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Graphic technology — Prepress digital data exchange — Use of PDF —

Part 2:

Partial exchange of printing data (PDF/X-2)

*Technologie graphique — Échange de données numériques de préimpression — Emploi de PDF —
Partie 2: Échange partiel de données d'impression (PDF/X-2)*

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards and related documents. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires a two-thirds majority vote of the P-members voting of the technical committee or subcommittee.

ISO 15930-2 was prepared by Technical Committee ISO/TC 130, *Graphic technology*, with the support of ANSI Committee for Graphic Arts Technologies Standards (CGATS).

Attention is drawn to the possibility that some of the elements of this part of ISO 15930 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 15930 consists of the following parts, under the general title *Graphic technology — Prepress digital data exchange — Use of PDF* —

Part 1: Complete exchange using CMYK and spot colour data (PDF/X-1a)

Part 2: Partial exchange of printing data (PDF/X-2)

Part 3: Complete exchange suitable for colour-managed workflows (PDF/X-3)

Annex A of this part of ISO 15930 is for information only.

Introduction

ISO 15930 defines methods for the exchange of digital data within the graphic arts industry and for the exchange of files between graphic arts establishments. It is a multi-part document where each part is intended to respond to different workflow requirements. These workflows differ in the degree of flexibility required. However, increasing flexibility can lead to the possibility of uncertainty or error. The goal throughout the various parts of ISO 15930 has been to maintain the degree of flexibility required while minimising the uncertainty.

Many printed documents are assemblies of partial pages and/or pages created at different locations and by different organizations. The merging of these individual elements into the final printing form and the subsequent printing may take place at different locations. Some of these elements may also be routed to multiple sites for incorporation into other documents. Each of these elements is referred to in ISO 15930 as a compound entity.

A variety of data formats and structures are used for the creation of this type of material, but with two prevalent kinds of underlying data structures. These are vector-based data for the encoding of line art and textual information; and raster-based data for the encoding of image information, including previously rasterized line art and textual information. Both kinds of data structures are required along with page description information in an open electronic workflow. The exchange of raster-based data using the TIFF/IT file format is defined in ISO 12639. The subject of ISO 15930 is a format for the exchange of object-based data where individual objects may be in either vector or raster data structures.

This part of ISO 15930 complements the other parts by defining a data format and its usage to permit the predictable dissemination of a compound entity to one or more locations, as colour-managed data, CMYK data, and/or spot colour data, by transfer of a file with some elements not included but with provision for unique identification. An exchange identified by this part of ISO 15930 may require communication between sender and receiver to select the mechanism by which elements not included may be identified.

These goals are accomplished by defining a specific use of the publicly available Adobe Portable Document Format version 1.4. In order to achieve a level of exchange that avoids any ambiguity in interpretation of the file, it identifies a limited set of PDF objects that may be used and adds restrictions to the use, or form of use, of those objects, and/or keys within those objects.

While this part of ISO 15930 defines a data format and its usage to permit the predictable dissemination of a compound entity to one or more locations where some or all of the elements may be more logically present at the receiving site, or may be exchanged at a different time, there are occasions where this is not appropriate. Parts 1 and 3 of ISO 15930 specify the exchange of complete material, with all elements present.

It is anticipated that a variety of products will be developed around PDF/X, such as readers (including viewers) and writers of PDF/X files, and products that offer combinations of these features. Different products will incorporate various capabilities to prepare, interpret and process conforming files based on the application needs as perceived by the suppliers of the products. However, it is important to note that a conforming reader must be able to read and appropriately process all files conforming to a specified conformance level.

An ongoing series of Application Notes [1] is maintained for the guidance of developers and users of the ISO PDF/X family of International Standards. They are available from NPES The Association for Suppliers of Printing, Publishing and Converting Technologies in the standards section at <http://www.npes.org/standards/workroom.html>.

Graphic technology — Prepress digital data exchange — Use of PDF —

Part 2: Partial exchange of printing data (PDF/X-2)

1 Scope

This part of ISO 15930 specifies the use of the Portable Document Format (PDF) for the dissemination of digital data, where all elements necessary for final print reproduction are either included or provision is made for unique identification. Colour-managed, CMYK, and spot colour data are supported in any combination.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 15930. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 15930 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest editions of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 15930-1:2001 *Graphic technology — Prepress digital data exchange — Use of PDF — Part 1: Complete exchange using CMYK data (PDF/X-1 and PDF/X-1a)*

ISO 15930-1:2003 *Graphic technology — Prepress digital data exchange — Use of PDF — Part 1: Complete exchange using CMYK data (PDF/X-1a)*

ISO 15930-3:2002 *Graphic technology — Prepress digital data exchange — Use of PDF — Part 3: Complete exchange suitable for colour managed workflows (PDF/X-3)*

<https://standards.iteh.ai/catalog/standards/sist/3511a2a9-ce53-4d86-9fad-8a0f7e000000/iso-15930-3-2002>

ISO 15930-3:2003 *Graphic technology — Prepress digital data exchange — Use of PDF — Part 3: Complete exchange suitable for colour managed workflows (PDF/X-3)*

ISO/IEC 11578:1996 *Information technology - Open Systems Interconnection - Remote Procedure Call (RPC)*

DCE 1.1: *Remote Procedure Call*. Open Group Technical Standard Document Number C706, August 1997. <http://www.opengroup.org/publications/catalog/c706.htm>

PDF reference: Adobe Portable Document Format version 1.4, 3rd Ed., Adobe Systems Incorporated (ISBN 0-201-75839-3)

XMP, *Extensible Metadata Platform*, Version 1.5, September 14, 2001, Adobe Systems Incorporated

3 Terms and definitions

For the purposes of this part of ISO 15930, the following terms and definitions apply:

3.1

characterized printing condition

printing condition (offset, gravure, flexographic, direct, etc.) for which process control aims are defined and for which the relationship between input data (printing tone values, usually CMYK) and the colorimetry of the printed image is documented

NOTE 1 The relationship between input data (printing tone values) and the colorimetry of the printed image is commonly referred to as characterization.

NOTE 2 It is generally preferred that the process control aims of the printing condition and the associated characterization data be made publicly available via the accredited standards process or industry trade associations.

**3.2
complete exchange**

exchange of compound entities in which all elements and element resources are present as part of a single exchange and all of the information needed to process the compound entity is either in the compound entity or is specified within the applicable standard and its normative references

**3.3
compound entity**

unit of work with all text, graphics, and page elements prepared for final distribution, representing a single page, a portion of a page, or a combination of pages, whose contents may reside in one or more computer files, uniquely linked together

**3.4
conformance level**

identified set of restrictions and requirements to which files, readers and writers must comply

**3.5
element**

substructure of a compound entity relative to the current processing environment, such as a block of text, a contone picture or an outline graphic that, by itself, comprises the smallest logical composed unit of a compound entity

**3.6
font**

identified collection of graphics that may be glyphs or other graphic elements

**3.7
FPO file**

file containing a low resolution rendition of an external file and information about the full resolution file from which it was derived, used for placement in design applications

**3.8
glyph**

recognizable abstract graphic symbol that is independent of any specific design
[ISO/IEC 9541-1]

**3.9
non-print element**

an element not intended for final print reproduction, including previews, preview images and all annotations other than **TrapNet** or **PrinterMarks**

**3.10
partial exchange**

an exchange of composite entities in which some elements or element resources are intentionally excluded from the exchange, and are separately available

NOTE Examples of excluded elements are high resolution images.

**3.11
PDF (Portable Document Format)**

file format defined in the *PDF reference*

**3.12
PDF dictionary**

associative table containing key-value pairs, specifying the name and value of an attribute for objects which is generally used to collect and tie together the attributes of a complex object

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3.13**PDF/X-1a:2001**

file conforming to the PDF/X-1a conformance level defined in ISO 15930-1:2001

3.14**PDF/X-1a:2003**

file conforming to the PDF/X-1a conformance level defined in ISO 15930-1:2003

3.15**PDF/X-3:2002**

file conforming to the PDF/X-3 conformance level defined in ISO 15930-3:2002

3.16**PDF/X-3:2003**

file conforming to the PDF/X-3 conformance level defined in ISO 15930-3:2003

3.17**preview image**

preview consisting of a raster image representing a compound entity at a resolution suitable for viewing on a computer display

3.18**print element**

an element intended for final print reproduction

3.19**printing tone value**

data value corresponding to the relative area of a printing surface that is intended to transfer ink to the substrate being printed

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NOTE

See 3.1, characterized printing condition
<https://standards.itih.ai/catalog/standards/sist/3511a2a9-ce53-4d86-9fad-8ae10e352f39/iso-dis-15930-2>

3.20**proxy**

visible placeholder representing at least the size and shape of the area to be replaced by the referenced object

NOTE

A visible placeholder may be something as basic as a rectangle of the appropriate size containing no image content, or may be a partial or complete representation of the intended content. See 3.17

3.21**reader**

software application that is able to read and appropriately process files

3.22**spot colour**

single colorant, identified by name, whose printing tone values are specified independently from colour values specified in a colour coordinate system

3.23**trapping**

modification of boundaries of colour areas to account for dimensional variations in the printing process by overprinting in selected colours at the boundaries between colours that might inadvertently be left uncoloured due to normal variations of printing press registration

NOTE

Trapping is sometimes colloquially referred to as chokes and spreads or grips. This is not the same as ink trapping.

3.24**UUID style ID**

a 128-bit number that is guaranteed to be globally unique.

NOTE This guarantee may not be absolute; it is sufficient that the probability of a collision is so enormously remote as to be effectively impossible.

**3.25
writer**

software application that is able to write files

4 Symbols and notations

PDF operators, PDF keywords, the names of keys in PDF dictionaries, and other predefined names are written in a bold sans serif type font; for example, the key **GTS_PDFXVersion**.

Operands of PDF operators or values of dictionary keys are written in an italic sans serif font; for example the (*PDF/X-2:2003*) value for the **GTS_PDFXVersion** key.

For the purpose of this part of ISO 15930, references to the "PDF reference" are to the *PDF reference: Adobe portable document format* as identified in clause 2.

5 Conformance

This part of ISO 15930 defines the use of the PDF file format for the partial exchange of digital data representing a compound entity.

Partial exchange means that components of the compound entity might not be included in the PDF/X-2 file, but that sufficient information can be made available to uniquely identify the missing elements. Unique identification may be completely and automatically resolvable using references in the PDF/X-2 file and its components, or they may require additional communication between sender and receiver to establish the identity with certainty.

Neither the version number in the first line of a PDF file, nor the value of the **Version** key in the **Catalog** of a PDF file shall be used in determining conformance with this part of ISO 15930

A conforming PDF/X-2 file is a PDF file in which those features necessary for the exchange of a compound entity adhere to this part of ISO 15930. A conforming file may also include other valid PDF features that do not affect the reproduction of the compound entity.

A conforming writer is a software application that shall be able to write conforming files.

A conforming reader is a software application that shall be able to read and appropriately process all conforming PDF/X-2 files.

Although *PDF reference* permits compliance with earlier versions of PDF, features described in versions of the PDF specification earlier than 1.4, but which are not described in *PDF reference*, should not be used in a conforming PDF/X-2 file. Such features may be ignored by a PDF/X-2 reader.

All conforming readers shall parse all PDF files but may ignore those features not required by this part of ISO 15930. A reader may ignore an annotation's **Print** flag except for those in a **TrapNet** annotation.

Rendering of conforming files shall be performed as defined in the *PDF reference* and as restricted by this part of ISO 15930. To the extent that the *PDF reference* and this part of ISO 15930 permit more than one rendering of a conforming file, a conforming reader may use embedded job ticket or metadata information to control the rendering of the file more precisely.

EXAMPLE 1 (Trapping) If a conforming PDF/X-3 file specifies **Trapped=False**, a conforming reader may use job ticket information to determine details of how the file is to be trapped. If the file specifies **Trapped=True**, a conforming reader must ignore any trapping information in an embedded job ticket.

