pixelate • v. divide (an image) into pixels, typically for display or storage in a digital format. > display (a person's image) as a small number of large pixels, typically in order to disguise someone's identity.

pixie (also **pixy) • n.** a supernatural being in folklore, typically portrayed as small and human-like in form, with pointed ears and a pointed hat.

pixilated • adj. crazy; confused. > *informal, dated* drunk.

(From The Concise Oxford English Dictionary)

Dear Reader,

Well it's that time of year again. The time when Laurel and Paul pack their bags and head for India to run workshops at the yearly Indian Printer & Publisher conference in Delhi, and the rest of us stay home and panic about gifts and things. 2003 has been a year of reckoning for the printing and publishing industry. The economic upturn foreseen in some quarters did not quite happen. Instead both suppliers and users have had to have a good think about what they are doing and why. W&Co, who Laurel writes about in this issue, represent a good example creative strategic thinking.

Some of the big players have had a bit of a struggle. We are still waiting for newspaper press manufacturer Goss to gobble up Heidelberg Web, something which is looking increasingly likely as the company is making further cut-backs (see News). We've just learned that Scitex Corporation has sold off Scitex Digital Printing to Eastman Kodak, and we get the feeling it wasn't because they particularly wanted to. We hope next year will bring stability and room for creativity for all.

We are very happy to tell you that our Buyer's Guide series, to be published in time for Drupa, now has the support of seven prepress vendor sponsors and nine publishing partners. More on that story in News Focus.

Enjoy the read and the festive season!

Cheers from the Festive Pixies,

Laurel, Cecilia, Paul and Todd

In This Issue

Open, Linux!

"Apple and Microsoft have a vice-like grip on their operating systems, with such total control that these technologies are effectively proprietary. Even though millions of people use them, neither is an open system." Laurel Brunner has visited German company W&Co who have plunged their media production into the truly open world of the Linux operating system...

see page 9

Divide and conquer with PDF

Writes Laurel Brunner: "What happens when a PDF file gets taken apart and turned into a collection of records in a database? The next generation of PDF systems is about blowing apart PDF and using it as much as a publishing format as a production format." Find out what structured PDF can do for you...

see page 12

The PostScript nemesis

Well not quite, but when Chuck Geschke and John Warnock first presented PostScript, one of the things that their Xerox colleagues criticised was an apparent lack of dynamic entries functionality, a crucial flaw from the point of view of variable data printing. There would be no way to make RIPping truly efficient. Enter PPML...

see page 16

Regular Columns

We hope you are reading Spindrift with interest. We have a special message for readers who are non-subscribers, so if you are not a subscriber please turn to the last page or visit our website (www.digitaldots.org)

News Focus

Heidelberg gives up on web offset

After a meeting of the supervisory board on Nov 26, Heidelberg Druckmaschinen announced fairly major changes in the organisation. Management board members Wolfgang Pfizenmaier and Holger Reichardt (responsible for digital printing and marketing respectively) are resigning – "in mutual and friendly agreement with the supervisory board" – and the remaining three board members will run the show from now on.

Another 1000 workers are being made redundant worldwide. The digital division is being repositioned, exactly what that will entail will be made known before the end of the fiscal year. The postpress division will become a separate entity. And the company made it clear that the selling off of the web offset division is now pretty much just a matter of finalising negotiations (although no names were mentioned. Read: Goss – we think). All this will lead to Heidelberg being able to "concentrate its resources on sheetfed offset printing and all its related value chain".

CEO Bernard Schreier said: "Heidelberg will continue to provide products for premium quality print results. Our target markets will mainly be commercial printers, focusing on short and medium print runs, as well as packaging and label printing."

After estimated one-time-costs of €400 million, let's hope this brings the improved profitability and cash-flow the company needs.

Kodak scoops up major inkjet asset

Last week it was announced that Eastman Kodak Company has signed a definitive agreement with Scitex Corporation under which Kodak will buy the assets and business of Scitex Digital Printing Inc, a wholly-owned US subsidiary of Scitex Corp, for the sum of US$250 million. SDP is the main player in the field of high-speed, continuous inkjet printing presses, with most of their customers in the commercial and transactional printing sectors. Their products include the monochrome, spot and full-colour VersaMark presses and the Dijit family of narrow-format printers.

As far as intellectual property goes this is certainly a coup for Kodak, who earlier this year announced a re-emphasis on digital printing systems. Said Daniel A. Carp, Chairman and CEO of Eastman Kodak: "We are moving decisively to implement our growth strategy by expanding into a range of commercial digital businesses. One part of that strategy is to acquire in a disciplined manner companies and technologies that complement our existing businesses, capabilities and assets. [These include Encad Inc, maker of wide-format inkjet printers, the Nexpress joint venture with Heidelberg producing high end digital colour presses and the Kodak Polychrome joint venture dealing in consumables. –Ed.] The acquisition of Scitex Digital Printing is a prime example of how we intend to build upon inkjet technology developed on our own to build business in growing market segments. This is the first of several actions Kodak will take to expand our participation in the digital commercial printing industry." Could this mean the Nexpress?

Once the deal has been completed, Scitex Corporation will be left with its majority shareholding in Scitex Vision (wide-format drop-on-demand printers) and its equity interests in various companies, including Jemtex Ink Jet Printing Ltd and Objet Geometries Ltd. (See also Spindocs)

Global Graphics Lets Rip into JDF Territory

At an early pre-Drupa press conference Global Graphics outlined long term plans regarding its core products, the Harlequin and Jaws RIPs. It is no big surprise that Global Graphics puts JDF compatibility at the heart of its strategy, and the new release of the Harlequin RIP, Eclipse, is JDF compliant. For about a year Global Graphics has been exclusively a software company with a number of key technologies under the Global Graphics umbrella. These are the highly valuable Harlequin and Jaws RIPs, the Max Workflow of somewhat intangible value, and Ansyr's PDF viewing technologies for handheld devices.

It all adds up to a strong technology portfolio for cross media production and process commoditising in the graphic arts, digital printing and corporate enterprise markets.

Most of the Global Graphics technology is not visible to end users, but Global Graphics is focused on enterprise software and leveraging its long experience in high end production. Global Graphics has the experience to bring production insight to enterprise wide data management for all sorts of print and graphic arts applications. The end results of the company's efforts are however only visible in products carrying the brand names of one of a growing list of OEM partners. The list includes companies like Creo, ECRM, Esko-Graphics, Hewlett-Packard, HighWater, Kodak, Quark, Ryobi, Scitex and Screen, to mention just a few. Global Graphics offers some products to end users, and among these the Jaws PDF suite.

The Harlequin RIP remains the company's primary solution for high end graphics arts applications, including digital printing as well as proofing. The Jaws RIP is positioned for low- to mid-range applications, down to inkjet printers. The Jaws RIP is better suited for embedding into hardware, and the server based Harlequin RIP better for workflow and RIP management systems. Global Graphics is continuing to develop its SOAR concept (Scalable Open Architecture RIP), an infrastructure for supporting multiple networked RIPs, giving OEMs greater flexibility in workflow system development. SOAR and JDF share many common objectives and a JDF enabled Harlequin RIP will provide a control mechanism for JDF file construction that can be used in all manner of workflows.

In a yet to be released product it will be possible to create PDFs using the Global Graphics PDF library with a JDF wrap around. Combined with Jaws PDF Courier this technology could reach from the lowliest inkjet printer through to the giddy heights of variable print content management, within a single JDF and PDF processing architecture. This is expected to be shown at DRUPA working with files produced with Agfa's Delano. Jaws PDF technologies will be fully JDF enabled later next year.

The JDF compliant tools are available now for the OEM partners, and it will be interesting to see who will be the first to announce new JDF compatibility in their Harlequin based workflow. Global Graphics will participate in PrintCity at Drupa, and also announced its support, albeit somewhat guarded, for the NGP (Networked Graphic Production, initiated by Creo) project. Global Graphics is very active in the CIP4 committee, not least because Global Graphics' senior technical consultant Martin Bailey is the current CIP4 chairman.

Global Graphics also shared information about its relationship with Enfocus and confirmed that the

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Buyer's Guide Series

We are pleased to announce that the Digital Dots Buyer's Guide series is up and running. The series of five Buyer's Guides covers JDF, CTP, Preflighting, Colour Management & Proofing, and Digital Printing. The sponsors are Agfa, Creo, EnFocus, Esko-Graphics, Heidelberg, KPG and Screen. Publishing partners are AGI Sweden, AGI Norway, AGI Denmark, CIP4, Il Poligrafico Italiano, Indian Printer & Publisher, Printing World and Seybold Publications. The project also has the support of DRUPA and articles from the complete series will be available in print and on the www.drupa.de web site in the coming months. The idea is to raise awareness of each technology and to help prospective buyers to plan their investments into their next generation systems.

This is an independent series of publications supported by the graphic arts trade press and leading manufacturers. The goal is to improve understanding of digital production, giving users objective data in order to encourage confident investment.

Each guide includes an introduction plus comprehensive explanations raising and addressing different aspects of the technology, depending on the title. JDF, CTP, Preflighting, Colour Management & Proofing, and Digital Printing technologies are covered in depth, including explanations and descriptions of relevant technologies, plus cost benefits and examples of how they fit into a cross media production workflow.

The guides will be printed in time for distribution at DRUPA. We are looking into production of customised editions printed on demand on site at the show.

Enfocus Certified PDF technology will be included in Global Graphics products from now on. A new release of PDF Courier is available for free to clients with server based licensing models for service provider branding. The company is also heavily into PDF-X1 and X3 development and has released OSX compatible versions of its products. It's interesting to see the cooperation between Global Graphics and Enfocus, which will benefit the market as a whole. Adobe needs some real challenge in this area and of late seems less than wowed by its traditional market.

Creo the Redeemers

Creo has introduced a new file transfer solution called Creo Tokens - It works via ordinary e-mail messaging, rather than attaching the actual, often very fat file to an e-mail, a "token" is attached instead. This Token is very small, only some few bytes, and simply points to the original file and server location. It's a neat way

of avoiding the file size limit on mailboxes, and avoids violating the general courtesy rule of a maximum size of 500 K for an attachment. Maybe we should use it for Spindrift? Files are encrypted (128 bit AES, Advanced Encryption Standard) but without the need for an ID or password.

Creo provides a Tokens Redeemer freeware via the Creo web site, and once this is installed a double click on the Token attached in the mail initiates fetching of the original file. The Tokens Creator is the bit that costs, but the cost is trivial. The cheapest option is the Tokens Creator for about €50 for a maximum of 5 Gb file transfer per month in a year. The Token Server is priced €595 for a ten user license.

This looks like an excellent and much needed tool to aid file transfer and it will be much appreciated. FTP can be awkward to use, and large file attachments are not a good thing for emails. There are also security issues with FTP, both for nasty incoming files and the fact that they are in a public folder on the FTP server. Often that folder is open for anyone to open or fetch files including digital vandals. Creo's Tokens currently don't support password protection, but this would be a good thing for Creo to consider adding in the near future.

Compose Star Spangled for G5

Compose has upgraded its Star proofing system for the G5 Mac, gaining a threefold speed improvement over the dual G4 equivalent. Star is an impressive proofing system based on Global Graphics technology for creating screened contract proofs on high-end inkjet printers. Compose claims a 70 percent improvement in the time taken to convert high resolution separations into screened proofs. Star Proof costs around €3750, or €350 for an upgrade.

Fujifilm Updates Rampage

Fujifilm's latest version of its Rampage workflow system has support for over 150 output engines, from Agfa to Screen and everything in between. Rampage Open has what Fujifilm call "improved" JDF compliance with the Rampage Pathway JDF Interface. There is also a range of Java based modules for managing JDF communications and data interchanges with MIS, financial and production systems. Rampage is based on technology from Global Graphics (see separate news story).

Rampage Open includes Ramproof Direct proofing module which uses the preRIPped Rampage Digital Master as the basis for all proof outputs from soft proofing through to halftone proofing, locally and in remote environments. There is also an inRIP trapping tool with support for up to 28 spot and four process inks, chokes and spreads, and adjustment of colour values

within a trap. A Mac based Trad Editor is also available for previewing and adjusting traps offline.

Gates Goes West

Into the wild country of the bounty hunter one fearless (or is that hairless?) digital warrior fears not to tread. Bill Gates is offering a digital bounty to anyone who can snitch on hackers and help send them down the Kermit* to prison. Mr. Gates has allocated a fund of US$5 million for people who can provide information leading to the conviction of hackers. They'll probably end up employed by Microsoft once they've done their time, but it's a high price to pay. Some might consider that the money would be better spent on external testing programmes prior to the release of software upgrades. That isn't nearly so exciting though. So anyone who knows who wrote Blaster or SoBig.F should get in touch with Microsoft. It could be worth US$250,000 a head.

* This is a wonderful example of a cockney rhyming slang that slangs the slang: frog and toad = road, Kermit is the green and vertically challenged frog who hosts the Muppet Show.

Markzware Expands PDF Flightplan

Markzware's latest version of Flightcheck Professional now includes Pass4Press verification and support for the Ghent workgroup rules. The latter will allow users to verify PDFs for compliance with the Ghent specifications, and for PDF-X1 and PDF-X3. The UK's Pass4Press rules are a PDF ad delivery specification for magazine advertisers.

Markzware's PDF object model provides access to a file so that the Flightplan module can check the file meets the correct specification. It can also detect transparencies, the percentage of ink usage and interrogate the PDF file creation process. This is a good move, taking Markzware and its customers closer to quality control processing extending preflight concepts to workflow management.

Safety by Frog

Frog Software, a Swedish systems integrator, has launched a secure file transfer solution called InFlow. At first look it appears to be functional FTP dressed up in the clothes of a web interface, but there is something quite different beneath the smart tailoring. For a start incoming files are placed outside the firewall of the receiving network for inspection before being allowed in. Each and every entity that wants to submit files has to identify themselves with an ID and password. And the files are encrypted prior to transfer.

InFlow has a mechanism for job related metadata, which is JDF encoded and encrypted and saved. Only when the sender and the files have been inspected can they enter the receiver's own network. Unaccepted encrypted

files are held in the network's Demilitarized Zone. Once accepted into the network the JDF data can be used to automate subsequent file processing. The sender will also be notified that the package has been successfully received.

The Frog InFlow Server starts at about €2200 for one incoming queue setup. An InFlow Server for an unlimited number of InFlows is about €6600. Clever stuff.

Xinet XTends a Helping Hand to Quark

Xinet has announced versions of its FullPress Xtensions for XPress 6.0. These extensions provide the necessary additions for integrating XPress into server based workflows. Xinet's FullPress is a server engine for managing file sharing, print spooling and output management for PostScript, PDF and TIFF files. This technology is a turbo charger for digital workflows.
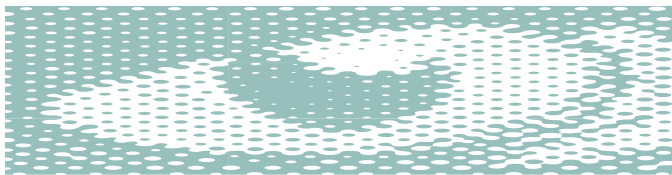
Acrobites

(Something to get your teeth into)

CxF (Color eXchange Format)

CxF (Color eXchange Format) is a file format invented by Gretag Macbeth to communicate colours. And yes, it's XML based. Well, isn't it enough to just state the Pantone, RGB, CMYK or CIELab colour you want? Actually, no, because all of these are device or print production specific. Even CIELab values have to be coupled with information about what light source is used and whether one refers to the 2 or 10 degree viewing angle of the CIE standard. Also, if one claims colour accuracy within a certain tolerance range measured in delta E, it is necessary to specify whether you refer to delta E 94, CMC, 2000 etc. [what? –Ed] Does anyone still think that colour management is child's play? [No -Ed.]

The CxF is an open format and it contains a range of attributes that can be called upon in colour management and imaging software. Manufacturers of hardware and software can extend this list of attributes if they think it's necessary (that's the beauty of XML) but if so, they should report this to the keepers of the CxF-standard.

CxF is supposed to be used by designers to specify the colour they use in their documents. Colours can be exported to for example Adobe's applications, where they show up in the colour palette. Gretag Macbeth offers a free software utility called iOne

Share, primarily for use in conjunction with the Eye One spectrophotometer. A detailed white paper on CxF can be found at www.gretagmacbeth.com.

We think the CxF format should probably be included in the JDF (Job Definition Format) standard. The JDF format is already used to communicate colour information in proofing applications by for example Efi/Best. This is another important standard with broad relevance within the graphic arts.

PDF/X (PDF eXchange)

This subset of Adobe PDF 1.3 for "printable" PDFs has been an ISO-standard since 2001. There are in fact three (at least) versions of PDF/X. In chronological order they are PDF/X-1, PDF/X-3 and the not yet ISO certified PDF/X-2. PDF/X-1 (the latest version is called 1a) is the strictest, since it requires high resolution colour separated files (no OPI calls or DCS-files). PDF/X-2 is supposed to be more tolerant – it accepts OPI calls and colour management with ICC-profiles. It is often stated that PDF/X-1 doesn't allow spot colours, but it does. But it's only PDF/X-3 and PDF/X-2 that allow RGB and CIELab encoded images.

While PDF/X has made it easier to specify how a PDF file has to be constructed to be printable, it doesn't specify things like the minimum resolution required. Therefore the term PDF/X Plus has come up, indicating that the user has to provide some additional information about the printing conditions. 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 the way to go. Unfortunately PDF file processing is another thing that isn't child's play.

Say What?

(Iffy Writing Award Presented in the Ether for Obfuscation, Confusion, Misinformation or All Out Pretentiousness)

We came across this in one of those high priced industry studies:

"What is JDF?

JDF is an XML schema file. It has structure and that structure is used to represent the manufacturing processes for a product. Each process step is represented and the inputs and outputs for each process are specified. The inputs are defined in terms of the required resources and the parameters that control it. Outputs from one process will be inputs to another. This type of structure can be well represented within an XML schema."

And there's us thinking JDF was a data format.

Spindocs

(Where the spinner gets spun!)

Scitex sells to see another day?

As mentioned in News Focus, Scitex Corporation has sold its US subsidiary Scitex Digital Printing Inc to Eastman Kodak Company. In the Scitex press release, Mr Nachum "Homi" Shamir, President and CEO of Scitex Corp and Scitex Digital Printing states:

"We believe this transaction creates significant value for Scitex's shareholders, in the spirit of our public statements since the appointment of the new leadership at Scitex and the realignment of our board to reflect the new ownership of IDB Group. Kodak is a terrific strategic fit for SDP and I am very excited about the future of this business under Kodak's stewardship."

Mr Avi Fischer, among other things a member of the Scitex board, is quoted as saying:

"We are thrilled with this value-creating transaction. It represents exactly the type of focus we put on shareholder value and dynamic repositioning of assets. This transaction demonstrates the talent of Scitex management and is a terrific achievement for the company's leadership."

Repositioning of assets? It sounds to us like basically they've sold half their company and have made a tidy and much needed sum to appease the shareholders and save their skin. But we may have missed something…

Letter From… Antwerp

Dear Spinvreends,

Ik spreek to du from sunny Antwerp! Vell, zomtimz de son is een bit shiney hir. Eenyvej in Belgium vi stroggle much wid de new versions ov PDF but vi heb de impression det vi need to spreek more about de Ghent workgroup.

Det workgroup is making menny specifikationz voor de PDF file deliveryz and vi all agree on dem. Det means det standards are uzed by lotz ov peoplez in menny lands in Europe. Vi heb standards for sheet end web ovset ad delivery. Vi heb peoplez von 13 industry associations in Belgium, Holland, France, Switzerland, Denmark and Amerika. Bot no English, Swedish or Germans. Maybe det's a gut thing? But ik don't know.

Vi heeft to work together wid menny speeks hijr in Belgium, so maybe det's why de Ghent workgroup kan do gut works wid PDF. But vi should heeft memberz from de other lands too. Vi want du to tell de peoplez about what vi do wid de specifikations PDF-X1 and PDF X-3. De kan get dese spefikations von www.ghentpdfworkgroup.org.

Tank you!

Jan Bamblankeldam

Driftwood

(Useful stuff washin' in on our shores)

Keynote Strikes a Chord

Keynote, a firm specialised in performance measurement and improvement, is launching a service that could improve digital infrastructure performance. The Keynote web application performance management tool is designed to optimise and customise online experiences by bridging firewalls without compromising security. Sounds weird.

Yes, but listen. The Keynote Web Performance Management services work in conjunction with existing enterprise management software. These Total Performance Management (TPM) services cover everything from managing e-business solutions to system performance testing. They assess web sites and LANs in order to avoid congestion and for overall performance. They can provide an audit trail so that what file went where, why and how can be captured, which is useful for network administrators and for database managers. This technology doesn't just tell the administrators that there has been a logon problem, but instead shows where a transaction has failed. It can also do the same for applications, so that when a thing crashes, the cause of the crash can be identified and fixed (or at least avoided next time around).

The Keynote technology is interesting because it looks at both internal and external performance. Although there are plenty of performance monitoring tools that look at web sites and tools that measure internal networks, such tools cannot take into account activities on the other side of a corporate firewall.

Keynote is providing customised portals for end to end monitoring and root cause diagnostics. A scoreboard compares service level objectives for multiple location e-businesses, and there is a tuning service that monitors and repairs performance bottlenecks in a production environment. There are load testing services, and

a low cost option for measuring web page usage according to geographic locations. This could be of interest to newspapers looking to develop their remote readerships.

Bridging firewalls sounds like a dangerous business, but if Keynote's technology does what it says it should have interesting ramifications for Internet based publishing and production.

Boomerangs

(Your feedback fed back)

The Tera take on InDesign (and other related issues)

We had a letter from David Howes at Tera UK, apropos of the news that Tera is to support InDesign and a question he has been asked by a representative of the industry...

I am sure that InDesign is a wonderful 'design' tool and certainly something we cannot ignore if we are to increase Tera sales worldwide. But then, we never 'ignored' Quark [Xpress]. We simply chose to provide a more newspaper orientated pagination tool. Our thoughts were, and always have been, as follows: pagination is just one of the things newspapers do, pretty important, yes, but just 'one' of the things they do. We believe that content gathering and content selection are what newspapers 'do'. Putting type on a page should not dictate how we run our newspaper, it is just the end of the production line (or nearly the end). But how many times have we heard 'Quark based system' and now 'InDesign based system'? As if this was the be-all and end-all of the production cycle. I cannot recall working for a newspaper that claimed it was running a 'hot-metal compositor' based system in the past. I recall newspapers talking about editorial direction and party political allegiances not Harry in the comp room. When they got rid of comps they kind of 'threw the baby out with the bath water', replacing compositors' skills with a new army of super-subs who could write a bit, design a bit, sub a bit, but could not spell. Where we once had compositors following layouts we have banks of Macs being operated by 'designers'. Let's see what we can do with today's paper. There that's it – it looks just like yesterday's. Bit like calling bricklayers architects in my opinion. Because that's what I was as a compositor – a bricklayer. I just put together the carefully gathered and assembled information according to a layout that was provided by the 'one or two' designers we employed. We also had a reader but then that's another story.

I am writing this because I have just been asked 'how quickly can you design a page in Tera compared to Quark or InDesign?' I was not asked 'how quickly it would

be possible to select stories and pictures and assign them to pages within the Tera system?' Forget content management we are talking 'pagination'. I don't care if it takes a week to gather the information I just want to know how quickly you can draw a box. The answer is of course 'just as quick' but I sort of lose interest when talking to people who want to buy systems 'based on pagination'.

And do you want to know why so many people use 'runarounds' in today's newspapers? The answer is the same as for the question, why do dogs lick their back sides? Answer – because they can.

David Howes
Director
Tera UK Limited

From: Mike Clarke <mike@mimotek.com>
To: <lb@digitaldots.org>
Date: Friday, October 24, 2003 16:40
Subject: re: Boomerangs

Hi Laurel,

Concerning your correspondent who found it difficult to read your two-column layout on-screen:

I am sure that I will not be the only person to point out that there is an answer to this in Acrobat itself. The feature, known as article threads, is featured in Seybold, vol 3, no 11 (page 5) as "Kendall's underused Acrobat Feature No 1". It is quite easy to insert threads in a document, and it makes reading much easier...

Hope this helps,

Best wishes,

Mike

Book Review

Understanding Colour Management

Delmar Thomson has recently published a new book about colour management written by Abhay Sharma of Western Michigan University. It's entitled "Understanding Color Management", and frankly it's a very appropriate title. The list of books and papers on colour management is getting quite long by now, but this is in my view the first one to be really thorough, clear and in-depth. Looking at Sharma's background you'll understand why. Abhay Sharma is an ex-Crosfield

man (today part of Fujifilm Electronics). He was Senior Research Engineer in the Fujifilm colour management R&D team, a job which included providing training and support to Fujifilm scanner and colour management software users. This practical hands-on experience shines through in all chapters of the book.

The organisation of the book is quite conventional, going from the fundamentals of colour theory to more in-depth discussions. What is different is the clarity of each chapter, and the depth in which Sharma explains the issues. The book is rich in illustrations – not too many showing Fujifilm equipment. Some illustrations I recognise in particular from the Adams & Weisberg book "Introduction to Color Management" published by GATF, but they are so generic that it's understandable that Sharma has failed to credit GATF for them. Sharma stresses the importance of understanding the "Three Cs" of colour management; calibration, characterisation and conversion, to an equal extent as Adams and Weisberg.

While I wholeheartedly recommend buying and reading "Understanding Color Management", there are a few areas where I still wish for more clarification or help. One is on the matter of how to correctly calibrate and use the monitor. Sharma concludes, like many other, that using a white point of 5000 K (D50) often results in a "dull image". Yes it does if you use a faulty calibration tool like the built-in Apple monitor colour calibration, or if you try some of the commercial programmes using measuring devices. The trick is to achieve correct luminance at 5000 K, typically around 100 cd/m2, as recommended in the ISO 12646 standard (referred to in the book). Many programmes adjust the white point in the last stage of the calibration process by reducing the power of the blue channel, resulting in too low a luminance (brightness) of the monitor. The ambient lighting condition also affects the appearance of the monitor. A too brightly illuminated room prevents the monitor from accurately rendering the colours. Unfortunately the recommended very low ambient light of 32 lux is not mentioned by Sharma. Pictures in the book with operators sitting by a monitor also show an environment that's much too bright. But yes, in other places in the text Sharma recommends a "dimmed" light in a room where colour critical work is done on a monitor.

Another thing I miss in "Understanding Color Management" is a chapter describing how to implement colour management at a typical printing plant. At the end of the chapter on how to correctly use Adobe Photoshop there is a summary that may be interpreted as a suggested "roadmap" for how to implement colour management. But what should be stressed is that successful implementation must start with the wholehearted support and participation of the management. Sufficient training of staff on different levels, including some training of marketing

and administrative staff, is often neglected. The whole workflow, including the work done on the print buyers' side, must be, and will be, affected by the implementation of ICC-based colour management. But perhaps such a chapter is under preparation, and will appear in the next edition. As for now, the reader has to write that chapter him- or herself.

– Paul Lindström
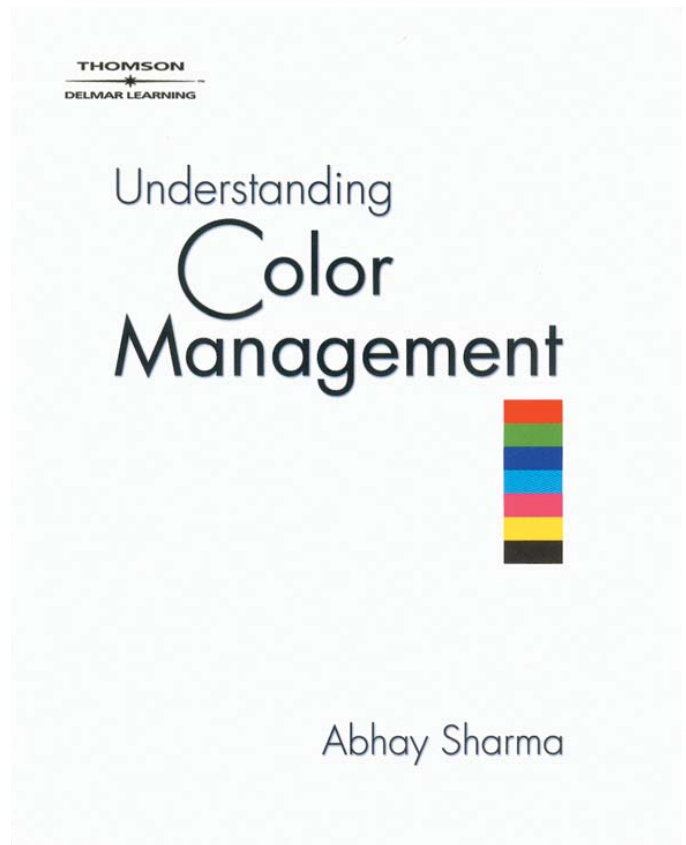
Understanding Color Management is priced at about **US$ 55** (www.delmarlearning.com) but can also be ordered through Amazon.
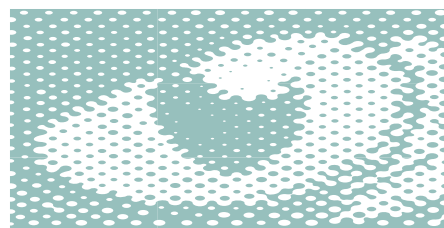
W&Co & Linux

It's hard to find a truly open system these days, even though the graphic arts has long since embraced standard platforms. But Apple and Microsoft have a vice-like grip on their operating systems, with such total control that these technologies are effectively proprietary. Even though millions of people use them, neither is an open system. Openness has no dependence or association with a single entity and open operating systems should be able to evolve in cooperation with its user community, symbiotically. This is the underlying concept of Linux, the open source operating system invented by Linus Torvalds in 1991 (see issue 5). Linux isn't yet widely used in printing and publishing, but one German repro company has taken the plunge. W&Co is building a powerful media production infrastructure with Linux and Dalim technologies.

W&Co isn't really a repro house although it started out that way. Now under the guidance of managing director Alex Werkmeister, W&Co was founded 50 years ago by Herr Werkmeister senior with a team of 75 people in Munich, with a branch with 50 people opening in Hamburg some years later. The company now has facilities in various locations including sites in Bulgaria and Thailand. W&Co is building the technology foundation for its future, to reshape itself into a new type of media services provider. Moving away from repro, W&Co, will extend into to all aspects of media management, with an ICC colour managed workflow based on Dalim's Twist workflow management system running under Linux. Linux now supports all W&Co activities.

Dalim's Twist is used throughout the company and facilitates the cooperation within and across W&Co's numerous production teams. According to Alex Werkmeister the teams are "similar to a profit centre but we do no bureaucracy. We make it very simple. Growing in the future with customers we have to establish new ways of managing without having more people. We like to have a small group of people able to communicate with each other." Alex Werkmeister is passionate about everything he does and particularly so when it comes to laying the foundation for W&Co's future: "We believe that in Germany we have at the moment mainly family orientated small companies [which] have just one survival chance: [either] get smaller and specialise, or get bigger." He continues: "passion is in us. It's not planned, it's how we are".

W&Co and Dalim

W&Co has worked with Dalim for the last nine years, mostly because Dalim's Twist provides format flexibility combined with jet propelled processing code. At the time desktop publishing was all the rage so W&Co set up four Macs working in tandem with Scitex kit, to see if DTP could hack it in the workflow. Of course it stood no chance, either in performance terms or for the work W&Co was doing. But over time more work moved to the Mac environment and the Scitex kit was eventually switched off five years ago. The population of W&Co Macs has since grown and with it the close relationship with Dalim, initally with Litho and later with Twist. Today Twist handles all W&Co's production. W&Co processes huge data volumes, producing around 7,000 A4 pages per month for catalogues alone, sending Dalim Twist's print ready files to printing company clients many of whom also use Dalim systems.

A number of the W&Co digital services for specific sectors were developed in cooperation with Meyle & Muller and another large

W&Co has worked with Dalim for the last nine years, mostly because Dalim's Twist provides format flexibility combined with jet propelled processing code.

Alexander Metz of W&Co

German repro house. These include Online DBS, a database server, Online QMS for quality management, the Online PPS tracking system and Online Mask, a masking and clipping path service. These web based services are available free to clients and extend the W&Co workflow into customer sites via the web. W&Co's customers include Readers Digest, Axel Springer, Green Peace, IMP, Gruner & Jahr, and others. W&Co is working with Colour Systems in the UK on the Reader's Digest account to provide the magazine publisher with European-based production as well the London operation. Other clients include Germany's major publishers, primarily German and European mail order companies such as Klinger, Quelle, and Schwab. W&Co also serve industrial customers such as Audi, VW, Estee Lauder, Porsche and Warner Brothers.

System architecture

The move to Linux came four years ago when W&Co decided to replace its SGI Origin workstations. These twin CPU machines have capacity for four processors but the upgrade would have been very expensive. Instead W&Co ran processing tests with a version of Twist running under Linux. The tests showed a fourfold improvement in system performance running on IBM Netfinity e232 machines compared to the Origins running Irix (SGI's version of Unix).

According to Alexander Metz the new system "cost the same fully licensed as a single SGI cpu upgrade. Maintenance also was better. It cost €50,000 for 7/24 support with SGI versus IBM's free support". Although IBM's best effort is a next day response, running mirrored servers overcomes anxieties and still costs less than an SGI support contract. Linux is the engine room for W&Co's 30 Macs. But there is more to the story. Sun's Solaris (its version of Unix) is also installed to support MIS functions. W&Co use the German ISY 3 MIS system, with links into the production file system via electronic job tickets. Effectively ISY3 is an application server and Solaris supports file and print server functions. This includes managing the links to production systems.

W&Co Next steps

At the moment the biggest system headache for W&Co is upgrading its Macs to OSX. This has proved to be more of a mess than it ought to be, not least because Apple's support has apparently been little short of abysmal. According to systems manager Andy Bosse, in Germany Apple's support organisation has a policy not to support the OSX shell because of insurance considerations. Instead of relying on Apple, Andy is solving his problems on his own, but the problems aren't trivial. One example Andy gave us is OSX's apparent loss of 380 Gb of data and a period of 27 consecutive system crashes. Each crash resulted in a two hour reboot. Naturally all production ground to an expensive standstill.

No OS shift is painless. Even though W&Co was well prepared, the shift to Linux "was very, very heavy" according to Alex Metz, although from the users' perspective the workflow server changeover was smooth. Operators were familiar with Dalim and the interface stayed the same and once the painful groundwork was finished transition from Unix servers to Linux was a non-issue. Alex and Andy found that: "It's as fast as installing an NT server."

For Dalim W&Co has high praise. Dalim recognises that although workflows above all need to be adaptive and responsive, it is the user who knows best how to make them so. Alex Metz explains that "Dalim

The Linux Touch

Compared to OSX or Windows 2000 the development resources building Linux are vast. Linux development has a fluidity and creativity that is hard to match in less anarchic development environments. Besides Linux's rich vein of development resources the language has several advantages, not least the fact that it's nominally free. It starts to cost when human resources are required to manage and develop Linux environments. Nonetheless Linux has the benefits of Unix without its overhead, even in cluster applications.

Linux developers make their money by solving system puzzles. Developers build open source applications and then get funding for their support and development once a company has deployed the application. And there are plenty of companies with viable businesses based on this model. Perhaps the best known of these is Red Hat. The point is, if you can't design something yourself someone in the Linux community will help you and this is the point at which Linux stops being free. Alex Metz thinks this is an excellent business model because: "you have a huge community solving problems with the code or applications and this means it's changing fast". However the platform benefits from years of brains, development, fixing and testing and is inherently stable.

It seems we are beyond the stage were software should be introduced in discrete releases and this is what Linux is about. Digital technology pervades every part of communication and as such its development cannot be measured or confined to a fixed point of release. All forms of digital technology are, like the Internet, continuously developing, and in a perpetual state of organic evolution. Perhaps operating systems have reached a stage where they are beyond productisation, which is why the mess of patches and interim fixes put out by Apple, Microsoft et al is so irritatingly ineffective. Perhaps we should speak not of operating systems, but of operating environments?

always try to create something, tools, like for impositioning, but they don't use the tool in production, so the tools are there but using them isn't always easy so they work with us to make them better". Dalim is fast to respond, adding the finishing touches to its technology, once a tool is actually in use. This is perhaps why the company has built such a loyal customer base: development is continuous, the result of an often intimate partnership with operators in the field. Alex adds: "I don't know any technology that has the flexibility it has with Dalim and also you can run it on any platform".

The next steps for W&C are in part customer driven and in part about building the right infrastructure for the future. It is necessary to continuously develop systems on behalf of customers, which is why developing a cohesive JDF strategy is so important. The company is beta testing Twist 5 which it finds to be more user friendly, with a better layout of buttons on screen, and more conducive to the way people want to work. W&Co is using Twist as an application server built with Java to provide a clientless computing model with support for remote users. The company wants to see all applications, including tools from Helios and Xinet used for OPI and high performance file sharing to run on Linux and to support JDF.

W&Co is responding to consolidation in its market, which is leading to consolidation within the service community. Survival depends on specialisation, or cooperation, to either serve a tiny and potentially vulnerable niche or leverage economies of scale. The future belongs to the few at either extremity; there are no half measures. This is the reality for W&Co and many graphic arts service providers. W&Co is building its road to the future, with Linux, Dalim, and of course the support of its customers.

– Laurel Brunner

At the moment the biggest system headache for W&Co is upgrading its Macs to OSX. This has proved to be more of a mess than it ought to be, not least because Apple's support has apparently been little short of abysmal. According to systems manager Andy Bosse, in Germany Apple's support organisation has a policy not to support the OSX shell because of insurance considerations.

PDF Rearranged?

What happens when a PDF file gets taken apart and turned into a collection of records in a database? PDF technology has gone so far that the next generation of PDF systems will not be about managing production PDF files, but about managing their constituent parts as individual PDFs. The next generation of PDF systems is about blowing apart PDF and using it as much as a publishing format as a production format. What that will mean for production management is anybody's guess, but adding structure to PDFs is the first step towards creating dynamic PDF documents for multichannel publishing.

PDF is acknowledged as the preferred transport vehicle for digital content. It is a locked container and its elements are mostly inaccessible to external applications. This is as it should be for prepress production, where the PDF output file is the final content version. Add the specifics of PDF-Xn (where n = any number) and colour management profiles, and a PDF container becomes more heavy goods vehicle than mere transporter. The final PDF is often archived along with its component elements, because it is the final version of a file. But perhaps it could make sense to archive a single file, in both complete and deconstructed forms with PDF the only file format?

Structured PDF

Imposing structure onto PDFs in a post-production process is not a new idea, but it has mostly been limited to newspaper applications. However if PDF extraction works in newspapers where page layouts are extremely chaotic and content spreads over several pages, it will certainly work elsewhere. As always it's about database implementation.

The digital heart of everything is a database, from a list of ring tones on a mobile phone through to complex e-commerce environments. For any company involved in high volume content processing, from newspapers to books, database technology is fundamental to both production and content management, but databases require some means of determining content relationships. Traditionally this has been a no go area for PDF, which started life as the antithesis of conventionally structured documents, tagged with SGML and more recently XML. The blend of XML, structured PDF and database management creates a rich environment for publishers looking for new commercial models, particularly if on demand printing is thrown into the pot.

How is it done?

Adding structure to PDF files begins with analysing the file's content to determine what's what. Identifying images, captions, body text, headlines, straplines and bylines is the first step, and although this is complicated it is one of the reasons for the attraction of this type of technology for newspaper applications. Newspapers are highly structured, largely because structure aids automation and speed. Designs that blur the distinctions between graphic and text elements can make accurate analysis tricky however. The New York Times for example uses a blobby looking font with blurred and tinted edges for its class ad categories. Should this be treated as text, graphic or logo?

Assuming PDF analysis can accurately identify the various elements on the page, the next step is to work out how they relate to one another. ▶

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The ultimate goal is to create a series of files that can be managed dynamically as individual files including any linked elements. The files can then be treated as individual entities or as new collections built automatically and ultimately on demand.

Applications

Once a PDF is broken up into a collection of subsidiary PDFs, the files are accessible to any digital environment from web sites to mobile phones. Digital content can be used for archiving, clippings services and personalised print services such as digital newsprint or variable content publishing. Content components are thus digital ingredients that can be used in a range of publishing recipes.

Until quite recently the primary reason for deconstructing PDFs was for cuttings. Press cutting services generally scan printed pages and use OCR technologies to create TIFF page images that can then be carved up into individual page elements. It isn't quick or easy, and it isn't particularly cheap. What is really needed is a postproduction process that extracts content from the digital version of a newspaper before it is printed, ideally working with an Acrobat extension.

Although on demand and variable content printing have been touted for years, the printers and publishers are still cautious to embrace it unless there is a clear and accessible market for it. The biggest problem with variable content print seems to be coming up with the right commercial model and of course ensuring accurate production. The economics are still not really proven. The cost of producing custom documents may not be high at the output end, but the associated data management costs are very high. And is it the print that gets the response or the fact that the prospect has been well qualified in the first place?

Either way effective database management depends on skilled operators employed by publishers or some high ticket subcontractor. But if a user could specify their own content requirements, for example via the web, the commercial model might start to look a lot more attractive.

Advertising management is another area where this technology could be relevant, particularly for digital newsprint applications. Newspapers printing remote editions might want to work with local partners for ad sharing, for example. It is in these contexts that structured PDF technologies start to look extremely interesting.

What's required?

PDF extraction tools should be able to accurately deconstruct PDFs, preserving each content element's individual layout and design, so that material can be read in its original context including brand characteristics. The tools ought to be able to convert PostScript and PDFs into individual elements formatted as PDF or XML files, and to augment asset and content management technologies. A deconstructed PDF ought to be able to maintain all links and associations, and it should be possible to automatically extract at least 65 percent of content accurately. Speed, ease of use, reliability, sophisticated error handling, and file routing tools must also be considered.

Users should be able to work with predefined analysis rules, as well as write their own rules to take application specifics into account. Any

To find out more about implementations of structured PDF, visit these web sites:

www.mimotek.com
www.texterity.com
www.iceni.com

technology for this sort of application must be able to handle different types of PDF files such as PDFs validated and certified for particular output, or constructed according to specific profiles. The workflow needs to reflect both sets of interests, because blurring production performance with content management priorities could result in a very nasty mess.

There are also security and production issues to consider, particularly in applications where print parameters vary. Furthermore the technology needs to be able to handle all the non-content pieces of a PDF such as comments and online notes, page furniture in production PDFs, running heads and footers, tables of contents and indexes, include any preflighting and production profiles with individual elements, and manage PDFs according to their production environment. All of this sounds a bit like the interplay between XML and an associated DTD. It seems contrary to the nature of PDF as a secure and fixed file format, so why bother?

Who's at it?

Easy to use, PDF is an increasingly familiar format on the web, and it is much friendlier than XML. PDF can hide much of the scary stuff that turns casual users away from XML. For DIY (Do-It-Yourself) document buiding PDF is a natural, assuming that the right infrastructure and the tools for creating PDF components are in place. A number of companies are working on technologies to extend PDF for this sort of application as well as others, although it seems most efforts have been to do with e-books. The digital equivalent of Frankenstein's monster, e-books have quite understandably failed to rocket into fiscal outer space. However, many of the ideas for technology to support this poor excuse for an application have relevance elsewhere.

Mimotek is one of the few companies working on PDF structuring tools for print orientated publishing, with the PCM newspaper group in Holland using it for five national titles. Another is Texterity. Picdar has also made forays into this area through its cooperation with Solidam. Iceni is another player in this space and has arguably been at it the longest. Iceni's core engine is Argus 4.5. This PDF extraction technology is available as an SDK (Software Developer's Kit) so it can be added to existing technology, and is primarily used to build fielded content rather than new PDFs although it is able to do it.

Mimotek's Structuriser technology turns PDFs into individual elements that can be rendered independently. Structuriser deconstructs PDFs into their component parts using the Tagged PDF feature within PDF. Also known as PDF Structure this operator identifies a PDF's object elements. Mimotek's implementation analyses a PDF to build a representation according to the relative placements of elements within the PDF file. Elements are however defined as separate elements and the technology uses layout parameters, white space, font metrics and sizes, to work out the structural roles of the various page elements. Structuriser is rule based system and so can be highly tuned to a specific publication's requirements.

Texterity has focused on converting print content into web site material, but its foundation technology is suitable for deconstructing PDFs. The TextCafé engine is an automated document conversion tool that converts PDF, Quark and Word files into XML and SVG formats. The technology provides tracking and metadata management tools

The digital equivalent of Frankenstein's monster, e-books have quite understandably failed to rocket into fiscal outer space. However, many of the ideas for technology to support this poor excuse for an application have relevance elsewhere.

and will work with custom DTDs. It works by determining a document's hierarchy according to what Texterity calls "visual cues". This means format parameters combined with identification rules for various generic document types. TextCafé produces valid XML that can be repurposed, as well as a range of other formats including PDF.

Conclusions

So is the route to multichannel content output management PDF, XML or both? That depends very much on the particular publishing application. Many publishers will welcome technologies that they can use to steer well clear of in-your-face XML, particularly if they have no investment in it. So we're saying XML is an unavoidable industry reality, as is PDF. Once the fuss about production PDF settles down, PDF will find its role in new publishing applications. And it will happen sooner than we think.

– Laurel Brunner

Get in the fast lane with PPML

Postscript may be a pillar of the graphic arts industry, but for variable data printing it hasn't really delivered. However as anyone working in digital printing, particularly with personalised print, will confirm PPML definitely has. An increasing number of printer manufacturers support this relatively new page description language, and everyone is gaining from it.

Databases and XML are the future for the industry. This much we know but quite what this means in reality is perhaps less clear. What implementations are there? One important XML implementation is PPML, Personalised Print Markup Language, a page description language for variable content output. When Chuck Geschke and John Warnock first presented PostScript, one of the things that their Xerox colleagues criticised was an apparent lack of dynamic entries functionality. This existed in Xerox' Interpress page description language, and was crucial to enable high speed variable data printing. The beauty of dynamic entries is that the printer memory caches any static page content, such as background images and set text and only the variable objects or text is placed on the page. This is much faster than PostScript's usual mode of operation which entails processing entire pages, rendering each page over and over again for each print, even if only a single word changes.

In order to process variable data in a PostScript environment, many software and printer vendors have developed "pre-RIPing" techniques. The material is stored in the cache as bitmap data, ready to be transferred directly to the printer without further processing in the RIP. Such solutions vary depending on how the vendor has opted to tackle the problem. There were no standard practises dictating what the original should look like, at least there wasn't until the vendors pulled together and produced PPML.

Let's all get together

Printer and software suppliers recognised it would be in everyone's interest to support a common standard for variable data preparation. The PODI (Print on Demand Initiative) was set up to develop an XML based standard and a draft was presented at Drupa 2000. Version 3.0 of PPML is imminent and has among other things, improved support for graphically rich documents. PODI saw the possible synergies of cooperating with CIP4, since the electronic job tickets in both PPML and JDF are XML based, so the two are cooperating on PPML.

Since mid 2002 the development of PPML job tickets has been synchronised with JMF (Job Messaging Format), part of the JDF standard. PPML includes a third standard UP3I (Universal Printer and Post processing Interface) to handle the actual data transfer between machines in the workflow.

As the name PPML (Personalised Print) implies, this technology was developed for digital print, in particular variable data print. This can be anything from custom made handbooks for cars or chosen sections of product catalogues to utility bills with highly detailed information. Variable data printing inverts the model whereby limited information is sent to a lot of people most of whom don't want it, so that a lot of

A typical PPML workflow resembles the automatic generation of web pages, with a strict distinction between content and formatting.

PPML: structure

Like other programming languages, PPML has a fairly logical structure, the main components of which are shown below.

• **<PPML>** Production data and material for the entire production.
• **<JOB>** A job with production data and objects for this particular job.
• **<DOCUMENT>** A document with production data and objects for this particular object.
• **<PAGE>** A page of production data with objects for this particular page.
• **<MARK>** Instruction about placing an object on the page.
• **<DOCUMENT>** Next document.

Source: www.podi.org

information is sent to a limited number of people most of whom do want it. PODI stress that increasing numbers of recipients expect highly customised information.

However, distributing more relevant information requires good customer lists. A rubbish database can cause considerable embarrassment, as American Family Publishers learned. The group had sent what was supposed to be a very tempting offer to "God" at a church in Florida. A letter was sent to the Bushnell Assembly of God parish saying: "God, we've been searching for you." It went on to say that God was one of the finalists in the raffle for a million dollar first prize. Of course he didn't win, but a great many parishioners were still deeply offended.

How is it done?

A typical PPML workflow resembles the automatic generation of web pages, with a strict distinction between content and formatting. Content can be formatted either with XSLT (Extensible Stylesheet Transformation) templates or directly in the Perl scripting language. Whatever the format, the content has to come from a database and data retrieval is a whole other problem. The printer has to support PPML directly, and preferably support a direct link to the database so that data can flow in real time to the printer. In PostScript implementations all pages have to be processed (RIPped) before printing can begin, but this is not the case in an advanced PPML solution. PPML can handle very long and highly personalised print runs as well as short runs.

PPML also has methods and tools for increased production automation. Ideally all machines involved in the workflow should receive all information necessary to complete the electronic job ticket, including sorting, packing and addressing details. With PPML compatible equipment across the board, super efficient production solutions can be built with a minimal risk of quality breaches and incorrect deliveries. PPML can also improve efficiency for short run digital print.

What products support PPML?

All major suppliers of digital print equipment and software are members of PODI. All products supporting PPML are listed at the PODI web site, along with case studies describing PPML implementation. Products from Creo, EFI, Heidelberg, IBM, Océ, Xeikon and Xerox are listed. In the near future PPML support will spread to mid range colour laser printers, but in order to take advantage of this, the available implementations have to made much more user friendly. One shouldn't need to be able to program either XML or Perl in order to use them. Perhaps this is a job for Microsoft. Perhaps not.

– Paul Lindström

Variable data printing inverts the model whereby limited information is sent to a lot of people most of whom don't want it, so that a lot of information is sent to a limited number of people most of whom do want it. PODI stress that increasing numbers of recipients expect highly customised information.

Talking to users:

Jonas Toftefors, Intellecta Docusys, Gothenburg, Sweden

Do you use a PPML solution today? If so, in what type of implementation?

– Intellecta Docusys has two systems which we have developed ourselves. They were both developed before PPML became official. One is a simple system for addressing/price lists with the possibility of reusing objects, in particular images. The other system, Quickdoc, is more complex and enables us to create pretty much any type of document from any data source. The developers of Quickdoc knew about PPML, hence the system can use major parts of the PPML notation. However, Quickdoc has a number of functions which do not exist in PPML, and are not included in future plans for the standard, as far as we know. One such example is the possibility of including function calls in the XML code, linked to tasks running on a computer with Quickdoc (or in future with the PPML interpreter). This type of function calls can generate very complex calculations or layout changes based on the data stream to be visualised on paper. Since the calculations are hidden in the calls, a user will find the reference file much easier to edit than a PPML-file would be.

What are the advantages of PPML?

– When PPML is used to its full potential, it is much easier to create dynamic documents which are less dependent on RIP or printer equipment. It's also easier to coordinate several data sources into a common document. PPML allows for the use of new standard programmes to create fast on demand solutions.

Are there any shortcomings in PPML which need fixing?

– Our RIPs have to support PPML and the various makes of equipment which we use have to implement PPML in exactly the same way. Today we use a number of programmes which utilise XML as an intermediate step. Several of these could be directly converted into PPML.

Michael Cypriansen, Digital Printing Network, Malmö, Sweden

Do you use a PPML solution today? If so, in what type of implementation?

– We use PPML/vdx to print variable data jobs on our Heidelberg Nexpress 2100. We print mostly addressed direct mail. We are currently using Datalogic's DL-100 which is a plugin for Acrobat 5, or Personalizer-X which is an xtension for Quark 4/5.

What are the advantages of PPML?

– The variable data files (.vdx) which are sent to RIP are only a few megabytes once they are processed. When we export directly from Acrobat/DL-100 the export is extremely quick.

**Are there any shortcomings in PPML which need fixing?**

– RIPing still requires a lot of capacity. This is because within the Heidelberg solution, all PDF pages are RIPped, not just the variable data layer. We are, however, looking forward to the next major upgrade.

With PPML it is much easier to create dynamic documents which are less dependent on RIP or printer equipment, says Jonas Toftefors at Swedish Intellecta Docusys.

Exporting the variable data files from Acrobat/DL-100 is extremely quick, according to Michael Cypriansen at DPN in Malmö, Sweden.
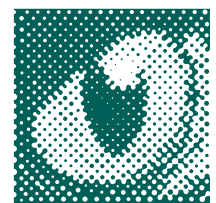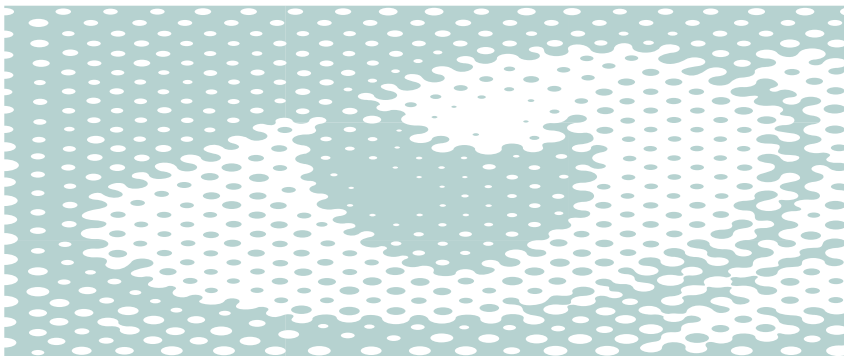
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