definitions and abbreviated terms

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

- 4.1**
2CS
Dual or Two Carrier System
German stereo
FM modulated signal which has two carriers, the second of which contains either stereo information or a second (dual) sound channel
- 4.2**
AA
Anti-Aging logical component
- 4.3**
AAC
Advanced Audio Coding (AAC is standardized as part of the MPEG-2 and MPEG-4 specifications.)
- 4.4**
AAVL
Audio Automatic Volume Leveler
- 4.5**
AC-3
Dolby's third generation Audio Coding algorithm a.k.a. Dolby Digital
- 4.6**
access unit
coded representation of a presentation unit [ISO/IEC 23004-2:2007](https://standards.iteh.ai/catalog/standards/sist/85f5738d-237e-4de4-bbe5-4e22ebbab93f/iso-iec-23004-2-2007)
<https://standards.iteh.ai/catalog/standards/sist/85f5738d-237e-4de4-bbe5-4e22ebbab93f/iso-iec-23004-2-2007>
- 4.6.1**
access unit
<audio> coded representation of an audio frame
- 4.6.2**
access unit
<video> all the coded data for a picture, and any stuffing that follows it, up to but not including the start of the next access unit
- 4.7**
ADRC
Audio Dynamic Range Control logical component
- 4.8**
AFC
Automatic Frequency Control
- 4.9**
AGC
Automatic Gain Control
- 4.10**
AL
Ambient Light
- 4.11**
AM
Amplitude Modulation

4.12**ANG**

Audio Noise Generator logical component

4.13**API**

Application Programming Interface

4.14**application**

piece of software that makes use of the API

4.15**ASK**

Amplitude Shift Keying

4.16**ATRAC**

Adaptive TRansform Acoustic Coding

4.17**ATSC**

Advanced Television Systems Committee

4.18**AtscDec**

ATSC Decoder logical component

4.19**AVC**

Audio Volume Control logical component

4.20**AVD**

Analog Video Decoder

4.21**AVDC**

Analog Video Decoder Client

4.22**AVI**

Auxiliary Video Information

4.23**AVL**

Automatic Volume Leveling

4.24**BBD**

Black Bar Detection logical component

4.25**BC**

Bass Compensation type of bass enhancement, described in 7.2.2

4.26**BCS**

Brightness, Contrast and Saturation

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4.27
BE
Bass Enhancement

4.28
BER
Bit Error Rate
ratio of the number of erroneous bits to the total number of bits transmitted

4.29
BTSC
Broadcast Television Systems Committee
US standard for sound, which can be mono or stereo, with an optional SAP

4.30
BVF
Basic Video Featuring

4.31
CA
Conditional Access

4.32
CBC
Cipher Block Chain

4.33
CC
Closed Caption

4.34
CDS
Color Dependent Sharpness

4.35
CHD
Channel Decoding logical component

4.36
CINCH
RCA
connector used for composite video or audio connections

NOTE For stereo audio two connections are needed.

4.37
CLUT
Color LookUp Table

4.38
COM
Microsoft's Component Object Model

4.39
control interface
interface provided by the API that allows platform functionality to be controlled by a client

NOTE In this part of ISO/IEC 23004, the term control interface is in most cases used to mean the interface that the Connection Manager provides to select use cases.

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4.40**CRC**

Cyclic Redundancy Check

4.41**CRT**

Cathode Ray Tube

4.42**CTI**

Color Transient Improvement

4.43**CVBS****4.43.1****CVBS**

Composite Video Baseband Signal

4.43.2**CVBS**

Composite Video, Blanking, Synchronization

video format where luminance, chrominance, blanking and synchronization are integrated in one signal

4.44**CVI**Component Video Input
video format where color information is transmitted in three different signals**4.45****CW**

Control Word

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Digital Audio Reference Signal

4.47**dB**

deciBel

unit used to express relative difference in power or intensity, usually between two acoustic or electric signals, equal to ten times the common logarithm of the ratio of the two levels

4.48**DBE**

Dynamic Bass Enhancement type of bass enhancement, described in 7.2.2

4.49**Dei**

De-interlacing

4.50**DES**

Data Encryption Standard

4.51**DiSEqC**

Digital Satellite Equipment Control

4.52
DLNA
Digital Living Network Alliance

4.53
DMA
Direct Memory Access

4.54
DNR
Dynamic Noise Reduction

4.55
Dolby
Dolby Laboratories Inc., supplier of audio algorithms including the AC-3 audio coding standard

4.56
DRC
Dynamic Range Control
functionality associated with the ADRC

4.57
DSS
Digital Satellite System

4.58
DTS
Digital Theater System

4.59
DTV
Digital TeleVision, including HDTV (high-definition digital television) and SDTV (standard digital television)

4.60
DTVCC
Digital TeleVision Closed Captioning

4.61
DV (SD-2ch/4ch)
Digital Video (IEC 61834) interface standard

4.62
DVB
Digital Video Broadcasting

4.63
DVD
Digital Versatile Disc

4.64
DVI
Digital Visual Interface

4.65
ECB
Electronic CodeBook

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4.66**ECM**

Entitlement Control Message

4.67**EIAJ**Electronic Industries Association of Japan
Japanese TV stereo sound standard**4.68****EIT**

Event Information Table

4.69**EMM**

Entitlement Management Message

4.70**error**

condition which, if not handled, can cause a system to crash or malfunction

4.71**error handler**

piece of software meant to deal with the consequences of an error

4.72**ES**

Elementary Stream

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4.73**EXIF**

EXchangeable Image File format

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4.74**FEC**

Forward Error Correction

4.75 Field/frame rate**4.75.1****field rate**

⟨interlaced video⟩ number of fields per second

4.75.2**frame rate**

⟨progressive video⟩ number of frames per second

4.76**filter depth**

size of the data on which filter criteria can be applied

4.77**FM**

Frequency Modulation

4.78**FM Korea**

form of 2CS transmission used in South Korea

4.79

GIF

Graphics Interchange Format from CompuServe

4.80

GOP

Group Of Pictures

4.81

GUID

globally unique identifier

value that uniquely identifies some entity in the universe

4.82

HDMI

High-Definition Multimedia Interface

uncompressed digital audio/video interface

4.83

HM

Histogram Modification

4.84

IAA

I Am Alive logical component

4.85

ICAM

Integrated Conditional Access Module

4.86

ID

Identifier

4.87

Id

Identification

4.88

IF

Intermediate Frequency

4.89

IID

Interface Identifier

4.90

JFIF

JPEG File Interchange Format

4.91

JPEG

Joint Photographic Experts Group

4.92

kbps

kilobits per second

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4.93**LC**

Logical Component
multimedia component as it appears to the user

4.94**LCD**

Liquid Crystal Display

4.95**LFE**

Low Frequency Effects

4.96**LNB**

Low Noise Block

4.97**loudness**

perceived strength of sound

NOTE Loudness generally increases with the volume level, but not uniformly across all frequency ranges for the human ear.

4.98**Loudness-Processing**

advanced audio functionality that ensures that the relative perceptual loudness levels for different frequencies are maintained across volume settings for the same musical piece

4.99**Lt/Rt audio stream**

two-channel (Dolby, DTS, etc.) surround encoded audio stream

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4.100**LTI**

Luminance Transient Improvement

4.101**matrix display**

flat display type, like plasma or LCD

4.102**McTc**

Motion compensated Temporal conversion

4.103**MPEG**

Moving Picture Experts Group

4.104**MPEG section**

segment of tables containing meta-data

NOTE See [2] for more information.

4.105**MS**

MPEG Source