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## Graphic technology — Variable printing data exchange —

### Part 1: Using PPML 2.1 and PDF 1.4 (PPML/VDX-2005)

*Technologie graphique — Échange de données d'impression  
variables —*

*Partie 1: Utilisant PPML 2.1 et PDF 1.4 (PPML/VDX-2005)*



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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. 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 16612-1 was prepared by Technical Committee ISO/TC 130, *Graphic technology*.

ISO 16612-1 is based on ANSI/CGATS.20-2002, *Graphic technology — Variable printing data exchange using PPML and PDF (PPML/VDX)*.

ISO 16612 consists of the following parts, under the general title *Graphic technology — Variable printing data exchange*:

— *Part 1: Using PPML 2.1 and PDF 1.4 (PPML/VDX-2005)*

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## Introduction

ISO 16612 defines a data format and its usage for facilitating methods of exchange of digital data for variable data printing. It focuses on the exchange of files between establishments as well as within an integrated environment that produces variable data printing. In particular, ISO 16612 is concerned with the exchange of content information as well as data representing the final appearance of customized or personalized print products to be manufactured. This part of ISO 16612 is based on the use of PPML version 2.1, PDF version 1.4, and JDF version 1.2. Subsequent parts of ISO 16612 may use later revisions of these reference documents. However, because it will be important to be able to separately identify different versions of PPML/VDX, these will be created as individual parts of ISO 16612.

This part of ISO 16612 is intended to respond to the workflow requirements associated with the efficient and reliable exchange of final form data between one or more senders or receivers. The workflows addressed by this part of ISO 16612 can differ in their degree of optimization, flexibility and level of integration. It is recognized that increasing flexibility can lead to the possibility of uncertainty or error in the interpretation of page appearance data as intended by the originator. Two conformance levels are identified that provide a reasonable balance between flexibility and predictability.

Unlike conventional digital master formats that describe the final appearance of pages of a single document, a variable document format must define many related documents and the final graphical appearance of the pages of each document. Such documents are referred to in this part of ISO 16612 as "instance documents". It is important to note that instance documents within a job may vary in page count, graphical content, page dimensions and finishing. The pages of instance documents are referred to in this part of ISO 16612 as "compound pages" where all pages of each document are defined in reader order.

Each compound page is an assembly of one or more partial pages or graphical content objects referred to in this part of ISO 16612 as "compound elements". In most cases, many compound page definitions share a common set of compound element definitions. This part of ISO 16612 takes advantage of this content data sharing by allowing compound element data to be defined once regardless of the number of times it is referenced from the various compound page definitions. This effectively minimizes the overall size of the data that need to be exchanged, to a size that is manageable for most exchange scenarios.

The layout data entity that defines the instance documents and their compound pages is referred to in this part of ISO 16612 as the "layout data" of a PPML/VDX instance, where such a file set is referred to as a "PPML/VDX instance". The layout data is defined using the *Personalized Print Markup Language* (PPML) data format, which is based on XML syntax.

The PPML layout data can also carry meta-information that characterizes the re-use of specific renderings of compound element data as they appear as graphical marks on compound pages. This re-used information is intended to provide developers and manufacturers of reader software, such as a PPML/VDX conforming print or display rendering system, with opportunities to improve the efficiency of page rasterization.

All compound element data of a PPML/VDX instance referenced from the PPML layout data must be defined in the PDF format as defined in the *Adobe PDF Reference*, or as further restricted by the ISO 15930 family of International Standards (PDF/X). More specifically, the data that define a compound element as laid out on a compound page by the PPML data is a page of a PDF file. To clarify this concept further, the pages of one or more single or multiple page PDF files are used as the compound element data in a PPML/VDX instance.

PPML/VDX enables the sender to identify the rigor with which the data being exchanged is defined and thus also identifies the areas in which the receiver is being asked to assume responsibility. This also enables the recipient of a file to clearly understand the liability assumed in accepting the file.

This part of ISO 16612 does not have a provision for specifying data specific to a given reader process or printing device. Therefore, PPML/VDX has no provision for conveying device control information such as imposition layout, trapping parameters, or any other device-specific information.

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This part of ISO 16612 does, however, allow data that describe print product intent to be included in a conforming PPML/VDX instance. "Print product intent" data, as they are referred to in this document, provide information that describes various characteristics of the finished, variable print products to be manufactured in a way that is device-independent. Characteristics such as binding style, media type and folding instructions are allowed to vary per instance document and per compound page. The print product intent data of a PPML/VDX instance is defined by a restricted subset of the *JDF Specification* that is based on XML syntax.

Two conformance levels are defined in this part of ISO 16612 and are referred to as *PPML/VDX-Strict* and *PPML/VDX-Relaxed*.

*PPML/VDX-Strict* provides the sender with maximum control and portability of the exchanged data and is the conformance level most suitable for blind complete exchange. All information necessary for defining a complete variable data job is included in the exchanged data. All content data must be encoded as either PDF/X-1a and/or PDF/X-3 (see ISO 15930-1 and ISO 15930-3).

*PPML/VDX-Relaxed* is used where not all information required by the receiver to manufacture the job is required to be included in the exchanged data. Data not provided in the exchange may be submitted separately, or identified through communication between sender and receiver, and it will be the recipient's responsibility to provide the additional data and properly bind them to the PPML/VDX data. This conformance level may also make use of PDF files not conforming to the PDF/X-1a or PDF/X-3 International Standards.

The two conformance levels of PPML/VDX accommodate multiple exchange modes (including single file single transfer, multiple file single transfer and multiple file multiple transfer) while insuring reliable exchange of all data components. PPML/VDX is therefore suitable for collaborative authoring workflows where more than one sender may exchange data components of the same job with a receiver, where the receiver can reliably determine when all components of the exchanged job are under their local control.

A set of application notes for this part of ISO 16612 may be found at <http://www.npes.org/standards/tools.html>. In addition, pointers may be found on this site to development tools provided for the assistance of developers and users of applications prepared, based on this part of ISO 16612.

It is anticipated that a variety of products will be developed around PPML/VDX, including readers, writers and viewers of PPML/VDX files, as well as validation pre-flight tools 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.