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Document management — Electronic document file format for long-term preservation —

Part 1:
Use of PDF 1.4 (PDF/A-1)

Gestion de documents — Format de fichier des documents électroniques pour une conservation à long terme —

Partie 1: Utilisation du PDF 1.4 (PDF/A-1)

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Contents

Page

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. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member 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 shall not be held responsible for identifying any or all such patent rights.

ISO 19005-1 was prepared by Technical Committee ISO/TC 171, *Document management applications*, Subcommittee SC 2, *Application issues*, in collaboration with Technical Committees ISO/TC 130, *Graphic technology*, ISO/TC 42, *Photography* and ISO/TC 46, *Information and documentation*, Subcommittee SC 11, *Archives/records management*, in a Joint Working Group.

ISO 19005 consists of the following parts, under the general title *Document management — Electronic document file format for long-term preservation*:

— *Part 1: Use of PDF 1.4 (PDF/A-1)*

In this corrected version of ISO 19005-1:2005 paragraph 5 of the Foreword (above) has been augmented in order fo mention the collaboration of ISO Technical Committees ISO/TC 130, ISO/TC 42 and ISO/TC 46 in the preparation of this part of ISO 19005.

Introduction

PDF is a digital format for representing documents. PDF files may be created natively in PDF form, converted from other electronic formats or digitized from paper, microform, or other hard copy format. Businesses, governments, libraries, archives and other institutions and individuals around the world use PDF to represent considerable bodies of important information. Much of this information must be kept for substantial lengths of time; some must be kept permanently. These PDF files must remain useable and accessible across multiple generations of technology. The future use of, and access to, these objects depends upon maintaining their visual appearance as well as their higher-order properties, such as the logical organization of pages, sections, and paragraphs, machine recoverable text stream in natural reading order, and a variety of administrative, preservation and descriptive metadata.

Adobe Systems Incorporated makes the PDF specification publicly available. However, the inclusive, feature-rich nature of the format requires that additional constraints be placed on its use to make it suitable for the long-term preservation of electronic documents.

The primary purpose of this part of ISO 19005 is to define a file format based on PDF, known as PDF/A, which provides a mechanism for representing electronic documents in a manner that preserves their visual appearance over time, independent of the tools and systems used for creating, storing or rendering the files.

A secondary purpose of this part of ISO 19005 is to provide a framework for recording the context and history of electronic documents in metadata within conforming files.

Another purpose of this part of ISO 19005 is to define a framework for representing the logical structure and other semantic information of electronic documents within conforming files.

These goals are accomplished by identifying the set of PDF components that may be used, and restrictions on the form of their use, within conforming PDF/A files.

By itself, PDF/A does not necessarily ensure that the visual appearance of the content accurately reflects any original source material used to create the conforming file; e.g. the process used to create a conforming file might substitute fonts, reflow text, downsample images or use lossy compression. Organizations that need to ensure that a conforming file is an accurate representation of original source material may need to impose additional requirements on the processes that generate the conforming file beyond those imposed by this part of ISO 19005. In addition, it is important for those organizations to implement policies and practices regarding the inspection of conforming files for correct visual appearance.

This part of ISO 19005 should be used as one component of an organization's electronic archival environment for long-term retention of documents. Successful implementation of this part of ISO 19005 for archival purposes depends upon:

— the retention requirements of an organization's archival environment, records management policies and procedures as specified in ISO 15489-1, [9];

— any additional requirements and conditions necessary to ensure the persistence of electronic documents and their characteristics over time, including, but not limited to, those defined by:

  — ISO 14721;

  — ISO/TR 15801, [10];

  — ISO/TR 18492, [12];

  — ISO 18509-1, [13];

  — ISO 18509-2, [14];

⸻ quality assurance processes necessary to verify conformance with applicable requirements and conditions; e.g. an inspection regime to verify the quality and integrity of converted source data.

This part of ISO 19005 should lead to the development of various applications that read, render, write and validate conforming files. Different applications will incorporate various capabilities to prepare, interpret and process conforming files based on needs as perceived by the suppliers of those applications. However, it is important to note that a conforming application must be able to read and process appropriately all files complying with a specified conformance level.

This document has been created as Part 1 of ISO 19005 to allow the creation of future parts, which can provide compatibility with future versions of the underlying PDF specification without rendering this document or applications based on PDF Version 1.4 obsolete.

The following terms, referring to this specification or parts thereof, are recommended when referring to this specification when the full ISO name is not being used:

⸻ "PDF/A" – a synonym for the ISO 19005 family of standards;

⸻ "PDF/A-1" – a synonym for ISO 19005-1;

⸻ "PDF/A-1a" – a synonym for ISO 19005-1 Level A conformance;

⸻ "PDF/A-1b" – a synonym for ISO 19005-1 Level B conformance.

This part of ISO 19005, in conjunction with *PDF Reference* and *XMP Specification*, January 2004, provides sufficient information to interpret any conforming PDF/A file. *PDF Reference* contains a statement from Adobe Systems Incorporated concerning its intellectual property and its willingness to allow perpetual, royalty-free, non-exclusive use of that property in order to promote the use of PDF. Adobe has provided ISO with a similar statement relating to *XMP Specification*. In general, anyone may use *PDF Reference* and *XMP Specification* to create applications that read, write or otherwise process PDF/A files.

Patent claims regarding applications that read, render, write or otherwise process PDF/A files are outside the scope of this part of ISO 19005.

NPES and AIIM (accredited standards developing organizations) maintain an ongoing series of application notes for guiding developers and users of this part of ISO 19005. These application notes are available at <http://www.npes.org/standards/toolspdfa.html> and <http://www.aiim.org/pdfa/app-notes>. Both NPES and AIIM will also retain copies of the specific non-ISO normative references of this part of ISO 19005 which are publicly available electronic documents.

Document management — Electronic document file format for long-term preservation —

Part 1:
Use of PDF 1.4 (PDF/A-1)

1 Scope

This part of ISO 19005 specifies how to use the Portable Document Format (PDF) 1.4 for long-term preservation of electronic documents. It is applicable to documents containing combinations of character, raster and vector data.

This part of ISO 19005 does not apply to:

— specific processes for converting paper or electronic documents to the PDF/A format;

— specific technical design, user interface, implementation, or operational details of rendering;

— specific physical methods of storing these documents such as media and storage conditions;

— required computer hardware and/or operating systems.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 646, *Information technology — ISO 7-bit coded character set for information interchange*

NOTE 1   The character encoding defined in ISO/IEC 646 is equivalent to ANSI X3.4 (ASCII) [1] and ECMA-6 [2].

ISO/IEC 9541-1, *Information technology — Font information interchange — Part 1: Architecture*

ISO/IEC 10646-1, *Information technology — Universal Multiple-Octet Coded Character Set (UCS) — Part 1: Architecture and Basic Multilingual Plane*

NOTE 2   The character code values defined in ISO/IEC 10646-1 are equivalent to those of Unicode [22].

ISO 14721, *Space data and information transfer systems — Open archival information system — Reference model*

ISO 15930-4, *Graphic technology — Prepress digital data exchange using PDF — Part 4: Complete exchange of CMYK and spot colour printing data using PDF 1.4 (PDF/X-1a)*

Date and Time Formats, W3C Note, 15 September 1997. Available from Internet <http://www.w3.org/TR/NOTE-datetime>

Errata for PDF Reference, third edition, 18 June 2003. Available from Internet <http://partners.adobe.com/asn/acrobat/docs/PDF14errata.txt>

Extensible Markup Language (XML) 1.0 (Third Edition), W3C Recommendation, 4 February 2004. Available from Internet <http://www.w3.org/TR/2004/REC-xml-20040204>

ICC.1:1998-09, *File Format for Color Profiles*, International Color Consortium. Available from Internet <http://www.color.org/ICC-1_1998-09.PDF>

ICC.1A:1999-04, *Addendum 2 to Spec. ICC.1:1998-09*, International Color Consortium. Available from Internet <http://www.color.org/ICC-1A_1999-04.PDF>

PDF Reference: Adobe Portable Document Format, Version 1.4, Adobe Systems Incorporated – 3rd ed. (ISBN 0-201-75839-3). Available from Internet <http://partners.adobe.com/asn/acrobat/docs/File_Format_Specifications/PDFReference.pdf>

RDF/XML Syntax Specification (Revised), W3C Recommendation, 10 February 2004. Available from Internet <http://www.w3.org/TR/2004/REC-rdf-syntax-grammar-20040210/>

Tags for the Identification of Languages, RFC 1766, March 1995. Available from Internet <http://www.ietf.org/rfc/rfc1766.txt>

XMP Specification, January 2004, Adobe Systems Incorporated. Available from Internet <http://partners.adobe.com/asn/tech/xmp/pdf/xmpspecification.pdf>

NOTE 3   AIIM and NPES (accredited standards developing organizations) maintain copies of the non-ISO references that are publicly available electronic documents.

3   Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
conformance level
identified set of restrictions and requirements to which files and readers must comply

[ISO 15930-4]

3.2
cross reference table
PDF data structure that contains the byte offset of the start of indirect objects within the file

3.3
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

[ISO 15930-4]

3.4
electronic document
electronic representation of a page-oriented aggregation of text and graphic data, and metadata useful to identify, understand and render that data, that can be reproduced on paper or optical microform without significant loss of its information content

3.5
end-of-file marker
five character sequence **%%EOF** marking the end of a PDF file