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Spindrift

...Scandalising The Graphic Arts Industry Since April 2003

News Focus • Opinion
Reviews • Techno-Babble
Attitude

Volume 4, Number 5
1st September, 2006

Sexy • a. (sexier, sexiest) 1 sexually attractive or exciting. **2** sexually aroused. **3** very exciting or appealing.

– From the Concise Oxford English Dictionary

Dear Reader,

This month we should all be leaping back to our desks refreshed and revitalised, not just because of the summer break. For the first time in a long time recent weeks have seen signs of rising confidence in the industry, with suppliers showing positive results and even newspaper businesses improving. It's not dramatic yet, but we are heading in the right direction. Finally.

Why is it that, after so much doom and gloom, print seems to be coming in from the cold? Could it be that people are realising the medium is still effective, despite cheerless forecasts and the print industry's imploding economics? Is print after all, the communications medium that works best, for the least cost both in real terms and environmentally? Well yes of course to all of this, but we've still got a serious problem. Image.

During the Xerox-sponsored *In the Balance* debate held at IPEX last April, moderator Jeremy Paxman asked the panel: "Why is print sexy?" Strangely, no one on the panel gave a coherent response. And this is a problem: printing and publishing industry professionals should sing print's praises at every opportunity. This industry itself should hammer home the message that digital technology plus print, equals an unassailable communications advantage. Building such models isn't easy, but the technology and the knowledge are there to do it.

Explaining and evaluating technology is what Spindrift is all about, and it's why we share content with a range of publishing partners around the world. Easing access to technical material is one of the motivating factors behind our latest project, the IGAEF. This content portal pulls together material from anyone in the international graphic arts community who wants to provide journalists with data and background information. We hope it will help encourage awareness of how digital technology and data management drive integrated media strategies, including and especially print, the sexiest medium of all. Enjoy!

Cecilia, Laurel, Paul, Nessian and Todd

In This Issue

JDF falling short?

Published in September 2005, version 1.3 of the JDF specification has revisions to many areas, including some packaging related extensions. However, when we decided to write a case study about a prepress company taking advantage of these new features, we couldn't find one. So instead we visited Gilchrist, who have developed their own Online Digital Information Network, or ODIN for short. Find out why we were so impressed...

see page 10

Wide format put to the test

Mr Lindström takes on wide format printers in our latest series of graphic arts technology tests. We have decided not to measure technology for its own sake, but instead to measure fitness for purpose based on actual performance. The printers tested in this round include models from HP, Epson, Kodak and Roland. You may be surprised to see the full results...

see page 16

Sorting out the standards

Are you confused about what standards apply to what areas of colour production and how? Never fear, Laurel Brunner explains all. "Well-implemented standards can make very real changes in the workflow and economics of a printing company, so even though it's not the most exciting way in the world to spend money, investment into standards development is worth it." It's all here...

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News Focus

Agfa-Gevaert's second quarter results for the Graphics division, show improved pre-tax earnings, margins and price trends over Q2 2005. Graphics division sales were €436 of the €859 million group total, versus €446 of the €849 million group total for Q2 2005. This figure includes €14 million of sales transferred from Graphics to Specialty products earlier this year.

Pre-tax earnings up by 9% were on the back of a 1.2% increase in Group sales over the same period last year with profit margins running at around 40% instead of 37.2% in 2005. For Graphics, pre-tax earnings were €18.1 versus €17 for the same period last year. Agfa's overall profitability has improved despite rising raw materials prices, largely because of the Orion efficiency measures due to complete this year but which will now continue until 2008. Agfa Graphics' profitability should therefore improve because of these measures and the continued shift to more profitable digital technologies.

Agfa's sales and general administration costs (SG&A) amounted to €212 million, or 24.7% of sales, versus 24.9% of sales in the second quarter of 2005 and 25.9% of sales in the first quarter of 2006. These costs are to be reduced by €250 million over the next two years. Agfa's restructuring and non-recurring items were €25 million, and are mostly

associated with the closure of the Graphics division's analogue plate factory in Italy.

Following its decision in June to split the Group into three independent entities, Graphics expects to be a €1.9 billion business by 2008, so it will be the dominant contributor to Group income. By this time the €250 million cost reduction programme will be complete, with Graphics bearing some 26% of these savings, which is the smallest percentage of the three businesses. Overall there are expected to be 2,000 functional redundancies worldwide, so Graphics can presumably expect to possibly lose 520 positions worldwide, which is estimated to be somewhat less than 10% of the overall employee base.

Heidelberg has finished its buyback program for shares initiated last November, costing an ear-tingling €150,349,212.29, and giving the company 1.67% of the outstanding shares. The largest block of shares (73%) is free-floating, with RWE AG holding 15% and Allianz AG 12%.

Shareholders should all be pleased with the company's first quarter performance with orders up by around 21% to €1.076 billion and a rise in sales of 9% to €719 million. Heidelberg's operating result more than doubled to €16 million in the period, a big jump over last year's €7 million. The net profit for Q1 was €5 million, a six million Euro improvement over the loss of €1 million in Q1 2005. This is the first positive result Heidelberg has seen in four years.

Perhaps the best news from Heidelberg is the comment from Bernhard Schreier, Heidelberg's CEO that "the positive trend in the print media industry continued in the first three months of the new financial year" which should be encouraging news for everyone. The company has also upped headcount to 18,876 from 18,583 people in Q1 2005 and expects sales growth of around 5 percent in the year 2005/06.

Privately held Esko has also announced positive results. During the second quarter of 2006, net revenues were up by 17% over the first quarter and by 7.5% compared to the second quarter 2005. For the first half of the year the company's packaging business increased 15% over the same period in 2005, with a four-fold increase in EBIT (Earnings Before Income Tax).

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▼ All regions and product lines contributed to the improvements, but Esko has also taken some drastic steps to reduce costs and improve profitability. One area that is believed to have come under the point end of the knife is research and development. This, in addition to drastic reductions in overall marketing expenditure, could put future revenue growth in jeopardy. In the meantime, according to President and CEO Carsten Knudsen “We are very pleased to see our business growth confirmed again in the second quarter of 2006. It is clear that buyers, designers and providers of packaging products and services are embracing our approach to offer integrated solutions to the packaging supply chain.”

X-Rite's acquisition of Gretag Macbeth has now gone through. The new combined company will operate under the name X-Rite (not Mac-Rite or X-tag or any of the possible names we had pondered). When going through the whole product portfolio the two companies found that there is less overlap than they had at first thought. Product development will be a joint effort involving both of the previous R&D teams, and although all existing products will be supported, changes to the portfolio are inevitable. X-Rite has promised to service any discontinued products for at least seven years after their removal from the product line.

Advanced Vision Technology (AVT) is developing a version of its print inspection technology for sheet fed presses. AVT already has over 1300 such systems installed in web presses for packaging, and has a 60% market share in this sector. The worldwide installed base of sheetfed presses is estimated to be over 370,000 with some 13,000 sheetfed presses installed for packaging, labels and security printing. AVT's technology can substantially help reduce start up waste, labour and materials costs, further improving the environmental footprint of these presses and of print in general.

Xerox has announced improved versions of its Freeflow Digital Workflow Collection modules. This set of six integrated tools is designed to streamline print job management. The Web Services module is a dedicated web portal for print job submission and print purchasing based on a customised version of Press-sense's business flow automation solutions for the print production industry. There are five other modules in the Freeflow suite, all of which have been improved: Process Manager 5.0 for automated document preparation now handles a wider range of document types and incorporates proprietary

technology developed by Xerox, called Automatic Image Enhancement (see Spindrift vol. 3, issue 1). The Variable Information Suite 5.0 for personalised document production has a new previewing option; Print Manager 5.0 uses JDF to automate and manage output paths for repeat jobs; Makeready 5.0 has new imposition options and Output Manager 2.0 now supports JDF/JMF for dynamic print production process updates.

The Graphic Arts industry is finally getting to bask in that Hollywood glow! Well sort of. An enterprising group of people are making a film about **Helvetica**, that's the typeface, not the country. Helvetica is a feature-length independent film about typography, graphic design and global visual culture. According to the producers this film “looks at the proliferation of one typeface (which will celebrate its 50th birthday in 2007) as part of a larger conversation about the way type affects our lives”. The film will be screened at film festivals worldwide starting in early 2007. If you want to take a new career direction and you fancy the movies, the people behind the film are looking for production assistants. They need people living in the vicinity of New York City who are either independently wealthy or who have benevolent parents, because these are volunteer jobs working a couple of days per week. Contact the Helvetica folks at info@helveticafilm.com. In addition to the film, the producers have commissioned a number of the designers featured in the film to do a series of limited edition prints. If you pre-order one of the first three of the 100 numbered copies, your name will be included in the film. Fame at last! There is even an Helvetica mailing list and a page on Myspace. See www.helveticafilm.com for more information.

Kodak's new wide format media swatch and sample book is now available. This handy tome is a reference tool for print buyers and service providers with samples of Kodak's complete portfolio of wide format inkjet media. It also has comprehensive compatibility information for all leading wide format printers in the market. This includes printers manufactured by Kodak, HP, Canon, Epson, Color Span, Roland and Mutoh, with both dye- and pigment based inks and there is a chart summarising indoor and outdoor durability for each media, depending on whether a Kodak, Epson, HP or Canon printer is used. The book is available at the Kodak site: <http://www.kodak.com/go/wfswatchbook>

Markzware has announced the availability of conversion utility ID2Q7, for converting Indesign files v1.5 through ►

4.x to Quark Xpress 6.x to 7. This extension does the conversion with a single click and includes everything in a document such as object positions, colours, fonts, text attributes, images and so on. It also converts files across platforms, so it can turn PC Indesign files into Mac Quark Xpress and vice versa.

GMG is making available a single user version of its Color Server Separation module, which previously ran exclusively as an optional part of GMG's Color Server Pro system. This will make it possible for multiple users to produce proofs without having to share a single server based system, or invest in multiple versions of server technology that is beyond their requirements. Included in GMG Color Server Separation is a PDF-to-PDF conversion function for RGB data. Composite RGB data in PDF files can be separated for target CMYK colour spaces, however embedded CMYK data is left unchanged. This is curious, as CMYK to CMYK is a fairly common requirement in colour managed workflows, so it would be useful to be able to do this with this tool.

EFI has introduced a new Vutek model. The QS2000 is a fourth generation UV-curing digital inkjet printer, which apparently prints with superior image quality, with improved productivity and connectivity. The Vutek QS2000 is the first in a new class of printers combining EFI's production and workflow management technologies with its recently acquired Vutek superwide format printer products. Print resolution can go up to 1080 dpi on rigid and flexible substrates up to 5.08 cm thick and 2 metres wide. Image quality is enhanced through proprietary image smoothing technologies. The new engines (for there will be more) print six colours, with a special white ink channel using EFI Fiery XF image processing that can print white in several variations including overprint, underprint, spot, underspot, fill and overspot. The Vutek QS2000 will be available with the EFI Fiery XF production RIP or optional Colorburst RIP. Pricing details have not been announced.

Quark Inc. has announced that Meadows Publishing Solutions has released its Design Merge extension for Quark Xpress 7. Design Merge is a suite of software modules for creating variable data output from Quark Xpress projects. It is possible to fully personalise documents using an underlying database and Design Merge rules which execute specific layout actions according to the contents of the database fields. Output is direct to any Postscript device, and can use the new Personalized Print Markup Language (PPML) formatting feature in Quark Xpress 7. Also, Quark

Xpress 7 is now available for Mac OS X Tiger, running natively on Intel-based Macs. The Xpress 7.01 update is available free to Mac users of Xpress 7.0 and is built to run at top performance on both Intel- and Power PC-based Macs. Quark is the first major developer of design and publishing tools to release a so called Universal application, i.e. one that runs on both chips (Apple term).

Screen has now introduced Spekta 2 HR, its new high resolution option for the Spekta 2 hybrid screening technology. The new version creates 15 micron dots for printing very fine details without the risk of moiré. Screen claims that it can help reduce ink usage on press by as much as 20%. The new version is free to existing owners of Spekta 2, and all future Spekta 2 products will include the Spekta 2 HR facility.

Atlas Software, creators of Print Shop Mail for variable data output management, has released a new web-to-print solution, Print Shop Web. This technology is designed for companies who want to improve print production efficiency, and expand print-related services. Print buyers can use this software to work with document templates on a secure website, which also handles the background job processing.

One Vision has announced the Speedflow Cockpit version 3.0 with enhanced functionality for automated pre-flight checking and imposition, plus more efficient routing of documents and email notification. Speedflow Cockpit can also instruct native layout applications like Adobe Indesign and Quark Xpress to perform dedicated tasks, as needed in the workflow.

And finally our congratulations to **Dalim** for being awarded the PIA/GATF InterTech Technology award for its well deserving automated production software Mistral.



IGAEF |Eye-gaff| INTERNATIONAL GRAPHIC ARTS EDITORS FORUM

The countdown has begun

We are currently working on correcting a wrong: There is no single international information source for the graphic arts trade press. Nor is there any single and simple means for trade journalists to communicate with one another, or find out about how digital technologies are used in other markets. Furthermore international companies have no single and direct means of providing the graphic arts trade press with unlimited background information about their technologies and product lines.

We are therefore in the process of setting up a website for the International Graphic Arts Editor's Forum. The IGAEF (pronounced Eye-Gaff) will provide access to technical reference materials for all trade journalists worldwide.

ing and publishing markets. This includes current product specifications, news, user stories, white papers and other reference materials. The goal is to provide accessible and current information for the many technologies used in graphic arts and print media production. Hopefully this will cover all forms of publishing, commercial or otherwise. The site will go online at the beginning of October. Contact Laurel at lb@digitaldots.org for more info.



IGAEF is intended to provide writers and journalists in the international graphic arts industry with a single content portal. It takes the graphic arts trade press directly to the right content and links for technical and market information relevant to the print-

Spindocs

(Where the spinner gets spun!)

This time, we are posting an Inverted Spindocs - WRH Marketing UK Limited (who work with mailroom supplier Ferag), deserve a mention, not because they've publicised spin, but rather because they are doing what more corporations should be doing - good:

"WRH Marketing UK Limited has become the latest supporter of The Newspaper Education Trust (The NET) by pledging a donation worth eight per cent of the charity's overall operational costs. The NET, a registered charity based at West Ferry Printers in the heart of London's Docklands, in the UK, offers one-day journalism courses in a live newsroom environment to children from primary schools in East London and to secondary schools around the country.

"It's a great concept," says Marcus Evans, Managing Director at WRH Marketing UK Limited, "and we're absolutely delighted to help the charity and as a result, support the children who learn about being a newspaper journalist - from writing, editing to designing newspaper pages. As a key mailroom solutions provider to many of the newspaper companies in the UK and globally, working with The NET is a natural choice for us and we look forward to extending our relationship in future."

Anna Pangbourne, Founder Director of The NET, explains:

"We're already in our 11th year and continue to grow and expand our activities and programmes which are all curriculum-linked. With the ever growing tide of podcasts, blogs, broadband, television and glossy magazines, newspapers have many challenges ahead, including attracting younger readers. Thanks to companies such as WRH Marketing UK, who've committed to supporting us over several years, we've the security needed to develop our programmes further and get youngsters excited by the industry!"

Driftwood

(Useful stuff washin' in on our shores)

Drupal

As is mentioned elsewhere in this issue, Digital Dots, publishers of Spindrift, is developing an information and content portal called IGAEF, for graphic arts trade journalists. The idea is to help writers and researchers covering the ever-expanding universe of graphic arts technologies to do their job more easily and so that when they need to, the background technical low down is all in one place. In trying to work out which technology to use, our intrepid webmaster came across Drupal (from the Dutch for "drop") written in PHP and designed for high volume website content management. So impressed have we been with this comprehensive content management and forum tool, that we thought we would share details of it with you.

This technology has been developed to provide the underpinnings for news driven sites. It is web software, however it has many of the characteristics one would expect from a good front-end editorial system. It makes it very easy to publish complex and varied content on a site, but it also allows for communities to add content to the site. For anyone wanting a site to be open to cooperative editorial development with other people, this is extremely important.

Drupal features include support for blogs and forums, collaborative authoring and content management, image galleries and support for file uploading and downloading. This may not sound so special, however Drupal differs from most web based content management systems in that it is built around group administration, rather than assuming that only one person should be allowed to update content at any one time. A Drupal site is designed and built so that multiple people can work together on the site and it works in this way right down to the core of the application. Drupal assumes a data organisation where information and data are classified according to a

▼ predefined scheme, according to how bits of information relate to one another. The technology supports a dynamic information system, and encourages knowledge development simply because information is easy to navigate. Instead of assuming that learning has to be a dedicated process, isolated from one's day to day work, Drupal's approach can facilitate learning because it allows it to happen naturally. This is important because these days we are all struggling to find our way through a morass of information. We are overloaded and yet we continue to rely on traditional methods of data organisation.

Drupal allows community users to manage information relationships without having to programme the website, because it was designed specifically not for content management but for knowledge management. It's a subtle but important difference, because content production no longer follows conventional models. What Drupal is about has nothing to do with the slightly ridiculous and seriously naive information push versus information pull model that gained some currency in the nineties. This model posited that we were moving away from the model where publishers shovelled content at supine consumers, and towards a model where those same users pulled the content they wanted from a website. The assumption that people are so very energetic and proactive was obviously flawed.

Drupal on the other hand is built on the assumption that knowledge development and content management ought to be dynamic, organic processes happening incidentally and without specifically relying on peoples' initiative to learn. Let's face it, given the chance, we're most of us more inclined to idleness rather than graft and Drupal recognises this. So if you create the right content environment, learning and knowledge is encouraged naturally as the user community itself develops.

Drupal was introduced around three years ago and since inception has attracted a huge following, mostly for building community and portal sites, which is what we are doing with the IGAEF site. Other users include people building corporate sites and e-commerce tools.

This is all well and good, however Drupal is definitely not

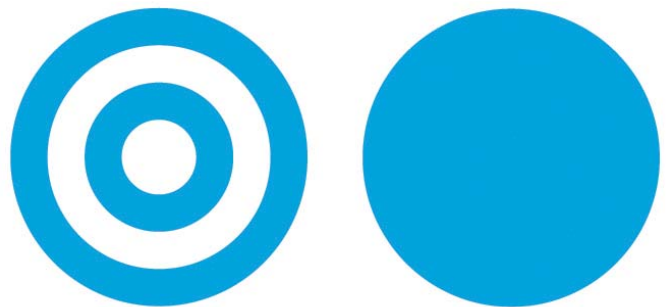
for the average webserf. It is very much for geek royalty, those wireheads who ooze dataspeak from every pore and like nothing better than binary on the rocks, with a PHP twist. Fortunately there are plenty of people aspiring to reach that organotechnic class, so we expect to see a rising number of Drupal sites. See www.drupal.org for more info.

Expandocs

(In this section, we aim to cast some extra light on a particular recent news story.)

More screening of screens

Since our test of hybrid screens we have been informed of yet other new screening technologies. One of the most recent technologies is the Artworks concentric screen, useful in most types of printing, both newsprint, commercial sheetfed offset and flexo.



The new screening technology from Artwork Systems called Concentric screen (left), compared to conventional, round dot, AM-screening (right).

The concentric screening technology is a high resolution AM-screen, and according to Artworks it offers many of the benefits of second generation FM-screens, or for that matter, hybrid screens. While conventional AM-screens are supposed to offer stable print results, if quite coarse ones at medium or low screen frequencies, according to Artworks they actually are prone to colour variations depending on variations in ink density. While FM-screens are less sensitive to ink density variations, because of the relatively small dots used, their weakness traditionally is that they have a tendency to give a "grainy" look. The concentric screen dot is made up by several rings inside

▼ the actual round dot, and this stabilises the ink density, so reduces colour variations in the print run. The concentric screen dot also reduces the risk of a too high ink density, a phenomenon that actually causes a reduced perceived saturation (or chroma) of that particular colour. So the concentric dot technology should be superior to conventional AM-screening, and according to Artworks even match the print quality of FM-screens (stochastic screens) and hybrid screens. It will be interesting to see how Artwork markets the concentric screen compared to the FM-screens and hybrid screens that they also have in their portfolio. We will return with a head-to-head comparison when we have had the chance to compare actual prints using the concentric screen with the tests we have done already on FM-screens and hybrid screens.

Say What?

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

RISI ACQUIRES SEYBOLD FROM CMP MEDIA BEDFORD, MASSACHUSETTS (August 1, 2006) - RISI, a leading business-to-business information provider, today announced the acquisition of the printing and publishing industry publication The Seybold Report from CMP Media LLC. Launched in 1971, The Seybold Report is the pioneering publication devoted to cross-media tools, technologies and trends shaping print and Internet publishing. Published twice a month, it includes industry commentary, product critiques, technology reviews, and case studies. RISI's acquisition also includes The Seybold Bulletin, a weekly email summary of printing and publishing industry news. "The proliferation of new production technologies continues to make the printing and publishing industry a quickly evolving and highly competitive marketplace," Rod Young, RISI's CEO, commented. "Many companies struggle to stay abreast of the issues that are affecting this growth. RISI's news and analysis have long been a key source for our clients in printing and publishing to make the best decisions about their businesses, and the Seybold publications supply content that complements this information very well."

Rhiannon James-van Beuningen, vice president for editorial products at RISI, stated,

"We are committed to bringing Seybold's editorial quality back to the level that readers have enjoyed in the past. We will be sending out a comprehensive reader survey soon, and I will also be working closely with all the editorial contributors to the Seybold Report to plan enhancements to the publication."

Could this be yet another, as the delightful Mr. Wilde put it, "triumph of hope over experience"?

Boomerangs

(Your feedback fed back)

Some time back, Cecilia Campbell posted this text on the Digital Dots CTP forum, and received a useful response:

While at Ifra's conference about closed-loop production control last week, something interesting came up. The second day was devoted to CTP, which cannot, as yet, be controlled through true closed-loop, i.e. the loop is not completely closed, there are no self-corrective systems. But, there are now four systems on the market (Nela, Agfa, Kodak and a German partnership I can't recall the name of), which can read values off special wedges on the plates, and then warn when values are outside the reference. Three users (who had been running these quality control systems for less than a year) talked about what they'd gained, particularly in eliminated press-stops – now they discover faulty plates before these go on press. HOWEVER, and this was what I wanted to raise; while we were having pre-dinner drinks courtesy of Associated Newspapers and Allan Marshall (who ended up not appearing after all), Dave Elvin of Kodak pointed out that these systems cannot operate with processless plates, as they lack enough contrast to be read by the camera that reads the wedge. Will this mean printers have to choose between automatic plate quality control and getting rid of the processor in the workflow?

▼
Digital Dots CTP forum
 May 12

Hi folks, Tony King from Agfa here. With the Fuji and Kodak plates (designed for on-press 'development') you can't measure the image dots as they are still surrounded by the non-image area. This is one of the major problems with the concept of 'on-press development'. In this respect Dave Elvin (a good mate of mine, tel 0113 2522177 Kodak Leeds) is absolutely right.

HOWEVER, the Agfa plate, Azura, uses a gumming unit which gums the plate before it goes to press. When this happens the non-image area is washed away, so you CAN use dot measurement devices with the latest processless plates but ONLY if you are pre-gumming the plates. Right now that means only Azura can be used in this way.

Hope this helps

Tony

Acrobites

(Something to get your teeth into)

Meme

It isn't exactly an acronym, more of a concatenation, an artificial word that probably won't last long. It's a shortening of the Ancient Greek, "mimeme" meaning something imitated, in order to make it sound similar to the modern English word "gene". It refers to the fact that ideas spread of their own accord amongst humans and that, as they evolve, "they become better and better at distracting and diverting us from whatever we'd really like to be doing with our lives". Memetics is apparently a new science devoted to the "Virus of the Mind". Richard Brodie, who originally coined the term, says he was the original author of Microsoft Word and Bill Gates assistant. Maybe that explains it.

CVS

A Concurrent Versions (or Versioning) System, manages versions of files and registers changes, no matter how

small, to all jobs within its scope. Most commonly used for software project control, CVS allows multiple users in different locations to collaborate on a common project. It is especially popular within the open source software community and is available under the General Public License programme which provides and monitors free user licenses.



Package deals

Published in September 2005, version 1.3 of the JDF specification has revisions to many areas, including some packaging related extensions. On the surface that sounds like support for packaging production. However when we dug a little deeper we found that these extensions are mostly about how products get wrapped together and placed into boxes, which are then put into cartons and palletted up ready to ship. This may be why repro and prepress companies specialising in packaging production are often disinclined to embrace JDF for job management and production. Understandably, they need rather more from JDF and many prefer instead to develop their own systems to handle the very particular needs of packaging production. One company which has gone down this route is Gilchrist in the UK, with its Online Digital Information Network, or ODIN for short. It is one of the most sophisticated systems we have seen in years.

It's often the case that the slickest digital production systems are developed in-house, and they're slick because they match the production need absolutely. Most systems of this kind tend to be IT intense, database driven and with print production issues handled almost as an afterthought. Most large newspaper systems are like this: highly specific to the company and application, but not really capable of alternative production workflows. A packaging production system however cannot afford such luxury because such systems have to be flexible enough to produce all content types, formats and levels of complexity. This is what Gilchrist has built with ODIN.

Gilchrist is a UK company employing 180 people. It has developed its own system to support the packaging production requirements of a wide range of clients including Asda, a nationwide network of 360 supermarkets owned by Walmart in the US. Other clients include Fortnum & Mason, the Queen's grocer, and Harrods, one of the world's favourite tourist destinations, as well as Twinings and Danone. All of these, plus the rest of Gilchrist's international client base, have similar though not equivalent output requirements. Although Gilchrist, with its origins as a repro service provider, will take in any sort of work, it prefers to work with partners. It was just such a partnership that led to ODIN's development. Working in collaboration with Asda and other clients, the idea was to develop an online retail product packaging development system. As James Egan, Asda's business unit development manager, says: "We come at it from the angle of brand owners and delivering an NPD process which can be applied to any industry." NPD stands for New Product Development and refers to the tasks required to develop new or replacement products or product lines.

When we originally started work on this article it was with a view to writing about JDF and its use in the packaging sector. The disappointments started with the frail support for this application within the latest JDF spec, and continued when we tried to find interesting case studies.



According to Dave Roberts, Gilchrist's IT manager and one of the ten people dedicated to ODIN's support, ODIN runs "probably everything there is for packaging because we deal with hundreds of printers and all of them have different requirements for data".

ODIN is a product development tool that supports everything associated with a product's packaging: the package itself, plus all pack copy, images and related collateral material. This includes digital assets, approvals management and of course the relevant print production tasks. ODIN is based on a bevy of technologies jointly installed and managed by Gilchrist's IT and production support team, plus system integrators Turning Point Technologies. Among other things, TPT handles Dalim and Xinet technologies, which Gilchrist uses as the foundation for production and digital asset management.

The Scope of the Problem

Gilchrist's job is to produce the data necessary to print a package almost from product concept to placement on the shelves. If you take a stroll down any aisle of your local supermarket displaying packaged goods, and consider that Gilchrist's system is capable of producing all of them, you get some idea of ODIN's scope. And it has to have such scope: the retail industry is fiercely competitive and its packaging is as intrinsic to a product as the product's ingredients. 80% of Fast Moving Consumer Goods (FMCGs) have a shelf-life of only six weeks and the packaging design can often change with each life cycle, presenting brand owners with a dizzying production challenge. Ostensibly ODIN is about print production management, but it is also about production in a larger context. Unavoidably IT dependent, ODIN presupposes the IT's ability to leverage to the max Gilchrist's application understanding and production knowledge.

Hardware

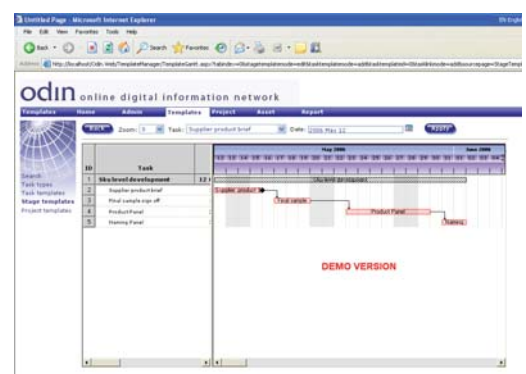
ODIN runs under the Irix (a Unix derivative) operating system on SGI Origin 2000 servers, which support multiple Intel based SQL databases. SGI is now pretty much out of business, so Gilchrist is investigating moving to some other equally resilient hardware. The company is reluctant to share details of its plans, however the options are pretty clear since only a Unix based system such as OSX or Linux has the required stability and all round sturdiness ODIN needs. Subsidiary Intel servers handle workflow management tasks and specialised tasks such as digital asset management and activities associated with ODIN's various task modules. The whole collection is linked over a digital network, with a broadband connection to the Internet. Details are necessarily sparse because Gilchrist does not want to publish details of the hardware infrastructure.

Software

Xinet's Fullpress provides file sharing and print spooling using hot folder automation. It can support an extensive range of file formations and integrates with both standard, i.e. Postscript or PDF, and proprietary, i.e. CT/LW based RIPs. The Fullpress technology normalises data access and manages multiple workflows and output paths. It works in conjunction with Xinet Webnative, which manages asset files within a single subsystem. This includes images, documents and workflow management tools,



Central to ODIN is the definition of administrative roles for operators. Here is the screen that shows the roles associated with a given project, plus a brief job description.



ODIN is a complex project management tool as well as a production tool. This screen shows the time line for a single SKU (Supplier Known Unit).

all of which are accessible via a standard web browser. Users can preview and access assets from any location, using the web for delivery.

Dalim's Dialogue handles all online proofing and Twist all file management. ODIN also uses various software components from both Esko and Artpro, as both are needed to support any possible client requirements. According to Dave Roberts, Gilchrist's IT manager and one of the ten people dedicated to ODIN's support, ODIN runs "probably everything there is for packaging because we deal with hundreds of printers and all of them have different requirements for data". ODIN is about consolidating a huge array of workflows and output paths into a single incredibly complicated yet easy to use system.

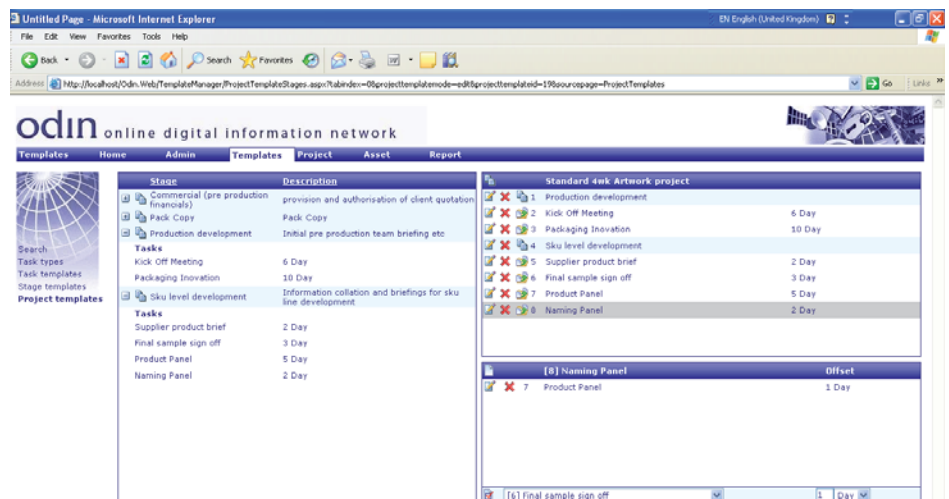
The secret is universal XML based translation, using custom scripting to provide a means of pulling together the work of operators using all sorts of production software and hardware. The system's primary goal is to provide a common environment that allows the back end technologies to be used and function as they must, but with a common front end and single user interface. This is why the IT infrastructure has to be so resilient and why Gilchrist has a team of five full time development engineers, supporting standard IT and all system modules. These modules have been written internally, mostly in XML which also provides the lowest common denominator for the system's many databases. Application specific technologies, such as the Dalim and Xinet kit, are supported jointly with Turning Point Technologies (TPT), one of the UK's leading system integrators. Everything else is written mostly in Microsoft .Net because of its ability to pull data from any server and hold it on a data node for fast access.



The individuals working on ODIN have permissions for system access based on their roles for a particular project.

ODIN in Action

Key to ODIN's interoperability is the use of different builds for different clients depending on the requirements. This is IT speak for configuring the basic system so that it meets the requirements of different people and stages within the workflow. Used as a noun, build refers to the process of creating a software component or module specific to a particular application or process, as in "we've done a build for you".



This screen summarises the activities involved with a complete project. Note that the tasks associated with each phase in development are given descriptions and time lines. Also spot the spelling mistake in the user interface!

Access to ODIN is via secure log-on, to determine which pieces of ODIN are accessible to a given user. Jobs flow through the system according to their status using check boxes, profiling and hot folders to manage work. The key thing here is that the job must conform to the specified route through the workflow, and this route is established as soon as a job or

▼ project enters the system. Gilchrist project managers provide the job and project analysis that determines the production requirements and the production workflow. With the secure logins ODIN can also determine access levels and asset check in and out, privileges for the Xinet Fullpress systems. It can also warn operators of impending deadlines but people didn't like this sort of nagging. ODIN has instead been configured with critical path management systems, giving operators a list of tasks associated with the current stage of production for a given job, prioritised for each operator. This list tells people when they log in what needs to be done and helps them to plan their working day.

Of course all of this sounds as if it's crying out for JDF, but despite the work that has gone into the specification, Gilchrist's work with ODIN goes way beyond JDF's packaging production capabilities. Gilchrist's developers prefer to use their own XML tagging specification, both because they can be sure it works, and in case the JDF specification changes or modifies the packaging supports in the future. Dave Roberts says: "we are JDF compliant but it's really XML" and this says it all really.

Gilchrist is processing the packaging and publishing for thousands of product lines per week. Within each product line are multiple entities and each of these has multiple components. It all adds up to a processing load of 30 Gb per day. Within the processing load are many diverse workflows reflecting the many requirements of each package and its associated collateral. Each job or project coming into the ODIN system is set up as a new job, or NPD, and processes vary, from a single simple package and up. ODIN can be tailored to work with any type of project or job, regardless of its complexity, because ODIN basically manages a critical path for each element in a project. This means that it doesn't matter how complex or simple the production requirement, as long as the set-up is correct in the first place. Gilchrist's people have a deep understanding of what is required to produce a Supplier Known Unit or SKU, packaging speak for any retail item. Their ability to use ODIN to specify and manage each package's evolution is their greatest strength, and without their knowledge ODIN could neither exist, nor function with anything like such efficiency.

Deploying this knowledge is the first step in establishing the NPD for new or replacement product lines. This might involve the redesign of a product, for example a range of pies, and has to take into account everything involved with the product right up to the logistics involved. In Asda's case for example, that includes delivery of the product line to 360 outlets nationwide, instruction to the right people in each shop to manage the line, signage, special offers, promotions in store and advertising in the local press. ODIN manages it all right down to ensuring the cold chain, and manages how the pies get to the correct place in the shop. ODIN also handles supplier management to make sure that the supplier can meet anticipated demand within Asda's timescales, as



One of Gilchrist's partners is Asda, who was instrumental in building up the ODIN system. Gilchrist's business unit development manager James Egan says: "We come at it from the angle of brand owners and delivering an NPD process which can be applied to any industry."

well as producing bespoke packaging, labels and localised special offer package and signage designs. Gilchrist's work here is crucial because all of the print involved needs to fully support that managed NPD process, without compromising production processes and of course print quality and accuracy.

Built into ODIN are the tools to assign deadlines and goals, project production paths and specific production requirements for different SKUs. ODIN also manages the links from ODIN into other subsidiary or related systems. In the pies example mentioned above this could be links to a recipe management system for foodstuffs. Such systems keep track of the ingredients in a food product, right down to the supplier of the basic ingredients. These recipe assets are often stored within ODIN as well, because they may be part of a package's design. For all content, including recipes and directions for use, ODIN assigns profiles and production parameters, plus the critical path for each entity within the SKU right up to creation of print ready PDFs, preflight checking and delivery to the printer. Gilchrist works with its own printers and those its suppliers dictate.

Proofing

Within each line, creative and production processes run in parallel, with tight and sometimes complex approval cycles all along the way. This is one area that is especially crucial for ODIN since proofing issues can call a halt to the entire project or job's workflow, wherever they occur. Kodak's Realtime Proof is currently used for approval proofing, but Gilchrist do not want to share further details about their future plans for proofing development.

Future Plans

ODIN can also be used for process management and for measuring people's performance throughout the content supply chain. It can monitor both clients and third party service providers. This aspect of ODIN is likely to be developed in order to maintain maximum production efficiency because as Dave explains: "ODIN immediately makes transparent all the flaws in a process."

With ODIN, Gilchrist has achieved an astounding success. This is the first system of its kind that we have seen that has started with the IT and built up. Its data processing perspective is evident throughout, from the use of SSL in log-ons through to XML providing bridges to sibling systems. Gilchrist has very wisely chosen to work with established technologies such as Dalim's Twist and Dialogue, and Xinet's Fullpress and Webnative. Even more sensibly staff are working with TPT, a system integrator who understands the production and IT imperatives equally well. ODIN is also special because it isn't fixed: it is under constant development. The next big step in development will be to move to next generation databases including multiple array databases such as Caché. Caché

Coming to Terms

Both IT and the specific applications it serves have all sorts of new terms and expressions describing various processes. Here are explanations of some useful packaging and IT terms.

NPD - New Product Development refers to everything involved in developing a new or replacement product or product line. This term covers the entire development cycle from concept to getting things onto the shelves of a shop. If it is a food product the NPD cycle will include suppliers, recipes, sources of ingredients, and even means and location of production.

SKU - A Supplier Known Unit is precisely what it says, the unit itself could be anything. This sounds like it's a completely pointless thing to know, but consider the following elaboration before you dismiss it out of hand.

SKU refers to stuff on shop shelves or racks, and it is important because it's used by product and brand owners, re-pro people et al in the packaging supply chain to denote the packaging required for different items within a range of goods. A single packaging project for a given product could consist of multiple variable content iterations. If packaging really is the market most sought after, this is an acronym you definitely need to know.

FMCG - This is another acronym from the packaging side of the business. Fast Moving Consumer Goods are all the stuff on shelves that we buy and use day to day, like shampoo and catfood. FMCG refers to the goods themselves; it's an acronym brand owners throw about, and it's also common amongst advertising executives. If you hear it, brace yourself

is a multidimensional database combining object orientated and SQL database technologies. It is designed for rapid access and processing speed, and with massive scalability. Although this is a relatively new technology, its use is not unprecedented for the graphic arts: DTI's systems use Caché for newspaper production.

When we originally started work on this article it was with a view to writing about JDF and its use in the packaging sector. The disappointments started with the frail support for this application within the latest JDF spec, and continued when we tried to find interesting case studies. We had hoped to find both clever extensions in JDF 1.3 to support the packaging supply chain further upstream, and excited users boogying along with JDF left, right and centre. What we instead found was rudimentary packaging support with JDF and a certain ambivalence in the market. It is interesting that Gilchrist chose to call their system ODIN. Odin is a Norse god, the god of magic and prophecy. ODIN, the system also seems to be weaving a very special magic indeed.

– **Laurel Brunner**



for hooligan colours, heinously complex proofing cycles and of course squeaky-tight deadlines.

Pack copy - all text image copy and collateral content relating to an individual package

Wide Format Printing Test

Signage production using wide format printing devices is currently one of the fastest growing print markets, with a wide array of products, substrates and inks to choose amongst. So broad is the market that we thought it might be timely to conduct a series of formal tests of these devices. However, such is the level of maturity of this technology that testing it *per se* seemed a little bit pointless. Far more interesting was a test that looked at the technology's fitness for purpose.

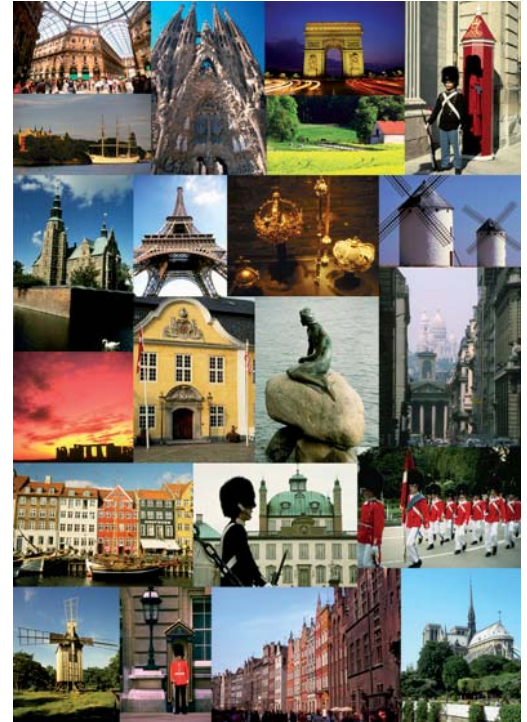
When designing a test set-up for this type of application, it was soon obvious we need to be looking and testing from an applications perspective, rather than a technological one. We need to evaluate technology for one particular segment of the market at the time, so we decided to limit our current testing round to the production of posters for indoor use. Since efficient poster production is best done with the pages printed out tilted, we suggested that participating vendors use devices with a print width of at least 1.016 m (40"), and not more than 1.524 m (60"). We have also decided to test flatbed printers in a separate test, and have only included roll fed inkjet printers in this test round.

RIP solutions

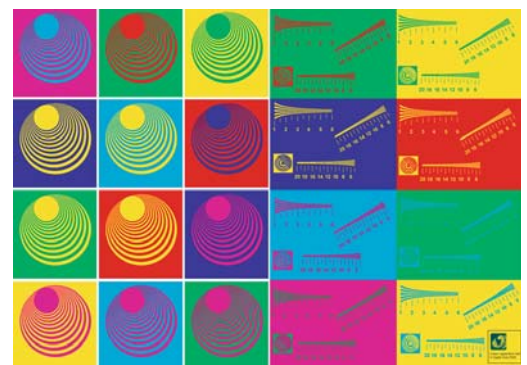
One of the problems with running tests is isolating the thing you are trying to measure from other system components which might influence the outcome. The performance of a colour inkjet wide format printer depends to a significant extent on the front end, the RIP. The same printer may produce excellent and colour correct prints printing output from one RIP, but not from another. It's also possible to get prints without using a dedicated RIP to drive the printer, relying instead the free printer driver that comes with the engine. The problem with this is that although you can always get prints out, you can't necessarily get them quickly or with a calibrated and colour accurate result. For these reasons, for high-end production it's recommended that you use a dedicated RIP system. We have not included RIP performance in these tests, focusing instead purely on the engines themselves.

An advanced RIP system can drive several printers, so the operator can control all the printers from one and the same user interface, which is more efficient. A good RIP also provides advanced calibration tools as well as colour management facilities, to ensure high quality and colour accurate prints. Finally, a proper RIP system often takes full advantage of a powerful print server, and so should offer the fastest possible throughput, including rendering time in the RIP.

There are several stand alone RIP solutions on the market, often with the word "poster" somewhere in the product name. Colorgate, Efi, Onyx, Perfectproof, SA International and Wasatch are some of the manufacturer



We asked the vendors to print a poster size 700 x 1000 mm to test both speed and image quality for wide format inkjet printers.



To be able to check colour registration for all the channels, we designed this test form.

names to look out for. Ideally the RIP should be able to calibrate and set ink amount as well as create an optimised ICC profile for each paper type and substrate that is used for production. The scope and degree of sophistication for this is one of the differentiating factors between RIP systems, and full calibration or ink adjustment is rarely possible through the printer driver alone.

If you choose not to use an advanced RIP, and to instead rely only the printer driver, you are likely to be limited to printing only on substrates supplied by the printer manufacturer, because generally speaking they will be the only output options listed in the printer driver menu. You can take your chances and use those options for a totally different paper type, from another manufacturer, but this may not work as well as one would hope. Inkjet papers and other substrates are very sensitive to the settings of ink amount and such factors, so the output quality can be quite miserable if the wrong ICC profiles or output options have been chosen for the substrate at hand.

How the test was done

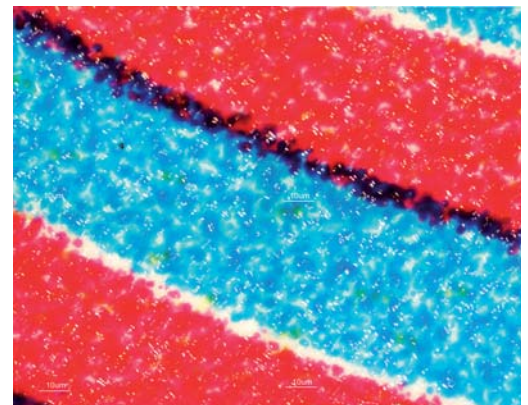
We designed the test to include several factors that are important for poster production: speed, registration, true resolution, tendency to banding, and ink usage and cost. Not very surprisingly it was the last of these, ink usage and cost, that was the most difficult to come to grips with. There are many ways to define an “average” ink usage. Some vendors refer to 30% coverage on the page (image and text versus blank white space), others assume 200% ink usage, with the assumption that a maximum of 400% is possible, although unlikely, for an image in CMYK. In the near future we expect ink consumption to be rather easier to calculate, since more and more vendors have started to report actual ink usage through the feedback from the printer driver.

This kind of statistical data, which some users may think is unnecessary, can be very useful when trying for example to optimise ICC profiles for minimum ink usage, while maintaining high print quality. One of our tests was to print a 1000 x 7000 mm poster, and we estimated that the poster would use about 200% ink in average. The information fed back from for example the HP printer driver, reported that we had used 10 ml ink, and that we had incurred an ink cost of about €0.3 per ml (millilitre). In this example the cost of ink was about €3 just for the ink to print our poster. Taking this data it is simple enough to add the cost of the substrate, plus figures for operator time, an overhead charge, device maintenance and depreciation, in order to calculate the total production cost for such a poster.

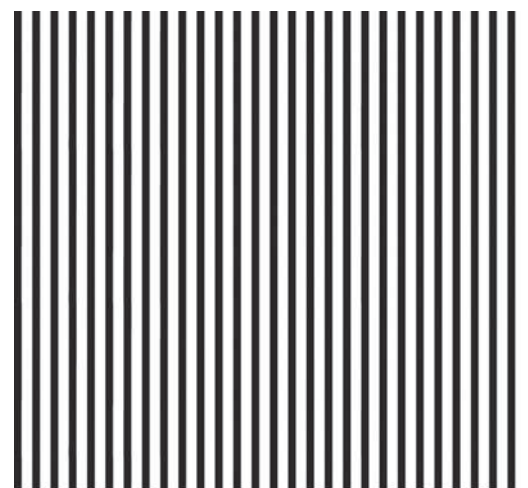
Back to the plot. Several of the printers we tested offer very high resolution according to their technical specifications. However, from our long and varied experiences testing both scanners and digital cameras, we know that the true resolution is likely to be something else, because so many factors influence true resolution. The robustness or not of a device’s mechanics, vibrations, ink/substrate chemistries and so on can



This is the original image. The colour registration in the output should ideally show a result very similar to this.



The registration of the colour channels is not always as perfect as one would like. Here a view through a digital microscope of the output from the Kodak 1200i wide format printer at 500x enlargement.



The test form designed to test actual resolution contains line pairs set closer and closer together. This corresponds to 508 dpi, and ideally the printer should reproduce the lines like this. In reality the ink droplets spread around the designated spot, undermining the printer’s theoretical maximum resolution.

all influence output resolution. Also it's a challenge for any wide format printing device to maintain register and accurate placement of ink droplets over such a large area, so our test has shown considerable differences between achieved resolutions, and the resolutions stated in the technical specifications.

A device's ink droplet size limits its achievable resolution. Ink droplets have a variable size that can be down to 3–4 micron (one thousandth of a millimetre) in diameter. While in theory the droplets should land exactly on the designated target spot, movement of the printhead and air dynamics cause them to instead spread over some considerable area, an area that cannot necessarily be predicted. There are some inkjet printers claimed to be capable of 4800 dpi output, but as our test shows, this is far above what seems to be physically possible when analysing where and how the ink droplets actually land on the substrate. It is better to achieve sharp and precise output without banding at say 600 dpi, than to claim fantastic and unrealistic numbers for theoretical output resolution.

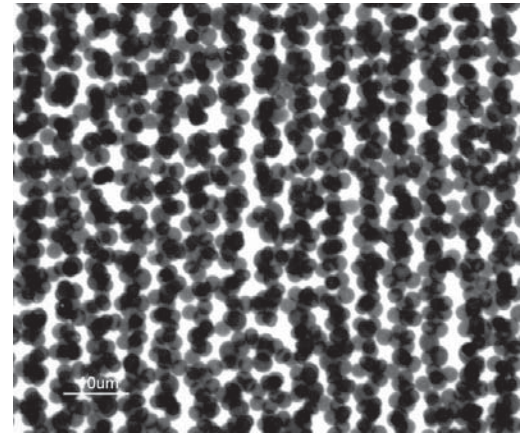
Banding is a common problem for many inkjet printers, especially at high speed. This is why we have judged this in a separate category, where a high score means little or no visible banding.

We also wanted to analyse what colour gamut the tested printers could reach on different substrates. This is difficult to judge by a purely visual evaluation, so we analysed the ICC profile used, assuming that a larger colour gamut would offer a more colourful output. We compared this with the colour gamut achieved with conventional sheetfed offset printing, on coated paper, according to the ISO standard 12647-2.

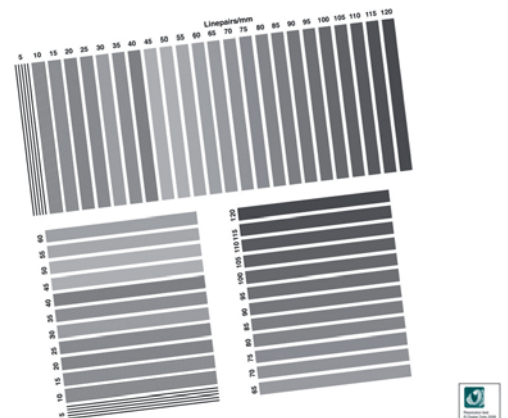
Output speed is often stated in square feet per hour for many devices in this class, but we have converted this to square metres per hour to provide a universal reference. A printer's maximum speed is also often stated based on a quite low resolution, which is misleading for poster printing, since outputting at low resolution runs a high risk of visual banding in the print. We therefore instructed the participating vendors to choose a speed and resolution combination that would yield a saleable print, one that customers wouldn't refuse to pay for. When reading the table of results below, there is a clear trade-off between high speed and quality. The times presented in the table don't include RIPping, since this is influenced by the capacity of the front-end server, and the actual load and capacity of the network. Instead output times were measured from when actual output started in the printer to when printing was completely finished. In this way we only measured the printing speed of the print engine, not of the system's throughput.

Our findings

In general the output quality of all the printers tested is impressive. However there is a clear risk of banding at low output resolutions set in order to achieve the fastest printing speeds. The largest colour gamut was reached, not surprisingly, when using glossy and coated paper qualities,



The resolution achieved in reality is generally much lower than the theoretical maximum resolution stated in the technical specification. Here, the output of lines equivalent to that of 508 dpi for a Roland Soljet II wide format printer, viewed through a digital microscope at 500x enlargement.



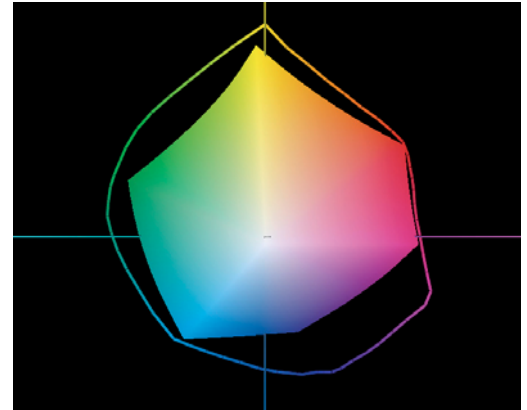
We tested the actual resolution achieved by the printer using this test form. It consists of thin lines placed increasingly closer together and at a 7 degree angle.

▼ or substrates. We also did some extra outputs, outside the test, on vinyl and with impressive results. When a matte or uncoated paper was used however, the colour gamut was significantly reduced and the images looked quite dull.

We found that the resolution achieved in practice was about half of the stated technical (that is theoretical) resolution, according to our testing method. When lines with increasingly less distance between them are no longer clearly separated, or rendered properly as straight lines, the printer has reached its resolution threshold. We of course made this particularly difficult for the printers, by slanting the lines to an angle of about 7 degrees.

It is impossible to give a definitive and comparable price for the output of these engines, but we have come some ways along. We can use the statistics from some of the RIP systems and printer drivers to estimate ink consumption and costs, and we can add to it the various costs mentioned earlier. Printers can then use this as a basis for comparing costs, although this isn't necessarily possible prior to purchasing one of these devices! We nonetheless welcome this RIP feature, since it provides a start for more accurate cost comparisons. It also makes it possible for users to optimise print quality as well as ink usage, for different types of substrates.

– Paul Lindström



We compared the achieved colour gamut for the inkjet printers with that of printing with conventional sheetfed offset, according to the ISO 12647-2 standard. In general the inkjet printers achieved a larger colour gamut on glossy paper. The inner, coloured area represents offset, and the outer contour the colour gamut of HP Designjet 4500 on glossy paper.

Table 1 – Speed in Quality Mode, versus maximum speed stated

Model and substrate	m ² /h	at resolution	max speed, m ² /h
Epson Stylus Pro 9400, Enhanced Matte Poster Board	9.9	720 x 720	26.4
Epson Stylus Pro 9800, Enhanced Matte Poster Board	5.6	720 x 720	22.1
HP Designjet 4500, Premium Satin	5.4	1200 x 600	50
HP Designjet 5500, Premium Satin	6.1	1200 x 600	17.2
Kodak 1200i 60", Pro Satin	6	600 x 600	20.4
Roland Sol Jet Pro II V 545, Gloss	12.2	720 x 360	32

Table 2 – Output Quality

Model and substrate	Registration*	Banding**
Epson Stylus Pro 9400, Enhanced Matte Poster Board	10	9
Epson Stylus Pro 9800, Enhanced Matte Poster Board	10	10
HP Designjet 4500, Premium Satin	10	10
HP Designjet 5500, Premium Satin	10	10
Kodak 1200i 60", Pro Satin	5	5
Roland Sol Jet Pro II V 545, Gloss	9	5

* Score 1–10, where 5 is acceptable and 10 perfect

** Score 1–10, where 5 indicates a small but acceptable tendency to banding, and 10 means an output with no visible banding

**Table 3 – Judged optical resolution, dpi**

Model	Horizontally	Vertically	Technical maximum resolution
Epson Stylus Pro 9400	not measured*	not measured*	1440 x 720
Epson Stylus Pro 9800	603	540	2880 x 1440
HP Designjet 4500	508	444	1200 x 1200
HP Designjet 5500	476	254	1200 x 600
Kodak 1200i 60"	444	222	1200 x 600
Roland Sol Jet Pro II V 545	545	508	1440 x 1440

* Due to errors in the output, the resolution couldn't be analysed. No new output arrived in time for a new evaluation.

Table 4 – Colour gamut

Model	% of ISO coated
Epson Stylus Pro 9400, Gloss paper	112
Epson Stylus Pro 9800, Gloss paper	112
HP Designjet 4500, Gloss	121
HP Designjet 5500, Gloss	121
Kodak 1200i 60", Pro Satin	106
Roland Sol Jet Pro II V 545, Gloss	111



Colour Me Maxi

Much attention is being paid these days to standards and digital workflow automation, particularly for colour print production. However apart from the difficulties of implementation, many people are confused as to which standards are relevant for the various print production workflows. There is also confusion as to what actually constitutes a standard, despite the fact that there is an internationally recognised body devoted to standards development for the industry.

Who's Who?

Technical committee 130 within the International Standards Organisation (ISO) is responsible for standards relating to the graphic arts and printing. Based in Switzerland, ISO is a legal group made up of the National Standards Bodies of around 140 countries. TC 130 has members from numerous ISO member countries and is dedicated to the development and ratification of formal standards for the graphics industry. It also works with sub-committees and working groups drawn from industry.

Over the years ISO and TC130 have been responsible for some extremely important work, work that benefits printers worldwide and that benefits the industry as a whole. Confusing as they can be, the various graphics industry ISO standards can make a big difference not only to production processes, but also to the economics of a printing business as a whole. Following is a quick overview of the ISO standards most relevant for digital colour production workflows.

Beginnings

Despite ISO's work, within the printing industry the most commonly used acronym associated with colour management is not ISO, it is ICC. The International Color Consortium is an independent body with a membership drawn from both the supplier and user communities and close links to ISO. Founded in 1993, the ICC has worked tremendously hard to develop viable digital data interchange standards exclusively for managing digital colour data. Primarily intended for print output, the ICC's work now encompasses colour management for the car, textile and broadcasting industries.

Using the ICC technologies (the ICC defined profile standard is also the basis for ISO 15076), it is possible to calculate digital colour data so that it appears accurately wherever it is output, and regardless of how it was originally described. Printers commonly use ICC standards and techniques to convert files described in RGB to CMYK, and also to convert from one CMYK space to another. Correctly implemented, with precise device calibration and characterisation, an ICC colour workflow can ▶

Over the years ISO and TC130 have been responsible for some extremely important work, work that benefits printers worldwide and that benefits the industry as a whole.

▼ ensure accurate and consistent output on multiple proofers, monitors, platesetters and presses in different locations. In addition to the work of the ICC, which has been well documented, there are several other key ISO standards that printers and publishers ought to be aware of.

ISO Foundations

One of the trickiest aspects of colour management is managing viewing conditions. Obviously colours viewed under different light sources can appear to be different, so ISO has defined a standard viewing condition to be used for all colour critical work, including proofing and when checking pull sheets at the press.

ISO 3664 was published in 2000 and defines the viewing conditions for photographs and transparencies, as well as images displayed on monitors. Monitor technologies have moved on substantially since 2000 however, so relying on this standard for monitor based proofing on modern screens is probably not a good idea. ISO 3664 is nonetheless useful for comparing on screen images where there is no printed, hardcopy equivalent. It is more commonly used for checking tone and saturation values, and for comparing reflection photographs, transparencies and photomechanical prints, both with each other and with original objects.

ISO 13655 defines how colour is measured and calculated for graphic arts images. It assumes ISO 3664 standard viewing conditions and like 3664, is currently under review in order to reflect recent developments in monitors and printing technologies, and of course the devices used to measure colour data. ISO 12646 for colour proofing further defines the characteristics and viewing conditions, specifying the requirements for resolution, uniformity, luminance and so on for monitors used to simulate hard copy proofs.

Along with ISO 15076, these standards provide a foundation for digital colour management for print production. However they are not based on the use of tristimulus colorimeters, which are becoming increasingly popular for measuring spectral data. The standard is therefore under review in order to update it to reflect current practice.

ISO has also published a standard defining how data should be prepared for digital production workflows. The ISO 12642 digital data exchange standard has been around since 1996 and defines how input data should be characterised for four colour process printing. This is the standard generally used to produce ICC profiles and it is under continuous review in order to keep it current. The standard defines measurement procedures and the output data format for matching proofs to anticipated results on press.

Another important data exchange standard is ISO 15930 which specifies prepress data exchange based on PDF/X. Part one defines the complete ▶

Well-implemented standards can make very real changes in the workflow and economics of a printing company, so even though it's not the most exciting way in the world to spend money, investment into standards development is worth it.

▼ exchange of CMYK data using PDF/X-1 and 1a, part 2 is for partial data exchange of printing data using PDF/X-2, part 3 is complete exchange in colour workflows and is based on PDF/X-3.

ISO 12647 most important

Of all the ISO standards, the ISO 12647 series is perhaps the most important of all, since it specifies the printing conditions for various print processes, in order to standardise print processes within a common framework. In the ten years since it was first published, ISO 12647 has provided printers worldwide with a common means of data characterisation and process standardisation. Instead of a proprietary somewhat hit and miss approach to print output, we have a means of optimising standard colour communication from concept to final output for any print process, any place.

ISO 12647 also establishes a basis for process management that customers and services providers alike can use in file preparation. This can be useful for creating ICC profiles and PDFs, proof preparation, plate production and of course press set-up. ISO 12647 part one defines the vocabulary and basic processing parameters, part 2 specifies the process parameters for colour separation, plate making and finishing for heatset web, sheetfed or continuous forms process printing, plus the associated proofing. Part 3 provides the equivalent guidelines for standardised newspaper printing, part 4 for gravure, part 5 for screen and part 6 for flexo. Part 7 is currently under development and will provide process parameters for off-press proofing based exclusively on digital data.

All of these standards are important to consider for digital colour management, if not to actually implement. However there are several others worth knowing about, the relevance of which depends on a printing company's primary business. ISO 2846-1 defines the colour and transparency produced by four colour heat-set lithography inks when printed under certain conditions. Part 2 does the same for coldset lithographic inks, part 3 for gravure printing, part 4 for screen printing and part 5 for flexography. We are now at a stage where printers all over the world can unite to work with a common print standard, working with industry associations to replace older non ISO-standards like SWOP and Euroscale with the latest version of ISO 12647.

ISO 12635 and ISO 12218 relate to plate making. ISO 12635 specifies the dimensions of offset printing plates to facilitate communications between press and platesetter manufacturers, plate producers and plate users. The 12218 standard codifies the language and process controls for the preparation of offset platemaking and applies to presensitised metal plates and contact exposures.

Numerous industry organisations are working on standards development and many of these claim to represent worldwide interests. But, well ►

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intentioned as they are, there is no getting away from the fact that organisations such as the ICC, CIP4, CGATS and the Ghent PDF Workgroup are supplier driven groups, pursuing to some extent the vested interests of their members.

ISO is the only truly independent and international body, and it is fortunate for the industry as a whole that many of the groups working to promote standards, such as JDF and PDF, have close ties with ISO Standards development. Standards work is unavoidably a dry and dusty business and one that takes a great deal of time and commitment from many people, so the contribution of these groups to standards development has been immeasurable. Standards development can take so long that by the time a standard is published the market or technology has moved on, so the active involvement of such groups adds a real life dimension.

Whatever its development path, standards work is vital for the survival and healthy development of any industry, whether it's printing or civil engineering and building construction. Well-implemented standards can make very real changes in the workflow and economics of a printing company, so even though it's not the most exciting way in the world to spend money, investment into standards development is worth it. The standards mentioned here can be purchased online at www.iso.org where further information is also available.

– **Laurel Brunner**



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