

digital report



Understanding PDF/X

Imagine digital files
without guesswork or
damage control

For designers, page layout people, publishers, advertisers, output bureaus and print shops, PDF (Portable Document Format) is now a very important and useful file format. It can eliminate delay, uncertainty and potential disaster when working with an electronic file destined for commercial printing. Let's examine the format and how to work with it.

The ability of a PDF file to include—embed—both fonts and graphics into one file makes it very convenient and portable. When you receive a PDF file, you need not worry about whether you have the document's fonts installed, or even available, on your computer or whether the supplier included the originals of any placed graphics—the way you do for QuarkXPress files, for example. Everything is included in the one file, and it looks virtually identical on any computer and prints at the limit of whatever print or output device you have,

be it small inkjet printer or a million-dollar platesetter. Very convenient.

Further, the format uses smart compression to minimize file size (a 50 Mb original EPS file will frequently go down to 5 Mb or less as a PDF, without losing print quality), and knowledgeable users can create files that have just the image resolution they need for the intended use of the file.

With all this convenience, it was natural that the design and print industries would embrace PDF, and they did, starting about ten years ago. Many current graphic arts programs, like Adobe's InDesign and Illustrator, work natively in PDF, and a number of entire print-shop workflow systems are based around PDF, like Agfa's Apogee system, for example.

Everyone can do it

And here is where we get to the problem. Because most people can create PDF files—including those who know little about commercial printing—service bureaus, publications and print shops regularly get PDF files

from customers that either need repair or are totally unusable for print production. A user may not want to pay \$500 or more for Adobe's full Acrobat Professional or Acrobat CS—or other high-quality PDF creation or pre-flight programs—so he uses cheaper, or free, programs or print drivers to create the files, often with very limited or no access to PDF file settings that are crucial for commercial print. Even if the program does offer the needed flexibility, he may not know what the various PDF settings should be.

Common and fatal mistakes include using RGB colour graphics, which will not separate properly; using many spot colours unintentionally; not embedding the document's fonts; using low-resolution graphics—usually 72 dpi—or using very highly compressed graphics intended for on-screen use or home printers. If a PDF arrives with one or more of these problems, it can be difficult, time-consuming and often impossible to diagnose and/or fix it without access to the original file used to create the PDF. In fact, this problem has

By Bob Atkinson

fueled a thriving market for programs like PitStop and FlightCheck, which can quickly diagnose problems in a PDF file and even repair some of them.

Six years ago, the American National Standards Institute's Committee for Graphic Arts Technologies Standards, at the request of newspaper publishers and advertisers, began work on a new format, PDF/X—the X is for exchange—aimed at users in graphic arts only. This format was published in 1999, and has since gone on to become an international ISO standard file format supported by a number of commercial and free graphic arts and prepress programs and systems. The aim here is for users in our business to switch from generic PDF files to PDF/X, and that process is happening, albeit very slowly.

The release of Adobe's Acrobat 6 Professional and Acrobat CS Professional, both of which can change a regular PDF into a PDF/X and include the current version of Acrobat Distiller, which supports the creation of PDF/X files from PostScript or EPS originals, should accelerate this change-over, as will the release of other free or commercial programs that support the PDF/X format.

PDF with training wheels

PDF/X is a subset of the general PDF format. People often ask "So, what can I do in PDF/X that I can't do in the generic PDF format?" The short answer is: "Not much. But there are a bunch of things that you can do in generic PDF that PDF/X does not allow." Think of PDF/X as PDF with built-in guides to prevent you from creating a file that will not output and separate properly for commercial print use. It's "PDF with training wheels" for professional printing. Fonts are automatically embedded. RGB graphic files are not permitted. Minimum graphic resolution, trim and bleed size can be specified, and so on. In this way, the creator of the file and the person receiving it can be reasonably assured that it will work as intended.

Current versions of Acrobat allow you to check a PDF file and see if it meets PDF/X requirements. If it does not, a log file tells you where it failed. If it does meet them, you can then save the file as a PDF/X. This is all done in Acrobat's powerful new Preflight dialogue box under the Document menu. Distiller now has canned settings for PDF/X, which can also be edited as needed. Other non-Adobe PDF/X programs have similar capabilities,

but the Acrobat/Distiller package remains the most popularly used program for the creation of PDF/X.

So what are the real-world benefits of PDF/X?

- To improve matches of proof-to-proof, proof-to-press, and press-to-press
- To reduce processing errors in proofing and prepress
- To reduce the complexity and cost of customer education
- To dependably move files between multiple sites, using different equipment, from many vendors.

Designers can create a digital file that they can be confident will print predictably and correctly by the service provider, whether it's a commercial print job printed at one site, or a magazine ad placed in many publications and printed across the world. Output service and proof providers, print shops and publishers can receive digital files that they can be confident will run through prepress without requiring rework or causing errors.

There are actually several current variations of PDF/X: PDF/X-1a, most widely used in North America; PDF/X-3, most widely used in Europe; and the emerging new PDF/X-2 format, which few pro-

grams support yet; plus PDF/A, for digital archive storage of files; and PDF Plus, a development environment for developers and manufacturers to add device-specific settings to PDF/X. For our purposes here, we need only look at 1a and 3.

Both PDF/X-1a and PDF/X-3 support all the prepress basics described above—fonts must be embedded; an output intent selection (SWOP web press printing or SWOP sheetfed coated printing, etc.); trim and bleed sizes are specified, and so on—plus it indicates if the file has already been trapped, and more. Features of generic PDF not needed for prepress, such as indexing and rich media support, are left out.

The key difference between 1a and 3 is this: while both 1a and 3 support the most popular colour models used in commercial printing—CMYK process and spot colour—3 also allows other colour models and device-independent colour modes, giving you a bit more flexibility at output time and more portability between widely-ranging print. For most commercial print work in North America, 1a will work just fine. If you're printing on a digital press, which is not covered under SWOP or SNAP standards, use 3.

Properly used, PDF is a powerful and convenient file format for moving files around. PDF/X goes a step further, allowing for near-foolproof PDF files for professional printing. For a lot more information on PDF/X, look at these websites:

- www.pdf-x.com (excellent overview site)
- www.pdfx.info
- direct2time.com (Time Inc. was an early adopter of PDF, and this site has a good guide for creating proper files.)

How PDF came to be

Adobe created the PDF file format during the early 90s. A decade earlier, it had changed the world of printing—at home or on a press—with its PostScript page-description language, with drawing and page layout software, and PostScript-compatible printers or imagesetters. You could create a file and output it on a wide variety of devices at the highest possible quality each device allowed. Today, virtually all high-quality printers, imagesetters, platesetters and digital presses are PostScript-compatible with either Adobe's own PostScript or a variety of cloned versions from other companies.

After this success on the printing front, Adobe wanted to follow up with a com-

mon method of on-screen display to make files and type look exactly the same in any program or computer. The company called it Display PostScript and spent a lot of time and money on it in the mid-to-late 80s. Unfortunately, it never caught on, in part because the processor power it required was too much for most small computers of the time.

The project was shelved for a few years, until the rapid rise of the Internet connected millions of computers around the world. Adobe realized that, now more than ever, there was a huge need to open, view on-screen, and print good-looking documents with both type and graphics, regardless of the computer hardware, software and typefaces a person has. The company dusted off its Display PostScript technology and refocused it as a new cross-platform file form called PDF (Portable Document Format) and released Mac, PC and UNIX versions of a free PDF reader called Acrobat Reader—available as a stand-alone program or as a Web-browser plug-in—and a commercial program called Acrobat, which could create PDF files from PostScript or EPS (Encapsulated PostScript) original files. By the late 90s

PDF/Acrobat had become an extremely popular format for distributing high-quality documents, primarily over the Web.

Adobe continued to revise its PDF format—currently in Version 1.4—adding many new features, including interactivity, colour management, spot colour, transparency, e-forms, security and rich-media support. Many other software developers got on the bandwagon, developing free and commercial programs that could read and/or create PDF files.

Today, along with the MPEG (video) and MP3 (music) file formats, PDF is one of the world's most widely-used formats. In fact Apple's OS/X operating system, the norm for all current Macs, uses a derivative of Display PostScript in its Aqua screen display technology and can produce PDF files from literally any program, with some limitations. Microsoft has also incorporated PDF output into its massively popular MS Office line. These developments, along with the release of many cheap or free pro-

grams or print drivers by Adobe and many others, allow virtually any computer user to create and read PDF files. In addition, the file format has also spread to many other devices, including Palm and PocketPC handheld devices, eBook readers and even smart phones. ■

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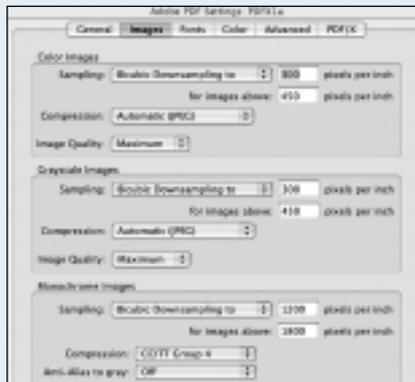
A walk through PDF

To understand what a PDF/X file includes, and how to make one, let's walk through Acrobat Distiller's file settings for a typical PDF/X file. In this case, we'll look at a fairly typical PDF/X-1a file setting for a job intended to print on a coated heatset web press that's common in the slick magazine or flyer business. This is basically Distiller's canned PDF/X-1a setting with a couple of key specified choices. In each case, we'll examine only the settings that are important for creating PDF/X files.



GENERAL

■ Contains Adobe's generic description of the PDF/X-1a format and the Acrobat/PDF level PDF 1.3 was the first PDF version that supported spot as well as process colour, and is compatible with the widest range of PostScript output devices. Note that if your files have partially transparent—translucent—objects and you had not flattened them in your original program, you may want to choose PDF 1.4 here, which supports transparency, although this may cause output and trapping problems. Ask your output provider or printer, but flattening the file beforehand is almost always a good idea. Thumbnails and fast web preview images are a waste of space in prepress files and are omitted.



IMAGES

■ High-resolution colour and greyscale images are sampled down to 300 dpi, plenty for this 150-line-screen printing job. Image compression is set to JPEG Maximum Quality for the best results and slightly larger files.



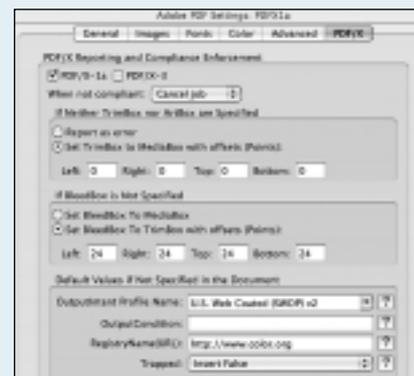
COLOUR

■ Colour management is switched off.



FONTS

■ All fonts are automatically embedded in the file, so you won't need to include them separately when you send the file.



PDF/X

■ This panel is crucial for creating PDF/X files. First, select the 1a file format and tell Distiller to cancel the creation of the PDF/X file if the original file does not meet all the requirements for PDF/X-1a files. (The log file it creates will show the problem encountered.) Here we can also specify a bleed area on all four sides of 24 points and tell Distiller this file will be printed on a SWOP—North American standard—web press with coated stock. Finally, select False under the Trapped setting, indicating that the file has not been trapped.