TECHNICAL GUIDE

PREPRODUCTION DATA MANAGEMENT

CREATING PERFECT PDFS

Second Edition

FESPA
profit for purpose

How To Create Perfect PDFs

PDF

Using PDF has been both hugely beneficial to printers and print buyers, and hugely frustrating. The format was not designed with the graphic arts industry in mind, but because there was no other format that worked as well, PDF use spread.

It soon became a de facto standard and was formally adopted by ISO as ISO 32000. Now it's used in a huge range of print applications, so there are countless opinions about the best way to create PDFs. It pays to standardise how you manage files in the business, in production and across production sites, and with your customers. This FESPA guidance will give you some ideas about how to create perfect PDFs for your workflow and output expectations.

The Right Ingredients

First consider the software you use to create the PDF. Most software, if not all, can create a PDF version of the document through the printer driver and this can be shared for viewing on screen as a softproof or printed out. But this approach to creating a PDF does not ensure high standard PDFs for professional printing. You must create PDFs suitable for high quality print output using software with the necessary features. For instance PDF creation might be part of your advanced print driver; or your application might have a special feature such as a generic "save as" PDF command, or an export option. But if it doesn't allow you to control how smooth gradients are to be rendered or define overprint settings for instance, you could be in trouble. Whatever application you are using, make sure that it lets you create or export print PDFs with the right settings for your output path.

Settings

Most PDFs for print output are created by document layout software, specifically designed for the purpose. In reality this limits the choice of suitable software to a few dedicated layout packages: Quark XPress and Adobe's InDesign, plus Adobe Illustrator. General office tools such as Microsoft Word and PowerPoint are commonly used for document design and production, but they are not recommended for high quality print production.

PDFs used to be created through Acrobat Distiller, but this is a two step process requiring that you first generate PostScript versions of your files to feed into the Distiller. The PDF settings in Acrobat Distiller can now be used in Adobe InDesign, which is much more straightforward.

InDesign's PDF creation settings section has extensive feature panels behind each of which sit dozens of nested options. These range from control over the compatibility level of the PDF you want to create and details such as whether it is left or right side binding, through to antialiasing and colour conversion

Not yet published, but in draft version, is ISO 21328 "Requirements for [...]. This will in part use the [...] profiles, ICC v5 (also call[...] formalise how ECG-prin[...]

Spectral Blending–iccMAX

Adobe InDesign offers a very basic preflight function, but this doesn't cover anything to do with image resolution or colour management. In order to preflight the document in a more advanced and extensive way you will need tools from for example vendors like Callas, Enfocus or Markzware.

instructions. PDF's ability to support different data types and output parameters is huge which is why the format is so popular. But this very flexibility provides scope for uncertainty and potential errors when creating PDFs. Understanding what settings are available and which ones you should use for your output channel is fundamental to creating perfect PDFs.

This is especially true when it comes to colour, even though Adobe Acrobat provides outstanding support for professional print colour reproduction. The difficulty is that there are so many ways you can manage colour. You and/or your customers might prefer to embed the ICC profile inside the PDF. This is a convenient start to colour management, but consider the mess it could cause if a bad or unsuitable profile is embedded, or if the correct colour conversion controls are not set in Acrobat Distiller. Settings errors are amongst the most common problems with PDF creation, so if you want perfect PDFs make sure that your customers and prepress team understand the settings for your output path, and that there are no conflicts. Remember that your PDF is only as good as the native files and software used to create it. Consider using one of the PDF/X series formats, which are a subset of PDF, in order to restrict the options for what can be included in the PDF when you create it.

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PDF/X

The potential for conflicts and errors is why the PDF/X series was developed and continues to evolve in line with the evolution of PDF. Work on PDF/X began years ago when it had become clear that printers and their customers wanted to use PDF as a foundation format for digital workflows. It didn't matter that PDF was designed to be a universal carrier for any type of content, the format worked better than anything else for most prepress and print professionals. In order to restrict the content in a PDF file, for instance so that it didn't allow "sticky notes" or videos, an industry user group started working to optimise the format for printing. The result was the PDF/X series. In particular the Ghent Workgroup (GWG) have produced a series of recommendations and settings which can be applied in a range of applications to perform preflight and fixups in an efficient way.

PDF/X-1a (ISO 15930-1) was introduced in 2001 and is based on version 1.3 of the PDF file format. PDF/X-1a is for blind exchange of PDF files, so everything needed for correct output is embedded in the PDF. It requires all fonts to be embedded and that colours are described as CMYK or spot colour data. PDF/X-1a also requires identification of components as trapped or not trapped and that the output intent is specified.

PDF/X-2 was published together with PDF/X-3 in 2003, but was never widely used and was eventually abandoned.

PDF/X-3 became very popular since it allows CMYK, spot colours, calibrated RGB and CIE L*A*b* as well as the possibility to embed ICC profiles. In 2008 PDF/X-4 based on PDF 1.6 replaced PDF/X-3. It supports layers and live transparency and is probably the most commonly used version of the PDF/X-format today.

There are a couple of other versions of this part of ISO 15930: **PDF/X-4p** can call in an external profile and **PDF/X-4g** graphical elements, making it suitable for variable data workflows. **PDF/X- 5g** takes the foundation of **PDF/X-4** and adds support for multiple images sourced from another external PDF/X file. The model is used in workflows where the page is created using other page elements in parallel with the main page's creation. Getting this right isn't easy, so quality control procedures are necessary for a profitable workflow. Careful analysis of job types and PDF processing patterns will show you which parts of ISO 15930 are best for your business.

Work is underway to launch PDF/X-6, based on PDF 2.0. But PDF/X-6 will probably not be ready for formal publication until 2020.

Quality Assurance & Preflight Checking

Quality control has been gradually moving away from the press and into prepress for many years. Years ago most printed colour adjustments took place on press, using a hard copy contract proof as the reference and tweaking ink keys. There are still plenty of printers who do their quality control in this way, however we can now print to numbers using complex data management to ensure data sets ref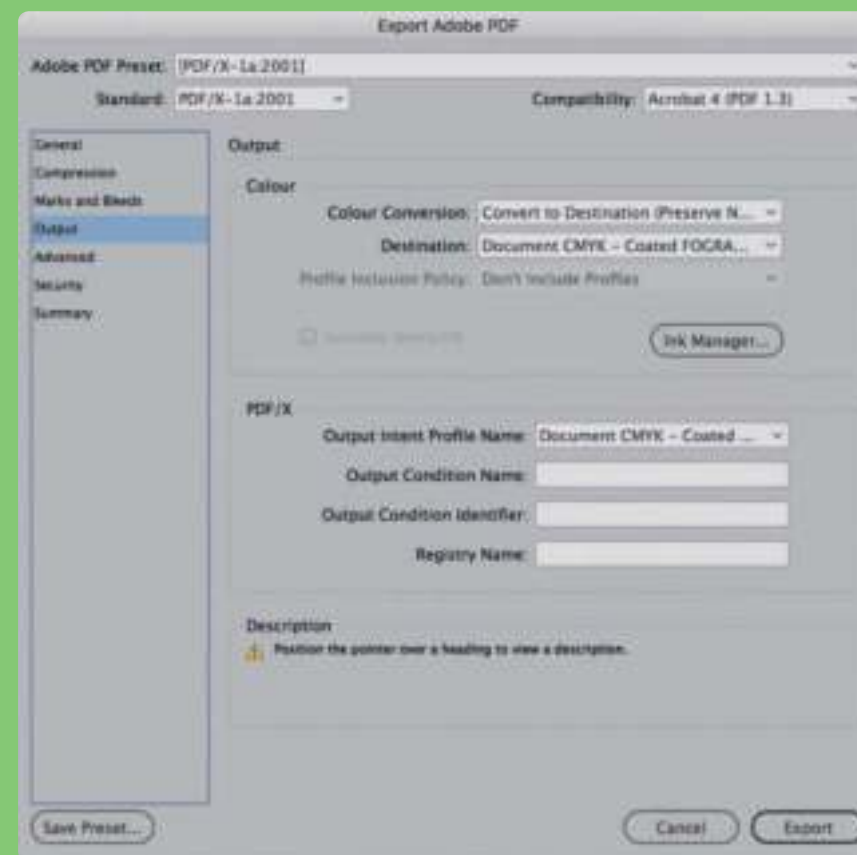lect output method's characteristics. This is far less risky: errors are more costly to fix the closer you get to press. However it requires careful data management and control from the moment a datafile enters production. The basic tenets of Quality Management are to Plan, Do, Check and Act, as outlined by W. Edwards Deming a management consultant and statistician.

Adobe InDesign can't save a document directly as a PDF, but can generate a PDF through an export function. The most commonly used PDF/X-format today is probably PDF/X-4, which allows images to be in RGB and also allows the use of layers and live transparency.

This system provides a model of constant data management process improvement. You can use it to quality manage business procedures as well as in prepress. In prepress you must have rigorous quality control in place, otherwise bad files will reach the workflow and cause production halts. Fixing bad files is expensive, far more over time than the cost of professional preflight checking tools.

Automated preflight checking and file processing saves time and expense because it fixes errors before they can cause harm. Automated file processing helps keep your presses running to capacity by feeding them a constant stream of work in the form of accurate data files. It can reduce human intervention, bringing down your cost per job and enhancing profits.

Preflight checking tools ensure that the content of a PDF can be processed safely in a given workflow and that the output file prints as expected. Proofing workflows will have different requirements than say signage workflows, but your production system can still be configured reliably to support any workflow. Preflight software inspects files, making sure they can be

output. Some rendering settings, such as correct flattening or transparency layers or trapping, might be difficult to check with conventional preflight checking methods, but common errors like too low resolution in images or lines too thin to print, will be flagged as preflight errors and if possible corrected. Some preflight tools also take metadata associated with files for use elsewhere, for instance in MIS.

Many preflight tools fix common errors, however it's better to set up your workflow so that errors do not occur. If they do, identify the source and adjust procedures in house or with customers.

PDF is the cornerstone of print media workflows. It's a foundation that makes automation and high volume production effective and profitable. How PDFs are created and managed should be at the heart of your business, so take a stroll through your prepress department and see how well PDFs are configured. Are they set up to take advantage of output device capabilities? Do customers know how to create PDFs that fully exploit your colour expertise? The answers to these questions and more will set you on the way to creating perfect PDFs for your business.

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