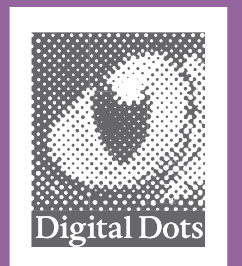


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The Digital Dots Buyer's Guide to Preflighting



The Digital Dots Buyer's Guides

This publication is part of a series of independent buyers' guides for publishers, graphic arts professionals, printers and print buyers. Buyer's Guide titles provide straightforward explanations of how technology works, what it's for and considerations for investment.

Authors Laurel Brunner, Cecilia Campbell and Paul Lindström can be reached via the Digital Dots website (www.digitaldots.org).

About Digital Dots

Digital Dots is an independent graphic arts research company established in 1999. The company is a collection of like-minded graphic arts consultants, pixies and professional journalists specialising in digital prepress and publishing technologies. Digital Dots provides exclusive market research, testing and evaluation services for prepress and publishing applications, and publishes a monthly newsletter. Spindrift is the industry's only truly independent resource for graphic arts news, analysis and comment, and has a rapidly growing worldwide readership.

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Thanks to Todd Brunner for production and layout under fire.

For John W. Seybold, 1916–2004
The father of digital typesetting

Introduction

Welcome to the Buyer's Guide to Preflighting

For most people print production is a bit of a mystery, a black art that takes a bundle of rough looking content and turns it into something gorgeous. Traditionally, what happens in between an idea and its realisation in print has been the preserve of prepress. Easy to use software and standard platforms have changed everything to the point where today virtually anyone can create digital documents, and deliver them to a printer for production and printing in glorious full colour. The art of printing is still the preserve of the few, but document creation is definitely no longer confined to the niche that was prepress. Digital production is everywhere, and everyone can have the tools for building documents destined for print. Even though most people haven't a clue about print production they can have a go at producing print ready files.

And unfortunately this is precisely what happens. It is the printer who has to sort out whatever problems the files have, often at the printer's own expense. This is why some basic understanding of preflighting and quality control, and their importance in the workflow, is increasingly vital to efficient production. Inefficient file processing slows down production and impedes automation, effectively adding costs through delays and reworkings. It is a problem concerning anyone in the print and digital media supply chain. An understanding of basic working practices and how to resolve problems is what this Buyer's Guide to Preflighting is all about. It is intended to help printers, prepress professionals and their customers understand the importance of preflighting for print production. It will be useful to anyone who buys print, from marketers to publishers.

In the following pages we cover everything you need to know about preflighting, beginning with an explanation of digital workflows and how various preflighting methods can help improve production. We have added a case study to the mix in order to demonstrate the way preflighting can make a continual improvement to production efficiency. Aller Group is a major publisher using preflighting techniques to improve file integrity and error free page processing.

The guide provides an overview of the leading preflighting tools on the market, with a chart that includes pretty much all the preflighting tools we have worked with. It is surely not exhaustive as this is a dynamic and fast moving field with many active players. Preflighting is increasingly about workflow management and quality control and this is the direction major players are taking. Successful investment is about choosing the right technology for your business, but for preflighting the technology choice is secondary to workflow optimisation. And this is all about providing the best service and process support for your customers. Technology is only part of the picture, and we hope that this guide will help you and your customers better understand the process. We hope you find the Buyer's Guide to Preflighting useful and we welcome your feedback.

Workflows, Preflighting & the Web

After nearly twenty years with PostScript, one would think that by now we would have achieved the goal Adobe founders John Warnock and Chuck Geschke set up: to offer a truly device independent page description language that would unify and simplify page design and document origination. Publishing tools and workflows have changed and evolved constantly since the introduction of desktop publishing in 1984, which was to a large extent down to the PostScript programming language. In fact, the publishing process has become more efficient, decentralised and even simplified because of it. However we still cannot say that PostScript, or its successor PDF, is truly device independent. Which is why preflighting and workflow management have become so central to efficient publishing processes. Processing compatibility across devices and systems is still required and because of this, document design and management are far from trivial. Preflighting has crept into the world of graphic arts production and is now central to digital production.

The evolution of publishing tools

Before 1984, publishing technologies were highly proprietary and safe in the hands of skilled craftsmen. Journalists, writers and editors were only allowed to hand in neatly typed, paper based manuscripts to the printer or typesetter. Respectfully they then waited to get back a proof to read through and check before printing could start. As we know, this has all changed and most document origination takes place beyond the walls of the printing or typesetting plant. Not until the very late stages of production does the document enter the printer's realm, but the printer is often still expected to take responsibility for the printability of those documents. Because everything used to happen in a closed environment it could be tightly controlled, but this is no longer possible. Production is no longer controlled in the same way.

Now anyone can buy a computer and the relevant software at a reasonable price and start making page designs. The rather less welcome news is that one needs to have at least some basic knowledge of the more important print parameters when doing page creation for high end print production. Open production systems have their price, and it is generally paid in the cost of error correction!

The first attempts to use rather feeble personal computers in high end colour production made even enthusiasts quite desperate, but one by one obstacles were overcome. One of the first problems was handling high resolution images on computers that were too slow and underpowered to cope with the volume of data. To get around this difficulty Quark invented the DCS format (Desktop Color Separations) in 1989, which meant that the operator only handled a proxy or low resolution version of an image when doing design and layout. The proxy pointed to the high resolution colour separated cyan, magenta, yellow and black files. A year after that, Aldus (long since consumed by Adobe) launched OPI (Open Prepress Interface), a more general standard that served the same purpose. Over time, desktop computers

have become more and more powerful as have networks, so much so that the OPI and DCS standards are increasingly redundant. Being able to work with the original high resolution images throughout workflow is no longer hampered by flyweight processing environments. Moreover it can reduce workflow complexity and the risk of errors, considerably simplifying preflighting procedures.

Today we take PostScript more or less for granted in graphic arts production, but it has taken a while for PostScript and PDF to achieve market dominance. In fact some of the manufacturers of machines and software for high end graphic arts production only recently abandoned their own proprietary page description languages in favour of PDF. For page design tools the dominance of a few players is a fact. Only some ten years ago there was an almost endless number of page layout tools around, but when it comes to high end page design and layout for general applications we now have only two contestants for the throne: Adobe InDesign and Quark XPress. Even for niche markets such as newspapers, technical documentation and packaging XPress and InDesign are broadly used although there are of course still specialised tools. Newspapers have sophisticated editorial and pagination systems, technical documentation production often relies on Adobe FrameMaker or technology from companies such as Advent or Xyvision. For general office document production, the Microsoft Office Suite suite dominates. However when pages are proofread and ready to be printed, the preferred means of data transfer today is typically PostScript or PDF.

Since PostScript is a programming language, it needs to be interpreted by each device and software involved in page processing. As always when doing interpretation there is a risk of at worst errors, and at best some minor differences in the interpretation. In a digital workflow any difference between what the designer intended as shown in the proof and what comes out on film or plate, will require reworking and corrections somewhere in the production line. To avoid doing this at a later and probably expensive stage, it is important to understand how PostScript works, how it relates to PDF, and how to avoid problems when moving PostScript and/or PDF files between systems. For building efficient digital workflows and preflighting procedures,, this is the most basic principal to understand.

Any time an electronic document moves from one system to another there has to be a checkpoint, a control mechanism, so that the integrity of the document is preserved in the new environment. In reality there have been a lot of problems to secure electronic document integrity and therefore a wide range of solutions, predominantly preflighting software technologies, have been developed to reduce the problems.

It's all about managing production

When transferring pages from one place to another, there are two alternatives. Either gather all the components included in the project, such as images, fonts, native document files (typically an InDesign or Quark document), and to send the whole lot to the printer, or save pages as one or several PostScript or PDF files. Working with native documents has some benefits in that if changes are required the files can be opened and corrected in the prepress department. Editing or correcting PostScript or PDF files is on the contrary only possible using dedicated editing software. However transferring native files and their component parts also has some severe disadvantages and dangers. Since a composed document often consists of many fonts, vector graphics and pixel images (photos), it is easy to forget to include something in the transfer. Missing fonts and images are by far the most common

reasons for why a page cannot be properly processed once it reaches the prepress department.

There are more disadvantages with handling native files. One generally needs the exact same software with the same defaults for opening the document, precisely as it was created. This not only means the application itself such as XPress, it also means the very same version of the application as the document creator has used. Opening an Xpress 5 document in XPress 6 may or may not work to satisfaction. The originator may have used the same software version number, but perhaps worked on a PC instead of a Macintosh so there are no guarantees that the file will behave in the same way. A prepress department accepting all kinds of native files therefore needs a comprehensive software library available, including all versions customers are likely to use. This software then has to be supported with maintenance and training and although this is a nice customer service to offer, it is also an expensive one. Accepting and working with native document files is still common, but there is a move to another workflow model. Increasingly printers ask customers to deliver PostScript or PDF files.

Working with PostScript and PDF: Raster Image Processing

For many years the RIP was just a raster image processor and nothing more. Once the page composition was proofread and ready for output, the pixel data got converted to a high resolution bitmap, according to the output parameters required and the characteristics of the imaging device. Many of the page specific settings were defined in the native page design software and special functions such as trapping were performed in stand alone software, sitting between the layout software and the actual RIP. Impositioning was done manually, since the output was single page films. There were no big issues with colour management since images were supposed to be colour separated early on, typically already converted to CMYK in the scanner software. With the move to fully imposed and direct to plate output, the RIP has become increasingly central to the workflow, handling far more than just rasterising.

Raster Image Processor (RIP)

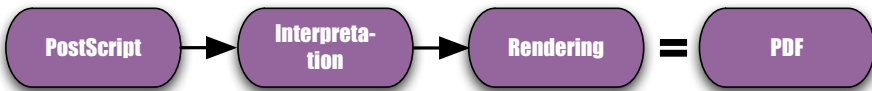


Over time more and more prepress production tasks have been integrated into fully digital workflows, increasing the need for reliable file transfer and therefore preflighting. Output formats got larger to allow the output of complete impositions, fuelling the development of electronic imposition tools. PostScript RIP based processes could be split up into several stages so that for example one could set up separate print queues for proofing, but this in turn required colour management to

ensure a close match between the colour printer output and that of the final print. All of these tasks required checking and this has fuelled the development of preflighting tools, and their gradual integration into the workflow.

Specific task management has become integral to multi-functional PostScript RIP systems. A modern RIP system is modular in design and typically processes both PostScript and PDF files. The user can start with a simple system, and then buy and add functions when needed. Preflighting can of course be incorporated, coexisting with different modules and working according to the requirements of the workflow.

PostScript to PDF Data Interpretation



PostScript encoded data needs to be interpreted and variation in its interpretation is one of the main reasons why preflighting is so important. The need to minimise the variability of PostScript language processing encouraged Adobe to develop the Portable Document Format. PDF makes it possible to save the interpreted and rendered page using a dedicated and mostly unambiguous data format. Although it was not designed specifically for graphic arts production, the printing and publishing industries have wholeheartedly embraced PDF. Its rapid adoption as the basis for prepress production has substantially reduced erratic and inconsistent PostScript interpretation, as well as seriously simplifying document interchange.

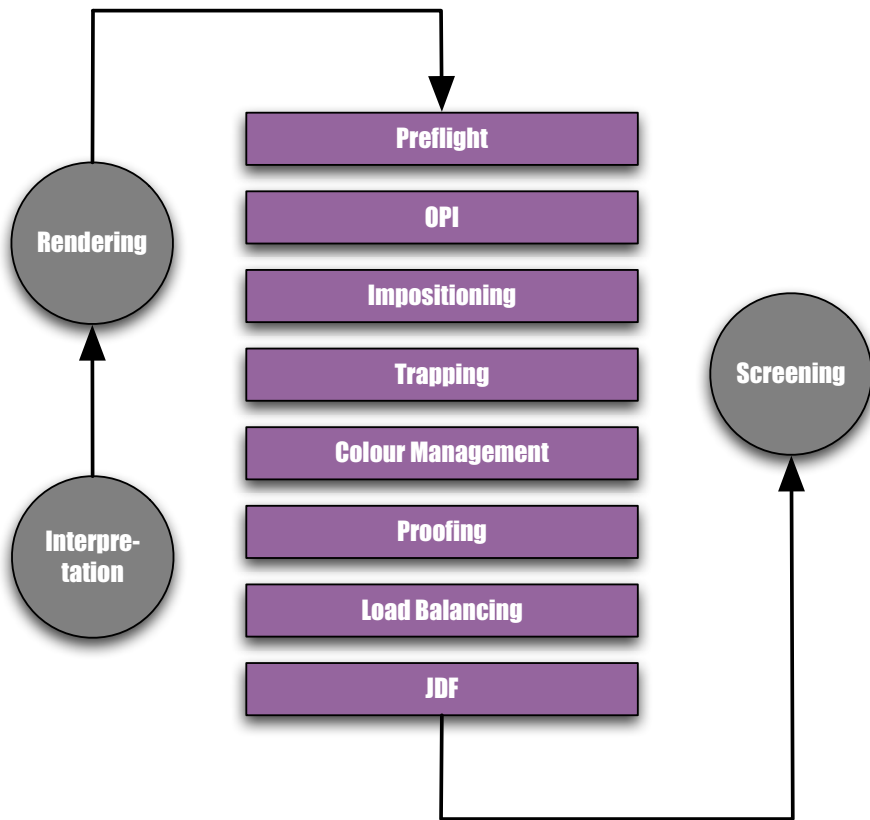
The introduction of PDF gave document creators a third choice for file delivery, alongside native documents and PostScript files. PDF offers many possible advantages such as file compression and font embedding, but it is still important to remember that several print related parameters must be defined when creating a PDF file. Not only does this give the designer a measure of control and responsibility over their print process, it also imposes preflighting discipline.

A Word on PostScript

PostScript is an open standard so it is possible for anyone to write their own PostScript language interpreter. Probably the most commonly used interpreter in high end RIP systems is the Adobe CPSI RIP (Configurable PostScript Interpreter). This can either be part of a software based RIP system or built into a hardware RIP, sitting inside an output device. Besides the Adobe PostScript interpreter there are a few well known alternatives to choose from, for example the Global Graphics Jaws and Harlequin interpreters, as well as Artifex (also known as the Ghost Script interpreter).

At all of these stages preflighting is relevant, but whether it is performed through manual quality control procedures such as proofing or with preflighting technology depends very much on the workflow. Incoming documents will have to go through many processes when they enter the prepress department so it is therefore very important that no faulty files are allowed to reach this stage of production. Any corrections to content should have been done at an earlier stage, and potential

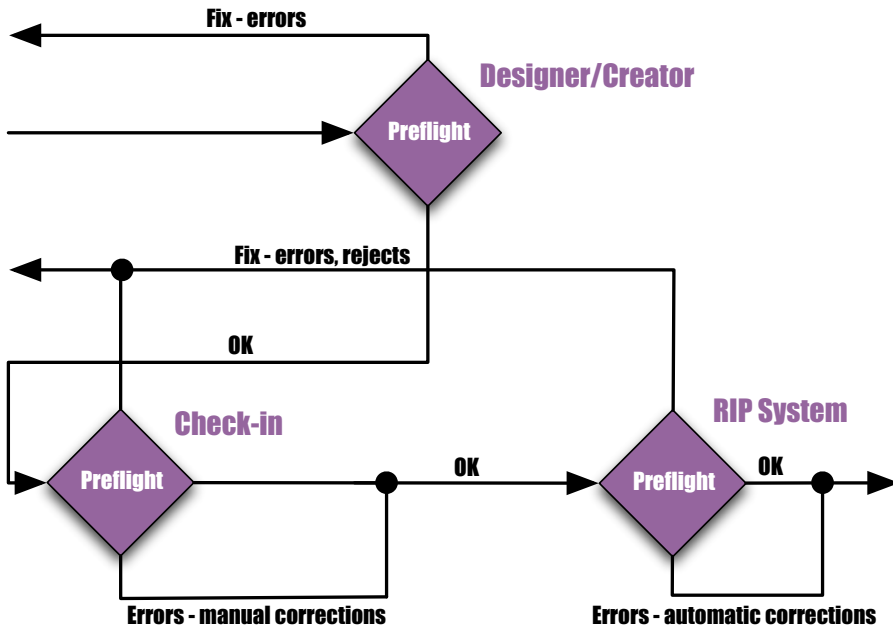
Modular RIP System



production problems should have already been highlighted through efficient preflighting. A final preflight check should always be made prior to files entering the RIP system.

Any manual hands-on corrections should be made in a preflighting system, and never in the actual RIP system. Ideally the designer or document creator should have already checked and validated the document as a printable file. This ensures that there is a clear separation of processes, starting with the complex and usually manual stage of page layout and design. There follows a less complex but still quite intense manual stage for checking and page control which is where the use of preflighting software is imperative. If the first two stages have been done properly, the final stage should be the straightforward and ideally fully automated raster image processing of the file with little or no human intervention. Even colour management can be handled automatically in the RIP, as long as the document set-up and file management have been efficient. The RIP can call for and apply the correct ICC profiles, taking into account the choice of paper and printing process, all of which can be profiled using ICC specifications. Impositioning schemes and other settings can also be automatically chosen and applied at a very late stage. And all of it can, by

Three Stages of Page Processing



the way, be provided as JDF data (Job Definition Format. See the Digital Dots Buyer's Guide to JDF for further information). But none of it will work as anticipated if the preflighting procedures are not set up correctly in the first place.

Workflow systems

Modern RIP systems are now designed to be workflow management systems and their architecture works with standard data formats rather than with native documents. Most high-end workflow and RIP systems are built around Adobe's PostScript Extreme architecture and are designed to optimise PDF processing. Before entering the RIP system all documents are automatically converted to PostScript or PDF. It is widely believed that software such as InDesign and Quark Xpress work internally with PostScript, but they do not. Quark Xpress and Adobe InDesign use their own proprietary native file formats, which are neither PostScript or PDE. All layout software builds the page composition using their own internal formats allowing for example structured text formatting and tagging, templates, layers et cetera. Adobe's internal formatting may be very close to PostScript, but Quark's most certainly is not.

In order to be prepared for print production, page content has to be exported out of the layout software to convert the data from the internal page descriptions to PostScript. This happens when the page is sent to a printer, to a computer screen, or exported for output elsewhere. It is no coincidence that when creating a PDF file in both InDesign and Quark Xpress 6, the export function must be used, rather than a save or save as function.

The Adobe PostScript Extreme architecture does no further processing of the pages until they are all converted into PDF, so all data is ultimately rendered into PDF. If the incoming files are already in PDF they only need to be validated to check such things as resolution and print specific parameters. This is where preflighting is absolutely key, although preflighting should ideally already have happened before the files reach the RIP system. Page processing can be speeded up using automated preflighting procedures and workflow management. A modern RIP and workflow system supports multiple processors and can also split up a multipage PostScript file into single page PDF files. This can speed up production, but it makes the need for preflighting even more vital.

Once the pages have been checked and validated, impositioning, colour management and trapping can take place. Rendered but not yet screened single page PDFs can now be output in a flexible way, for example first to a proofer or remote user's computer screen. The proof requires its own colour management to match the final print, and this can be managed in the RIP and workflow system. If the proofing device cannot manage the full size of the spread, the imposition will need to be temporarily changed, which the RIP system can do automatically. Quite often single pages may need to be corrected or replaced and this too can be handled without having to re-RIP or re-render the whole spread. Any change or correction should be checked again using preflighting tools, to ensure that no unforeseen disruptions have occurred.

In order to be able to work at top speed and to fully automate production, modern RIP and workflow systems are designed to work best with preflighted and validated PostScript or PDF files. The page designer or creator therefore has a huge responsibility to deliver print-ready PostScript or PDF files. Preflighting tools are vital, but so is an understanding of the processes involved and their purpose.

Preflighting & the web

Incoming files should always be automatically checked before they are allowed into the prepress production system and one way to do this is to check them at the last minute, often via the Internet. For a long time the delivery of proofs ready for print was made in person, with the opportunity to go through the material and physically check that everything was in place. With the introduction of the Internet it became increasingly easy to transfer even large amounts of data electronically. While this is convenient and speeds up the publishing process, a natural checkpoint has been lost. Handing over CDs and proofs is an obvious point in the workflow for explaining what's what in the material, and exchanging useful information about the job. Faceless delivery to an FTP server could allow faulty material to enter the prepress department, and only finding what's wrong or missing when it's too late. There are several solutions available to provide checks at the point of delivery.

Markzware offers the Flightcheck Online technology, but has also cooperated with Vio, a communications and workflow solutions provider, to build integrated solutions for customers. The Markzware products can offer yet further automation using AppleScript or Visual Basic.

Companies like QuickCut and AdSend combine online preflighting with administrative tools for handling metadata, and are good models for extended customer services. Printers can of course publish their preflight profiles on their own web site, or use the Enfocus CertifiedPDF.net service to ensure that customers

use the latest and correct production settings. The important thing is to assure that preflight checks are made at a very early stage in the workflow. For this to happen the printer has to make preflighting as easy and convenient as possible for designers and customers.

Teaching Old Dogs New Tricks

Company:

Aller Group – Denmark, Norway, Sweden and Finland

Type of work:

Publisher of weekly and monthly magazines, with a market share in Denmark and Sweden of about 70%, around 50% in Norway and 20% in Finland. Produces 3.2 million magazine copies every week.

Equipment:

Creo Brisque RIP and workflow system (Denmark and Norway), and ArtCom Impose 2000 in Sweden, plus Enfocus Pitstop Server for preflight services.

Time of installation:

Aller has used Enfocus Pitstop since 2000.

Top Advice:

Always ask for hard copy proofs if possible, even when receiving ads as electronic documents.

The Aller Group was founded in 1873 by Laura and Carl Aller. The first magazine to be published was Nordisk Mønster Tidene, with Laura Aller as chief editor. This magazine is still published, but with a new name – Femina. Over the years Aller added new titles to the portfolio, and the business expanded to Sweden and Norway. Today the fourth and fifth generations of the Aller family are still actively involved in the day to day running of the company. In the last twenty years this publishing house has expanded rapidly and today publishes more than sixty weekly and monthly magazines in Scandinavia. Altogether the Aller Group employs 2100 people, with 660 in prepress services.

Aller Group's high weekly page volume depends heavily on digital file delivery in a highly automated environment. Throughput has to proceed without errors if the automation is to be optimised. This was a problem that prepress manager Jess Hansen had to deal with because: "When producing more than a one thousand pages per week just in the Danish production centre here in Vallby, we can't afford to have a high rate of errors in production". Preflighting technology was the route to error reduction for Aller: "We started using Enfocus Pitstop four years ago, first just the stand alone version on some of our workstations. This helped us identify where the most common problems were in the workflow. We then trained our designers in this process to produce documents [that are] close to 100% ready to print".

Most errors had related to images with too low resolutions for print, and missing fonts. Once these problems were recognised and proper training was given, the error rate dropped from about 10% to close to 0%. So with the inhouse production more or less error free, Jess Hansen and his colleagues could take a closer look at the documents coming into the production workflow from the outside.

Most ads are produced by ad agencies on behalf of the ad buyer, and very few ads are produced inhouse. “We have about 10% of pages of ads in the weekly magazines, and about 20% of ads in the monthly magazines”, continues Jess. “We have thought about introducing some kind of Internet based preflight solution, but frankly haven’t had time to properly evaluate the systems on the market. Instead, on a daily basis, we try to educate our customers and their partners how to create a correct and printable document. We publish checklists on every magazine’s web page, but most of all it’s the daily contact our ad receiving department has with customers and ad designers that slowly pays off in better documents. From being quite high, about 40%, the percentage of erratic incoming electronic documents is today down to about 15%. Considering that it typically takes about half an hour to fix an ad that contains errors, including contacting the customer or designer, we would of course like to bring down the error rate even further.”

Money talks

Since January this year the Aller Group has recommended that its customers deliver ads as PDF files. To encourage the ad customers to really do so, the Danish customers are offered a 3% discount as an incentive. According to Jess “The 3% discount may not seem a lot, but all in all the volume of incoming PDFs is rising, and the quality of the files is improving too.”

“Today PDF files account for close to 80% of incoming files, while native Quark XPress files account for about 20% of the volume and InDesign for possibly only 1%,” states Jess Hansen. “We would of course prefer a 100% share of PDF files, but you mustn’t forget that we are dealing with a customer. If they for some reason or another want to deliver files in a native file format we have to accept that, as long as we are talking reasonably well known software like Quark XPress or InDesign.” The ad receiving department acts as a sort of clearing house for all incoming ads. Should some stray EPS files get into the workflow, they are converted to PDF and routed through the workflow starting with preflighting.

“We have the Brisque RIP system at some of our sites in Denmark and Norway, but the preflight function is pretty rudimentary”, says Jess. “Instead we have installed Enfocus Pitstop Server for a more complete and thorough control of all files. This is also used in Sweden, and the checked PDF files are fed into the Impose 2000 system”. He adds: “the big challenge is to reduce the remaining 15% errors, some of which can be fixed in Pitstop, plus the others that [can’t be fixed and] mean the file has to be rejected. We will evaluate the possibilities of an online based preflighting solution, but we think that educational efforts have to be continued in parallel. What we are looking for is a system that is pretty straightforward to install and maintain, as well as easy to use for the customers”.

Technology Overview

Chuck Weger, an American technical editor and consultant within the graphics art industry, is said to have been the first person to use the term “preflight” in relation to graphic arts production. However Esko-Graphics was the first company providing tools for checking production readiness. The company didn’t call it preflight, but in essence tools such as Print Rule Checker were preflighting technologies. Markzware was the first company to file a US patent for a “method for examining, verifying, correcting and approving electronically recorded documents, prior to their final output, whether printing, transmission or recording”.

Originally preflight checking refers to aviation and the checks a pilot completes before heading off for the runway. For a document creator or designer preflighting corresponds to the document checks made before sending a file off for printing. Many of these checks can be performed automatically, using digital preflighting software.

Even though document preflighting can be done with special software, it is still very useful to go through a basic preflight checklist before sending a document. This involves manual as well as electronic procedures and will stop obvious errors getting into the prepress department. It is far better to catch mistakes before they show up in the RIP or proofing stages, or even worse in print, when the cost of correction will be very high.

The preflight gatekeeper

Automated preflighting procedures using dedicated preflighting software sets up a neutral and objective gatekeeper. Because it is a stage in the workflow, preflighting can’t easily be bypassed or forgotten and it doesn’t get tired or error prone at the end of the working day. Of course using preflighting software still won’t eliminate the need for highly developed skills on the part of creators or designers. It still takes good planning to create printable digital files and to avoid the more common errors in page composition. Despite automation tools prepress production still requires some insight into the complex world of high end print production, or at least an awareness of the production workflow and printing processes. Even in the most well managed workflows, preflight processes provide additional insurance to prevent unanticipated errors reaching the workflow.

Order! Order! Order!

Before starting a publishing project it’s a good idea to think through the production chain, all the way from concept to distribution. What software will be used? What procedures will be followed? Where will content data come from? How will the content be printed? Any point where the slightest uncertainty or doubt creeps in, is the point at which to cross check requirements, ideally with someone with sound experience of a similar production workflow.

Many of the problems occurring in prepress can be avoided by establishing working practices to suit the project early in design and production planning. Preflighting is about quality control and different technologies are available to suit different types of

production environments. Many common mistakes can easily be avoided well before a file gets into the production chain. Much of what is considered an early preflight, is in fact about good working practices and using the tools best suited to a production process.

Preflight Technology Basics

Naming conventions

One of the simplest means of keeping track of files, versions, and their status is to set up and use consistent naming conventions. These can be based on dates and deadlines, customer codes, publication titles or anything as long as the naming works without conflict or misunderstanding. In addition to a well organised filing system and cohesive naming conventions, it is useful to work with file extensions as well. Together these are the starting point for efficient production management.

For those designers working in a Mac only environment the phenomenon of file extensions is almost unheard of. File extensions are used to get the computer operating system to handle files efficiently. The extension to a file's name provides the operating system with information about the software used to create the file. On a Macintosh this information is inside the file, but in Windows and Unix environments a file extension is necessary to direct the OS to the correct software for opening the file. Commonly used document types are doc, tif, jpg, eps and so on. When using Mac OS X (a Unix based OS), the user doesn't necessarily need to see or think about file extensions. However it may be wise to start adding them to document files because it simplifies file processing, particularly in hybrid environments with Macs, PCs and NT or Unix servers.

Working with images

Deciding how designers should work with RGB images during the page layout stage is an important clarification that should be made early in the workflow design, along with making sure the printer will be able to efficiently handle colour conversions to CMYK. Perhaps the printer prefers RGB images to be converted to CMYK, prior to placement on the page? If so, the designer should use the correct set up parameters for the colour conversions. Do the operators involved know how to do this correctly? Has the conversion process been tested with the printer? Set up parameters depend on whether the printer uses positive or negative film imaging, or goes direct to plate for CTP output with either positive or negative plates. Factors such as final dot gain on press are influenced by these kinds of production constraints, so they cannot be overlooked.

If one uses ICC profiles and embeds them in the image, all images should of course use the same embedded profile otherwise there will be serious problems with final colour proofing. In order to simplify things the printer may provide an ICC profile for colour conversion, but this locks one into the specific environment for which the ICC profile was created. This isn't a problem if the file is destined for a single print process, but it could cause difficulties if the file is to be printed on several different presses. If this is the case, preflighting can rapidly turn into a seriously stressful business!

Missing images and illustrations

Most layout software uses a link to the high resolution images used in the file, leaving the high resolution version residing elsewhere on the system. On the page it looks as if the image is there, but in fact it is only a low resolution proxy version of the actual image. The final image, the one that will end up in print, must of course be the high resolution version, rather than the proxy file. Therefore it is crucially important to organise all high resolution images and illustrations so that the correct files are fully accessible throughout the production process.

Images with insufficient resolution

Missing images is bad enough, but at least they are pretty easy to spot. Images with insufficient resolution generally take a little more effort to identify. The generally accepted calculation for working out image resolution is to have twice the resolution of the screen frequency used when printing. Using a screen frequency of 150 lpi (lines per inch) means that a resolution of 300 ppi (pixels per inch) is required for the images. Most images downloaded directly from web pages often have a resolution of around only 72 ppi which is insufficient for printing.

Font handling

When digital files enter a prepress department the most common problem is missing fonts or images or both. Digital housekeeping helps considerably to keep fonts organised for smooth production. Keeping fonts on a server is convenient and avoids having them cluttering up the system folders on individual computers. If fonts are required locally for working offline, make sure the font set-up mimics that of the server and nothing else. Keeping fonts organised has always been a somewhat endless battle, and Apple hasn't made things any easier with Mac OS X.

It is vital to learn how fonts are stored and organised in a particular operating system. Use a font tool for keeping track of which fonts are really used, as well as deleting duplicates and malfunctioning ones. A server based tool can help make font management more efficient. Tools such as Extensis Suitcase Server not only keep track of the fonts used in a file, but they can also be set up to check that all fonts in circulation are legal. Also fonts with the same name but different publication dates, can have different kerning information and character set-up causing unexpected text reflows at a later stage. Suitcase keeps everything in order, helping to simplify content proofing and resolving font related preflighting problems before they occur.

TrueType fonts are known to sometimes cause problems in a PostScript based workflow, and should if possible be avoided. If the interesting looking TrueType font downloaded from the Internet simply has to be used, at least make some sort of a test with the printer to check whether the font passes through the RIP without any problems. Make this test sooner rather than later in the production schedule. It's one less variable to be resolved during preflighting. Many production errors can be avoided by sticking with PostScript Type 1 fonts in the first place, or working with the new generation Open Type fonts. Either will help prevent nasty surprises later in production.

Calculating the bleed

Bleed refers to printing an image all the way to the outer edges of a page and making a mess of the bleed is a very common preflighting problem. Images printed with full bleed require an extra three to four millimeters added to their dimensions in order to avoid a gap around the image when it is printed and when the pages are finished. Most preflight software will pick up this error, but it is a good idea to make sure that designers know how to build it into their pages in the first place.

Use a proof

It may sound obvious, but enclosing a printed proof with digital documents can save a considerable amount of time, trouble and expense. Anything delivered on CD can be confirmed in this way, and even in a totally digital workflow where files are delivered exclusively in an electronic environment, it is still a good idea to send physical proof whenever possible. The printer can use the proof to check the output and as a guide for any potential prepress mishaps. Often the preparation of incoming files and proof production can take a day or so, which generally allows enough time for delivery of hard copy proofs.

Other points

Basic preflighting is about getting work through production with the least amount of fuss. It is about minimising and resolving variables early in the workflow so that file throughput is flawless. Simple checks such as making sure that CDs are readable, that monitors and proofers are correctly calibrated and that the correct ICC profiles are available, are all straightforward tasks. Furthermore they can have a hugely beneficial effect on the workflow, reducing errors, building customer and operator confidence and identifying problems before the correction costs grow too high. Preflighting is all about quality assurance, so it is also a good idea to take advantage of the basic preflighting tools in XPress and InDesign. However for high end production these should not be used in isolation.

Working with preflighting software

Proper and complete preflighting of native files, as well as PostScript and PDF files, requires dedicated preflighting software. This software might operate as a plug-in or extension to other software. Most preflight software not only identifies production errors in the document; these tools also explain why something is considered an error and how to correct it. There is plenty of room for improvement in this area, as some of the preflight explanations are quite brief and tend to assume familiarity with the PostScript programming language. We can expect the interactive help functions in preflighting software technologies to be continually enhanced over time. Correctly used, the current generation of preflighting software helps the designer to deliver fully printable error free documents.

There are plenty of packages available. There are also business models where the preflighting and sending module is free for users, but paid for by the receiver which is most often the printer or prepress service provider.

The Players

Following is a brief summary of the technology developers and the products they offer. Most suppliers have made demonstration versions available on their web sites (see chart), providing a good opportunity for testing the various products to some extent before deciding if they fit into a particular workflow.

Agfa

Besides having preflight capacity in the ApogeeX RIP system, Agfa offers a light version of ApogeeX called ApogeeX Create Pro. It helps designers create printable PDFs and provides server based PDF creation. A printer that has bought Agfa's Apogee Create can distribute client software to customers. The client tools can be set up with the correct settings for preflighting within the printer's workflow, so that the designer automatically creates documents that meet the printer's specifications. The software will also handle flattening of PDF 1.4 and 1.5 transparencies, PDF export including PDF/X-1A and PDF/X for remote processing. The software can also be enhanced to support trapping and contract proofing.

Callas

This company has several options for preflighting. The server based solution is called ProcessPrepress and it has a high degree of automation. Part of the Callas technology is used by Adobe in Acrobat 6 to provide basic preflighting tools.

Creo

Creo has built preflighting capabilities into the Prinergy, Brisque and Spire RIP systems. Creo offers the possibility for the designer to create PDFs according to a printer's specifications. The software is called Synapse Prepare and has plug-ins to InDesign and Quark XPress. Through these plug-ins, PDF creation and the subsequent preflight steps can be managed directly from within the layout software. The preflighting profiles will be compliant to specified Enfocus Certified PDF and/or Adobe Distiller settings.

Enfocus

Certified PDF technology is integrated into many of the well known RIP systems on the market, but Enfocus also has integrated it into all of the Enfocus products, including stand alone software such as Instant PDF for designers. For document receivers, Enfocus offers Enfocus PitStop Professional (an Adobe Acrobat plug-in) and PitStop Server, a standalone application allowing unattended preflighting through the use of hot folders. On the www.CertifiedPDF.net website printers and publishers can publish their latest and most accurate preflighting profiles, so that customers can produce printable PDFs.

While editing PDF files is possible to some extent using Enfocus or competing products, it is normally hard to keep track of the changes. With the Enfocus Certified PDF technology, it is possible to keep track of everything that has happened to a PDF file, including who did what, when and where. Thus it is possible to track any changes made and if at a later stage necessary, manually update the files. Enfocus also publishes a PDF Guide which explains the causes and possible remedies for all errors and warnings that might be generated. This is especially useful when controlling files with public specifications such as PDF/X and Ghent PDF Workgroup specifications.

Extensis

The Extensis preflighting software was recently sold to Printable, which uses Extensis technology in its own branded solution for online preflighting (PrintFlight). At the moment it is not entirely clear whether Printable will continue to sell the stand alone Extensis software as Preflight Pro, or rename it.

Global Graphics

Preflighting tools are incorporated into the single user version of Jaws PDF Creator as well as into Jaws PDF Server. PDFs can be automatically created according to Enfocus Certified PDF profiles (Global Graphics and Enfocus cooperate on this technology). Owners of the Jaws PDF Server can also distribute personalised software clients to their customers.

Grafikhuset

This Danish repro house developed a preflighting technology for its own needs and then introduced it to the market. As well as having the usual preflight software features, this tool can perform colour conversion on the fly.

Laidback Solutions

This Swedish software developer's preflighting software is coupled with a mechanism for adding administrative metadata to PDF files according to the new AdsML standard. This standard is designed for advertising file management within the newspaper industry.

Markzware

This is one of an elite band of industry veterans when it comes to preflight technology. The Markzware technology is also one of the few applications able to handle native files, created using such tools as InDesign, Quark XPress and Corel Draw. Markzware products offer a degree of automation that can be further extended with the use of Apple Script and Visual Basic. Markzware cooperates with other developers to offer integrated online solutions, and also offers its own standalone solution called Flightcheck Online.

OneVision

This is another veteran in the preflighting business. To describe OneVision's products exclusively as preflighting software isn't entirely fair as they are closer to RIP systems, with advanced editing and correction features. The price of this technology is consequently on a somewhat different level than most of the other programs mentioned here. However OneVision provides a very powerful solution for the money with lots of features.

Quite

A UK based software developer, Quite's preflighting technology offers some nice tricks, among them colour conversion on the fly.

The role of the internet in preflighting

One of the biggest developments in the preflight business has been the use of the Internet as an environment for preflighting. This is a trend that can only continue as prepress production becomes a more widely distributed business. Many companies are setting up central servers configured to receive and check files automatically. There are numerous developers who have developed such systems for publishers, including Markzware and Enfocus. Markzware designs and builds bespoke web based preflight and quality assurance systems (Markzware FlightCheck Online), and Enfocus has set up an innovative subscription based service.

The Enfocus CertifiedPDF.net website manages and synchronises PDF quality specifications between design and production processes. The primary objective is to ensure that document creators and receivers work with current PDF specifications for PDF creation, preflighting and subsequent production. The CertifiedPDF.net site stores all preflighting and production specifications necessary for checking and delivering production ready PDFs. Currently Certified PDF.net provides standard specifications such as PDF/X and file specifications from various industry associations, such as those working within the Ghent PDF Workgroup. Several publishers and printers publish their own specifications (or refer to public standards) on their personal page on CertifiedPDF.net. CertifiedPDF.net limits itself to publishing PDF specifications, and is therefore not a medium by which the files themselves are being transmitted from creator to receiver.

Enfocus CertifiedPDF.net follows a similar principal to that of Quickcut. This company specialises in advertising delivery for newspaper and magazine publishing, hosting a database of file specifications maintained by the participating publishers. The server provides a quality control reference check before allowing ad file delivery. Quickcut's server is set up for ad files, while Enfocus' Certified PDF.net and Markzware Flightcheck Online are designed for any kind of workflow. In both cases publishers are responsible for keeping the specifications up to date, so the host company is not responsible for file delivery or compliance.

PDF creators choose the specifications they use. A notification mechanism checks that the specifications are still up to date and notifies the user if there are changes. This type of web based preflighting provides a quality control hub for production, synchronising production specifications so that preflighting is done correctly when the file reaches the receiver's desktop and where the tools are available to correct any errors. The goal of web based preflighting and quality control systems is to avoid unnecessary file transmission, and to minimise delays in production.

Preflighting used to be about correcting PostScript errors, but it has evolved in step with the prepress business. Today workflow automation demands automated quality control systems increasingly based on PDF. The difficulty with using PDF as a base format for prepress has been its breadth of application and the considerable flexibility with which PDF files can be configured. Much work has been done to overcome problems associated with the format's scope for abuse, most notably the development of the PDF/X specifications. But that's another story.

Vendor	Product	Native files*	Pestscript	PDF	Client/Server	Price (EUR)	Web
Agfa	ApogeeX Create Pro	No	Yes	Yes	Server	approx 6000	www.agfa.com
Callas	process/prepress	No	No	Yes	Server	3,400	www.callas.de
Callas	pdfinspektor2 Auto	No	No	Yes	Server	49	www.callas.de
Callas	pdfinspektor2 Gold	No	No	Yes	Client	140	www.callas.de
Creo	Synapse Prepare	No	Yes	Yes	Client	310	www.creo.com
Cutting Edge Technologies	PROscript/PROscript hot	No	Yes	No	Client	865	www.laidbacksolutions.se
Cutting Edge Technologies	PROscript/PROscript hot	No	Yes	No	Server	2,960	www.laidbacksolutions.se
Enfocus	PitStop Professional	No	No	Yes	Client	599	www.enfocus.com
Enfocus	PitStop Server	No	No	Yes	Server	2,499	www.enfocus.com
Enfocus	CertifiedPDF.net	No	Yes	Yes	Server	on request	www.enfocus.com
Enfocus	Instant PDF	No	Yes	Yes	Client	299	www.enfocus.com
Extensis	Preflight Pro	Yes	Yes	Yes	Client	pricing not ready	was Extensis, see Printable
Extensis	PrintReady	Yes	Yes	Yes	Server	pricing not ready	was Extensis, see Printable
Global Graphics	Jaws PDF Creator	No	Yes	Yes	Client	79	www.jawspdf.com
Global Graphics	Jaws PDF Server	No	Yes	Yes	Server	from 1853	www.jawspdf.com
Grafikhuset	CMYK PDF Creator	No	Yes	Yes	Client	249	www.grafikhuset.dk
Grafikhuset	PDF Easy Join	No	Yes	Yes	Client	249	www.grafikhuset.dk
Laidback Solutions AB	AddMan	No	Yes	Yes	Client	130	www.laidbacksolutions.se
Laidback Solutions AB	AddMan Pro	No	Yes	Yes	Client	3,280 per web site	www.laidbacksolutions.se
Macula Datorkonsult	xADS	No	Yes	No	Client	1500	www.macula.se
Markzware	Flightcheck 5.0 Designer	Yes	Yes	Yes	Client	199	www.markzware.com
Markzware	Flightcheck 5.0 Pro	Yes	Yes	Yes	Client	499	www.markzware.com
Markzware	Flighcheck Workflow	Yes	Yes	Yes	Server	989	www.markzware.com
Markzware	Flighcheck Online	Yes	Yes	Yes	Server	on request	www.markzware.com
Onevision	Speedflow (Check, Edit & Impose)	No	Yes	Yes	Server & Client	10,420	www.onevision.com
Onevision	Asura	No	Yes	Yes	Server	19,634	www.onevision.com
Printable	PrintFlight 2	Yes	Yes	Yes	Server	on request	www.printable.com
Quite	Quite a Box of Tricks	No	No	Yes	Client	212	www.quite.com
Quite	Quite Revealing	No	No	Yes	Client	244	www.quite.com

* For example InDesign- or Quark XPress documents etc

The X-Files

The adoption of PostScript and PDF based workflows has encouraged a widespread shift away from preflighting of native files. This is in part why the number of software and solutions for preflighting PostScript and PDF files is significantly higher. There are two main scenarios for this type of preflighting. Either one preflights at the moment of file creation or at a later stage, typically when the files are about to enter the prepress department. Ideally one does both.

Historically, when not submitting native files, the obvious alternative was to create PostScript files instead. This could be done within layout software such as Quark XPress, but the resulting PostScript files still need to be checked for printability. The procedure can be complex and error-prone for novice users.

Instead of working with PostScript files, there has been a strong movement to create and deliver PDF files. This is often done using Adobe Acrobat Distiller, a part of the Acrobat package. While one can create a PDF file directly from inside Adobe InDesign, PageMaker and more recently Quark XPress 6, the route to a PDF often first requires the creation of a PostScript file.

Creating proper PostScript files can be tricky, time consuming and difficult to automate. So to help designers and document creators produce printable PDF files, several vendors have introduced solutions to create them by “printing” to a virtual printer, a sort of output destination that only exists digitally. A virtual printer works like a printer queue, and can be set up to also perform an instant preflight check at the time of file creation using software extensions and plug-ins.

Products such as Agfa Apogee Create, Creo Synapse Prepare, Enfocus Instant PDF, Global Graphics Jaws PDF Create, Markzware Flightcheck Workflow, and QuickCut are examples of such an approach. They provide a profile to the creation software defining how the file should be set up and what should be on the preflight checklist. The idea is that the printer will then receive accurate and fully printable digital files. In addition, when checking incoming files, there is no need for a second preflight, provided that the software offers information about whether or not and how the preflighting has been done, and whether or not it was successful.

Enfocus provides such a solution with its Certified PDF technology. A preflighted PDF file contains information about whether the preflight was successful or not and by whom it was performed. Moreover the profile used to preflight the file is embedded in the file and compared to profiles residing on the receiving computer. Thus the prepress department can avoid redundant work and can concentrate on files that need corrections or that have to be rejected. To some extent the Enfocus preflight technology is already integrated in different systems from companies such as Agfa, Creo, EFI, Fujifilm, Heidelberg, Screen and Xerox. Recently Global Graphics has integrated the Certified PDF technology into the Jaws PDF Courier system.

PDF/X (PDF eXchange)

PDF workflows were expected to simplify production processing a great deal. Unfortunately PDF hasn't entirely fulfilled its production promise. Adobe wrote the PDF data format for use in a wide array of applications, not only paper based print production. PDF files can contain audio- and video-clips, annotations, animations and so on. Such a PDF file is of course unlikely to be welcome into a print production workflow, so some redefinition of PDF was needed in order to optimise it for print production.

Defined in 2001 PDF/X is an ISO-standard for "printable" PDFs. It is a subset of Adobe PDF version 1.3 and it excludes all parts of the PDF format that are not relevant for print applications. Since 2001 at least three sanctioned versions of PDF/X have been introduced, and confusingly the oldest are PDF/X-1 and PDF/X-3. PDF/X-2 is not yet ISO certified. PDF/X-1, including the latest version PDF/X-1a, is the strictest since it requires high resolution colour separated files and does not allow OPI calls or DCS-files. It is often stated that the PDF/X-1a definition doesn't allow spot colours, but this is not correct, it does. PDF/X-2 is supposed to be more tolerant and it accepts OPI calls and colour management with ICC profiles. However only PDF/X-3 and PDF/X-2 allow RGB and CIEL*a*b* encoded images, coupled with the appropriate ICC profiles.

While PDF/X has made it easier to specify how a PDF file should be constructed for printing, the standard still doesn't specify such things as the minimum resolution required. To make up for this the term PDF/X Plus has come up, indicating that the user or receiver has to provide some additional information about the printing conditions.

The Ghent PDF Workgroup, an Enfocus-initiated association of twelve industry associations from seven countries, has defined nine PDF specifications to complement the PDF/X standard with business sector-specific settings. Specifications have been published for ad delivery (magazine and newspaper ads), sheet fed and web printing and specifications for packaging are under development. In some cases there are separate specifications for CMYK-only and spot colour printing. Some specifications allow low resolution images while others only accept high resolution.

As much as we had hoped that PDF would end the struggle in electronic document delivery, there is still some way to go. Like it or not, one still has to preflight files before sending them off and PDF/X is fast becoming the most popular means of doing this.

Up & Coming Preflight Technologies

At Drupa we expect to see preflight and incorporated technology for workflows of all kinds. Enfocus and Markzware lead the field when it comes to integrated and distributed preflight processing, however there are new technologies from a number of other workflow management and preflighting specialists. This includes Callas and OneVision, the two other big names in preflighting.

Callas recently introduced MadeToPrint (sic) a plug-in for extending InDesign CS presets. The technology is designed to improve output management through improved controls over output settings, adding a clever file management dimension to preflighting functions.

Enfocus Instant PDF 3.0 is due this year. Instant PDF 3.0 is a standalone version of the software built on Enfocus' own PDF libraries, rather than Adobe's. This means that it is a single application that does not need Acrobat in order to function. Instant PDF 3.0 has all the sophisticated tools for creating clean PDFs that are present in the existing version and runs under both OSX for direct PDF creation, and Windows. It also integrates with XPress and InDesign using software extensions to create PDFs with the Export options in these applications.

Enfocus has also developed PDF Queue which works alongside Instant PDF 3.0. This tool allows document receivers to specify how PDFs should be created, their configuration and preflight options, auto correction options and destinations for completed files. Each queue is unique to its users. The queue creator can specify optional changes and these changes can be selectively locked, depending on who is using the queue. PDF Queue can be used to manage collections of material for building single archive files including the queue information, plus any associated files such as the job options (i.e. job ticket, or PDF profile). With PDF Queue the file receiver can define the workflow parameters for a PDF file, locking down critical settings according to who is using the file and where it is in the workflow. PDF Queues can also be made available to subscribers via the Enfocus Certified PDF.net server.

Enfocus is extending its application support with the PDF Workflow Suite. This has everything needed for setting up a Certified PDF.net workflow. For document creators there are tools for importing PDF Queues from say a printer into Instant PDF, plus utilities for subscribing to a specification the Certified PDF.net website. Instant PDF 3.0 automatically synchronises with Certified PDF.net to update individual queues. There are new error reporting tools with links from the message in the preflight errors report to a Help document that explains the problem and how it can be fixed.

Enfocus is adding support for JDF compliant workflows through its Certified PDF.net technology. Enfocus can embed job ticket information in a PDF so that the job ticket can be checked, effectively providing an audit of the job ticket in rather the same way as preflighting is an audit of a PDF. The technology has a range of job ticket definition fields, some of which are mandatory and some optional. The job tickets are written

in XMP and embedded in the PDF file. The job ticket is thus protected and Certified PDF can then check the XML data as well as the PDF data structures. Completing the job ticket is integral to the PDF creation and preflighting process. These job ticket definitions will be stored in the Enfocus PDF Queue so a future version of PDF Queue will support the uploading of job ticket data to a workflow management server.

This technology will be available to all Enfocus partners using Pitstop. Partners will be able to extract the XMP data from the PDF for use in their workflow systems. There is also extraction support for XSLT, HTML and of course JDF.

Later this year Enfocus' job ticket functionality will be part of an upgrade of the company's entire product line. Document receivers will be able to use Pitstop Professional and Pitstop Server to define the data to be gathered in the job ticket, so that the data can then be utilised by other workflow or MIS systems. Document creators will be able to complete the requested job ticket information. This functionality will have a profound impact on JDF workflow management systems.

Markzware has also been busy and has developed XMLazarus, a tool for converting files into XML. This looks like a very smart piece of software particularly for legacy material. XMLazarus can convert old files into XML files that can be used in a variety of workflows. Markzware has also tested a bidirectional version of the software, for turning files into either XML or InDesign CS.

FlightCheck Online, Markzware's software for automated server based preflight management is evolving into a managed ASP (Application Service Provider) service and is to be available for the German, Austrian, Swiss and French markets. Markzware has also added new features to FlightCheck Professional. The software will include all the checks required for PDF preflighting following the Ghent PDF workgroup guidelines.

OneVision is strengthening its position in workflow management with the introduction of JDFnet. This technology connects OneVision's Asura, Solvero, Speedflow, and Sicuriq preflighting technologies with other systems such as MIS and their various iterations. JDFnet is a browser based system for automating production over the web. OneVision uses its own PDF library and new functionality will be added to its preflight and workflow modules for processing native PDF 1.5 files without restriction.

PostScript and PDF processing are no longer the shot in the dark they once were and today's advances in preflighting are intertwined with advances in workflow. Most workflow systems include preflighting routines and increasingly preflighting is about quality assurance for prepress files. This role is becoming even more important as digital workflows evolve. The advent of JDF and its successful implementation will depend very much on effective data and quality management technologies. The preflighting development community has long experience with this, so we expect substantial developments to be announced over the coming months.