FINAL DRAFT

AMENDMENT

**ISO/IEC
15444-12:2008
FDAM 2**

Information technology — JPEG 2000 image coding system —

Part 12:
ISO base media file format

AMENDMENT 2

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

Partie 12: Format ISO de base pour les fichiers médias

AMENDEMENT 2

Please see the administrative notes on page iii

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Foreword

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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.

Amendment 2 to ISO/IEC 15444-12:2008 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

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In Clause 2, add the following normative references:

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

ISO/IEC 29199-2:2010, *Information technology — JPEG XR image coding system — Part 2: Image coding specification*

In 6.2.3, remove the current tsel entry, and add the following entries after cprt to Table 1 (correctly cross-referenced):

		tsel		8.10.3	track selection box
		strk		8.14.3	sub track box
			stri	8.14.4	sub track information box
			strd	8.14.5	sub track definition box

In 8.5.2.1, after:

The samplerate, samplesize and channelcount fields document the default audio output playback format for this media. The timescale for an audio track should be chosen to match the sampling rate, or be an integer multiple of it, to enable sample-accurate timing.

add as part of the same paragraph:

`ChannelCount` is a value greater than zero that indicates the maximum number of channels that the audio could deliver. A `ChannelCount` of 1 indicates mono audio, and 2 indicates stereo (left/right). When values greater than 2 are used, the codec configuration should identify the channel assignment.

At the end of 8.5.2.1, add:

Colour information may be supplied in one or more ColourInformationBoxes placed in a VisualSampleEntry. These should be placed in order in the sample entry starting with the most accurate (and potentially the most difficult to process), in progression to the least. These are advisory and concern rendering and colour conversion, and there is no normative behaviour associated with them; a reader may choose to use the most suitable. A ColourInformationBox with an unknown colour type may be ignored.

If used, an ICC profile may be a restricted one, under the code 'rICC', which permits simpler processing. That profile shall be of either the Monochrome or Three-Component Matrix-Based class of input profiles, as defined by ISO 15076-1. If the profile is of another class, then the 'prof' indicator must be used.

If colour information is supplied in both this box, and also in the video bitstream, this box takes precedence, and over-rides the information in the bitstream.

NOTE   When an ICC profile is specified, SMPTE RP 177 "Derivation of Basic Television Color Equations" may be of assistance if there is a need to form the Y'CbCr to R'G'B' conversion matrix for the color primaries described by the ICC profile.

Before VisualSampleEntry in 8.5.2.2, add:

```
class ColourInformationBox extends Box('colr'){
   unsigned int(32) colour_type;
   if (colour_type == 'nclx') /* on-screen colours */
   {
      unsigned int(16) colour_primaries;
      unsigned int(16) transfer_characteristics;
      unsigned int(16) matrix_coefficients;
      unsigned int(1)  full_range_flag;
      unsigned int(7)  reserved = 0;
   }
   else if (colour_type == 'rICC')
   {
      ICC_profile;   // restricted ICC profile
   }
   else if (colour_type == 'prof')
   {
      ICC_profile;   // unrestricted ICC profile
   }
}
```

At the end of 8.5.2.3, add:

colour_type: an indication of the type of colour information supplied. For colour_type 'nclx': these fields are exactly the four bytes defined for PTM_COLOR_INFO( ) in A.7.2 of ISO/IEC 29199-2 but note that the full range flag is here in a different bit position

ICC_profile: an ICC profile as defined in ISO 15076-1 or ICC.1:2010 is supplied.

In 8.5.2.3, replace the following text:

ChannelCount is either 1 (mono) or 2 (stereo)

with:

ChannelCount is the number of channels such as 1 (mono) or 2 (stereo)

At the end of 8.8.7.1, add:

0x020000 default-base-is-moof: if base-data-offset-present is zero, this indicates that the base-data-offset for this track fragment is the position of the first byte of the enclosing Movie Fragment Box. Support for the default-base-is-moof flag is required under the 'iso5' brand, and it shall not be used in brands or compatible brands earlier than iso5.

NOTE   The use of the default-base-is-moof flag breaks the compatibility to earlier brands of the file format, because it sets the anchor point for offset calculation differently than earlier. Therefore, the default-base-is-moof flag cannot be set when earlier brands are included in the File Type box.

In 8.10.3.5, in the table with descriptive attributes, replace the following text:

The track can be fine-grain scaled.

with:

The track can be scaled in terms of quality.

In 8.10.3.5, in the table with descriptive attributes, replace the following text:

The track can be coarse-grain scaled.

with:

The track can be scaled in terms of quality.

In 8.10.3.5, add the following entry at the end of the table with descriptive attributes:

View scalability	'vwsc'	The track can be scaled in terms of number of views.

In 8.10.3.5, add the following entry at the end of the table with differentiating attributes:

Number of views	'nvws'	Number of views in the sub track

Replace 8.12.2 with the following text:

8.12.2 Original Format Box

8.12.2.1 Definition

Box Types: 'frma'
Container: Protection Scheme Information Box ('sinf') or Restricted Scheme Information Box ('rinf')
Mandatory: Yes when used in a protected sample entry or in a restricted sample entry
Quantity: Exactly one

The Original Format Box 'frma' contains the four-character-code of the original un-transformed sample description:

8.12.2.2 Syntax

```
aligned(8) class OriginalFormatBox(codingname) extends Box ('frma') {
   unsigned int(32)  data_format = codingname;
                   // format of decrypted, encoded data (in case of protection)
                     or un-transformed sample entry (in case of restriction)
}
```

8.12.2.3 Semantics

data_format is the four-character-code of the original un-transformed sample entry (e.g. "mp4v" if the stream contains protected or restricted MPEG-4 visual material).

Replace 8.12.5 and 8.12.6 with the following text:

8.12.5 Scheme Type Box

8.12.5.1   Definition

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

The Scheme Type Box ('schm') identifies the protection or restriction scheme.

8.12.5.2   Syntax

```
aligned(8) class SchemeTypeBox extends FullBox('schm', 0, flags) {
   unsigned int(32)  scheme_type;    // 4CC identifying the scheme
   unsigned int(32)  scheme_version; // scheme version
   if (flags & 0x000001) {
      unsigned int(8)   scheme_uri[];      // browser uri
   }
}
```

8.12.5.3   Semantics

scheme_type is the code defining the protection or restriction scheme.
scheme_version is the version of the scheme (used to create the content)
scheme_URI allows for the option of directing the user to a web-page if they do not have the scheme
   installed on their system. It is an absolute URI formed as a null-terminated string in UTF-8 characters.

8.12.6 Scheme Information Box

8.12.6.1   Definition

Box Types: 'schi'
Container: Protection Scheme Information Box ('sinf'), Restricted Scheme Information Box ('rinf'),
             or SRTP Process box ('srpp')
Mandatory: No
Quantity: Zero or one

The Scheme Information Box is a container Box that is only interpreted by the scheme being used. Any information the encryption or restriction system needs is stored here. The content of this box is a series of boxes whose type and format are defined by the scheme declared in the Scheme Type Box.

8.12.6.2   Syntax

```
aligned(8) class SchemeInformationBox extends Box('schi') {
   Box   scheme_specific_data[];
}
```

Add the following subclauses:

8.14 Sub tracks

8.14.1 Introduction

Sub tracks are used to assign parts of tracks to alternate and switch groups in the same way as (entire) tracks can be assigned to alternate and switch groups to indicate whether those tracks are alternatives to each other and whether it makes sense to switch between them during a session. Sub tracks are suitable for layered media, e.g., SVC and MVC, where media alternatives often are incommensurate with track structures. By defining alternate and switch groups at sub-track level it is possible to use existing rules for media selection and switching for such layered codecs. The over-all syntax is generic for all kinds of media and backward compatible with track-level definitions. Sub-track level alternate and switch groups use the same numbering as track level groups. The numberings are global over all tracks such that groups can be defined across track and sub-track boundaries.

In order to define sub tracks, media-specific definitions are required. Definitions for SVC and MVC are specified in the AVC file format (ISO/IEC 14496-15). Another way is to define sample groups and map them to sub tracks using the Sub Track Sample Group box defined here. The syntax can also be extended to include other media-specific definitions.

For each sub track that shall be defined a Sub Track box shall be included in the User Data box of the corresponding track. The Sub Track box contains objects that define and provide information about a sub track in the same track. The Track Selection box for this same track is already located here.

8.14.2 Backward compatibility

The default is to assign alternate and switch groups to 0 (zero) for (entire) tracks, which means that there is no information on alternate and/or switch groups for those (entire) tracks. However, file readers that are aware of sub-track definitions will be able to find sub-track information on alternate and switch groups even if the track indication is set to 0. This way it is possible to indicate that a file can be used by legacy readers by including the appropriate brand in the file type box. A file creator that requires a reader to be aware of sub-track information should not include legacy brands.

The same method of assigning sub track information can also be applied if all parts of a track except a sub track belong to the same alternate or switch group. Then the overall definitions can be made on track level as usual and specific assignments can be made at sub-track level. For sub tracks without specific assignments, track level assignments apply by default. As before, if a file creator requires a reader to be aware of sub-track information it should not include legacy brands (which would otherwise indicate that sub track information can be skipped).

8.14.3 Sub Track box

8.14.3.1 Definition

Box Type: 'strk'
Container: User Data box ('udta') of the corresponding Track box ('trak')
Mandatory: No
Quantity: Zero or more

This box contains objects that define and provide information about a sub track in the present track.

8.14.3.2 Syntax

```
aligned(8) class SubTrack extends Box('strk') {
}
```