
**Information technology — JPEG 2000
image coding system —**

**Part 16:
Encapsulation of JPEG 2000 images
into ISO/IEC 23008-12**

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Foreword

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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 or www.iec.ch/members_experts/refdocs)

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents) or the IEC list of patent declarations received (see patents.iec.ch).

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This document was prepared by ITU-T (as Rec. ITU-T T.815) and drafted in accordance with its editorial rules, in collaboration with Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

This second edition cancels and replaces the first edition (ISO/IEC 15444-16:2019) which has been technically revised.

The main changes compared to the previous edition are as follows:

- the encapsulation of Rec. ITU-T T.802 | ISO/IEC 15444-3 image sequences is deprecated, and replaced by the encapsulation of Rec. ITU-T T.800 | ISO/IEC 15444-1 image sequences;
- adds support for quality and resolution layers;
- the syntax and semantics of the JPEG 2000 header item property are clarified; and
- reader conformance requirements are removed.

A list of all parts in the ISO/IEC 15444 series can be found on the ISO and IEC websites.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html and www.iec.ch/national-committees.

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**INTERNATIONAL STANDARD ISO/IEC 15444-16
RECOMMENDATION ITU-T T.815**

**Information technology – JPEG 2000 image coding system –
Encapsulation of JPEG 2000 images into ISO/IEC 23008-12**

1 Scope

This Recommendation | International Standard specifies the encapsulation of image formats specified in the JPEG 2000 family of Recommendations | International Standards in the framework defined in ISO/IEC 23008-12.

2 Normative references

The following Recommendations and International Standards contain provisions which, through reference in this text, constitute provisions of this Recommendation | International Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies. At the time of publication, the editions indicated in dated references 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.

2.1 Identical Recommendations | International Standards

- Recommendation ITU-T T.800 (latest) | ISO/IEC 15444-1: (latest), *Information technology – JPEG 2000 image coding system – Core coding system*.

2.2 Paired Recommendations | International Standards equivalent in technical content

None.

2.3 Additional references

- ISO/IEC 23008-12:2017, *Information technology – High efficiency coding and media delivery in heterogeneous environments – Part12: Image file format*.

3 Definitions

3.1 Terms defined elsewhere

This Recommendation | International Standard uses the following terms defined elsewhere:

For the purposes of this Recommendation | International Standard, the definitions given in ISO/IEC 23008-12 apply. ITU, ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ITU terminology database: <https://www.itu.int/go/terms>
- ISO Online browsing platform: <https://www.iso.org/obp>
- IEC Electropedia: <http://www.electropedia.org/>

3.2 Terms defined in this Recommendation | International Standard

This Recommendation | International Standard defines the following terms:

None.

4 Abbreviations

For the purposes of this Recommendation | International Standard, the following abbreviations apply:

JPEG Joint Photographic Experts Group

5 Conventions

None.

6 Encapsulation of Rec. ITU-T T.800 | ISO/IEC 15444-1 images and image collections

6.1 General

This clause specifies the encapsulation of individual JPEG 2000 codestreams, as specified in Rec. ITU-T T.800 | ISO/IEC 15444-1, as individual images or as image collections as specified in ISO/IEC 23008-12.

6.2 JPEG 2000 coded image item

A JPEG 2000 coded image item is a coded image item, as defined in ISO/IEC 23008-12, with type 'j2k1' that conforms to the provisions of this subclause.

The body of the coded image item shall be exactly one Contiguous Codestream box as specified in Rec. ITU-T T.800 | ISO/IEC 15444-1.

NOTE 1 – The JPEG 2000 codestream contained in the Contiguous Codestream box can require capabilities not defined in Rec. ITU-T T.800 | ISO/IEC 15444-1, including those specified in Rec. ITU-T T.814 | ISO/IEC 15444-15. Such required capabilities are signalled in the CAP Marker Segment specified in Rec. ITU-T T.800 | ISO/IEC 15444-1.

The coded image item shall be associated with exactly one JPEG 2000 header item property specified in 6.3, and the essential field of the item property shall be equal to 1.

The coded image item shall be associated with exactly one 'colr' item property, and the essential field of that item property shall be equal to 1.

If a 'pixi' item property is associated with the coded image item, its information shall be consistent with the Ssizⁱ fields of the SIZ marker of the JPEG 2000 codestream within the Contiguous Codestream box.

If a 'lsei' item property is associated with the coded image item, then:

- the layers field of the JPEG 2000 header item property shall be present and contain an entry with a layer_id field equal to that of the 'lsei' item property; and
- the decoded image shall be the result of decoding the layer identified by the layer_id field of the 'lsei' item property.

The image_width and image_height fields of the 'ispe' item property shall be equal to width and height of the decoded image.

NOTE 2 – Item properties other than those referenced above can be associated with the coded image item.

6.3 JPEG 2000 header item property

6.3.1 Syntax

```
class J2KHeaderItemProperty extends ItemProperty('j2kH') {
    J2KChannelDefinition    channels;
    J2KComponentMapping     components;
    J2KPalette               palette;
    J2KLayers                layers;
}
```

NOTE – All boxes are optional unless specified otherwise, and boxes other than those listed above can be present.