

TECHNICAL GUIDE

OPTIMISED WORKFLOWS

GETTING THE MOST OUT OF YOUR
DIGITAL FRONT END

Second Edition



Getting The Most Out Of Your Digital Front End

The central, and absolutely crucial, component in every print production workflow is the Digital Front End (DFE), sometimes referred to in a simplified form as the Raster Image Processor (RIP). In the early days of processing the Postscript page description language, most of the focus was on the core part of the RIP, the Postscript interpreter, and the correct rendering of data to final bitmap.

But today the DFE, or workflow system, comprises many modules, and so can be quite complex. But the challenge is still the same: to optimise the DFE to ensure fast and reliable processing of all the pages and jobs thrown at it.

Accurate Rendering of Page Data

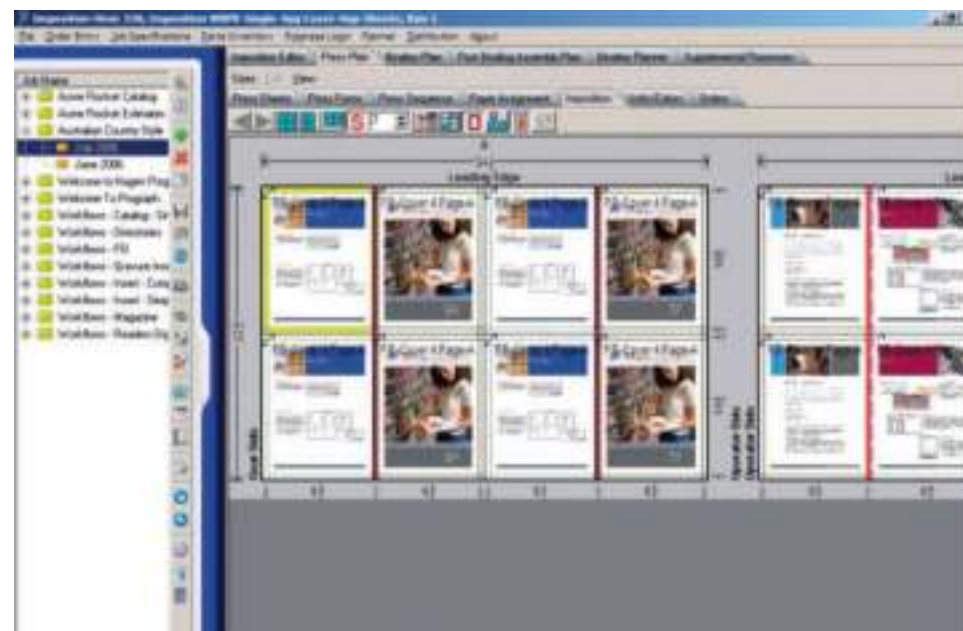
While Postscript is still used in some applications, the bulk of documents processed in today's workflows are formatted as Portable Document Format (PDF) files in one shape or another. One could have hoped that the problems of incorrect Postscript interpretation, and so faulty rendering, would be totally gone by now, but the sad truth is that we still come across faulty renderings of Postscript and PDF files. This is despite the tremendous effort put into tools for creating more print ready versions of PDF, particularly the PDF/X-series of data formats, a subset at the PDF file format. The X stands for eXchangeable and PDF/X is special because files are typically created from preflighted page designs, intended to be printed in high quality. The files are colour managed and have had the images checked to ensure that they have high enough resolution for printed output. At the moment the latest and most popular version is PDF/X-4, an ISO standard first published in 2008, for colour managed files with support for transparencies and optional content.

Of course a modern DFE also processes more or less any type of native document format, such as Microsoft Word, PowerPoint and Excel, or single images saved as JPEGs, or many other stray file formats. But such files are rarely colour managed, or checked for image resolution. So whenever a predictable printed result is expected, the PDF/X file format should be the first choice. A properly prepared PDF/X file contains information about the intended printing condition, including a hint of what substrate should be used, and so enables both colour accurate softproofing, and quality control throughout the process flow.

Correct Job Setup

With the introduction of computers to the repro process, a key factor for efficient job planning and job set-up is that the DFE is tightly aligned with the Management Information System (MIS) in use. Typically the early planning of the job takes place in the MIS, and all the relevant data, including impositioning schemes, should seamlessly transfer to the DFE. Often, but not always, this is done through the exchange of Job Description Format (JDF) data, which most high end DFEs support. If and when the jobs enter the workflow via a Web-to-Print (WtP) system, this too needs to be tightly integrated with the MIS as well as the DFE, if not using JDF, then at least through XML (Extensible Metadata Language) coding. If you find yourself entering job data manually when jobs are moved between these systems, then you have a point in the workflow that is not only vulnerable to errors, but also likely to cause delays, waste time and add costs.

Many tasks can and should be automated in the workflow. For example incoming mail and the attached files, can be routed to the correct job queue automatically, provided the job number or other identification is included or can be extracted from the email. The MIS system can suggest the suitable preflight settings (including the correct ICC profile to be used), and so the incoming files can be automatically quality checked before plates or prints are made. This area of quality control is often



If the DFE (Digital Front End) is tightly integrated with the MIS system, the correct imposition scheme can be assigned the job early on. Here an example from the EFI Hagen MIS, compatible with many DFEs, not only the ones from EFI.

underdeveloped in many workflows, and often done manually, which has both pros and cons. Of course a skilled prepress operator can perform a very good preflight of incoming files, but on the other hand a less skilled one cannot. And we are only human: in an often stressful situation, with many many jobs in the queue, it's easy to overlook something and let errors

slip through to the RIP. This is where computers and software are more reliable: they don't get tired and once correctly setup they perform their given tasks to the letter, every time, every day, 24/7.

If your DFE doesn't have enough functions to automate the workflow there are solutions, like Enfocus Switch, that can help. This type of "middleware" software can link many different types of software, and automate many, many routine tasks.



One DFE Serving Many Devices

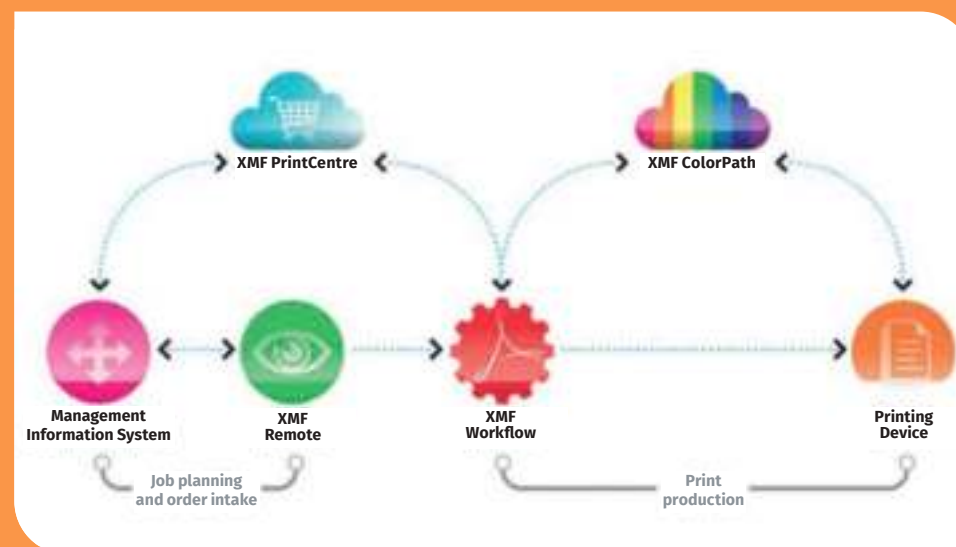
In a wide format digital printing environment, in contrast to conventional screen printing, it's common that over time the printer fleet grows and is controlled by many different RIPs, either of different makes or at least with different generations of the same brand. This is another source of potential operator errors, and doesn't make the work of staff training any easier. Far better is to strive for a situation where your DFE and workflow system can prepare all jobs, complete with job setup and colour management, centralised and accessible from any computer connected to the network. Then if specific RIPs are used in or at the printer, the RIP simply acts as slave to the DFE, and just passes on the image data to the print engine. This kind of setup also offers better options for job optimisation and load balancing, including instant switches between output devices. The need for multiple updates and maintenance will be reduced, and training simplified all of which saves time, resources and money.

Quality and Colour Management

A time consuming and never ending task in any digital print workflow is establishing and then keeping track of the correct settings for a wide range of printing substrates. This includes instructions for how and when a device needs to be calibrated and/or re-linearised. More and more DFEs have an optional Quality Assurance (QA) module, which helps the QA manager with this task. It should be well worth the effort to investigate if such a QA process would be able to both increase the overall quality of production as well as streamline the processes even further. Correctly implemented QA will help staff with both the regular maintenance, and also when choosing the correct setup for jobs as they come in. It's not as simple as just choosing the correct ICC profile for the job on a given substrate. There are many other settings on a digital press or large format printer that affect the printed result, and all relevant and crucial parameters should be applied correctly.

In a modern hectic digital workflow there is really no time for trial and error. Repeat jobs should be straightforward to setup, and once testing of a new substrate or ink is done, the final and approved settings should be available for all operators. They should also be clearly marked as the latest and most suitable settings. To fully understand the colour science involved here assumes a very deep knowledge of applied colour management,

and being fully competent in the set up and running of the DFE. Make sure several of your staff have those qualifications, and not just one single operator or prepress manager. You also need a colour champion because challenges related to colour management come up almost daily, so it's important to be able to deal with them correctly and with a minimum of production time lost.



Accurate and efficient colour management is key for any printed product, and should be an integral part of a DFE. Here an example from Fujifilm XMF, where the Colorpath colour management module is connected to both the MIS and the DFE.

Back up and Job Retrieval

While it should be a no brainer that necessary backup routines are part of the DFE, reality has unfortunately shown that this important task is often neglected. Or, perhaps even worse, a backup system is apparently in place and daily backup routines are followed, but actually trying to accurately retrieve the data is rarely, if ever, tested. This is not good and there are plenty of horror stories describing the collapse of a server, the loading of the backup data, and finding that no data is available. In too many cases nothing can be recovered, so test the backup function regularly. Take nothing for granted and treat your disaster recovery procedures as seriously as you would the company's fire drill. And never ever have the backed up data in only one place. The ISO 9001 quality management system as well as other ISO standards, describe procedures for this, but since not every printer is necessarily certified to any of these standards, awareness of the recommended procedures is not always in place. Since it's just a matter of time before a server breaks down or gets stolen, the issue of proper backup should never be ignored or taken for granted. Better to be a little paranoid now, than very regretful later!

While modern DFEs on the one hand have grown to be quite complex, with many different modules and options available, the vendors have put in lots of effort to make them more user friendly. This is good, since a user interface that is too complicated or cumbersome to get your head around is a source of yet more lost time and a potential source of errors. A good user interface works in a fairly intuitive way, and lends itself to automation. This and the features described here, are what you should look for in a good DFE.



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