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Information technology — JPEG 2000 image coding system —

Part 12: ISO base media file format

Technologies de l'information — Système de codage d'images JPEG 2000 —

Partie 12: Format ISO de base pour les fichiers médias

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Contents

Page

1 Scope 1
2 Normative references 1
3 Terms, definitions, and abbreviated terms 3
3.1 Terms and definitions 3
3.2 Abbreviated terms 5
4 Object-structured File Organization 6
4.1 File Structure 6
4.2 Object Structure 6
4.3 File Type Box 7
5 Design Considerations 8
5.1 Usage 8
5.1.1 Introduction 8
5.1.2 Interchange 8
5.1.3 Content Creation 9
5.1.4 Preparation for streaming 10
5.1.5 Local presentation 10
5.1.6 Streamed presentation 10
5.2 Design principles 11
6 ISO Base Media File organization 12
6.1 Presentation structure 12
6.1.1 File Structure 12
6.1.2 Object Structure 12
6.1.3 Meta Data and Media Data 12
6.1.4 Track Identifiers 12
6.2 Metadata Structure (Objects) 13
6.2.1 Box 13
6.2.2 Data Types and fields 13
6.2.3 Box Order 14
6.2.4 URIs as type indicators 17
6.3 Brand Identification 17
7 Streaming Support 17
7.1 Handling of Streaming Protocols 17
7.2 Protocol 'hint' tracks 18
7.3 Hint Track Format 19
8 Box Structures 20
8.1 File Structure and general boxes 20
8.1.1 Media Data Box 20
8.1.2 Free Space Box 21

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8.1.3 Progressive Download Information Box 21
8.2 Movie Structure 22
8.2.1 Movie Box 22
8.2.2 Movie Header Box 22
8.3 Track Structure 24
8.3.1 Track Box 24
8.3.2 Track Header Box 24
8.3.3 Track Reference Box 26
8.3.4 Track Group Box 27
8.4 Track Media Structure 28
8.4.1 Media Box 28
8.4.2 Media Header Box 29
8.4.3 Handler Reference Box 29
8.4.4 Media Information Box 30
8.4.5 Media Information Header Boxes 30
8.4.6 Extended language tag 31
8.5 Sample Tables 32
8.5.1 Sample Table Box 32
8.5.2 Sample Description Box 32
8.5.3 Degradation Priority Box 34
8.5.4 Sample Scale Box 35
8.6 Track Time Structures 35
8.6.1 Time to Sample Boxes 35
8.6.2 Sync Sample Box 40
8.6.3 Shadow Sync Sample Box 40
8.6.4 Independent and Disposable Samples Box 41
8.6.5 Edit Box 43
8.6.6 Edit List Box 43
8.7 Track Data Layout Structures 45
8.7.1 Data Information Box 45
8.7.2 Data Reference Box 45
8.7.3 Sample Size Boxes 47
8.7.4 Sample To Chunk Box 48
8.7.5 Chunk Offset Box 49
8.7.6 Padding Bits Box 49
8.7.7 Sub-Sample Information Box 50
8.7.8 Sample Auxiliary Information Sizes Box 51
8.7.9 Sample Auxiliary Information Offsets Box 53
8.8 Movie Fragments 54
8.8.1 Movie Extends Box 54
8.8.2 Movie Extends Header Box 54
8.8.3 Track Extends Box 55
8.8.4 Movie Fragment Box 56
8.8.5 Movie Fragment Header Box 56
8.8.6 Track Fragment Box 57
8.8.7 Track Fragment Header Box 57

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8.8.8 Track Fragment Run Box 58
8.8.9 Movie Fragment Random Access Box 60
8.8.10 Track Fragment Random Access Box 60
8.8.11 Movie Fragment Random Access Offset Box 61
8.8.12 Track fragment decode time 62
8.8.13 Level Assignment Box 63
8.8.14 Sample Auxiliary Information in Movie Fragments 65
8.8.15 Track Extension Properties Box 65
8.8.16 Alternative Startup Sequence Properties Box 66
8.8.17 Metadata and user data in movie fragments 66
8.9 Sample Group Structures 67
8.9.1 Introduction 67
8.9.2 Sample to Group Box 68
8.9.3 Sample Group Description Box 69
8.9.4 Representation of group structures in Movie Fragments 70
8.10 User Data 71
8.10.1 User Data Box 71
8.10.2 Copyright Box 72
8.10.3 Track Selection Box 72
8.10.4 Track kind 74
8.11 Metadata Support 75
8.11.1 The Meta box 75
8.11.2 XML Boxes 76
8.11.3 The Item Location Box 77
8.11.4 Primary Item Box 80
8.11.5 Item Protection Box 80
8.11.6 Item Information Box 81
8.11.7 Additional Metadata Container Box 83
8.11.8 Metabox Relation Box 84
8.11.9 URL Forms for meta boxes 85
8.11.10 Static Metadata 85
8.11.11 Item Data Box 86
8.11.12 Item Reference Box 87
8.11.13 Auxiliary video metadata 88
8.12 Support for Protected Streams 88
8.12.1 Protection Scheme Information Box 89
8.12.2 Original Format Box 90
8.12.3 IPMPInfoBox 90
8.12.4 IPMP Control Box 90
8.12.5 Scheme Type Box 90
8.12.6 Scheme Information Box 91
8.13 File Delivery Format Support 91
8.13.1 Introduction 91
8.13.2 FD Item Information Box 92
8.13.3 File Partition Box 92
8.13.4 FEC Reservoir Box 94

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8.13.5 FD Session Group Box 95
8.13.6 Group ID to Name Box 96
8.13.7 File Reservoir Box 96
8.14 Sub tracks 97
8.14.1 Introduction 97
8.14.2 Backward compatibility 97
8.14.3 Sub Track box 98
8.14.4 Sub Track Information box 98
8.14.5 Sub Track Definition box 100
8.14.6 Sub Track Sample Group box 100
8.15 Post-decoder requirements on media 100
8.15.1 General 100
8.15.2 Transformation 101
8.15.3 Restricted Scheme Information box 102
8.15.4 Scheme for stereoscopic video arrangements 102
8.16 Segments 104
8.16.1 Introduction 104
8.16.2 Segment Type Box 104
8.16.3 Segment Index Box 105
8.16.4 Subsegment Index Box 109
8.16.5 Producer Reference Time Box 111
8.17 Support for Incomplete Tracks 112
8.17.1 General 112
8.17.2 Transformation 113
8.17.3 Complete Track Information Box 114

9 Hint Track Formats 114
9.1 RTP and SRTP Hint Track Format 114
9.1.1 Introduction 114
9.1.2 Sample Description Format 115
9.1.3 Sample Format 117
9.1.4 SDP Information 119
9.1.5 Statistical Information 120
9.2 ALC/LCT and FLUTE Hint Track Format 121
9.2.1 Introduction 121
9.2.2 Design principles 122
9.2.3 Sample Description Format 123
9.2.4 Sample Format 124
9.3 MPEG-2 Transport Hint Track Format 127
9.3.1 Introduction 127
9.3.2 Design Principles 128
9.3.3 Sample Description Format 130
9.3.4 Sample Format 132
9.3.5 Protected MPEG 2 Transport Stream Hint Track 134
9.4 RTP, RTCP, SRTP and SRTCP Reception Hint Tracks 134
9.4.1 RTP Reception Hint Track 134

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9.4.2 RTCP Reception Hint Track 138
9.4.3 SRTP Reception Hint Track 140
9.4.4 SRTCP Reception Hint Tracks 142
9.4.5 Protected RTP Reception Hint Track 143
9.4.6 Recording Procedure 143
9.4.7 Parsing Procedure 143

10 Sample Groups 143
10.1 Random Access Recovery Points 143
10.2 Rate Share Groups 144
10.2.1 Introduction 144
10.2.2 Rate Share Sample Group Entry 146
10.2.3 Relationship between tracks 147
10.2.4 Bitrate allocation 147
10.3 Alternative Startup Sequences 148
10.4 Random Access Point (RAP) Sample Grouping 151
10.5 Temporal level sample grouping 152
10.6 Stream access point sample group 152

11 Extensibility 153
11.1 Objects 153
11.2 Storage formats 154
11.3 Derived File formats 154

12 Media-specific definitions 155
12.1 Video media 155
12.1.1 Media handler 155
12.1.2 Video media header 155
12.1.3 Sample entry 156
12.1.4 Pixel Aspect Ratio and Clean Aperture 156
12.1.5 Colour information 158
12.2 Audio media 159
12.2.1 Media handler 159
12.2.2 Sound media header 159
12.2.3 Sample entry 160
12.2.4 Channel layout 162
12.2.5 Downmix Instructions 163
12.2.6 DRC Information 165
12.2.7 Audio stream loudness 165
12.3 Metadata media 167
12.3.1 Media handler 167
12.3.2 Media header 167
12.3.3 Sample entry 167
12.4 Hint media 169
12.4.1 Media handler 169
12.4.2 Hint media header 169
12.4.3 Sample entry 170
12.5 Text media 170

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12.5.1 Media handler **170**
12.5.2 Media header **170**
12.5.3 Sample entry **170**
12.6 Subtitle media **171**
12.6.1 Media handler **171**
12.6.2 Subtitle media header **171**
12.6.3 Sample entry **171**
12.7 Font media **172**
12.7.1 Media handler **172**
12.7.2 Media header **172**
12.7.3 Sample entry **172**
12.8 Transformed media **172**

Annex A (informative) **Overview and Introduction** **173**
A.1 Section Overview **173**
A.2 Core Concepts **173**
A.3 Physical structure of the media **174**
A.4 Temporal structure of the media **174**
A.5 Interleave **175**
A.6 Composition **175**
A.7 Random access **175**
A.8 Fragmented movie files **176**

Annex B (void) **178**

Annex C (informative) **Guidelines on deriving from this specification** **179**
C.1 Introduction **179**
C.2 General Principles **179**
C.2.1 General **179**
C.2.2 Base layer operations **180**
C.3 Boxes **180**
C.4 Brand Identifiers **181**
C.4.1 Introduction **181**
C.4.2 Usage of the Brand **181**
C.4.3 Introduction of a new brand **182**
C.4.4 Player Guideline **182**
C.4.5 Authoring Guideline **182**
C.4.6 Example **183**
C.5 Storage of new media types **183**
C.6 Use of Template fields **183**
C.7 Tracks **184**
C.7.1 Data Location **184**
C.7.2 Time **184**
C.7.3 Media Types **185**
C.7.4 Coding Types **185**
C.7.5 Sub-sample information **185**
C.7.6 Sample Dependency **185**
C.7.7 Sample Groups **185**

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C.7.8 Track-level ... 186
C.7.9 Protection ... 186
C.8 Construction of fragmented movies ... 186
C.9 Meta-data ... 187
C.10 Registration ... 187
C.11 Guidelines on the use of sample groups, timed metadata tracks, and sample auxiliary information ... 187

Annex D (informative) Registration Authority ... 190
D.1 Code points to be registered ... 190
D.2 Procedure for the request of an MPEG-4 registered identifier value ... 191
D.3 Responsibilities of the Registration Authority ... 191
D.4 Contact information for the Registration Authority ... 191
D.5 Responsibilities of Parties Requesting a RID ... 192
D.6 Appeal Procedure for Denied Applications ... 192
D.7 Registration Application Form ... 192
D.7.1 Contact Information of organization requesting a RID ... 192
D.7.2 Request for a specific RID ... 193
D.7.3 Short description of RID that is in use and date system was implemented ... 193
D.7.4 Statement of an intention to apply the assigned RID ... 193
D.7.5 Date of intended implementation of the RID ... 193
D.7.6 Authorized representative ... 193
D.7.7 For official use of the Registration Authority ... 194

Annex E (normative) File format brands ... 195
E.1 Introduction ... 195
E.2 The 'isom' brand ... 196
E.3 The 'avc1' brand ... 197
E.4 The 'iso2' brand ... 197
E.5 The 'mp71' brand ... 198
E.6 The 'iso3' brand ... 198
E.7 The 'iso4' brand ... 199
E.8 The 'iso5' brand ... 199
E.9 The 'iso6' brand ... 200
E.10 The 'iso7' brand ... 200
E.11 The 'iso8' brand ... 201
E.12 The 'iso9' brand ... 201

Annex F (void) ... 202

Annex G (informative) URI-labelled metadata forms ... 203
G.1 UUID-labelled metadata ... 203
G.2 ISO OID-labelled metadata ... 203
G.3 SMPTE-labelled metadata ... 204

Annex H (informative) Processing of RTP streams and reception hint tracks ... 205
H.1 Introduction ... 205
H.1.1 Overview ... 205
H.1.2 Structure ... 205

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H.1.3 Terms and definitions 205
H.2 Synchronization of RTP streams 205
H.3 Recording of RTP streams 206
H.3.1 Introduction 206
H.3.2 Compensation for unequal starting for position of received RTP streams 209
H.3.3 Recording of SDP 210
H.3.4 Creation of a sample within an RTP reception hint track 210
H.3.5 Representation of RTP timestamps 211
H.3.6 Recording operations to facilitate inter-stream synchronization in playback 214
H.3.7 Representation of reception times 216
H.3.8 Creation of media samples 217
H.3.9 Creation of hint samples referring to media samples 217
H.4 Playing of recorded RTP streams 217
H.4.1 Introduction 217
H.4.2 Preparation for the playback 218
H.4.3 Decoding of a sample within an RTP reception hint track 218
H.4.4 Lip synchronization 219
H.4.5 Random access 220
H.5 Re-sending recorded RTP streams 221
H.5.1 Introduction 221
H.5.2 Re-sending RTP packets 222
H.5.3 RTCP Processing 223

Annex I (normative) Stream Access Points 224
I.1 Introduction 224
I.2 SAP properties 224
I.2.1 General 224
I.2.2 SAP properties for layers 225
I.3 SAP types 226

Annex J (normative) MIME Type Registration of Segments 227
J.1 Introduction 227
J.2 Registration 227

Annex K : Segment Index Examples (informative) 228
K.1 Introduction 228
K.2 Examples 228
K.2.1 Simple one-level indexing 228
K.2.2 Hierarchical 228
K.2.3 Daisy-chain 229
K.2.4 Combination hierarchical and daisy-chain 230

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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 document 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).

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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 WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

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

This fifth edition cancels and replaces the fourth edition (ISO/IEC 15444-12:2012), which has been technically revised. It also incorporates the Amendment ISO/IEC 15444-12:2012/Amd1:2013 and the Technical Corrigenda ISO/IEC 15444-12:2012/Cor 2:2014 and ISO/IEC 15444-12:2012/Cor 3:2015.

ISO/IEC 15444 consists of the following parts, under the general title *Information technology — JPEG 2000 image coding system*:

— *Part 1: Core coding system*

— *Part 2: Extensions*

— *Part 3: Motion JPEG 2000*

— *Part 4: Conformance testing*

— *Part 5: Reference software*

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— *Part 6: Compound image file format*

— *Part 8: Secure JPEG 2000*

— *Part 9: Interactivity tools, APIs and protocols*

— *Part 10: Extensions for three-dimensional data*

— *Part 11: Wireless*

— *Part 12: ISO base media file format*

— *Part 13: An entry level JPEG 2000 encoder*

— *Part 14: XML structural representation and reference*

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Introduction

The ISO Base Media File Format is designed to contain timed media information for a presentation in a flexible, extensible format that facilitates interchange, management, editing, and presentation of the media. This presentation may be 'local' to the system containing the presentation, or may be via a network or other stream delivery mechanism.

The file structure is object-oriented; a file can be decomposed into constituent objects very simply, and the structure of the objects inferred directly from their type.

The file format is designed to be independent of any particular network protocol while enabling efficient support for them in general.

The ISO Base Media File Format is a base format for media file formats.

It is intended that the ISO Base Media File Format shall be jointly maintained by WG1 and WG11. Consequently, a subdivision of work created ISO/IEC 15444-12 and ISO/IEC 14496-12 in order to document the ISO Base Media File Format and to facilitate the joint maintenance.

This technically identical text is published as ISO/IEC 14496-12 for MPEG-4, and as ISO/IEC 15444-12 for JPEG 2000, and reference to this specification should be made accordingly. The recommendation is to reference one, for example ISO/IEC 14496-12, and append to the reference a parenthetical comment identifying the other, for example "(technically identical to ISO/IEC 15444-12)".

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Information technology — JPEG 2000 image coding system —

Part 12:
ISO base media file format

1 Scope

This part of ISO/IEC 15444 specifies the ISO base media file format, which is a general format forming the basis for a number of other more specific file formats. This format contains the timing, structure, and media information for timed sequences of media data, such as audio-visual presentations.

This part of ISO/IEC 15444 is applicable to JPEG 2000, but its technical content is identical to that of ISO/IEC 14496-12, which is applicable to MPEG-4.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 639-2:1998, *Codes for the representation of names of languages — Part 2: Alpha-3 code*

ISO/IEC 9834-8:2005, *Information technology — Open Systems Interconnection — Procedures for the operation of OSI Registration Authorities: Generation and registration of Universally Unique Identifiers (UUIDs) and their use as ASN.1 Object Identifier components*

ISO/IEC 11578:1996, *Information technology — Open Systems Interconnection — Remote Procedure Call (RPC)*

ISO/IEC 14496-1:2010: *Information technology — Coding of audio-visual objects — Part 1: Systems*

ISO/IEC 14496-10, *Information technology — Coding of audio-visual objects — Part 10: Advanced Video Coding*

ISO/IEC 14496-14, *Information technology — Coding of audio-visual objects — Part 14: MP4 file format*

ISO/IEC 15444-1, *Information technology — JPEG 2000 image coding system: Core coding system*

ISO/IEC 15444-3, *Information technology — JPEG 2000 image coding system: Motion JPEG 2000*

ISO/IEC 15938-1, *Information technology — Multimedia content description interface — Part 1: Systems*

ISO/IEC 23001-1, *Information technology — MPEG systems technologies — Part 1: Binary MPEG format for XML*

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ISO/IEC 23002-3, *Information technology — MPEG video technologies — Part 3: Representation of auxiliary video and supplemental information*

ISO/IEC 29199-2:2012, *Information technology — JPEG XR image coding system — Part 2: Image coding specification*

ISO 15076-1:2010, *Image technology colour management — Architecture, profile format and data structure — Part 1: Based on ICC.1:2010*

IETF RFC 2045, *Multipurpose Internet Mail Extensions (MIME) Part One: Format of Internet Message Bodies*, FREED, N. and BORENSTEIN, N., November 1996

IETF RFC 2046, *Multipurpose Internet Mail Extensions (MIME) Part Two: Media Types*, FREED, N. and BORENSTEIN, N., November 1996

IETF RFC 3550, *RTP: A Transport Protocol for Real-Time Applications*, SCHULZRINNE, H. et al., July 2003.

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SMIL 1.0, *Synchronized Multimedia Integration Language (SMIL) 1.0 Specification*, <http://www.w3.org/TR/REC-smil/>

Rec. ITU-R TF.460-6, *Standard-frequency and time-signal emissions (Annex I for the definition of UTC.)*

ISO/IEC 23003-4, *Information technology – MPEG audio technologies – Part 4: Dynamic range control*

ITU-R, Recommendation ITU-R BS.1770-3. *Algorithm to measure audio programme loudness and true-peak audio level,* August 2012.

ITU-R, Recommendation ITU-R BS.1771-1. *Requirements for loudness and true-peak indicating meters,* January 2012.

EBU R 128-2014, *Loudness normalization and permitted maximum level of audio signals*, June 2014.

EBU EBU – Tech 3341, *Loudness Metering: EBU mode metering to supplement loudness normalization in accordance with EBU R128*

EBU EBU-Tech 3342, *Loudness Range: A measure to supplement loudness normalisation in accordance with EBU R 128*, Geneva, August 2011

ETSI TS 101 154 V1.11.1, *Digital Video Broadcasting (DVB); Specification for the use of Video and Audio Coding in Broadcasting Applications based on the MPEG-2 Transport Stream,* November 2012.

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ATSC Document A/85:2011, *ATSC Recommended Practice: Techniques for Establishing and Maintaining Audio Loudness for Digital Television,* July 2011

ATSC Doc. A/52:2012, *ATSC Standard: Digital Audio Compression (AC-3, E-AC-3)*.

IETF RFC 5646, BCP 47, *Tags for Identifying Languages*, PHILLIPS, A., et al, September 2009

3 Terms, definitions, and abbreviated terms

3.1 Terms and definitions

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

3.1.1
box
object-oriented building block defined by a unique type identifier and length

Note 1 to entry: Called 'atom' in some specifications, including the first definition of MP4.

3.1.2
chunk
contiguous set of samples for one track

3.1.3
container box
box whose sole purpose is to contain and group a set of related boxes

Note 1 to entry: Container boxes are normally not derived from 'fullbox'

3.1.4
hint track
special track which does not contain media data, but instead contains instructions for packaging one or more tracks into a streaming channel

3.1.5
hinter
tool that is run on a file containing only media, to add one or more hint tracks to the file and so facilitate streaming

3.1.6
ISO Base Media File
name of the files conforming to the file format described in this specification

3.1.7
leaf subsegment
subsegment that does not contain any indexing information that would enable its further division into subsegments

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