CAN/CSA-ISO/IEC 14496-12-09

National Standard of Canada

(ISO/IEC 14496-12:2008, IDT)

Information technology — Coding of audio-visual objects — Part 12: ISO base media file format

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Technical Corrigendum 4:2012 (IDT) to National Standard of Canada

CAN/CSA-ISO/IEC 14496-12:09

(ISO/IEC 14496-12:2008, IDT)

Information technology — Coding of audio-visual objects — Part 12: ISO base media file format

TECHNICAL CORRIGENDUM 4

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INTERNATIONAL STANDARD ISO/IEC 14496-12:2008
TECHNICAL CORRIGENDUM 4

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Information technology — Coding of audio-visual objects —

Part 12:
ISO base media file format

TECHNICAL CORRIGENDUM 4

Technologies de l'information — Codage des objets audiovisuels —

Partie 12: Format ISO de base pour les fichiers médias

RECTIFICATIF TECHNIQUE 4

Technical Corrigendum 4 to ISO/IEC 14496-12:2008 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

ICS 35.040 **Ref. No. ISO/IEC 14496-12:2008/Cor.4:2011(E)**

In 6.2.3, Box order, Table 1, Box types, structure, and cross-reference, remove the following line:

		tsel					8.10.3	*track selection*

In 6.2.3, Table 1, insert the following lines between 'subs' and 'mvex':

		udta					8.10.1	*user-data*
			tsel				8.10.3	*track selection*

In 8.3.3.1, replace:

This box provides a reference from the containing track to another track in the presentation. These references are typed. A `'hint'` reference links from the containing hint track to the media data that it hints. A content description reference `'cdsc'` links a descriptive or metadata track to the content which it describes.

with:

This box provides a reference from the containing track to another track in the presentation. These references are typed. A `'hint'` reference links from the containing hint track to the media data that it hints. A content description reference `'cdsc'` links a descriptive or metadata track to the content which it describes. The `'hind'` dependency indicates that the referenced track(s) may contain media data required for decoding of the track containing the track reference. The referenced tracks shall be hint tracks. The `'hind'` dependency can, for example, be used for indicating the dependencies between hint tracks documenting layered IP multicast over RTP.

In 8.7.3.1, add at the end:

NOTE A sample size of zero is not prohibited in general, but it must be valid and defined for the coding system, as defined by the sample entry, that the sample belongs to.

In 8.8.3.1, replace:

```
bit(4)   reserved=0;
unsigned int(2) is_leading;
unsigned int(2) sample_depends_on;
unsigned int(2) sample_is_depended_on;
unsigned int(2) sample_has_redundancy;
bit(3)   sample_padding_value;
bit(1)   sample_is_difference_sample;
      // i.e. when 1 signals a non-key or non-sync sample
unsigned int(16)  sample_degradation_priority;
```

with:

```
bit(4)   reserved=0;
unsigned int(2) is_leading;
unsigned int(2) sample_depends_on;
unsigned int(2) sample_is_depended_on;
unsigned int(2) sample_has_redundancy;
bit(3)   sample_padding_value;
bit(1)   sample_is_non_sync_sample;
unsigned int(16)  sample_degradation_priority;
```

and after:

The `is_leading`, `sample_depends_on`, `sample_is_depended_on` and `sample_has_redundancy` values are defined as documented in the Independent and Disposable Samples Box.

insert:

The flag `sample_is_non_sync_sample` provides the same information as the sync sample table [8.6.2]. When this value is set 0 for a sample, it is the same as if the sample were not in a movie fragment and marked with an entry in the sync sample table (or, if all samples are sync samples, the sync sample table were absent).

At the end of 9.3.2.5, and 9.4.1.3, insert:

A sample with a size of zero is permitted in reception hint tracks, and such samples may be ignored.

In E.6, The 'iso3' brand, remove the following line from the table (not numbered):

		tsel				*track selection*

ICS 35.040

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(ISO/IEC 14496-12:2008, IDT)

Information technology — Coding of audio-visual objects — Part 12: ISO base media file format

TECHNICAL CORRIGENDUM 3

CSA Standards Update Service

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INTERNATIONAL STANDARD ISO/IEC 14496-12:2008
TECHNICAL CORRIGENDUM 3

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Information technology — Coding of audio-visual objects —

Part 12:
ISO base media file format

TECHNICAL CORRIGENDUM 3

Technologies de l'information — Codage des objects audiovisuels —

Partie 12: Format ISO de base pour les fichiers médias

RECTIFICATIF TECHNIQUE 3

Technical Corrigendum 3 to ISO/IEC 14496-12:2008 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

In 8.3.2.1, replace the following text:

The width and height in the track header are measured on a notional 'square' (uniform) grid. Track video data is normalized to these dimensions (logically) before any transformation or placement caused by a layup or composition system. Track (and movie) matrices, if used, also operate in this uniformly-scaled space.

with:

Under the ‘iso3’ brand or brands that share its requirements, the width and height in the track header are measured on a notional 'square' (uniform) grid. Track video data is normalized to these dimensions (logically) before any transformation or placement caused by a layup or composition system. Track (and movie) matrices, if used, also operate in this uniformly-scaled space.

ICS 35.040 **Ref. No. ISO/IEC 14496-12:2008/Cor.3:2009(E)**

In 4.3, replace:

Box Type: `ftyp'
Container: File
Mandatory: Yes
Quantity: Exactly one

with:

Box Type: `ftyp'
Container: File
Mandatory: Yes
Quantity: Exactly one (but see below)

In 8.1.1.1, replace:

Box Type: `mdat'
Container: File
Mandatory: No
Quantity: Any number

with:

Box Type: `mdat'
Container: File
Mandatory: No
Quantity: Zero or more

In 8.1.1.1, replace:

Box Types: `free', `skip'
Container: File or other box
Mandatory: No
Quantity: Any number

with:

Box Types: `free', `skip'
Container: File or other box
Mandatory: No
Quantity: Zero or more

In 8.8.9.1, replace:

Box Type: `mfra'
Container: File
Mandatory: No
Quantity: Exactly one

with:

Box Type: `mfra'
Container: File
Mandatory: No
Quantity: Zero or one

In 8.8.10.1, replace:

Box Type: 'tfra'
Container: Movie Fragment Random Access Box ('mfra')
Mandatory: No
Quantity: One or more

with:

Box Type: 'tfra'
Container: Movie Fragment Random Access Box ('mfra')
Mandatory: No
Quantity: Zero or one per track

In 8.12.5.1, replace:

Box Types: 'schm'
Container: Protection Scheme Information Box ('sinf'), or SRTP Process box ('srpp')
Mandatory: No
Quantity: Exactly one

with:

Box Types: 'schm'
Container: Protection Scheme Information Box ('sinf'), or SRTP Process box ('srpp')
Mandatory: No
Quantity: Zero or one in 'sinf', depending on the protection structure; Exactly one in 'srpp'

At the end of E.2, add the following sentence:

Note that some requirements of the Track Header Box do not apply to this brand; see 8.3.2.1.

At the end of E.4, add the following sentence:

Note that some requirements of the Track Header Box do not apply to this brand; see 8.3.2.1.

ICS 35.040

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Information technology — Coding of audio-visual objects — Part 12: ISO base media file format

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INTERNATIONAL STANDARD ISO/IEC 14496-12:2008
TECHNICAL CORRIGENDUM 2

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Information technology — Coding of audio-visual objects —

Part 12: ISO base media file format

TECHNICAL CORRIGENDUM 2

Technologies de l'information — Codage des objets audiovisuels —

Partie 12: Format ISO de base pour les fichiers médias

RECTIFICATIF TECHNIQUE 2

Technical Corrigendum 2 to ISO/IEC 14496-12:2008 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

Page 12, 6.3, replace the entire subclause with the following:

The definitions of the brands that that apply to the file format are given in Annex E.

Page 25, 8.5.2.1 after paragraph eight,

If the 'format' field of a SampleEntry is unrecognized, neither the sample description itself, nor the associated media samples, shall be decoded.

insert the following note:

NOTE The definition of sample entries specifies boxes in a particular order, and this is usually also followed in derived specifications. For maximum compatibility, writers should construct files respecting the order both within specifications and as implied by the inheritance, whereas readers should be prepared to accept any box order.

ICS 35.040 **Ref. No. ISO/IEC 14496-12:2008/Cor.2:2009(E)**

Page 26, 8.5.2.1, paragraph 13, after the second sentence add the following new sentence (shown highligted grey):

The pixel aspect ratio and clean aperture of the video may be specified using the 'pasp' and 'clap' sample entry boxes, respectively. These are both optional; if present, they over-ride the declarations (if any) in structures specific to the video codec, which structures should be examined if these boxes are absent. For maximum compatibility, these boxes should follow, not precede, any boxes defined in or required by derived specifications.

Page 28, 8.5.2.2, insert a new line (shown highlighted grey) into the following VisualSampleEntry:

```
class VisualSampleEntry(codingname) extends SampleEntry (codingname){
   unsigned int(16) pre_defined = 0;
   const unsigned int(16) reserved = 0;
   unsigned int(32)[3]  pre_defined = 0;
   unsigned int(16)  width;
   unsigned int(16)  height;
   template unsigned int(32)  horizresolution = 0x00480000;      // 72 dpi
   template unsigned int(32)  vertresolution  = 0x00480000;      // 72 dpi
   const unsigned int(32)  reserved = 0;
   template unsigned int(16)  frame_count = 1;
   string[32]  compressorname;
   template unsigned int(16)  depth = 0x0018;
   int(16)  pre_defined = -1;
   // other boxes from derived specifications
   CleanApertureBox     clap; // optional
   PixelAspectRatioBox  pasp;    // optional
}
```

Page 102, at the end of E.1, add the following paragraph:

More specific identifiers can be used to identify precise versions of specifications providing more detail. These brand should not be used as the major brand; this base file format should be derived into another specification to be used. There is therefore no defined normal file extension, or mime type assigned to these brands, nor definition of the minor version when one of these brands is the major brand.

Page 103, at the beginning of E.2, add the following paragraph:

The type 'isom' (ISO Base Media file) is defined in this section of this specification, as identifying files that conform to the first version of ISO Base Media File Format.

Page 104, at the beginning of E.3, add the following paragraph:

The brand 'avc1' shall be used to indicate that the file is conformant with the 'AVC Extensions' in 8.6.4 and 8.9. If used without other brands, this implies that support for those extensions is required. The use of 'avc1' as a major-brand may be permitted by specifications; in that case, that specification defines the file extension and required behaviour.

Page 104, at the beginning of E.4, add the following paragraph:

The brand 'iso2' shall be used to indicate compatibility with the second version of the ISO Base Media File Format; it may be used in addition to or instead of the 'isom' brand and the same usage rules apply. If used without the brand 'isom' identifying the first version of this specification, it indicates that support for some or all of the functionality in 8.6.4, 8.9, 8.11.1 through 8.11.7, 8.11.10, 8.12, or the SRTP support in subclause 9.1, is required.

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Information technology — Coding of audio-visual objects — Part 12: ISO base media file format

TECHNICAL CORRIGENDUM 1

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Information technology — Coding of audio-visual objects —

Part 12:
ISO base media file format

TECHNICAL CORRIGENDUM 1

Technologies de l'information — Codage des objets audiovisuels —

Partie 12: Format ISO de base pour les fichiers médias

RECTIFICATIF TECHNIQUE 1

Technical Corrigendum 1 to ISO/IEC 14496-12 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

Pages 11 and 12, in Table 1, delete the following rows (NOTE ipmc has two rows to be deleted):

ipmc	8.12.4	*IPMP Control Box*
ipmc	8.12.4	*IPMP Control Box*
imif	8.12.3	*IPMP Information box*

Page 17, in 8.2.2.3, replace:

`duration` is an integer that declares length of the presentation (in the indicated timescale). This property is derived from the presentation's tracks: the value of this field corresponds to the duration of the longest track in the presentation.

ICS 35.040 **Ref. No. ISO/IEC 14496-12:2008/Cor.1:2008(E)**

with:

`duration` is an integer that declares length of the presentation (in the indicated timescale). This property is derived from the presentation's tracks: the value of this field corresponds to the duration of the longest track in the presentation. If the duration cannot be determined then duration is set to all 1s.

Page 19, in 8.3.2.3, replace:

`duration` is an integer that indicates the duration of this track (in the timescale indicated in the Movie Header Box). The value of this field is equal to the sum of the durations of all of the track's edits. If there is no edit list, then the duration is the sum of the sample durations, converted into the timescale in the Movie Header Box. If the duration of this track cannot be determined then duration is set to all 1s (32-bit maxint).

with:

`duration` is an integer that indicates the duration of this track (in the timescale indicated in the Movie Header Box). The value of this field is equal to the sum of the durations of all of the track's edits. If there is no edit list, then the duration is the sum of the sample durations, converted into the timescale in the Movie Header Box. If the duration of this track cannot be determined then duration is set to all 1s.

Page 21, in 8.4.2.3, replace:

`duration` is an integer that declares the duration of this media (in the scale of the timescale).

with:

`duration` is an integer that declares the duration of this media (in the scale of the timescale). If the duration cannot be determined then duration is set to all 1s.

Page 30, 8.5.4, replace the contents of this subclause with the following text:

(empty subclause)

Page 65, in 8.12.1.1, replace:

a) MPEG-4 systems with IPMP: no other boxes, when IPMP descriptors in MPEG-4 systems streams are used;

b) Standalone IPMP: an `IPMPInfoBox`, when IPMP descriptors outside MPEG-4 systems are used;

c) Scheme signalling: a `SchemeTypeBox` and `SchemeInformationBox`, when these are used (either both must occur, or neither).

with:

a) MPEG-4 systems with IPMP: no other boxes, when IPMP descriptors in MPEG-4 systems streams are used;

b) Scheme signalling: a `SchemeTypeBox` and `SchemeInformationBox`, when these are used (either both must occur, or neither).

Page 65, in 8.12.1.2, delete the code line referring to the IPMPInfoBox as follows:

```
aligned(8) class ProtectionSchemeInfoBox(fmt) extends Box('sinf') {
   OriginalFormatBox(fmt)  original_format;

   SchemeTypeBox           scheme_type_box;          // optional
   SchemeInformationBox    info;               // optional
}
```

Page 65, 8.12.3, replace the contents of this subclause with the following text:

(empty subclause).

Page 66, 8.12.4, replace the contents of this subclause with the following text:

(empty subclause).

Page 69, in 8.13.3.3, replace:

`block_size` indicates the size of a block (in bytes). A `block_size` that is not a multiple of the `encoding_symbol_length` symbol size indicates that the last source symbol includes padding that is not stored in the item.

with:

`block_size` indicates the size of a block (in bytes). A `block_size` that is not a multiple of the `encoding_symbol_length` symbol size indicates with Compact No-Code FEC that the last source symbols includes padding that is not stored in the item. With MBMS FEC (3GPP TS 26.346) the padding may extend across multiple symbols but the size of padding should never be more than `encoding_symbol_length`.

Pages 79 and 80, in 9.2.2, replace:

A schematic picture of a file containing three alternative hint tracks with different FEC overhead for a source file is provided in Figure 4.

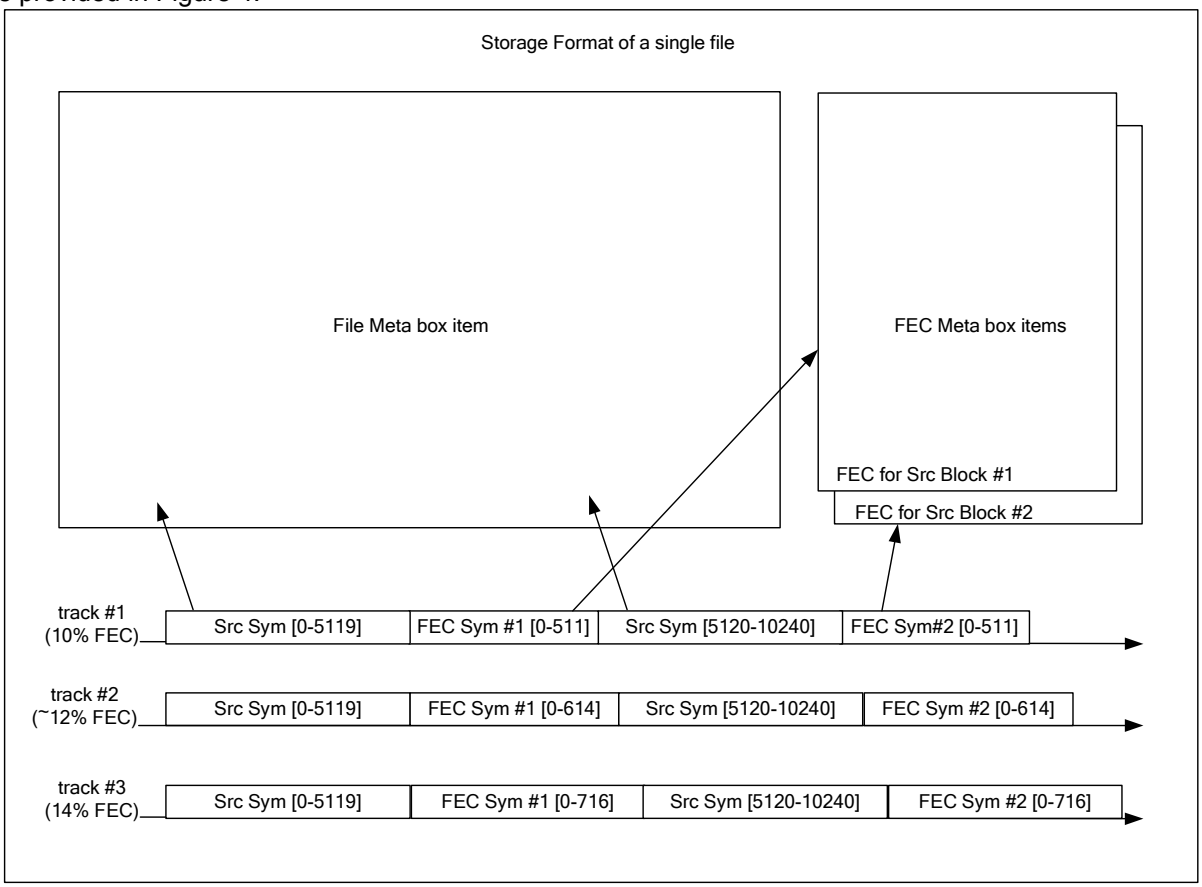

Figure 4 — Different FEC overheads of a source file provided by alternative hint tracks.

The source file in the above Figure is partitioned into 2 source blocks containing symbols of a fixed size. FEC redundancy symbols are calculated for both source blocks and stored in separate meta box items. As the hint tracks reference the same items in the file there is no duplication of information. The original source symbols and FEC reservoirs can also be used by repair servers that don't use hint tracks.

with:

A schematic picture of a file containing three alternative hint tracks with different FEC overhead for a source file is provided in Figure 4. In this example, each source block consists of only one sub-block.

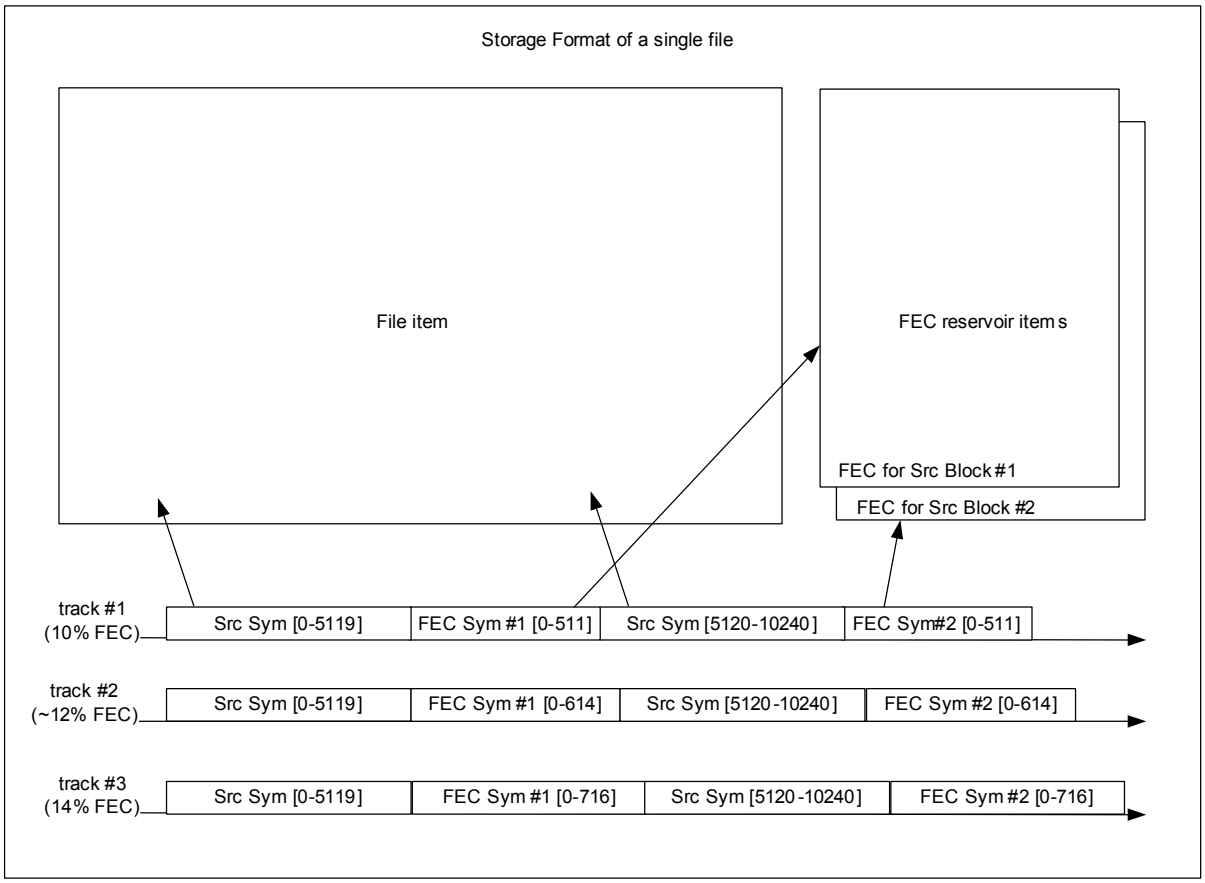

Figure 4 — Different FEC overheads of a source file provided by alternative hint tracks.

The source file in the above figure is partitioned into 2 source blocks containing symbols of a fixed size. FEC redundancy symbols are calculated for both source blocks and stored as FEC reservoir items. As the hint tracks reference the same items in the file there is no duplication of information. The original source symbols and FEC reservoirs can also be used by repair servers that don't use hint tracks.

Pages 80 and 81, in 9.2.3.3, replace:

`partition_entry_ID` indicates the partition entry in the FD item information box. A zero value indicates that no partition entry is associated with this sample entry, e.g., for FDT.

`FEC_overhead` is a fixed 8.8 value indicating the percentage protection overhead used by the hint sample(s). The intention of providing this value is to provide characteristics to help a server select a session group (and corresponding FD hint tracks).

with:

`partition_entry_ID` indicates the partition entry in the FD item information box. A zero value indicates that no partition entry is associated with this sample entry, e.g., for FDT. If the corresponding FD hint track contains only overhead data this value should indicate the partition entry whose overhead data is in question.

`FEC_overhead` is a fixed 8.8 value indicating the percentage protection overhead used by the hint sample(s). The intention of providing this value is to provide characteristics to help a server select a session group (and corresponding FD hint tracks). If the corresponding FD hint track contains only overhead data this value should indicate the protection overhead achieved by using all FD hint tracks in a session group up to the FD hint track in question.

Page 104, in Annex E.4, delete the following rows from the table (NOTE ipmc has two rows to be deleted):

	ipmc					*IPMP Control Box*
	ipmc					*IPMP Control Box*
			imif			*IPMP Information box*

Page 106, in Annex F, delete the following row:

8.41 8.5.4 Sample Scale Box

ICS 35.040

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CAN/CSA-ISO/IEC 14496-12-09
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Although the intended primary application of this Standard is stated in its Scope, it is important to note that it remains the responsibility of the users to judge its suitability for their particular purpose.
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National Standard of Canada

CAN/CSA-ISO/IEC 14496-12-09
Information technology — Coding of audio-visual objects — Part 12: ISO base media file format

Prepared by
International Organization for Standardization/
International Electrotechnical Commission

Reviewed by

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Information technology — Coding of audio-visual objects — Part 12: ISO base media file format

CSA Preface

Standards development within the Information Technology sector is harmonized with international standards development. Through the CSA Technical Committee on Information Technology (TCIT), Canadians serve as the Canadian Advisory Committee (CAC) on ISO/IEC Joint Technical Committee 1 on Information Technology (ISO/IEC JTC1) for the Standards Council of Canada (SCC), the ISO member body for Canada and sponsor of the Canadian National Committee of the IEC. Also, as a member of the International Telecommunication Union (ITU), Canada participates in the International Telegraph and Telephone Consultative Committee (ITU-T).

This Standard supersedes CAN/CSA-ISO/IEC 14496-12-06 (adoption of ISO/IEC 14496-12:2005). At the time of publication, ISO/IEC 14496-12:2008 is available from ISO and IEC in English only. CSA will publish the French version when it becomes available from ISO and IEC.

This International Standard was reviewed by the CSA TCIT under the jurisdiction of the Strategic Steering Committee on Information Technology and deemed acceptable for use in Canada. From time to time, ISO/IEC may publish addenda, corrigenda, etc. The CSA TCIT will review these documents for approval and publication. For a listing, refer to the CSA Information Products catalogue or CSA *Info Update* or contact a CSA Sales representative. This Standard has been formally approved, without modification, by the Technical Committee and has been approved as a National Standard of Canada by the Standards Council of Canada.

October 2009

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INTERNATIONAL STANDARD

ISO/IEC 14496-12

Third edition
2008-10-15

Information technology — Coding of audio-visual objects —

Part 12: ISO base media file format

Technologies de l'information — Codage des objets audiovisuels —

Partie 12: Format ISO de base pour les fichiers médias

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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 14496-12 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

This third edition cancels and replaces the second edition (ISO/IEC 14496-12:2005) of which it constitues a minor revision.

ISO/IEC 14496 consists of the following parts, under the general title *Information technology — Coding of audio-visual objects*:

— *Part 1: Systems*

— *Part 2: Visual*

— *Part 3: Audio*

— *Part 4: Conformance testing*

— *Part 5: Reference software*

— *Part 6: Delivery Multimedia Integration Framework (DMIF)*

— *Part 7: Optimized reference software for coding of audio-visual objects*

— *Part 8: Carriage of ISO/IEC 14496 contents over IP networks*

— *Part 9: Reference hardware description*

— *Part 10: Advanced Video Coding*

— *Part 11: Scene description and application engine*

— *Part 12: ISO base media file format*

— *Part 13: Intellectual Property Management and Protection (IPMP) extensions*

— *Part 14: MP4 file format*

— *Part 15: Advanced Video Coding (AVC) file format*

— *Part 16: Animation Framework eXtension (AFX)*

— *Part 17: Streaming text format*

— *Part 18: Font compression and streaming*

— *Part 19: Synthesized texture stream*

— *Part 20: Lightweight Application Scene Representation (LASeR) and Simple Aggregation Format (SAF)*

— *Part 21: MPEG-J Graphics Framework eXtensions (GFX)*

— *Part 22: Open Font Format*

— *Part 23: Symbolic Music Representation*

— *Part 24: Audio and systems interaction*

— *Part 25: 3D Graphics Compression Model*

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)".

Information technology — Coding of audio-visual objects —

Part 12:
ISO base media file format

1 Scope

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

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

ITU-T Rec. X.667 (09/2004) | 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 14496-1:2004: *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*

ITU-T Rec.T.800 | ISO/IEC 15444-1, *Information technology — JPEG 2000 image coding system: Core coding system*

ITU-T Rec.T.802 | 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*

IETF RFC 3711, *"The Secure Real-time Transport Protocol (SRTP)"*, BAUGHER, M. et al., March 2004