

**White Paper**

# PDF/VT – the ISO Standard for Variable Data Printing (VDP) Applications



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# Introduction

Printing, packing and franking transaction documents, whether they are essential business documents like delivery notices, invoices and payment reminders or direct marketing letters sent out in sheer endless numbers, is without question a billion dollar market. The high numbers of print jobs and the requirements for short through-put times have not only led to the development of corresponding hardware like high-performance printers. Applications like Variable Data Printing (VDP) have been created in order to significantly cut the cost per printed item.

Technical advances in computer-supported customer relations (CRM) and in digital printing make the use of available empty spaces for up-to-date, targeted and personalized advertising messages (transpromotion) possible. Market studies have shown that advertisements via transpromotion reach their target audience markedly better than accompanying pamphlets. It should come then as no surprise that large growth is projected for transpromotion.

But are print and preprint industries properly prepared for this?

- Transaction documents are still predominantly printed in black and white. The advertising messages require however a color reproduction.
- In addition, printer languages used like PostScript and AFP heavily restrict graphic possibilities. Designers who are used to desktop publishing with PDF/X do not want to accept compromises with respect to creativity.
- Furthermore, production processes with highly differing formats like PostScript and AFP, proprietary metadata (which is predominantly suited for a specific intended use) and missing caching and blending can no longer be easily optimized. Printing service providers require on the contrary cost reductions and improved interoperability, and pose clear demands on modern, automated printing processes.

These facts, and the huge demand for a universal and standardized VDP solution, have led to the development of PDF/VT. Promises that were previously projected by VDP visionaries should now be fulfilled with PDF/VT.

# The ISO Standard PDF/VT

Adobe announced the development of an own format for transactional printing at the drupa in 2008. At the same time, Adobe decided to conduct this development jointly with other manufacturers in the industry. As a result, Adobe transferred ownership of the new format to the ISO committee.

Following intensive work in the ISO committee, PDF/VT was released as the new standard ISO 16612-2 in August 2010. The introduction states that the standard "...specifies methods for the use of the Portable Document Format (PDF) for the definition and exchange of all content elements and supporting metadata necessary for printing tasks involving variable or transactional document content. ...PDF/VT is designed to enable variable document printing (VDP) in a variety of environments from desktop printers to digital production presses. This includes hybrid workflows involving both conventional and digital printing."

The primary focus of PDF/VT is therefore the exchange of content between business units or within an integrated VDP production environment. At the same time, PDF/VT should remain neutral with respect to workflow. Device control, resource administration and production management are not included in the standard. In a production environment, PDF/VT relies on the use of JDF or a similar job ticket language to describe the print product and the related production conditions.

PDF/VT is based on the PDF 1.6 graphic model, which supports transparency. Transparency is necessary for supporting shadowing and color blending effects with backgrounds. In addition, PDF/VT is built on the well-known standards PDF/X-4 (ISO 15930-7) and PDF/X-5 (ISO 15930-8), which themselves are also based on the graphic model of PDF 1.6. In this way the standard ensures that VDP content and metadata can be flawlessly transferred between conforming digital printing systems.

In PDF/VT, graphic content can be defined once and used repeatedly. With respect to PDF/X-4 the recurring content (XObjects) includes images, text blocks and logos. With PDF/X-5 it also encompasses external content (Reference XObjects) which describe entire pages. Employing reusable objects can significantly reduce file size. The objects can also be supplemented with information about their repetitive use, both within the file as well as external to it. This enables conforming applications to better manage the life cycle of the objects.

## The difference between PDF/VT-1, PDF/VT-2 and PDF/VT-2s

The ISO 16612-2 standard defines the following three levels of conformance:

- PDF/VT-1 is applicable for the exchange of a single, complete file. The file contains all resources and content necessary for the error-free interpretation of the file.
- PDF/VT-2 allows for the exchange of files which reference external ICC profiles and external page content.
- PDF/VT-2s provides for the processing of data streams. The data stream is a MIME package that contains a sequence of one or more PDF/VT files and the referenced resources.



## Where can I obtain a copy of the standard?

The PDF/VT Standard ISO 16612-2 can be purchased from the ISO website [www.iso.org](http://www.iso.org). It is available in PDF format or as a paper copy. As with all other ISO standards, the document is protected by copyright. It is therefore illegal to offer free copies for download in the Internet.

## The advantages of PDF/VT

Compared with the printing process widely used today, which only support black and white, PDF/VT offers the printing of simple process colors like CMYK through to spot colors and multi-channel colors. Color printing has as a prerequisite, however, that all levels in the process chain must more or less intensively deal with ICC color management. This will pose a challenge for many organizations and should not be underestimated.

The graphic model of PDF/VT is the same as for PDF/X, which for years has been the de-facto standard for graphic designers. PDF/X content elements, including images, logos and page descriptions which originate from common industry tools like Adobe InDesign, can be directly transferred into PDF/VT. Conversion processes like transparency flattening, that are necessary with PostScript and may result in undesirable side effects, can thus be avoided.

The related standards PDF/X and especially PDF/A require that the document may not contain any reference to external objects. PDF/VT on the other hand allows for repetitive elements like images, logos, text blocks and entire page descriptions to originate from external sources. In this way it is possible, for example by personalized campaigns, to keep the size of a printing job small by calling up data from an external database, even if it includes numerous pages. Saving data externally offers additional advantages, for example when using sensitive data like credit cards details and invoices. If the print file is stored externally, the sensitive data does not need to be saved with it, increasing the privacy protection notably.

PDF/VT allows for a large flexibility when configuring metadata. With a bulk mailing, for example, it must be ensured that the content can be grouped by receiver, zip-code or gender for enveloping or dispatching. In doing so, differences in the total number of pages, differences in text blocks or varying graphic elements have to be taken into consideration. The standardized form of the metadata also enables VDP applications to be more easily and economically implemented, since investing in additional, proprietary file formats for controlling the work process becomes obsolete.

One of the greatest strengths of PDF/VT is the support of data streams. PDF/VT pages, page ranges and resources are written in a continuous MIME data stream and are sent to the print server in packets, enabling high volume transactional output (HVTO).

## Where is the format used?

PDF/VT will be an elementary prerequisite everywhere that true hybrid workflows are applied and printing registers are drawn up with personalized content. PDF/VT will actually support all printing jobs, independent of whether or not they contain variable data.

VDP applications are used in a wide variety of publishing contexts:

- **Business correspondence**  
Name and address of the receiver as well as other select product information are integrated into personalized letters.
- **Individual publication**  
Specific content is prepared for newsletters and newspapers, or incorporated into templates and published directly.
- **One-to-one marketing**  
Graphic elements and variable text components are individually selected for each receiver based on simple rules.
- **Multi-channel marketing**  
Multi-channel campaigns connect text, image and graphic elements that are tailored for each addressee. The selection is defined by rules, taking into account criteria like demographic factors and purchasing patterns.
- **Transpromotion**  
With this type of business correspondence, individual content in transaction documents (for example account statements or invoices with name, address and account number) is supplemented with customer-oriented advertising. This is prepared in a superior graphic format, as is customary with advertising documents.

Further attractive uses for employing elaborate personalized and graphic content are imaginable. PDF/VT offers interesting new possibilities for individualized communication over email or mobile devices like smartphones with personalized URLs.

## Which tools are available?

It is not known at the present time whether or not Adobe will include a PDF/VT reader in a future version of the free Adobe Reader as part of their normal upgrade cycle. The new release of Acrobat Reader X is able to display PDF/VT-1 documents (as is already the case in Acrobat 9); however variable data is not displayed.

According to currently available information, Adobe is also not planning to integrate the creation of PDF/VT files into their applications like InDesign. Adobe is leaving it up to their partners to develop appropriate solutions. Several well-known Adobe partners have openly indicated their intentions to introduce suitable solutions into the market.

In the fall of 2010, Adobe released the newest version of their PDF Print Engine (APPE 2.5), which supports PDF/VT, to their partners. Several other software producers have also openly announced that they will support PDF/VT within the next half year. PDF/VT is for them just one more data stream, similar to the currently known ones like PostScript, AFP and PCL, that they can easily integrate into their solutions.

PDF Tools AG is planning to offer reliable and high-performance components for the creation, processing, display and conversion of PDF/VT files.

## How has the market reacted?

The demand for PDF/VT format is not very widespread at the present time. As with the change from PostScript to PDF technology, it will take a while before the new technology establishes itself in the market. The availability of appropriate tools for creating, processing, verifying, displaying and printing PDF/VT documents are necessary in order for PDF/VT to be a success. In addition, the end-customers who will use this technology will have to develop their own knowledge of it.

## PDF/VT – a standard with a future

The file format PDF/VT (ISO 16612-2) will play a key role in the use of VDP applications in the future. PDF/VT facilitates the inexpensive and easy realization of VDP solutions. Order control and production quality will be notably increased thanks to the integrated support of metadata offered in PDF/VT. In addition, data protection for sensitive printing orders can be increased if required through the external storage of metadata.

Based on the widely distributed and accepted PDF/X format, the PDF/VT standard format for VDP workflows will establish itself in transactional and trans-promotional print queues. VDP processes will now benefit from the well-known advantages of PDF, like blind exchange, preview, preflight, transparency, device independence and calibrated color rendering. Parties involved in VDP processes, e.g. marketing experts, designers, prepress specialists and printing shops, will be able to easily and safely exchange, verify and process PDF/VT documents.

## About PDF Tools AG

PDF Tools AG counts more than 4,000 companies and organizations in 60 countries among its customers, making it one of the world's leading producers of software solutions and programming components for PDF and PDF/A products.

Dr. Hans Bärffuss, founder and CEO of PDF Tools AG, began using PDF technology in customer projects more than 15 years ago. Since then, the PDF and PDF/A format have evolved into a powerful, widely used format and ISO standard that can be used for almost any application. During this time, PDF Tools AG has developed into one of the most important companies on the market for PDF technology, and has played a significant part in developing the PDF/A ISO standard for electronic long-term archiving.

As the Swiss representative on the ISO committee for PDF/A and PDF, the company's knowledge flows directly into product development. The result is high quality, efficient products based on the 3-Heights™ philosophy of the development team, which consists of experienced engineers.

The portfolio of PDF Tools AG ranges from components to services through to solutions. The products support the entire document flow, from raw materials to scanning processes through to signing and storage in a legally compliant long-term archive. An advantage of the components and solutions is the broad range of interfaces, which ensure smooth and easy integration into existing environments.

Due to the growing demands of the market, the products are enhanced and refined continuously. Support is provided by the developers themselves, allowing them to identify trends and customer requirements quickly and use this knowledge when planning enhancements and components.

All development activities are performed in-house at PDF Tools AG in Switzerland. The company does not outsource any programming, so that the entire development process can take place centrally in a single location. This helps to ensure the high standards expected by the company, particularly with regard to the 3-Heights™ technology.

The effectiveness of this approach is confirmed by the success of the products on the market. Our customers include well-known global companies from every industry. That is the greatest compliment of all – and the perfect motivation to continue shaping the world of PDF and PDF/A.







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