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Graphic technology — Variable content replacement —

Part 1: Using PDF/X for variable content replacement (PDF/VCR-1)

Technologie graphique — Remplacement du contenu variable —

Partie 1: Utilisation de PDF/X pour le remplacement du contenu variable (PDF/VCR-1)

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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.

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 ISO documents 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).

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. 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).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 130, *Graphic technology*.

A list of all parts in the ISO 16613 series can be found on the ISO website.

Introduction

This document describes the use of PDF as a variable content page template for printing applications where variable content data is substituted into the template live in real time immediately ahead of the rendering and printing processes. In most cases, a conforming processor comprises an integrated merge, render and print engine and the graphical representation of each merged page is stored only temporarily in memory until output.

In this type of template-based variable data driven print workflow, the variable substitution content data to be later merged with the template for printing is typically generated and then transferred into production in a data exchange separate from the exchange of the static content template.

In another type of workflow, the variable substitution content is generated during production by a processor present in the production workflow. This processor can use static source data as input, such as data from a database, and generate the substitution content on the fly. It can also use live source data, or both live and static source data where the live source data is acquired, e.g. from scanners during production.

This differs from the use of ISO 16612-2 (PDF/VT) where conforming PDF/VT files instead represent fully composed variable content documents that are the result of an arbitrarily complex, possibly template-based, data driven composition or merge process. Thus, pages of PDF/VT documents represent final form mastered documents that can be exchanged as a single file with static and variable content already combined and the final form representation remains after output is completed.

This document is targeted to enable the following requirements for printing using live content substitution:

— long runs;

— closed loop print verification and reprint recovery;

— immediate start of printing;

— fixed speed without pause (due to roll-based transportation of the media);

— low latency real-time processing (e.g. allow for camera-based determination of variable data and then merge, render and print in real time;

— capability to keep security-related information only temporarily;

— allow for spontaneous changes in print order (selectively reprinting bad records).

Use cases of printing using live content substitution are described in Annex B.

Graphic technology — Variable content replacement —

Part 1:
Using PDF/X for variable content replacement (PDF/VCR-1)

1 Scope

This document enables variable data printing applications using PDF template-based variable content substitution where

— a PDF template file containing pages with variable content substitution fields (placeholders) is delivered ahead of a print production run and may be reused across multiple print production runs, and

— PDF-based variable data substitution content is provided during print production and merged with the PDF template to produce final form variable content page output.

This document defines PDF/VCR (PDF for variable content replacement), a set of base technical requirements for a PDF template file format, a PDF-based variable data substitution content format and a framework for in-RIP variable content merging. The PDF/VCR base technical requirements do not include writer and processor conformance.

This document also defines the PDF/VCR-1 conformance level which is based on the PDF/VCR base technical requirements and defines conformance requirements for:

— the PDF/VCR-1 template file format;

— the PDF/VCR-1 data sequence format, a variable data substitution content format;

— a PDF/VCR-1 writer, a software application which can generate PDF/VCR-1 template files;

— a PDF/VCR-1 data provider, a software application which can generate PDF/VCR-1 data sequences;

— a PDF/VCR-1 processor, a software application which can perform substitution (replacement) of PDF/VCR-1 template placeholder objects with substitution content provided within a PDF/VCR-1 data sequence.

NOTE 1 Additional conformance levels can be added at a later time based on the same PDF/VCR base technical requirements.

NOTE 2 A conforming PDF/VCR-1 template file contains all necessary information for variable content printing by adding matching substitution content. Generating the substitution content usually requires additional information not present in the template file.

The template file format defined in this document is based on the ISO 15930 (PDF/X) family of standard formats for the representation of a single or multiple page template containing both static content and stylized variable content placeholders.

The variable data format defined in this document is based on the CSV file format defined in RFC 4180. It supports the representation of substitution content data that can be merged into the template's variable content placeholders to produce complete page content utilizing the full PDF graphics model.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 15930 (all parts)[1], *Graphic technology — Prepress digital data exchange using PDF*

ISO 15930-7:2010[2], *Graphic technology — Prepress digital data exchange using PDF — Part 7: Complete exchange of printing data (PDF/X-4) and partial exchange of printing data with external profile reference (PDF/X-4p) using PDF 1.6*

ISO 32000 (all parts)[3], *Document management — Portable document format*

RFC 3629, *UTF-8, a transformation format of ISO/IEC 10646*

RFC 4180:2005, *Common Format and MIME Type for Comma-Separated Values (CSV) Files*

Adobe PDF Reference, fifth edition, version 1.6, Adobe Systems Incorporated (ISBN 0-321-30474-8)[4]

3 Terms, definitions and abbreviated terms

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
application template file
file maintained by a VDP application containing one or more pages containing static content and variable content substitution *placeholders* (3.31)

3.2
BBox
bounding box of a *placeholder object* (3.32), given in user coordinates

3.3
CSV file
Comma Separated Values file
file consisting of records where each record contains multiple values separated by the ASCII COMMA (‘,’) character

3.4
form XObject
self-contained description of an arbitrary sequence of graphics objects, as defined in the applicable version of the PDF Reference

Note 1 to entry: The term is defined in the PDF 1.6 Reference, section 4.9.

Note 2 to entry: See Clause 5 for “applicable version of the PDF Reference” and “PDF 1.6 Reference”.

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1) ISO 15930 is a multi-part standard defining several versions of PDF/X. For each part, the latest edition applies.

2) Examples are given in, and application requirements refer to PDF/X-4 as defined in, ISO 15930-7.

3) ISO 32000 is a multi-part standard defining several versions of PDF.

4) Version 1.6 of the Adobe PDF Reference is used for examples and for references to definitions of PDF features, including section references. Available from www.npes.org/standards/toolspdfx.html.