

DRAFT AMENDMENT

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Information technology — JPEG XR image coding system — Part 2: Image coding specification

AMENDMENT 3: Support for JPEG XR coding in the ISO/IEC 23008-12 file format

Technologies de l'information — Système de codage d'image JPEG XR —

Partie 2: Spécification de codage d'image

AMENDEMENT 3: .

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At the end of the Scope and the first paragraph of the Summary, add the following:

Annex E contains a media type specification for images encoded according to the tag-based format specified in Annex A. Annex F specifies an alternative file storage format based on ISO/IEC 23008-12 and associated media type specifications for the storage and interchange of JPEG XR coded images and image sequences.

In clause 2, add the following:

Normative references which have a scope that is limited to the use of the file format specified in Annex F are listed in F.2.

Rename the title of Annex E from "Media type specification" to "Media type specification for the Annex A tag-based file format".

In E.1, change "This amendment specifies" to "This annex specifies".

Add the following Annex:

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**Annex F
(normative)**

ISO/IEC 29199-2:2012/DAmD 3

[https://standards.iteh.ai/catalog/standards/sist/7b8738a5-5256-489f-8a9c-](https://standards.iteh.ai/catalog/standards/sist/7b8738a5-5256-489f-8a9c-23008-12/iso-29199-2:2012/amd-3)

Storage in the ISO/IEC 23008-12 image file format and associated media type registrations

F.1 General

This annex specifies a file format to encapsulate images, image collections, and image sequences coded using the JPEG XR format in the image file format specified in ISO/IEC 23008-12. The file format specified in this annex is an alternative to the tag-based file format specified in Annex A. Brands for a single image and an image collection as well as image sequences are specified in F.5.

For the purposes of this annex, the terms, definitions, and abbreviated terms specified in ISO/IEC 23008-12 additionally apply. For the avoidance of doubt, in case of ambiguities, the definitions of ISO/IEC 23008-12 take precedence over the definitions in this annex.

NOTE 1 A sample in the context of ISO/IEC 23008-12 is "all the data associated with a single time". In this Annex, this is meant as data associated with one coded image, not "one element in the two-dimensional image array which comprises a component".

F.2 Normative references

The following Recommendations and International Standards contain provisions which, through reference in this text, constitute provisions of this annex to this Recommendation | International Standard. At the time of publication, the editions indicated were valid. All Recommendations and Standards are subject to revision, and parties to agreements based on this Recommendation | International Standard are encouraged to investigate the possibility of applying the most recent edition of the Recommendations and Standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards. The Telecommunication Standardization Bureau of the ITU maintains a list of currently valid ITU-T Recommendations.

Identical Recommendations | International Standards

None.

Paired Recommendations | International Standards equivalent in technical content

Rec. ITU-T T.833 | ISO/IEC 29199-3, *Information technology — JPEG XR image coding system — Part 3: Motion JPEG XR*

Additional references iTeh STANDARD PREVIEW

ISO/IEC 23008-12:2017, *Information technology — High efficiency coding and media delivery in heterogeneous environments — Part 12: Image file format*

[ISO/IEC 29199-2:2012/DAmD 3](#)

F.3 JPEG XR images and image collections

F.3.1 General

Clause F.3 and its subclauses specify requirements for ISO/IEC 23008-12 files containing JPEG XR-coded image items. When a brand specified in clause F.5.1 is among the compatible brands of a file, the requirements specified in clause F.3 and its subclauses shall be obeyed.

The specifications of clause 6 of ISO/IEC 23008-12:2017 and its subclauses apply.

F.3.2 Image data

An item of type 'jxr1' is a CODED_IMAGE() as defined in 8.2, *without* the IMAGE_HEADER(). Each image presented to a JPEG XR decoder is logically formed by appending the content of each sample to the content of the JPEG XR header item property.

NOTE 1 Offset values in the coded image apply to this complete set of data that is supplied to the decoder, i.e. the result of the append of the sample data to the content of the JPEG XR header item property. An item of type 'jxr1' is a sample.

NOTE 2 The item data is structurally identical to the syntax defined in Rec. ITU-T T.833 | ISO/IEC 29199-3 for a JPEG XR sample.

F.3.3 JPEG XR header item property

F.3.3.1 Definition

Box Type:	'jxrh'
Property Type:	Descriptive item property
Container:	ItemPropertyContainerBox
Mandatory (per an item):	Yes, for an image item of type 'jxr1'
Quantity (per an item):	One for an image item of type 'jxr1'

Each JPEG XR image item shall have an associated property that is a JPEGXRHeaderProperty.

NOTE 1 This is identical to the JPEGXRHeaderBox as defined in Rec. ITU-T T.833 | ISO/IEC 29199-3.

essential shall be equal to 1 for a 'jxrh' item property associated with an image item of type 'jxr1'.

F.3.3.2 Syntax

```
class JPEGXRHeaderProperty()
    extends ItemFullProperty ('jxrh', 0, version=0){
    IMAGE_HEADER();
    IsCurrPlaneAlphaFlag := FALSE;
    IMAGE_PLANE_HEADER();
    if (ALPHA_IMAGE_PLANE_FLAG) {
        IsCurrPlaneAlphaFlag := TRUE;
        IMAGE_PLANE_HEADER();
    }
}
```

F.3.3.3 Semantics

IMAGE_HEADER() as defined in 8.3;

IMAGE_PLANE_HEADER() as defined in 8.4;

IsCurrPlaneAlphaFlag is not a field in this structure, but a local variable used in the decoding of the IMAGE_PLANE_HEADER();

ALPHA_IMAGE_PLANE_FLAG is not a field in this structure, but a field in the IMAGE_HEADER() which is tested here;

PIXEL_FORMAT as defined in A.7.19;

IMAGE_BAND_PRESENCE as defined in A.7.31;

ALPHA_BAND_PRESENCE as defined in A.7.32.

F.3.4 JPEG XR info item property

F.3.4.1 Definition

Box Type:	'jxri'
Property Type:	Descriptive item property
Container:	ItemPropertyContainerBox
Mandatory (per an item):	Yes, for an image item of type 'jxr1'
Quantity (per an item):	One for an image item of type 'jxr1'

Each JPEG XR image item shall have an associated property that is a JPEGXRInfoProperty.

NOTE 1 This is identical to the JPEGXRInfoBox as defined in Rec. ITU-T T.833 | ISO/IEC 29199-3.

essential shall be equal to 1 for a 'jxri' item property associated with an image item of type 'jxr1'.

F.3.4.2 Syntax

```
class JPEGXRInfoProperty()  
    extends ItemFullProperty ('jxri', 0, version=0){  
    UInt8[16] PIXEL_FORMAT;  
    UInt8    IMAGE_BAND_PRESENCE;  
    UInt8    ALPHA_BAND_PRESENCE;  
}
```

F.3.4.3 Semantics <https://standards.iteh.ai/catalog/standards/sist/7b8738a5-5256-489f-8a9c-2017b6ef8e53/iso-iec-29199-2-2012-damd-3>

IMAGE_BAND_PRESENCE as defined in A.7.31
ALPHA_BAND_PRESENCE as defined in A.7.32

F.3.5 JPEG XR profile item property

F.3.5.1 Definition

Box Type:	'jxrp'
Property Type:	Descriptive item property
Container:	ItemPropertyContainerBox
Mandatory (per an item):	Yes, for an image item of type 'jxr1'
Quantity (per an item):	One for an image item of type 'jxr1'

Each JPEG XR image item may have an associated property that is a JPEGXRProfileProperty. When this property is not present, the inference rules specified in B.1 for when the PROFILE_LEVEL_INFO() syntax structure is not present shall apply.

NOTE 1 This is identical to the JPEGXRProfileBox as defined in Rec. ITU-T T.833 | ISO/IEC 29199-3.

F.3.5.2 Syntax

```
class JPEGXRProfileProperty() extends ItemProperty ('jxrp'){
    PROFILE_LEVEL_INFO();
}
```

F.3.5.3 Semantics

PROFILE_LEVEL_INFO() as defined in 8.6

F.4 JPEG XR image sequences

F.4.1 General

Clause F.3.4 and its subclauses specify requirements for all files containing one or more JPEG XR-coded image sequence tracks. When a brand specified in clause F.5.2 is among the compatible brands of a file, the requirements specified in clause F.3.4 and its subclauses shall be obeyed.

The specifications of clause 7 of ISO/IEC 23008-12:2017 and its subclauses apply.

F.4.2 Derivation from ISO/IEC 14496-12 and Rec. ITU-T T.833 | ISO/IEC 29199-3

A sample entry of type 'mjxr' shall be used for an image sequence track coded with JPEG XR, as defined in Rec. ITU-T T.833 | ISO/IEC 29199-3, using the MJXRSampleEntry and sample format as specified in Rec. ITU-T T.833 | ISO/IEC 29199-3.

For a track containing a JPEG XR image sequence, all samples are sync samples.

F.5 JPEG XR-specific brands

F.5.1 JPEG XR image and image collection brands

F.5.1.1 General

The brand 'jxrA' is specified in the following subclauses.

A coded image item is specified to conform to the 'jxrA' brand when all of the following constraints are true:

- The item has type 'jxr1' and conforms to the specifications in F.3.
- The item is not associated with any other types of essential item properties than 'jxrh', 'jxri', 'jxrp', 'irot', 'clap', and 'imir'.
- The content of the item conforms to the coded image syntax of the profile and level indicated by JPEGXRProfileProperty.

For the specifications below, a crop-rotate-mirror derived image item is defined as a derived image item of type 'iden' that is not associated with any other types of essential item properties than 'irot', 'clap', and 'imir'.

F.5.1.2 *Requirements on files*

Files shall include 'mif1' among the compatible brands and hence shall conform to the specifications in A.2.1.1 of ISO/IEC 23008-12:2017. Additionally, such files shall comply with the specifications in F.2F.3.

The files conforming to the 'jxrA' brand shall additionally be constrained as follows:

Files including 'jxrA' as a compatible brand shall contain an item that is present in the file, is either the primary item or any item from the alternate group containing the primary item, and fulfils one of the following constraints:

- The item is a coded image item conforming to the 'jxrA' brand as specified in F.5.1.1.
- The item is a crop-rotate-mirror derived image item, and each source image item of the item is either a crop-rotate-mirror derived image item or a coded image item conforming to the 'jxrA' brand as specified in F.5.1.1.

F.5.1.3 *Requirements on readers*

The requirements on readers specified in A.2.1.2 of ISO/IEC 23008-12:2017 shall be supported.

Readers conforming to the 'jxrA' brand shall support displaying an item for which the `JPEGXRProfileProperty` indicates that `PROFILE_IDC` is equal to 44 (indicating the Sub-Baseline profile) and `LEVEL_IDC` is equal to 4 (the lowest level defined in B.3) that is either the primary item or any item from the alternate group containing the primary item and fulfils one of the following constraints:

- The item is a coded image item conforming to the 'jxrA' brand as specified in F.5.1.1.
- The item is a crop-rotate-mirror derived image item, and each source image item of the item is either a crop-rotate-mirror derived image item or a coded image item conforming to the 'jxrA' brand as specified in F.5.1.1.

Readers conforming to the 'jxrA' brand are recommended but not required to decode coded images for all profiles and levels specified by Annex B.

File readers should support displaying of an image with opacity information specified by an associated auxiliary image of `aux_type` equal to `urn:mpeg:hevc:2015:auxid:1`.

F.5.2 *JPEG XR image sequence brands*

F.5.2.1 *General*

The brand 'jxrS' is specified in the following subclauses.

F.5.2.2 *Requirements on files*

Files shall include 'msf1' among the compatible brands and hence conform to the specifications in A.2.1.1 of ISO/IEC 23008-12:2017. Additionally, such files shall comply with the specifications in F.3.4. `Track_enabled` shall be equal to 1 and `Track_in_movie` shall be equal to 1 for at least one image sequence track conforming to with the specifications in F.3.4.

When the 'jxrs' brand is among the compatible brands, there shall be an image sequence track with 'mjxr' or 'mjxs' sample entry type, `Track_enabled` equal to 1, `Track_in_movie` equal to 1, and each sample entry having a `data_reference_index` value such that it is mapped to a `DataEntryBox` with $(\text{entry_flags} \& 1)$ equal to 1, for which the coded image syntax conforms to the profile and level indicated by `JPEGXRProfileProperty`.

NOTE 1 In other words, when the 'jxrs' brand is among the compatible brands, at least one viewable image sequence track is a JPEG XR image sequence track and contains a bitstream conforming to the coded image syntax of the profile and level indicated by `JPEGXRProfileProperty`.

F.5.2.3 Requirements on readers

The requirements on readers specified in A.3.1.2 of ISO/IEC 23008-12:2017 shall be supported.

Readers for the 'jxrs' brand shall be able to display an image sequence track with 'mjxs' sample entry type, `Track_enabled` equal to 1 and `Track_in_movie` equal to 1, for which the `JPEGXRProfileProperty` indicates that `PROFILE_IDC` is equal to 44 (indicating the Sub-Baseline profile) and `LEVEL_IDC` is equal to 4 (the lowest level defined in B.3).

Readers shall support all values allowed by 7.2.1 of ISO/IEC 23008-12:2017 for the matrix syntax element of the `TrackHeaderBox` and shall obey the `CleanApertureBox` of the visual sample entry when displaying an image sequence track with 'mjxs' sample entry and having a `JPEGXRProfileProperty` with `LEVEL_IDC` equal to 4 (the lowest level defined in B.3).

NOTE 1 In other words, readers are required to support rotation by 0, 90, 180, and 270 degrees and mirroring, as controlled by the matrix syntax element, as well as cropping, as controlled by the `CleanApertureBox`.

Readers are recommended but not required to be able to display image sequence tracks with 'mjxs' sample entry type, `Track_enabled` equal to 1 and `Track_in_movie` equal to 1, for all levels specified by Annex B.

Readers are recommended but not required to be able to display image sequence tracks with 'mjxr' sample entry type, `Track_enabled` equal to 1 and `Track_in_movie` equal to 1, for all profiles and all levels specified by Annex B.

Displaying of an image sequence track with opacity information specified by an associated auxiliary track of `aux_track_type` equal to `urn:mpeg:hevc:2015:auxid:1`, as specified in F.3.3, should be supported.