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Als Nederlandse norm is aanvaard:

- ISO/IEC 15444-6:2013, IDT

Normcommissie 381029 "Coding of audio, picture, multimedia..."

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Information technology — JPEG 2000 image coding system —
Part 6: Compound image file format

Technologies de l'information — Système de codage d'images JPEG 2000 —
Partie 6: Format de fichier d'image de composant
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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 15444-6 was prepared by Joint Technical Committee ISO/IEC JTC 1, Information technology, Subcommittee SC 29, Coding of audio, picture, multimedia and hypermedia information, in collaboration with ITU-T. The identical text is published as Rec. ITU-T T.805 (01/2012).


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
- 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
INTERNATIONAL STANDARD

RECOMMENDATION ITU-T

Information technology – JPEG 2000 image coding system:
Compound image file format

1 Scope

This Recommendation | International Standard defines a normative but optional file format for storing compound images using the JPEG 2000 file format family architecture. This format is an extension of the JP2 file format defined in Rec. ITU-T T.800 | ISO/IEC 15444-1 Annex I and uses boxes defined for both the JP2 file format and the JPX file format defined in Rec. ITU-T T.801 | ISO/IEC 15444-2 Annex M. This Recommendation | International Standard is useful for applications storing multiple pages, images with mixed content, and/or images that need more structure than provided in JP2.

Applications that implement this file format shall implement it as described in this Recommendation | International Standard. This Recommendation | International Standard:
– specifies a binary container for multiple bi-level and continuous-tone images used to represent a compound image;
– specifies a mechanism by which multiple images can be combined into a single compound image, based on the mixed raster content (MRC) model;
– specifies a mechanism for grouping multiple images in a hierarchy of layout objects, pages and page collections;
– specifies a mechanism for storing JPEG 2000 and other compressed image data formats;
– specifies a mechanism by which metadata can be included in files specified by this Recommendation | International Standard.

2 Normative references

The following Recommendations and International Standards contain provisions which, through reference in this text, constitute provisions of 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.

2.1 Identical Recommendations | International Standards
2.2 ITU, IEC and ISO references

- IEC 61966-2-1:1999-10, Multimedia systems and equipment – Colour measurement and management – Part 2-1: Colour management – Default RGB colour space – sRGB.
- IEC 61966-2-1/Amd.1:2003, Multimedia systems and equipment – Colour measurement and management – Part 2-1: Colour management – Default RGB colour space – sRGB.
- ISO 5807:1985, Information processing – Documentation symbols and conventions for data, program and system flowcharts, program network charts and system resources charts.

2.3 Additional references

- W3C (2008), Cascading Style Sheets, level 1 (CSS1) Specification. [http://www.w3.org/TR/REC-CSS1/]
3 Definitions

For the purposes of this Recommendation | International Standard, the following definitions apply.

3.1 annotation: Particular region of a page in a JPM document that has associated a URL reference, a note or a highlight.

3.2 base colour: The colour of an object for which no image data is available.

3.3 BasePage: The original state of the page before it is rendered with layout objects.

3.4 box: A portion of the file format defined by a length and a unique box type. Boxes of some types may contain other boxes.

3.5 component: A two-dimensional array of samples.

3.6 compound image: An image that may contain scanned images, synthetic images or both, and that preferably requires a mix of continuous tone and bi-level compression methods.

3.7 compressed hidden text XML: Hidden text XML data compressed using the mechanisms defined in clause F.2.

3.8 file format: A codestream or codestreams and additional support and information not explicitly required for decoding of the codestream or codestreams. Examples of such support data include text fields providing security and historical information, data to support the placement of multiple codestreams within a given data file, and data to support exchange between platforms or conversions to other file formats.

3.9 fragment: A portion of the codestream for an image. Clause 5.2.5 describes fragment usage.

3.10 hidden text: Symbolic representation for the characters and words found in an image.

3.11 hidden text UUID box: UUID box containing compressed hidden text XML.

3.12 hidden text XML: XML data which describe hidden text and annotations for a single page in a JPM file and which conform to the schema in Annex H.

3.13 hidden text XML schema: XML schema for hidden text XML, as defined in clause H.1.


3.15 JPM file: The name of a file in the file format described in this International Standard. A JPM file can contain one or more pages, composed from one or more layout objects, each of which is composed from at most two objects. Structurally, a JPM file is a contiguous sequence of boxes.

3.16 JPX file: The name of a file in the file format described in Rec. ITU-T T.801 | ISO/IEC 15444-2. Structurally, a JPX file is a contiguous sequence of boxes.

3.17 layout object: An entity that comprises at most two paired objects or MRC layers.

3.18 main page collection: The main page collection contains all pages and page collections in a file.

3.19 mask object: An object that is used to select the samples of a corresponding image object that are to be imaged on a page.

3.20 metadata: Additional data associated with the image data beyond the image data.

3.22 **object**: An image that is part of a layout object; an MRC layer.

3.23 **page**: The largest collection of layout objects that can be imaged independently of any other layout objects; a canvas or frame for imaging.

3.24 **page collection**: A collection of pages logically grouped together in a JPM file. Each page must be contained in at least one page collection.

3.25 **PageImage**: The image created by rendering the BasePage with the layout objects. The PageImagek are the images created by rendering the BasePage with the first k layout objects.

3.26 **primary page collection**: A page collection which provides back and forward navigation in the main document associated with a page.

3.27 **profile**: A subset of all possible field values in a file.

3.28 **superbox**: A box that itself contains a contiguous sequence of boxes (and only a contiguous sequence of boxes).

4 **Abbreviations**

For the purposes of this Recommendation | International Standard, the following abbreviations apply. The abbreviations defined in Rec. ITU-T T.800 | ISO/IEC 15444-1 clause 4 also apply.

- **DPI** Dots per inch
- **HTX** Hidden Text XML
- **IPR** Intellectual Property Rights
- **JPX** JPEG 2000 File Format defined in Rec. ITU-T T.801 | ISO/IEC 15444-2; JPEG 2000 File Format Extended
- **JPM** JPEG 2000 File Format defined in this International Standard; JPEG 2000 File Format – Multilayer
- **MRC** Mixed Raster Content
- **PPCLoc** Primary Page Collection Locator
- **UUID** Universal Unique Identifier

5 **General arrangement**

The purpose of this clause is to give an overview of this International Standard. Terms defined in previous clauses in this International Standard will also be introduced. (Terms defined in clauses 3 and 4 of Rec. ITU-T T.800 | ISO/IEC 15444-1 continue to apply in this International Standard.) Throughout this International Standard, text formatted as a NOTE in the following form is informative only:

NOTE – Informative text appears here.

This International Standard defines a file format for storing compound images using the JPEG 2000 file format family architecture. A compound image file contains multiple images, both continuous tone and bi-level, together with composition models describing how the individual images are combined to generate the compound image. This International Standard is based on the multi-layer mixed raster content (MRC) imaging model, defined in Rec. ITU-T T.44 | ISO/IEC 16485.

This International Standard defines a member of the JPEG 2000 file format family that enables the efficient processing, interchange and archiving of raster-oriented pages containing a mixture of multi-level and bi-level images. This efficiency is realized by representing the mixed-content image using multiple layers, determined by image type, and applying image specific encoding, spatial and colour resolution processing. A rasterized page may contain one or more image types, such as: multi-level continuous-tone or palettized (contone) content usually associated with naturally occurring images; bi-level detail associated with text and line-art; and multi-level colours associated with the text and line-art. This International Standard makes provisions for processing, interchange, and archiving of these image types in multiple layers and defines composition models which regenerate the desired image.
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