

# 7 Minutes with a PDF Standard – PDF/VT

Dov Isaacs | Technical Conference 2012 | March 27, 2012



# Why is the Print Industry interested in PDF/VT?

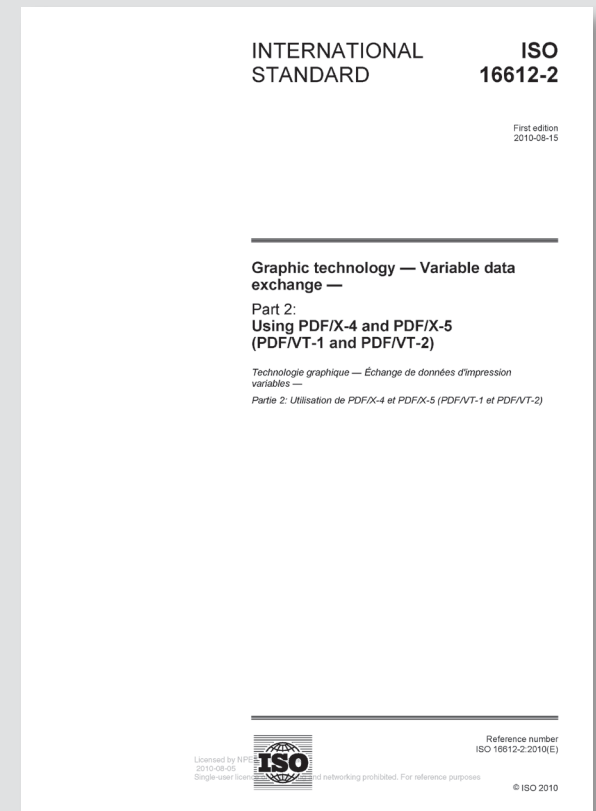
- Highly personalized printing as exemplified by VDP is one of the few areas of “printing” that is truly growing
- Highly personalized printing is priced as a business service based on perceived value and not on a price-per-copy commodity basis
- Unified print production workflows are key to product quality, lower production costs, and thus higher profitability.

# What is PDF/VT?

- An ISO standard (ISO 16612-2:2010) developed by ISO TC130 WG2/TF3; published August 2010

This part of ISO 16612 defines the PDF/VT document format which 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. It allows the specification of document structure, document layout, content data, and interaction of graphical elements in a graphics model that supports transparency.

- ... and what is PDF/VT really?
  - A PDF subset Final Form File Format to meet the special needs for publishing content that is personalized or transactional in nature
    - Represents fully-composited content
    - There are no variables in PDF/VT
    - Optimized to tackle issues of graphical complexity, rendering performance, and production
  - Based on ISO PDF standards PDF/X-4 and PDF/X-5 with multiple conformance levels



# What is VDP?

- VDP → **Variable Data Printing** or **Variable Data Publishing**
  - A digital *print* run where each printed page is somewhat different, with the variations usually determined by relating page content to customer information in a database
  - Could be broadly construed to include *any* printing of personalized materials
    - EPID → Every Page Is Different
    - ECID → Every Copy Is Different
  - One of the few areas showing growth in the printing industry!
  - Broadened to *publishing*, VDP may include output to mobile devices and the web, including personalized e-mail and PURLs (personalized URLs)

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# What is VDP?

- *Transactional Printing*


- Printing of routine, primarily text, transactional data associated with financial transactions and benefits including invoices, statements, payment checks, etc.
- Typically printed via relatively low resolution monochrome digital processes, often on pre-printed base paper stock
- Exceptionally high volumes of print requires high speed printing processes
- Satisfactory printing solutions exist for this type of printing (AFP, PostScript, ...)
- **However**, decreasing volume of print going forward:
  - Increased production and especially postal costs
  - Increased use of B2B electronic invoicing
  - Use of push e-mail to have consumers pull financial statements in electronic form (often PDF) from web
  - No perceived return on investment; mail that looks like a "bill" is usually *not* a good marketing vehicle

[illegible]



# What is VDP?



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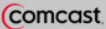
**From:** [XFINITY](#)  
**To:** [isaacs-administrator@comcast.net](mailto:isaacs-administrator@comcast.net)  
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Simplify your life by viewing your bill online with Ecobill.

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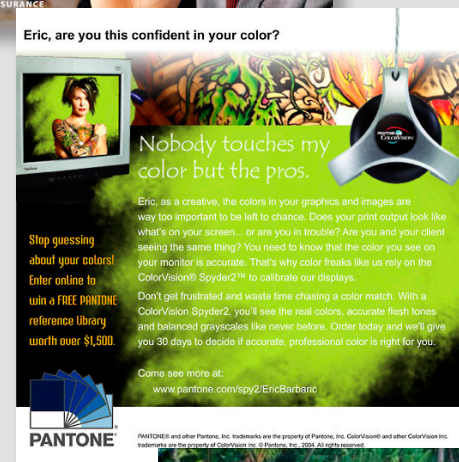
# What is VDP?

## ■ *TransPromo Printing*

- Combines attributes of traditional transactional printing with highly-personalized and graphically rich (including significant use of color) marketing / promotional content
- De-emphasizes transactions in favor of personalized promotional content!
- Technically most challenging VDP form due to graphical complexity, print quality requirements, and high print volume (i.e., performance issues)

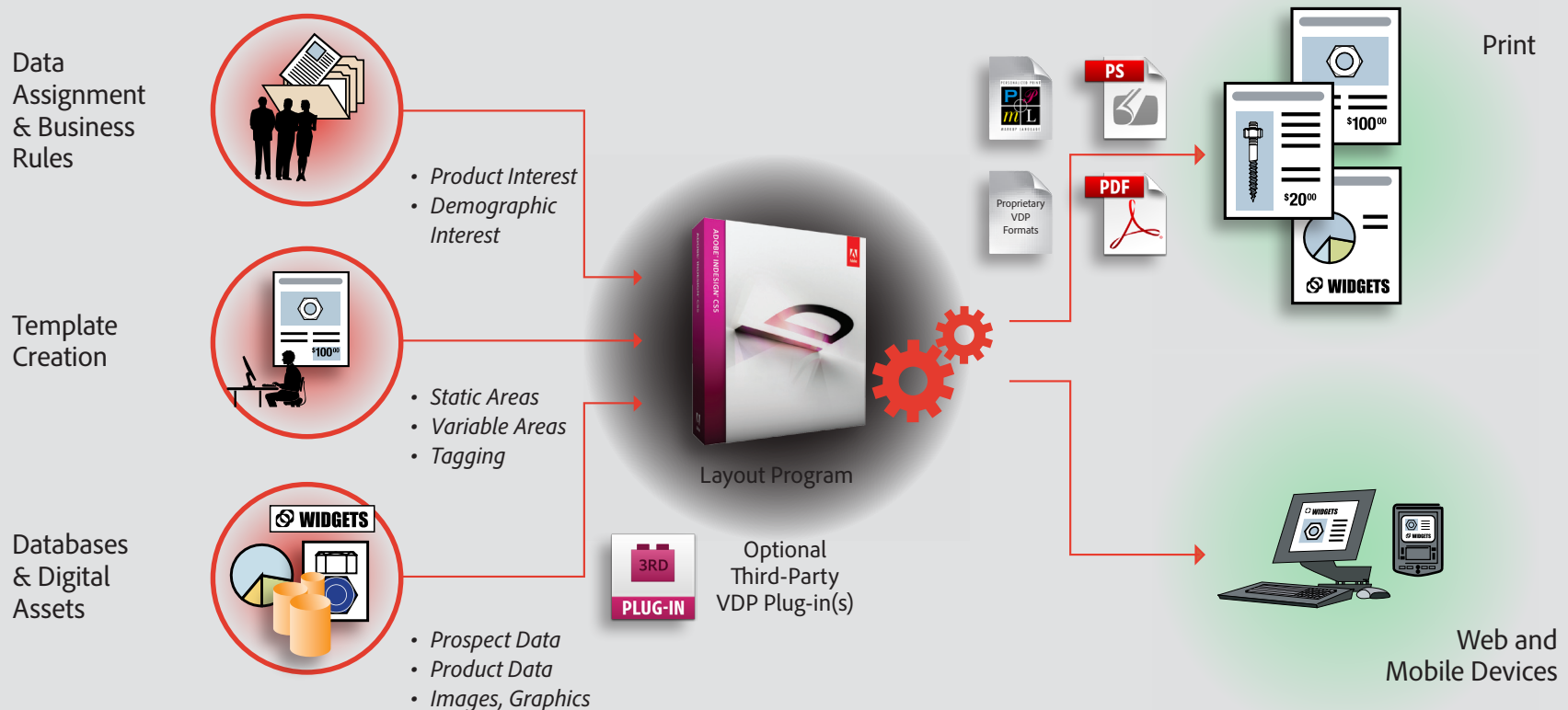
## ■ For our discussion purposes ...

VDP is highly personalized, very graphically rich (images, charts, color, transparency effects) printing based upon databases, business rules, templates, etc. and especially includes TransPromo Printing.



# What is VDP?

## VDP Workflow for Print, Web, and Mobile Devices



“... And I don’t care what they say about how much money you can make in it (VDP), the problem is if it’s hard to do, most people aren’t going to do it!”

– Frank Romano, *WhatTheyThink*, May 25, 2007

# Why yet another VDP format or standard?

## ■ Problems with existing non-PDF VDP solutions

- Limits to use of graphical constructs and/or nasty workarounds (i.e., color management and transparency effects)
- Difficulty in preflighting and proofing
- No edit / touch-up facilities
- No reasonable search, archive, and retrieval facilities
- Severe device / vendor dependencies; vendor lock on print service provider
- Lack of a “unified workflow” increases overhead for print service provider
- PPML & PPML/VDX (ISO 16612-1)
- Many problems are due to solutions based on PostScript or vendor-specific enhanced PostScript RIP products

## ■ Problems with use of unconstrained PDF for graphically-rich VDP

- PDF creation performance issues (i.e., time to create such PDF files) often improperly blamed on “poor composition performance”
- Bloated PDF file size due to failure to properly handle recurring graphical objects
- Poor print performance due to inability of the RIP software to currently take advantage of any PDF file internal optimization of recurring objects

The problem is not the file format itself!

There is tremendous potential for PDF!

# Minimum PDF/VT Requirements

- Conforms to one of three conformance levels: PDF/VT-1, PDF/VT-2, or PDF/VT-2s
- File identification
  - PDF/VT-1 and PDF/VT-2 files are additionally identified by setting the **pdfvtid:GTS\_PDFVTVersion** property to either PDF/VT-1 or PDF/VT-2 and the **pdfvtid:GTS\_PDFVTModDate** property to the file modification date (properties in the metadata stream associated with the **Metadata** key in the document's **Catalog**)
  - A PDF/VT-2s conforming stream is a MIME package of type *application/pdf-vt-stream* containing one or more PDF/VT chunks
- PDF/X conformance requirements
  - PDF/VT-1: PDF/X-4
  - PDF/VT-2: PDF/X-4p, PDF/X-5g, or PDF/X-5pg
- PDF/VT-1 and PDF/VT-2 files must have a minimal Document Part Hierarchy for metadata consisting of
  - A **DPartRoot** key in the **Catalog** dictionary whose value is an indirect object reference to a **DPartRoot** dictionary
  - At least one **DPart** dictionary must be present in the document part hierarchy
- Note what is *not* required
  - Taking advantage of PDF/X-4 & PDF/X-5
  - Actual use of any XObjects
  - Any meaningful metadata

**PDF/VT**



# VDP Solution Comparison

	Augmented PostScript Language Level 3	PPML	Proprietary	PDF/X-4 & PDF/X-5	PDF/ VT
Imaging Model	PostScript	PostScript	PostScript / Other	<b>PDF 1.6</b> Acrobat 7	<b>PDF 1.6</b> Acrobat 7
Color Management	PostScript CIE-based Color Management	ICC Color Management *	Varies	ICC Color Management	ICC Color Management
Live Transparency	<b>NO</b> Application "flattened"	<b>SOME</b> (PPML 3 only)	<b>NO</b> Application "flattened"	<b>YES</b>	<b>YES</b>
Layer Support	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>YES</b>	<b>YES</b>
Page Selection / Random Access	<b>NO</b>	<b>YES</b> (at PPML level)	<b>NO</b> / Varies	<b>YES</b> (limited to selection by page number)	<b>YES</b> (DPart metadata in conjunction with JDF)
Blind Exchange	<b>NO</b>	<b>NO</b>	Varies	<b>YES</b> (PDF/X-4 only)	<b>YES</b> (PDF/VT-1 only)
Print Job Control	Normally <b>Internal</b> via /setpagedevice	<b>External</b> (Typically via JDF)	Varies; often proprietary	<b>External</b> (Possibly via JDF)	<b>External</b> (DPart metadata in conjunction with JDF)
Image & Object Optimization	<b>Possible</b> (Augmented PostScript Forms)	<b>YES</b>	<b>YES</b>	<b>Available</b>	<b>YES</b> (Part of the PDF/VT "DNA")
View / Search / Archive / Soft Proof	<b>Indirect</b> Convert to PDF & use standard PDF viewer	<b>Indirect</b> Convert to PDF & use standard PDF viewer	<b>Indirect</b> Convert to PDF & use standard PDF viewer	<b>YES</b> via standard PDF viewer	<b>YES</b> via standard PDF viewer
Preflight	<b>Difficult</b> or <b>Impossible</b>	<b>Difficult</b> or <b>Impossible</b>	<b>Difficult</b> or <b>Impossible</b>	<b>YES</b> standard tools	<b>YES</b> standard tools *
Typical File Size	<b>Large</b>	<b>Compact</b>	<b>Compact</b>	<b>Compact</b>	<b>Compact</b>
Normal Overall Characterization	<b>Highly Vendor</b> and <b>Device-Dependent</b>	<b>Vendor</b> and <b>Device-Dependent</b>	<b>Highly Vendor</b> and <b>Device-Dependent</b>	<b>Device-Independent</b>	<b>Device-Independent</b>
Unified Workflow	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>YES</b>	<b>YES</b>

# The Word is Getting Out ...

## THE SEYBOLD REPORT

Volume 11, Number 15 • August 8, 2011

### PDF/VT: A Little Known Standard with a Bright Future

By Molly Joss

Earlier this month NPES announced ISO 16612-2 Graphic technology (Variable data exchange) Part 2: Using PDF/X-4 and PDF/X-5 received an InterTech Technology Award. ISO 16612-2 is better known PDF/VT, but by either name it is an emerging standard only a few people know a lot about and a concept with a bright future and excellent promise. ➡

### Digital Printing by the Numbers

By IMI and I.T. Strategies

This summer the Information industry research firm, to come near-future state of the world, the article are drawn from material to use the data. ➡

#### Benefits.

- PDF/VT is portable. It provides a reliable container for **blind exchange** of final-form, graphically rich, variable content.
- PDF/VT takes full advantage of the **PDF imaging model** for printing graphically rich personalized communication (e.g. variable transparency effects).
- PDF/VT enables **caching** for recurring elements in VDP jobs.
- PDF/VT can be **preflighted** with standard off-the-shelf tools.
- PDF/VT enables **reliable proofing**, and distributed **review/approval** workflows prior to printing, using the readily available PDF viewing software, such as the free Adobe Reader.
- PDF/VT enables **predictable color** for VDP jobs, based on modern ICC color management.
- PDF/VT provides a robust metadata infrastructure to enable sophisticated/dynamic/**granular runtime controls** for VDP print production (e.g. filtering, rules-based imposition, audit trail, barcoding, check-point re-start).
- PDF/VT is device-independent and object-oriented, and enables VDP jobs to be **dynamically re-purposed**, refactored, or re-targeted to different presses.
- PDF/VT benefits **direct marketing** campaigns, and also enhances management of high-volume print runs (e.g. TransPromo).

#### Custom Marketing Solution for Coldwell Banker Realtor Sherri Buxton

A PODI Digital Print Case Study

Sherri Buxton is one of the most successful Coldwell Banker Realtors in North Carolina and is consistently listed among the top two percent of agents nationwide. Knowing what it takes to stand out in a competitive environment, Buxton understood she had to increase branding efforts and create a look exclusively her own in order to take sales to the next level. To achieve this meant moving from the popular, but generic, Web-to-print store offered to all Coldwell Banker Realtors to a fully customized solution. ➡

#### Review: Power Styles for InDesign

By Rose Rossello

Anyone who works on long documents in InDesign knows the importance of using styles to format text. Manually tagging text can be a painfully long process. Power Styles, an InDesign plug-in available from DTP Tools helps take some of the pain out of the process. ➡

#### The Latest Word ➡

#### New opportunities.

PDF/VT uniquely satisfies the requirements of job portability, page independence and device neutrality. It opens up new opportunities in digital printing by decoupling the complexities of VDP job authoring from the particular methods of print production. By simplifying the process, PDF/VT will yield benefits for all stakeholders: enterprises, marketers, designers and print professionals.

#### What next?

PDF/VT has been publicly endorsed by the leading hardware and software vendors offering personalized print and cross-media solutions (Link). Expectations are running high. End-to-end PDF/VT workflows are expected to emerge in late 2011, and reach critical mass by 2014-15. However, as of early 2011, it remains an unproven technology. Industry trendsetters (marketers, agencies, print buyers, enterprises, print operations) have a window of opportunity to explore how the potential of PDF/VT could be harnessed to improve quality, competitiveness, productivity, and to develop the next generation of TransPromo and marketing programs.

#### Contact the PDF/A Competence Center

##### EUROPE

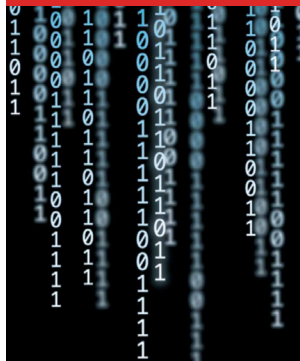
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## PDF/VT for Personalized Print



## Chicken, eggs and variable data

Adobe's PDF/VT variable data format has been a long time coming, but now vendors are finally announcing their plans to support it. By Nessian Cleary.

When it comes to producing variable data jobs there is quite a number of file formats to choose from. It's not a difficult choice because

most are optimised to particular sectors, ranging from direct mail to transactional formats are based on a look clunky in the PDF workflows. I wanted to develop its variable jobs, known as 'variable' and was first announced since then Adobe has elaboration as an element is more time-consuming than other vendors have had a chance to should be fairly

exist on the printers' system. Equally, for some variable campaigns there might be a unique bitmap for each customer which could add up to terabytes of data which might be better managed in a separate file.

That said, the file spec does also allow for streaming, as Olaf Drümmer, CEO of callas Software, explained: "The maximum file size of a VT file is around 10 GB, which seems very huge but isn't in variable data printing. Once you have very huge files it takes a little bit of time to write the file. In some instances it's important to be able to start printing as soon as possible. With AFP, people are used to be able to print the file while writing it, which is the reason why we added this feature to it." He added: "VT has conformance to an S level that makes it possible to put chunks of a PDF in a container based on MIME, though these VT-S files would have to be converted to individual files to be able to access them with Acrobat."

Another important aspect of the PDF/VT format is that it includes a lot of metadata about pages and page ranges. Mr Drümmer says that there's a lot of freedom in how you use the metadata: "Some people will

partition a huge file into street names and zip codes to optimise postal delivery of the printed job. Others will assign it to customer names and so on. It's completely open. But if you want to stick the printed job in an envelope you have to know which pages belong together, especially if the number of pages per letter is different, such as a transactional print run where customers might have bills or statements of different lengths."

There's also the option to add further metadata to the basic format. Screen, as a devel-

This is a real PDF/VT file, supplied to us by XMPie. It can be opened by Acrobat X, but it won't display or print any more of the variables.



www.digitalprintermag.co.uk

# PDF/VT Organization Roles & Status

- PDF/VT Standard Development
  - ISO TC130 WG2/TF3
  - Tim Donahue (Kodak), Chair;  
Dov Isaacs (Adobe), Co-chair
  - Future activity pending any changes in PDF/X-4, PDF/X-5, and ISO PDF as well as industry feedback on existing standard
- PDF Association  
PDF/VT Competence Center
  - Olaf Drümmer
  - Education & evangelization of PDF/VT
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