Digital Dots

Spindrift

News Focus • Opinion
Reviews • Technology
Interviews • Ranting
Psychotherapy • Fun

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...Intoxicating The Graphic Arts Industry Since April 2003

Put 30 billion euros in unmarked bills in a bag by the gate of the Icelandic embassy in London, and we'll turn off the volcano.

– Anonymous

Dear Reader,

With most of the last couple of weeks spent trying to readjust travel expectations, it's been hard to focus on getting real work done. It's amazing how quickly people have recovered from the chaos Eyjafjallajokull (pronunciation optional) caused. This is in no small part down to the efficiency of the IT involved and the fear of the negative impact that continued disruption will have on business.

The temporary grounding was actually not so bad. It gave us all the chance to enjoy the silence of the skies, and to remember what the world was like before the likes of Ryanair and Easyjet brought to air travel that same exotic mystique enjoyed by bus travellers for many decades.

The impact Eyjafjallajokull will have on IPEX remains to be seen, but it will be a great excuse if the halls are empty. Do volcanoes have silver linings?

As ever,

Laurel, Nessan, Paul and Todd

In This Issue

Regular Columns

News Focus

Heidelberg will be launching a new press at IPEX. The Speedmaster CX 102 uses Heidelberg's 70 x 100 cm format and runs at 16,500 sheets per hour. Heidelberg has re-used some of the high performance technology from its large format XL press including the gripper system and cylinder bearings. It can handle flimsy papers, stiff board and a wide range of plastic materials and has a modular design that will handle most common machine configurations.

Agfa has added variable data capabilities to the M-Press Tiger, its high-speed flatbed inkjet press. Apogee Vibe is a straightforward graphic editor for creating print jobs with variable data content on the Dotrix and the M-Press Tiger. Users can define elements such as text, graphics and images that may change from one document to the next without holding or slowing down the press. All variable elements are retrieved from a database (or spreadsheet). It supports multiple-up variable pages on the same sheet.

Agfa has launched new UV curable inks for its Dotrix LM printer. The Agorix LM UV inks use advanced photo initiator systems resulting in low odour, low migration and low set-off risks so that they can be used for digital printing applications on primary and secondary food packaging substrates.

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Agfa will also be showing a new Jeti 1224 UV wide format printer at IPEX. Built on a solid steel platform, designed for three shift operations, the Jeti 1224 features a linear motor-driven vacuum bed for highly accurate dot placement in both flatbed mode or with the optional roll-to-roll feature. The flatbed architecture can print on anything that is reasonably flat up to 5 cm thick and with its industrial grade construction can support media rolls up to 110kg.

Agfa has a new version of its Amigo plate. The Amigo TS is said to be up to 50 percent faster with improved image contrast for a run length of up to 200,000 plus impressions without post baking. It can also be baked for longer runs.

Canon has announced three new black-and-white, light production models. The ImageRunner Advance 8085, 8095 and 8105, running at speeds of 85, 95 and 105 pages per minute respectively, are designed for CRDs (Central or Corporate Reprographic Departments) and print-for-pay environments. They offer maximum image resolution of 1200 x 1200 dpi. The new devices can handle paper stocks up to 256gsm (up to 220gsm duplex) and sheet sizes larger than SRA3.

Xerox has finally decided to market the Colour 800 and 1000 presses, which it is already selling in its Asian markets. The systems – printing 80 and 100 pages per minute respectively – can produce high definition image quality on a wide range of paper stock. An optional clear dry ink station, allows for images and text to be highlighted for visual impact, or digital watermarks applied for artistic effect or security. Fujifilm will also show the Xerox Color 1000 press on its stand at IPEX

Alwan will be launching its Print Verifier system of print verification and certification software for handheld devices at IPEX. This can save, export and import quality control analysis conditions including Target, Instrument, Control strip, Measuring conditions, and Certification method so that print buyers can check quality control measures under the same conditions as their printers.

EFI has made improvements to its Pace MIS, including new iPad and iPhone applications and tools for the wide-format market aimed at increasing productivity

and profitability for print providers. It also now has JDF certification for finishing.

EFI also has a new interface for its Monarch MIS, which has more graphics, a new colour scheme, new icons and improved tab functionality, all aimed at making the software easier to use and the workflow more streamlined.

Dalim has just launched the latest release of ES 1.1, its streamlined customer-facing environment for online file delivery and approval. There are significant enhancements to the High Resolution Soft Proofing option, such as extended PDF layer support for improved visual approval. Additionally, for the labels and packaging markets, an operator can simulate a specific printing process or ink characteristics, by changing opacity and the order of separations with just a couple of mouse clicks. There are two new optional modules, Enterprise Project Tracking and Custom Job Ticket, that complete the circle of incremental production processes by adding the necessary business logic into ES.

OneVision has updated its Voyager automated file submission system. The new version of Voyager has seen considerable improvements in terms of usability, user administration and speed. There are additional controls to help manage workflow path access and user permissions. Users can now set up multiple hot folder configurations, which extend the use of Voyager for automatically submitting and retrieving processed files.

HP has launched a 3D printer aimed at the mechanical computer aided design and educational markets. Available in two models and starting below €13,000, the HP Designjet 3D printer creates highly accurate models in ivory coloured ABS Material, while the HP Designjet Color 3D printer can produce single-colour parts using eight different colours, ideal for designers and educational professionals who need to differentiate individual areas of assembled models.

Extensis is developing a new cloud-based service to support Web fonts, which will enable commercial web designers to incorporate custom fonts into websites. Most Web browsers now support the use of custom fonts on websites via @font-face tags but different browsers support different web font formats, and font vendor licenses generally do not allow users to simply put fonts loose on a web server, because of concerns about piracy. The Extensis system allows a designer to rent their preferred typeface from the Extensis service, which then generates the necessary CSS to be placed into their web code so that end users see the chosen fonts, in the correct format for their browser, generated from a secure Extensis server.

The Ghent PDF Workgroup, or GWG, has updated its Ad Ticket in response to the IDEAlliance eMedia21 Publishers Forum, which evaluated the GWG Job Ticket for use in the North American market and identified a number of additional fields that it required. This includes confirmation as to whether a hard-copy proof was sent, and whether or not the accompanying advertisement replaces a previous version.

Xerox has a new monochrome wide format printer for the technical drawing market. The Wide Format 6622 Solution prints 22 A1 prints per minute and offers 600 x 1800 dpi printing plus 600 x 600 dpi scanning options. An on-board colour scanner can improve copies of worn originals – automatic background suppression makes smudges and creases less noticeable and tattered documents easier to read. It comes with Xerox's FreeFlow Accxes controller allowing users to copy and scan-to-file simultaneously.

Manroland and Swiss newspaper press manufacturer **Wifag** have abandoned plans for Manroland to buy Wifag, though the two companies have said that they will cooperate on a technical level. Last year Wifag enacted a number of cost saving measures, including making some 300 staff redundant, and announced that it was looking for a partner.

Manroland GB and web2print company **RedTie** have formed a strategic partnership. Marian Stefani, managing director of RedTie, commented: "I think the combined power of our web-to-print solution and one of the world's leading litho press manufacturers can only be good for printers, as together we will be able to educate the market on the real potential web-to-print has to open up strong, new revenue streams for printers."

Quark has launched a new QuarkXPress Maintenance Programme for users to receive unlimited priority technical support and future upgrades free of charge. It only applies to QuarkXPress 8 users and costs €150 for 12 months and €230 for 24 months. Current QuarkAssurance and ServicePlus agreements will continue until their expiry dates with Quark hoping that customers will then migrate to the new Maintenance Programme.

Meanwhile, Quark has also become an associate member of RIXML.org, a consortium of buy-side, sell-side, and vendor firms committed to the development and implementation of the first open standard for investment research. Quark's XML Author can be configured for RIXML so that research analysts and other non-technical professionals in the financial services industry can create RIXML content easily, without having an understanding of XML coding.

Ricoh has finally completed the integration of its Infotec and Ikon divisions. David Mills, CEO of Ricoh UK, said: "Harmonising the back office functions of the three organisations has freed up valuable time allowing us greater flexibility to be more responsive to the frontline needs and requirements of our customers as we work with them to help drive competitive edge."

News Analysis

Adobe has finally waved the white flag and given up developing tools to allow people to run Flash content on the iPhone. This follows Apple changing the rules for developing iPhone apps. Adobe's Flash CS5 has a Flash Packager for iPhone feature, which would have allowed developers to target their applications for the iPhone. But Apple has now expressly forbidden the use of an intermediary translation or compatibility layer.

Apple has accused Flash of being a closed, proprietary format and said that the reason for banning Flash from its iPhone platform is the inherent unreliability of Flash, and the drain on battery life, which is always a crucial consideration on mobile devices. It is certainly true that Apple's Xcode can deliver more robust results. Moreover, by forcing developers to use only approved development tools, Apple is ensuring that most apps will have the same look and feel as those it has developed itself, which will help Apple's hardware stand out from its competitors.

Adobe's CEO, Shantanu Narayen, has denied that there are problems with the Flash technology, pointing out that over 100 apps that Apple has previously accepted in its App store were written in Flash.

For now, Adobe has committed to shipping its Flash technology on Google's Android mobile platform. But, given the huge market share that Apple has with the iPhone, and the early success of the iPad, all achieved without recourse to Flash, it seems likely that Adobe will have to find a way to work with Apple, if only because a number of content-providers such as YouTube are adopting non-Flash video formats.

Nonetheless, this could yet prove a hollow victory for Apple, as this spat may dent some of the enthusiasm that many publishers expressed for the iPad. On the face of it, the iPad's large colour screen would seem ideal for viewing digital editions of newspapers and magazines, and many publishers rubbed their hands in glee at the possibility of being able to charge users to access this digital content. But many of those publishers use the Creative Suite to author their printed editions, websites and mobile content, and have a lot of legacy Flash content, so that it won't be so convenient to publish for the iPad without being able to use the Adobe products.

It's impossible to say how this will pan out. Apple has form in taking things away from end users, like the 3.5ins floppy disks that were once universal. Then too, a lot of people complained about Apple restricting consumer choice but in the end most of us were glad that Apple forced the rest

of the IT industry to ditch those floppies. And it's entirely likely that Apple's stance will force Adobe to rethink some of its core technologies, which may be to everyone's benefit.

Then again, Adobe has put a lot of resources into Flash and it may simply be that the Flash juggernaut is too big and Apple eventually has to give in or watch as it loses market share. Either way, it would be better for consumers if both these companies could work it out like adults without resorting to playground tactics.

Apple CEO, Steve Jobs released a statement regarding Flash last week, which outlines the company's attitude towards the technology in no uncertain terms. Jobs begins with: "Adobe claims that we are a closed system, and that Flash is open, but in fact the opposite is true. Let me explain." Get the full skinny at **http://www.apple.com/hotnews/thoughts-on-flash/**

Adobe has replied to Apple's criticisms with its own blog, which you can find here: **http://blogs.adobe.com/conversations/2010/04/moving_forward.html**

Did You Know?

Colour management for the Web

One of the new standards for web programming, CSS3 (Cascading Style Sheets, version 3), is slowly making its way into the developer community. CSS3 is more modular than its predecessors, and one of the new modules that it is now possible to implement is the Color Module. This sounds like good news since colour consistency isn't very precise at the moment on web pages.

Unfortunately it seem as if colour management (again) has been a low priority for the programmers developing the web browsers. According to a test performed by Anders Hallundbæck Mortensen at the Danish School of Media and Journalism, trying to describe colours according to CSS3 leads to very different results on the actual page. The worst offenders are Microsoft Internet Explorer 8 and 9 (beta), which can't render colours according to the suggested alternatives in CSS3, RGBa or HSLa, where the 'a' is an opacity setting.

The good news though, is that pixel-based images (photos) specified in the sRGB colour space, will be rendered across today's most common web browsers, including Chrome, Firefox, Internet Explorer, Opera and Safari (even the iPhone version). But most designers would be happier if the solid colours and tints could be properly matched and specified in a predictable way.

The effort to establish a colour managed environment for the Web isn't new – Anders Hallundbæck Mortensen quotes intents described in the CSS1 standard from 1999, where ICC profiles and colour rendering intents are described and suggested. And the draft version of the CSS3 Color Module from 2008 adds to this initial work. But unfortunately it doesn't seem to have been observed or implemented across today's web browsers. One can't help but wonder why? Isn't correct colour interesting enough to web designers and more importantly to advertisers, to push this matter harder?

Anyone who would like to read the reports from Anders' tests can visit his web site www.uppercase.dk/color/. There is also an interesting report on compatability of web browsers with sRGB from 2009.

Heroes & Zeros

Hero

Our hero this month is Hye-Jeong Ahn, editor of Graphics World, the leading trade magazine in Korea. Hye-Jeong set out for the recent ISO TC 1340 Working Group meeting in St Gallen, Switzerland, with a direct flight from Seoul to Zürich. However, under the ashy skies she was obliged to go via Rome and then train it the rest of the way. She made it as far north as Turin, after which there were no trains available. Car rental was also impossible, so Hye-Jeong and a fellow business traveller, who was also trying to reach Zürich, hit the highways and hitchhiked. We aren't sure whether the fact that Hye-Jeong was travelling light because the airline had lost her luggage made life marginally easier or not.

Zeroes

Sad to say but this month's Zero prize goes to whoever it was that came up with the Ten Reasons to go to IPEX. The so-called 'reasons' read more like a to-do list for halfwits. Suggestions range from the obvious such as registering to attend and booking travel, through to thinly veiled marketing for stuff that earns the organisers incidental income, such as buying a catalogue. Oh, and another of the Ten Reasons is "Don't forget your passport."

This could have been so much better!

How about:

1. See live demos of new kit, not just read about them.

2. Pressing the flesh with developers, instead of relying on sales and marketing bumpf.

3. Close deals you've been working on for months, extracting maximum value.

4. Get value for money through buying kit off of the show floor.

5. Meet the people behind research and development of new kit.

6. Urge developers to work on stuff you need.

7. Hang out with peers and listen to seminars you might not otherwise have bothered with.

8. Participate in, rather than merely attend, PIRA's Great Debates.

9. Partake of Birmingham's finest curry houses.

10. Find ways to shift your perspective for the future of your business.

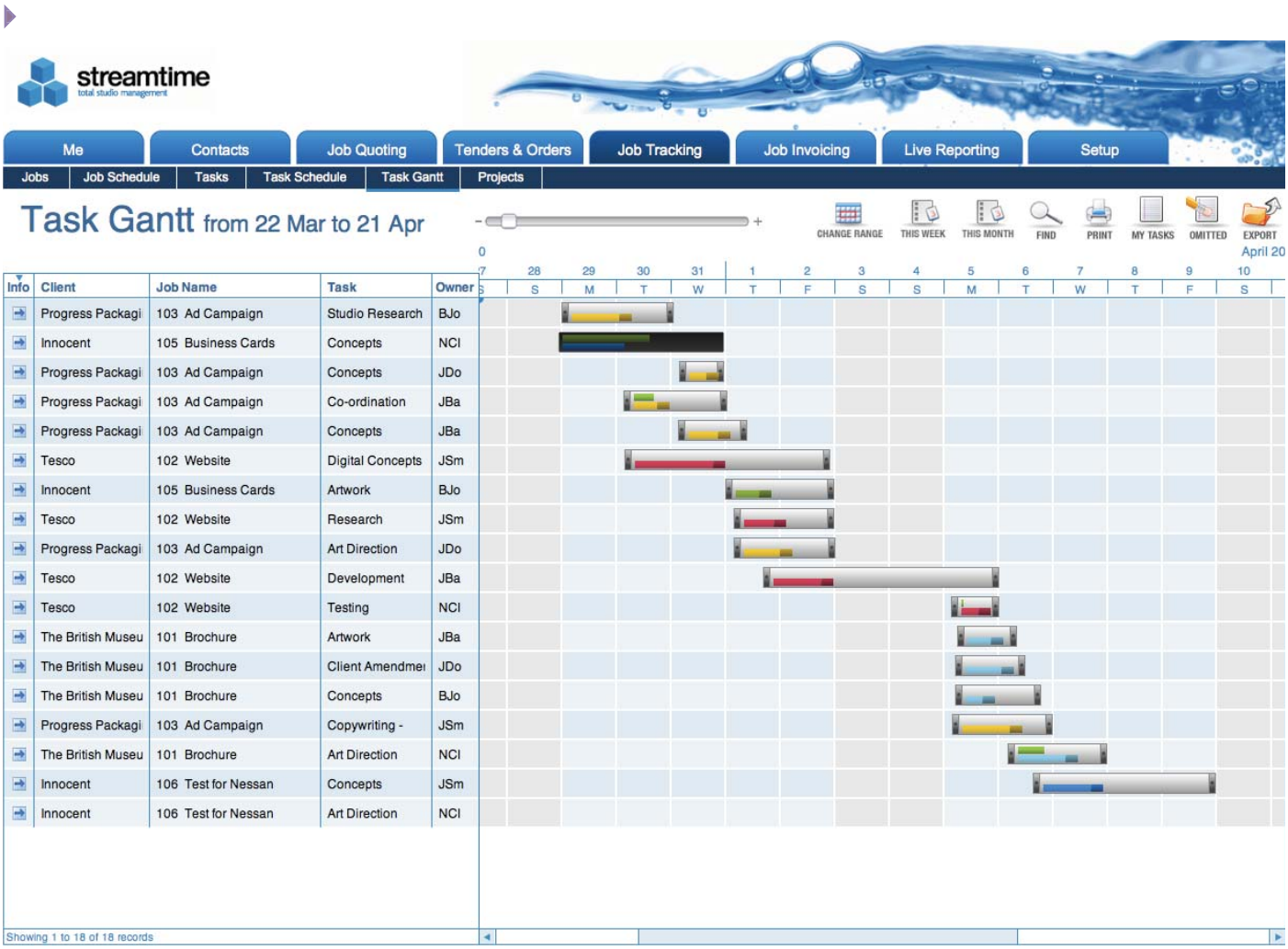
A Review

Streamtime 10

This month we've been playing with Streamtime 10, a business management tool developed using the FileMaker 10 database. It's primarily aimed at creative businesses, typically with five to 50 users, though it will also work for much larger companies.

Streamtime 10 offers general business management, including quoting, production planning and CRM functions for managing clients and jobs, as well as budget forecasting and invoicing.

Filemaker-based applications do tend to have a fairly similar look and feel, with a lot of tabs between sections. Streamtime is no different having a number of tabs across



Streamtime has quite a visual feel to it, with features such as this task scheduler showing each job at a glance.

the top of the screen that lets users click through from seeing their own tasks, and the progress of those tasks, through to quotes and orders and onto job tracking and invoicing. Each section has a number of sub-sections, which can be a little overwhelming, but it does present an enormous amount of information.

Marketing manager Daniel Clouston says that most customers use Streamtime as a database of contacts and certainly it is an extremely effective CRM tool, letting users keep track of clients, with reminders to follow up on leads, and a record of all correspondence.

It can generate quotes, both for a whole job and as a part of a larger job, and those quotes can be emailed from within Streamtime, and used to set up an invoice. It's also possible to group sections from a quote together for a multi-part job or to make separate invoices. Users can also decide just how much information they show to the clients on the invoice.

Quotes can be converted into jobs, which can be further split up into tasks for different people. Users can see a list of the tasks assigned to them, or view a chart that shows jobs for all the people in a team, or a Gantt chart showing all the jobs in hand and the time set aside for them. Users can also grab jobs and move them around to assign them to other people with the system dynamically changing everybody's timesheet. There's also a calendar that can be synced with both Outlook and iCal. The system can record time sheets that can be used for billing clients.

Streamtime can also generate reports on various items, including correspondence entered into with a particular client through to the profit on a job and detail differences between a quote and an actual invoice. It can be

integrated with some account programs, including MYOB, QuickBooks, Moneyworks and Sage and can be used to generate budget forecasts.

There are a number of custom fields so that users can add their own searchable fields. It can also be used to create orders and print forms.

It will work with both Mac and PC and there's also an iPhone application, free to Streamtime users, which shows the contacts database complete with all correspondence for each client, as well as the quotes and task scheduler.

The pricing structure has been radically overhauled from previous versions with Streamtime now moving to a software as a service model. Instead of a one-off cost for a boxed copy there's now a monthly service charge of £26 that includes the program itself plus technical support and upgrades for both Streamtime and Filemaker, though training will cost extra. That said, Streamtime is reasonably easy to grasp and there is an online help database.

Streamtime has been developed by Particle Systems, which was founded in New Zealand but is now headquartered in Sydney, Australia and also has offices in the UK.

Picture This

A man is sitting outside a News Agent in Stavanger, Oslo, just hours before the Eyjafjallajoekull volcano erupts on Iceland, not that far from Stavanger.

Is it a newspaper he is reading, or a book? Or perhaps scrolling through the latest news on an iPhone? Whichever

it is, he is totally unaware that tomorrow morning he will search several media to learn more about the whereabouts of the ash cloud. Perhaps he was scheduled to fly out from Stavanger on Thursday morning, and needs information on train times et cetera.

Whatever media he chooses to use is less important – that he wants to be well informed by trustworthy and well researched reporting we can be sure of. Hopefully he understands that such reporting brings costs somewhere, and he is willing to pay for quality information.

Green Shoots

The inaugural meeting of the *ISO TC 130 Task Force on Carbon Footprinting* took place recently in St Gallen, Switzerland. Despite the volcanic travel chaos, 25 people made it to the meeting. Another 11 joined via an online webinar kindly hosted by Callas GmbH. One way or another people from across the globe participated and the group has initiated a substantial list of action items.

The Task Force is on track to become a Working Group within ISO TC130, with over 40 people listed as participants on the official ISO list.

Envirowise, a government department in the UK, has developed an online tool to help businesses reduce their costs and environmental impact. Called *Green Street,* this tool uses a virtual tour of different spaces to show people ways that they can make their resource usage more efficient.

Only mildly patronising in tone, Green Street shows ways to make savings in key areas and provides access to top tips, free publications and services along the way. Much of the advice is common sense, but worth hearing nonetheless: www.envirowise.gov.uk/uk/Our-Services/Tools/Green-Street.html

Print City is using IPEX to promote its green resources. The alliance has produced a variety of materials including a new good practice guide for managing carbon footprints and energy management. Members of the alliance will be on hand to offer advice to printers keen to learn more about environmentally friendly business practices.

Agfa's *GreenWorks Environmental Recognition Award Program* has added its 150th printer to its list of recipients. Launched in 2007 as a part of Agfa's global environmental initiatives, the programme recognises printers that integrate, support and promote environmentally sound practices in their facilities.

Recipients seem to mostly be in the US and include, Allegra Print and Imaging (Abbotsford, BC, Canada), Coastal Printing & Graphics (Shallotte, NC, USA), Curtis Packaging (Sandy Hook, CT, USA), Rose Printing (Oriccia, ON, Canada), and Worth Higgins and Associates, Inc (Manassas, VA, USA).

Plase take part in the Verdigris Environmental Awareness Survey. We value your opinions!

Verdigris

http://verdigrisproject.com/survey

Five easy pieces

As Adobe prepares to unleash the fifth generation of its Creative Suite, we take a look at five perennial favourites from this collection.

When Adobe first announced the Creative Suite it made a lot of sense to lump a number of programs together into one box. For starters, it allowed Adobe to use must-have applications like Photoshop to build market share for other programs, notably InDesign. It also made it easier for customers to organise their purchasing budgets, and saved people a lot of money.

But over the years the Creative Suite has ballooned into a huge and expensive collection, which to be completely honest, is a reviewer's nightmare. There are some 18 different programs of varying size and complexity, plus a number of online services. So, rather than attempt to run through all of these here, we'll cover this in two parts. For this first half, we'll look at the five programs that most traditional designers will use and then deal with the rest of the suite in a follow up article.

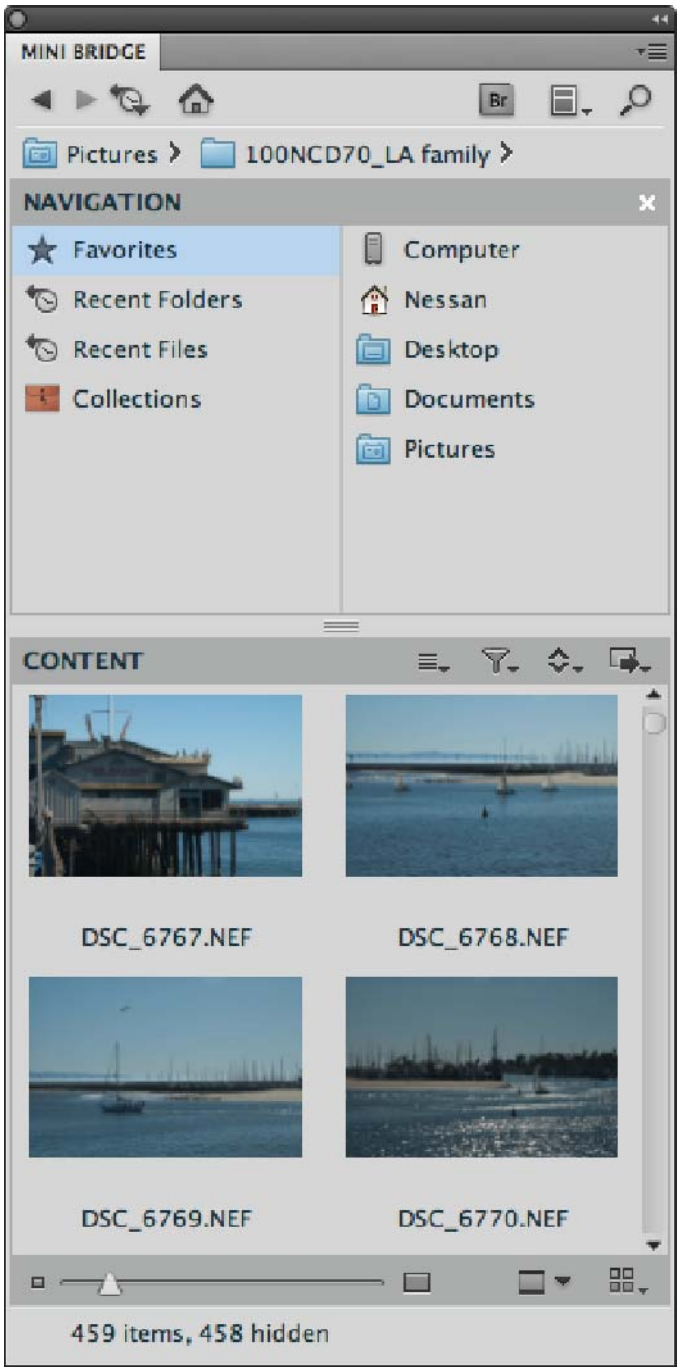
Bridge

Adobe still relies on Bridge for asset management, and though it can do a reasonable job of finding files, it falls very far short of a full-blown asset manager. Adobe has made some changes, such as new file info panels for metadata, and a slightly cleaner look to the interface, but otherwise very little has changed. That said, you can get a full screen preview of an image by hitting the space bar without having to actually open the file which is a useful time saver.

The major new addition is Mini Bridge, an additional palette available in Photoshop and InDesign, which you can use to browse files directly from within those applications. However, you still need to run the main Bridge application in the background.

Photoshop

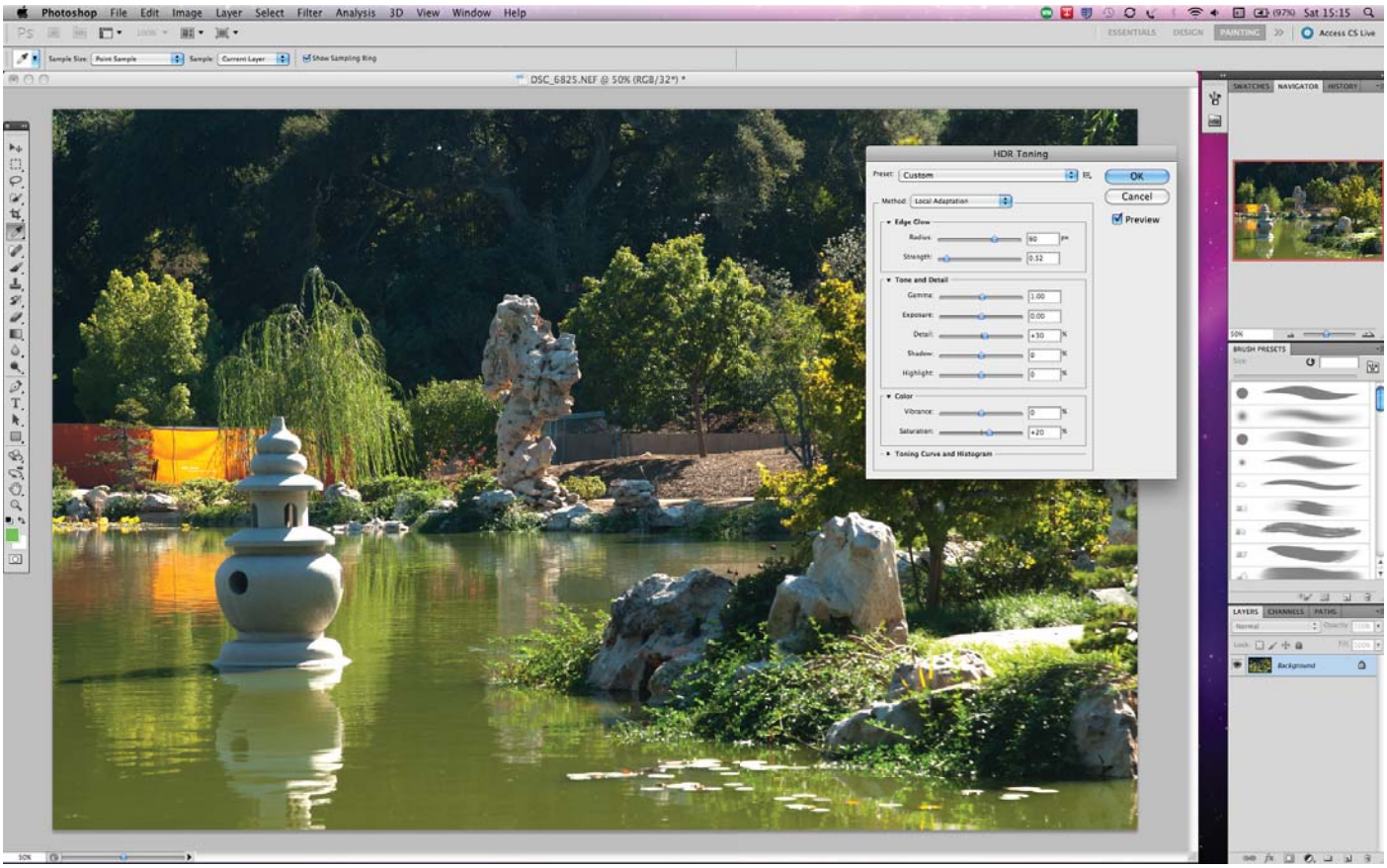
Photoshop has done well out of this upgrade with a number of useful additions. There's a new version of the



There's a new Mini Bridge available to both Photoshop and InDesign to find files without having to keep going back to Bridge, though you'll need Bridge running in the background.

Camera Raw plug-in which is significantly better than the previous version at reducing noise, sharpening image quality and generally tidying up an image. It was quite an eye opener to use it on some older Raw images and to see the improvements.

It's also better at dealing with common lens distortion problems and vignetting. Furthermore, you can download



Adobe's beefed up the options for High Dynamic Range images, and you can simulate the HDR effect on single images.

a Lens Profile Creator tool from the Adobe labs website to produce custom profiles of the lens and cameras you use to automatically correct some lens problems.

Adobe has built on the selection tools to make it easier to produce masks. New Refine Radius and Erase Refinements allow you to fine-tune the selection and the Smart Radius button can really make a big difference.

There's also a very neat Content-Aware Fill option that lets you erase part of an image, and then fills the space with information from the surrounding area as if the object that you've just erased was never there in the first place. It's surprisingly effective, doing a good job of matching the colours and lighting.

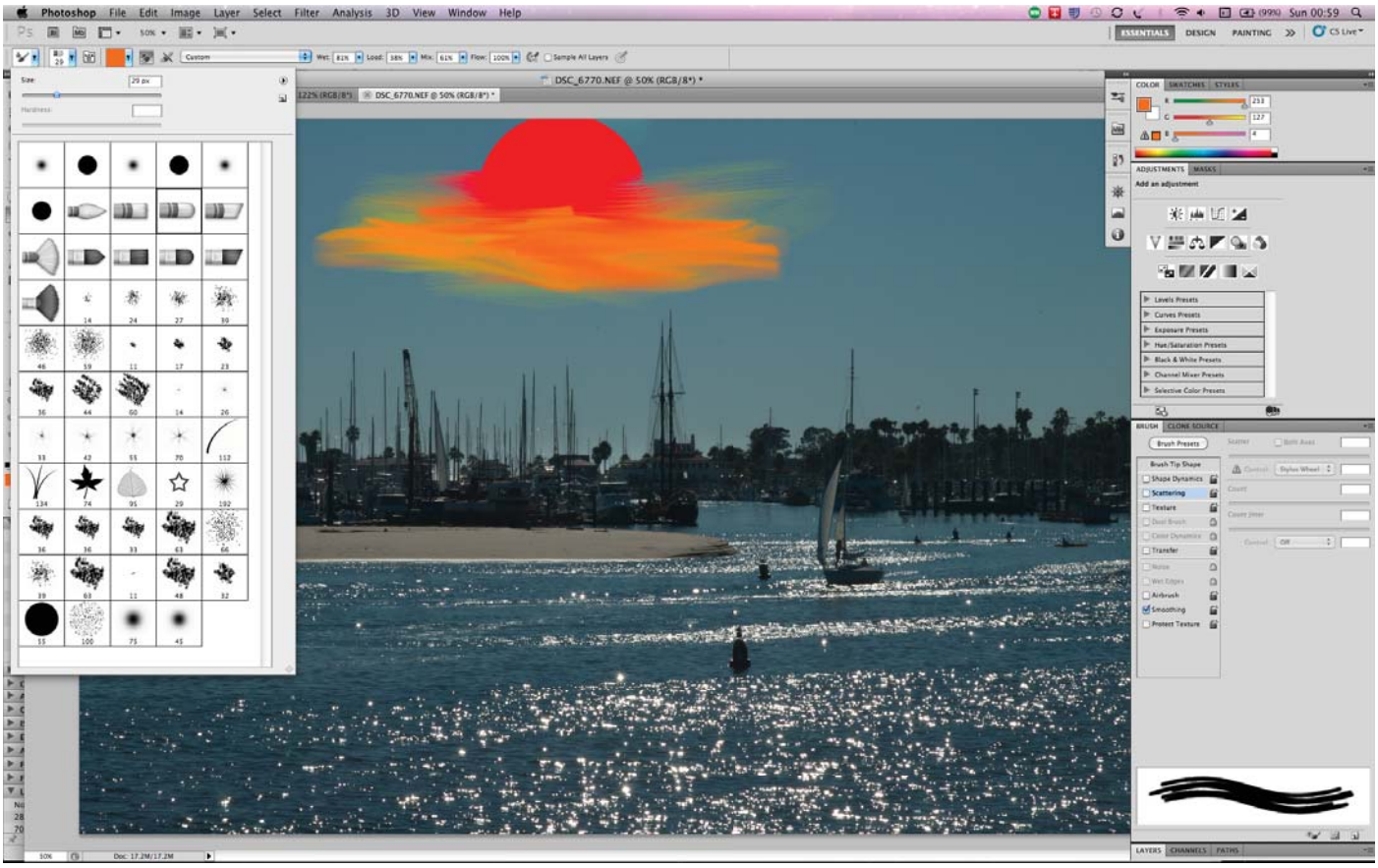
Adobe has also improved the brush tools, which previously were based on a single tip but now have multiple bristle-based brushes for a more naturalistic feel. There's also a new Mixer brush that lets you define multiple colours on a single brush tip so that when you paint they all mix and blend together with the hues already on the image that

Which edition?

Adobe has axed the Web Standard edition so there are now five versions of the Creative Suite. Design Standard includes Photoshop, Illustrator, InDesign and Acrobat and costs €1,400. Design Premium includes all these, but with the Extended version of Photoshop, as well as Dreamweaver, Fireworks, Flash Professional and Flash Catalyst. This weighs in at €2,048 or from €700 for an upgrade.

The Web Premium edition comes with Photoshop, Illustrator, Dreamweaver, Fireworks, Contribute, Flash Pro, Flash Catalyst, Flash Builder and Acrobat. This costs €1,940. For video users there's the Production Premium edition which includes Premiere, After Effects, Soundbooth, OnLocation, Encore, Photoshop, Illustrator, Flash Pro and Flash Catalyst. This will set you back €2,048. And of course there's the Master Collection which includes everything, priced at €3,126 with upgrades from €1,077.

All of these editions also come with Bridge and Device Central, and the Production Premium and Master Collection also include Dynamic Link.



A new Mixer brush in Photoshop adds a whole new dimension to painting with a more naturalistic feel.

you are working on. The effect is similar to painting on a traditional wet canvas, and there are options for how much paint is loaded on the brush and whether or not the brush is refilled or cleaned after each brush stroke.

You can paint on top of existing photographs, or directly onto a blank canvas. In this latter case, there are two wells, a reservoir and a pick-up, where you can store and mix paints on the Mixer brush.

One of the most fun features is Puppet Warp, which lets you move parts of an image, much like a puppet on a string. The idea is fairly simple; you take an object, such as say, a person's arm and define the top, middle and end points of the arm. The more points you set up the more control you have over the movement. It uses the mesh warp so you have to mask out the area you want to Puppet Warp or it will pull the whole image apart.

Adobe has also added more HDR facilities. High Dynamic Range images are those where several exposures of a scene are combined to make a single image with a much wider tonal range than any single exposure. HDR Pro uses new algorithms for more accurate registration between images, including de-ghosting of moving objects.

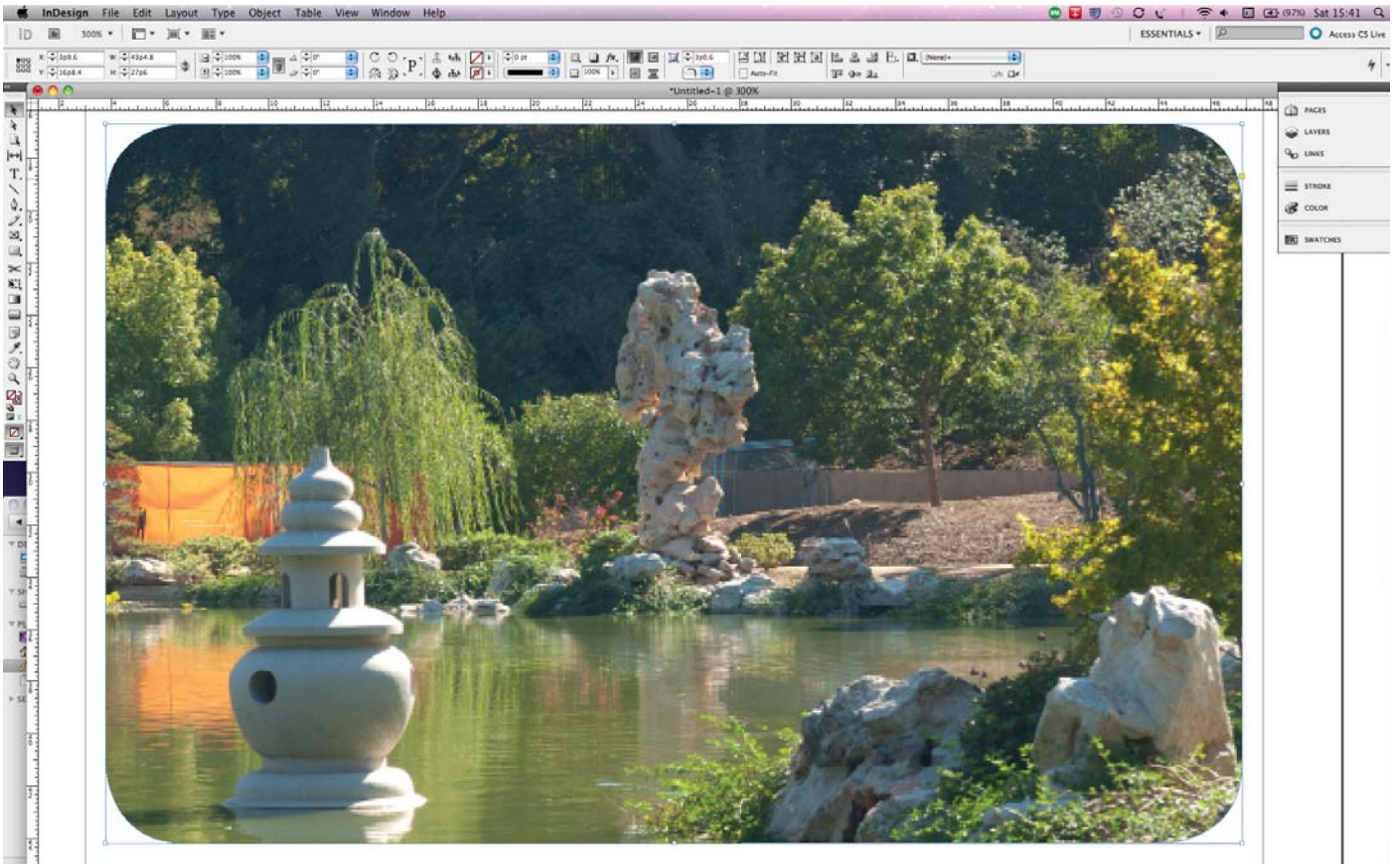
Minimum requirements

Windows: Windows XP, Vista or Windows 7; Intel Pentium 4 or AMD Athlon processor; 1GB of RAM; 1GB of hard drive space.

Mac: Mac OS X 10.5.7 or later; Multicore Intel processor; 1GB of RAM; 2GB of hard drive space.

The Merge to HDR Pro dialog box lets you adjust various factors including the colours, contrast, shadows and highlights for a wide range of different effects. You can even mimic the effects of an HDR image on a single exposure with a new HDR Toning tool which lets you adjust that image with the same tools as the Merge To HDR Pro dialog.

The Extended version of Photoshop has a few extra tricks up its sleeve, such as the ability to make 3D extrusions



Grab the corner handles of an image box and pull to create rounded corners at the drop of a hat.

of text, handy for creating artwork for websites and video titles. You can also use the Repoussé dialog to add textures to 3D objects. You can download textures or load your own. You can add lighting, and can even use images as a source of lighting and generate shadows off the ground plane of a 3D object.

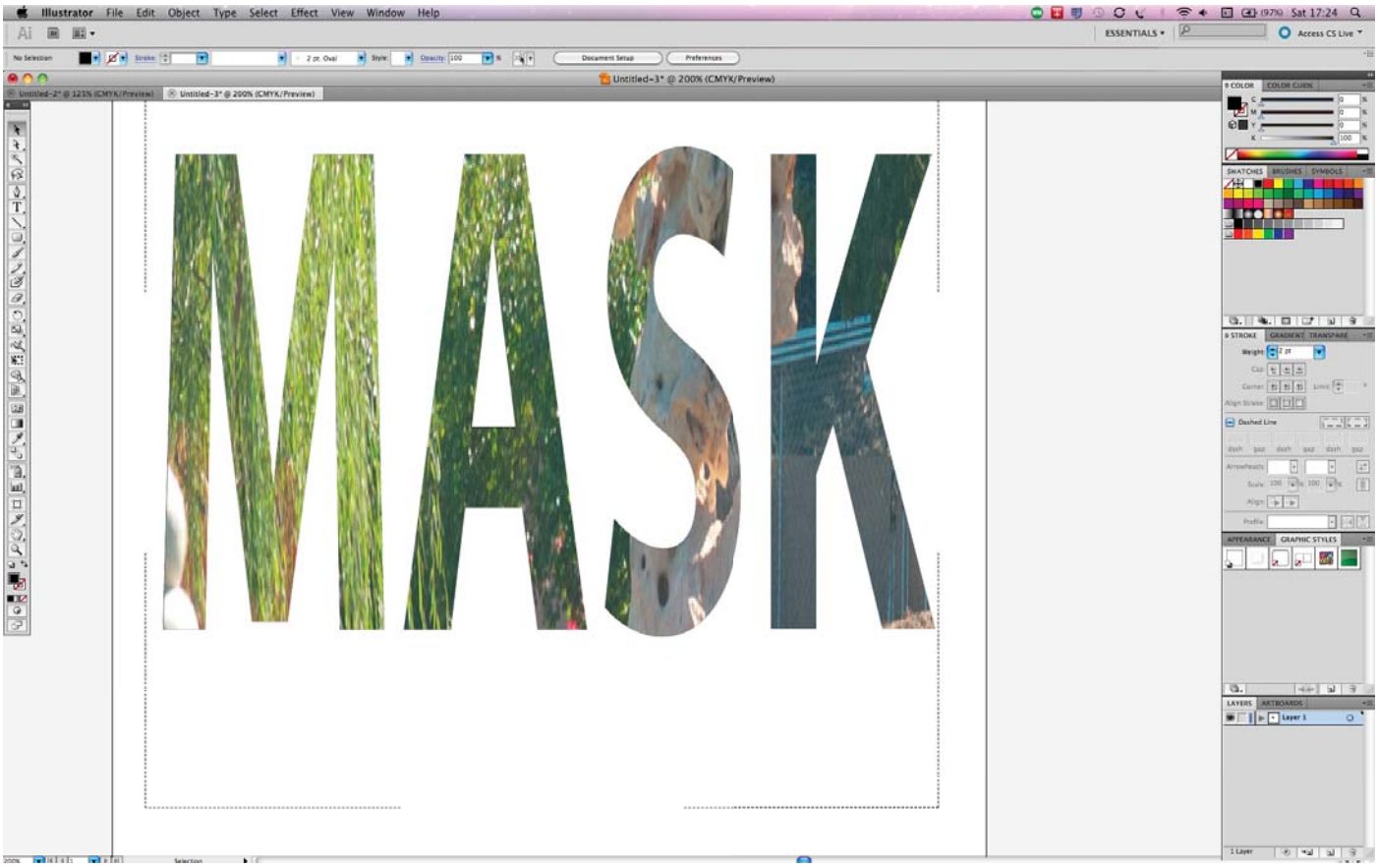
InDesign

All of the changes to InDesign are relatively minor improvements to the way that some of the tools work which collectively have the effect of making the program much faster to use. So, for example, when you position the cursor on an image with the Selection tool, a Content Grabber cursor appears and you can drag the image, rather than the frame around, without having to select it. Click on the image to reveal its bounding box and move the image with its frame. Double-clicking on that image then lets you transform the image, saving you the bother of selecting it with the Direct Selection tool.

A new Live Corner handle allows you to add rounded corners to frames directly from within the object. A new Grid mode lets you create blank frames in a grid arrangement. You can combine this with the ability to load multiple images onto a cursor, and then create a grid of frames complete with their images. There's a new Gap tool to adjust the gap between frames which remains in proportion as you move page elements around.

All of the changes to InDesign are relatively minor improvements to the way that some of the tools work which collectively have the effect of making the program much faster to use.

There's also a new Captions feature to take caption data direct from the metadata within an image though you do have to specify which metadata to use. It's also possible to track changes within the text of an InDesign document. It's also possible to include pages with different sizes in the same document, useful if you want to design a gatefold.



The new Draw Inside mode gives Illustrator an automatic masking tool.

Adobe has also borrowed a page from Quark's Interactive Designer by allowing users to use animation, sound and video on InDesign pages, and to export the result as an swf file. You can also add interactive elements such as a button, so that users could click a button to play a sound or video file.

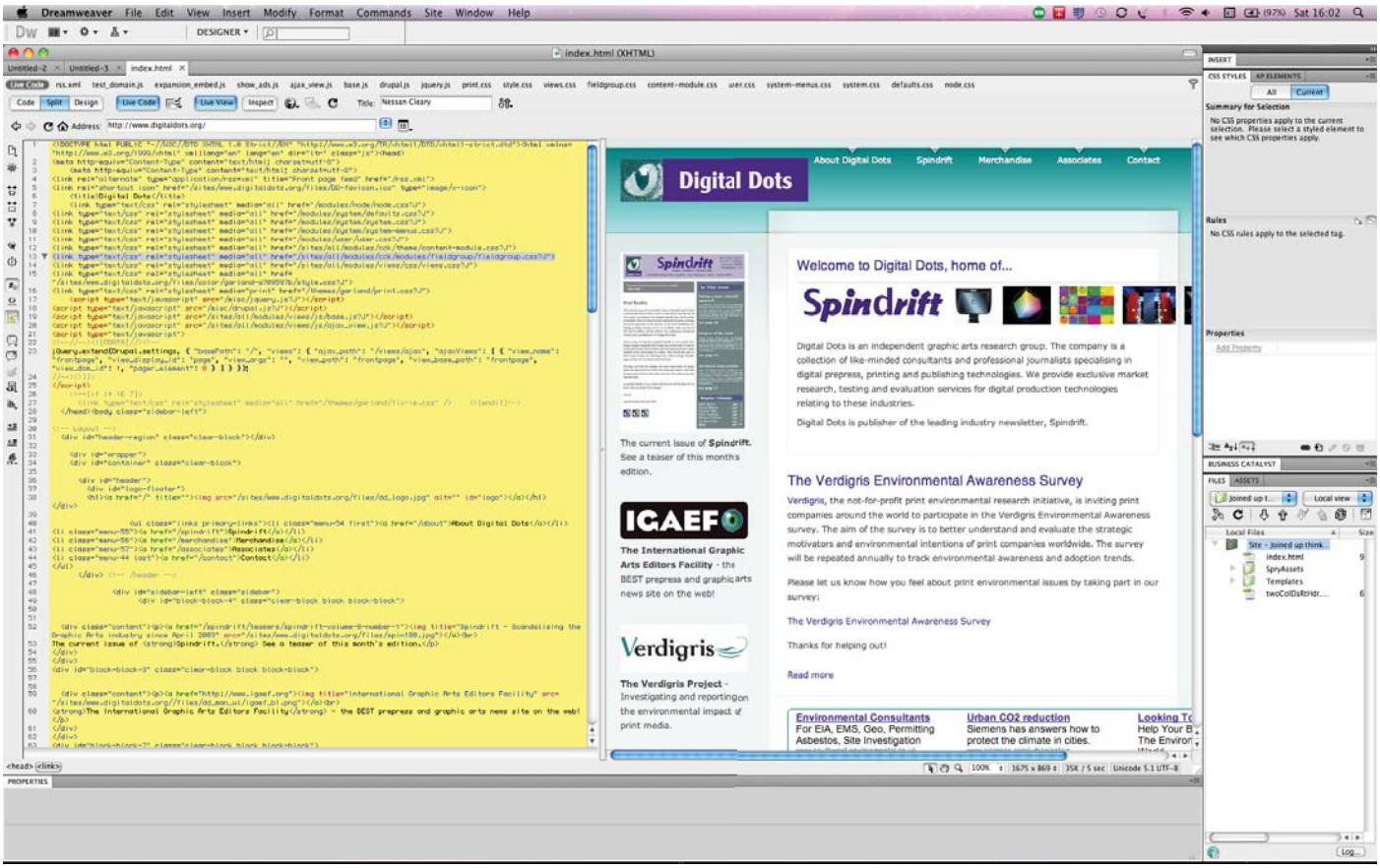
Illustrator

Illustrator gains a couple of useful features, including a new Artboards panel that lets you mix multiple types of artwork in a single file. You can also now have variable width strokes by adding width control points to paths. You can save the results as a profile to reuse later. Adobe has also added arrowheads and dashes to the stroke panel. There's a new shape builder tool that lets you merge objects together to form new shapes. You can add or subtract shapes from each other, and there's interactive colour selection for filling closed and partially closed areas.

There's a new Draw Inside mode, which basically creates an automatic mask out of any object that you select. You could, for example, select some text, use Draw Inside to turn it into a mask and then place it over another object to see that object through the mask. You can then edit the mask to adjust how much of the underlying image shows through. Similarly, another mode, Draw behind, lets you create new artwork underneath another object, controlling where it lies in the stacking order.

Adobe has made use of its natural bristle brush technology to enable painting with vectors with a highly naturalistic feel. Using vectors means that the final images remain highly scaleable. You can now set bristle characteristics such as size, length and thickness, as well as opacity to create some extremely effective images.

Perhaps the best of the new features is the ability to draw in perspective. Or, to be more accurate, you can draw in 2D on a perspective grid, and then move the grid to change the perspective and dynamically transform objects, all controlled from the Perspective Object control bar. So, for example, you could draw the front of a building complete with windows and doors, and then move the grid, changing the perspective on the building, with the



Dreamweaver can now open a page, as if in a browser, including external web pages linked to from within your site. You can even view the code of these external pages, as here with the Digital Dots website.

windows and doors automatically aligning themselves to match the perspective. It works with one, two and three-point perspectives, for single objects, corners and aerial views.

Elsewhere, you can preview right down to the pixel level so that with a new Align to Pixel Grid you can line up work up exactly, crucial in some web design work. Adobe has also enabled text anti-aliasing to make it easier to create legible text for mobile applications. Illustrator also integrates with a new Flash Catalyst tool, which we'll cover in the second part of this review.

Dreamweaver

This release marks a subtle shift in emphasis in the publishing market. Previously, the assumption has been that people will design for print with InDesign, with the web layouts coming second. But with CS5, Adobe has clearly spent more time overhauling Dreamweaver, as the Web increasingly becomes the primary design space.

For starters, Adobe has made it slightly easier to get to grips with using Dreamweaver by allowing you to get on with designing the site without the tedious need to set up remote servers and so on until you're ready. Adobe has also rewritten the CSS starter layouts and included instructions as placeholder text in the otherwise blank documents, making it much easier for web novices to get to grips with learning website design.

There are new CSS inspection tools to show the properties of the CSS box in use, colour coding different elements so that it's really easy to see how the different parts of a CSS box relate to each other. You can also toggle CSS properties on and off to see how the page design is affected, which makes it easier to track down problems in the design.

Another sign of Dreamweaver's coming of age is the way that it now plays nicely with PHP-based content management tools commonly used in developing websites, including WordPress, Joomla and Drupal,

obviating the need to flick backwards and forwards from different editing programs. There's a new Dynamically Related Files feature for collecting together all the files needed by the various content management systems.

There's a new WebKit browser engine which lets you preview a page within Dreamweaver as it will appear in a web browser. This includes dynamically generated pages, even if they've already been used on a live server. You can see your web pages in a Live View preview, or you can choose to see the underlying code, or a split view of the two.

You can even follow links to other external sites and display the code for those sites – and then copy and adapt that code for your own site to see how other webmasters have worked. There's a comprehensive set of hints to help you find the write code elements even for PHP coding.

Adobe also has a new online service, BrowserLab, which allows you to upload a snapshot of your pages from Live View to test it on a specific combination of operating system and browser. You can compare how the same page will be displayed in two different browsers, or two different versions of a browser. It's a good idea and can potentially save a lot of time in finding problems early on in the design process.

Conclusion

Adobe has dabbled with online services in the past but this release of the Creative Suite relies on a number of CS Live online additions to really make the most of all the features.

The major theme to emerge from CS5 is one of greater productivity. Most of the programs have been tweaked so that you can do things quicker, and for some people that in itself may justify the cost of upgrading. Photoshop still remains the only serious image editor on the market, and features such as the new Camera Raw engine, content aware fill and the improved brush tools are probably worth having for most people.

Equally, Adobe has done enough to Dreamweaver to keep it at the forefront of web design. InDesign, as well as being noticeably faster to use, has moved further down the Flash route, while Illustrator's natural bristle tools alone should justify this upgrade.

Indeed, depending on their type of work, most people will find at least one or two of these programs worth having, and there are generous upgrade offers that are worth taking advantage of. Mac users will need to beware that CS5 only runs on an Intel processor, so anyone still working on an G5 will need to think about whether or not this is the time to upgrade their hardware as well. Next month we'll delve into the rest of CS5, both in terms of new features for individual programs, and with a more considered view of the Creative Suite as a whole.

– Nessan Cleary

Full of purpose or completely pointless?

For the Chinese the number eight is considered lucky. For many members of TC130 Working Group 3 beavering away on ISO 12647 part 8, the number eight is the bane of their lives.

ISO 12647 is the standard which specifies the conditions for various printing processes and it currently has seven parts. The standard is around 14 years old and its many parts each deal with a different printing process. The standard is an extremely logical one: carefully specifying how to get good results from different printing processes, from sheet fed offset presses (part 2) through to flexography (part 6).

None of these parts includes anything digital, although, part 7, published in 2007 describes the requirements for hard-copy digital proof printing systems producing output that is "intended to simulate a printing condition". Since many digital output devices can achieve this standard, this part could have been considered as a good starting point for an ISO 12647 part for digital printing systems. Sadly, it was not. Instead ISO TC130 has preferred to develop part 8 so that digital devices not capable of the level of output quality of part 7 would have their own standard suitable for proofing purposes using these engines.

Part 8 has been underway for about three years and its completion is proceeding. But, inevitably, it has to wade its way slowly through a morass of debate, discussion and speculative pondering. However progress tends to forge on regardless, and with any luck part 8 will be published in the coming months.

That part 8 isn't yet published hasn't stopped Fogra, the German research institute, from coming up with a part 8 certification scheme for digital output devices. Part 8 and the certification which confirms that an output device is capable of a certain performance level has been keenly embraced by various manufacturers, including Ricoh, Canon and Océ. But what part 8 promises has caused some raised eyebrows within the colour management consultancy community, and amongst printers.

From a user's perspective, the problem is that at first glance part 8 looks rather like part 7. This part specifies target values for proofing processes working directly from digital data, whereas part 8 describes validation print processes working directly from digital data. It's a nuanced difference, one vulnerable to misunderstanding. Even manufacturers selling devices certified to part 8 don't really seem to understand the difference.

Part 8 has been underway for about three years and its completion is proceeding. But, inevitably, it has to wade its way slowly through a morass of debate, discussion and speculative pondering.

Apart from wanting to know the difference between the two parts, users also want to understand what the wonderfully murky phrase 'validation print' actually means. According to the authors of ISO 12647-8 a validation print is a proof that cannot be used for contract proofing because it isn't good enough. Therein lies the problem: what is good enough for a contract and what precisely does the contract bind the printer to? A part 7-compliant proof is supposed to simulate a printing condition, but a validation print doesn't. A validation print only validates that digital content can be output, so it conveys the concept of a proof, but nothing more.

A printing system used to produce digital colour prints suitable for content checking, rather than professional proofing, can be set up using part 8 since it specifies test methods for measuring their capabilities. A validation print isn't likely to meet the same quality targets as output that complies with ISO 12647-2 or of a part 7 proof.

Instead the output sits somewhere in between an interim proof used to check content and a real proof, that looks as close as possible to something printed on a litho press. In

other words, part 8 prints are basically rubbish versions of 12647-2 and 12647-7 level output. For people who don't want an accurate rendition of their content they are fine and if this sounds like validation prints are useless for most printers, they basically are. Aaron Archer, technical director of Pureprint in the UK, says of Part 8: "It holds no use to my business … Will our customers require it in any way? No."

Andy Kraushaar of Fogra is an enthusiastic supporter of part 8.

But Part 8 is probably not intended for customers of high quality litho print. Rather, the target user is people who want an interim proof that gives them an idea of what their content and data will eventually look like. Craig Revie, principal consultant to the RIP and workflow development group within FFEI, is part of the team working on ISO 12647. He says: "From the industry point of view I think that the main benefit of this standard is that it drives manufacturers of equipment commonly used in the design stage to improve their colour accuracy and repeatability. There is at present wild behaviour and unrealistic expectations of many of the players involved at this end of the workflow. Having a standard that is 'quite close to print' helps to avoid disappointment later when the work is printed."

Another member of the 12647 team is Andy Kraushaar of Fogra who is extremely enthusiastic about part 8. He believes it offers "a (first) quality level that is objectively measurable [and] … that is based on internationally agreed upon aims, a measure for internal quality control, a measure to see where a customer/company stands (compared to other systems and competitors), [and] security when doing creative work or buying devices".

Akihiro Ito of Fuji Xerox in Japan is also keen, saying that: "In the final part of the design stage, the prediction of the colour reproduction on the final production print helps to achieve a smooth transition to the printing process. It makes the process of reaching an agreement on the contract proof shorter, because the receiver of the contract proof has already predicted the colour reproduction using a validation print. And also it encourages designers to design with the final colour reproduction on print in mind."

Ito also points out that the relevance of part 8 could depend to some extent on the workflow: "I think that the tolerances for contract proofs cannot be decided in a single uniform way because they depend strongly on the user's business and that of their clients. Actually a wider quality range of proofing systems is used for various types of jobs in [the] Japanese graphic arts industry, and they are working very well. I know that higher colour accuracy proofing systems are valid for wider range of jobs, but they are not needed for all of jobs."

He continues: "And proofing system users are thinking that not only colour accuracy but also time and cost are important for their business. For example, in publication printing, especially publishing a magazine, lower running costs are preferable because they need to make many pages of proofs. Also a shorter proof making time is required because publishers want to use the latest information for their article and they don't want to waste time for making proof prints. So, some clients can make minor concessions about colour accuracy."

It may be that all this qualification misses an important point. The ISO 12647 standard specifies system performance criteria that are objective and measurable. The relevance and usefulness of part 8 seems to be dependent on a variety of subjective factors, the appreciation of which depends on end users understanding the differences between parts seven and eight. Paul Sherfield, one of the UK's top digital colour management consultants, says that this may slow down uptake of ISO 12647: "As many thought in the UK, including printers and the BPIF, the ISO 12647-8 validation print standard is confusing the market and is in danger of misleading users, so devaluing the whole standard."

This all means that printers and print buyers will be looking at two parts of 12647, both of which address proofing, and could well conflate the two. There is much in common between the two parts, but there are some crucial differences. Part 8 allows for three different substrate types: same as will be used for printing; a substrate that approximates it; or an altogether different one. Part 7 recommends that the same substrate be used for proofing as for final print.

In part 8 there is no requirement that coloration variations across a proof should be limited to a standard deviation of less than 0.5 for values of L*, a* and b*. And the list goes on. Compared to the stiff constraints of 12647-7, part 8 is a soft and floppy alternative. As Sherfield says: "This validation print is a one copy, 'sort of' lower level proof standard. However it is being used by digital printing machine vendors to certify their RIP/digital printer offerings as if it is a digital printing standard. This is wrong and confusing to printers and clients."

As a driving force behind the UK's ISO 12647 certification efforts Sherfield takes an extremely serious view of their implementation: "The 'validation print', if it has any value at all, is only certified when it has a Fogra Media Wedge or similar and a validation sticker or report proving compliance to the standard, print by print!"

This means that implementation isn't likely to be straightforward. Aaron Archer agrees: "It holds no benefit to us in any way. If a customer wants us to match digital print to litho and we're running those presses to 12647 we've got to run to get a match". So a standard that can't match the run is useless. Archer adds: "With part 8 you're stating that a digital press can print to a certain specification but the real question is if those presses can print to ISO 12647-2: to all intents and purposes they may not do. If you read between the lines, this is manufacturers looking to position their presses as high quality devices capable of printing to a specification but can they actually print colour materials that match litho materials? Not unless that device prints to 12647-2".

Paul Sherfield is one of the UK's leading colour consultants.

Many printers we have spoken with who are aware of this standard echo Archer's view. He adds: "if someone said to me about a certain digital press that could print to the 12647-8 standard, I'd tell them it's so loose that it's not printing to a real standard. I see it as a marketing sales benefit for digital press manufacturers whose customers aren't all that well informed."

This is perhaps at the heart of the real problem with part 8. It appears to some eyes to have been written to appease manufacturers of devices that can't meet the tolerances in 12647-7. Is this such a bad thing? Bruno Mortara, a pre-press and colour consultant in Brazil and also a member

of the part-8 committee, says: "Now that we have this part 8, it will serve the office printing machine market and, I hope, also the designers. We should reinforce that from early stages the digital representation of the final product should match more closely the colorimetric values on the file with or without simulation of an intended printing condition. To reach this goal, the use of calibrated monitors (12646), good illumination (3664) and part 8 are essential. This could streamline the communication downstream and improve the total efficiency of the process."

But this isn't a universal view as Sherfield elaborates: "There is no need for a 'sort of' lower level proof for toner-based printers. They can be used as proofing engines, only if and when they pass the ISO 12647-7 contract proofing requirement. So we have two confusions in the ISO 12647 area caused by this poor addition to the standard." And as Archer says: "For digital printing to be in the real world it has to be aligned to 12647-2".

If there were an ISO standard for digital presses perhaps the debate surrounding part 8 would fade away.

Elsewhere, perhaps part 8 has its place as Andy Kraushaar explains: "It is important to not confuse the 'single copy' validation prints with digital production printing (e.g. compared to the offset world using ISO 12647-2). Here many technologies, use cases and quality demands come into play."

If there were an ISO standard for digital presses perhaps the debate surrounding part 8 would fade away. Is the answer to this a revamp of 12647 that takes into account digital processes? Or should we start again using target colorimetric values as the basis for a process agnostic standard?

Fogra's Digital Printing Working Group (DPWG) is taking this topic forward and is open to all participants. The DPWG is considering a specification of the requirements for digitally printed material using various criteria including data delivery and gamut. Kraushaar explains: "In order to collect input from the industry and to provide a platform for discussions and analysis Fogra initiated the digital printing working group (http://forschung.fogra.org/index.php?menuid=195). Anyone from a digital press manufacturer to a banner printer using LFP is invited to participate: face to face at the meetings or via the mailing-list." So what are you waiting for?

– Laurel Brunner

Sign of the times

Sign & Digital UK could perhaps be thought of as the warm-up act in a spring of European trade shows that culminates with Fespa in June.

Although a relatively low-key event, this year's Sign UK show did provide an opportunity to gauge the health of part of the UK's print market and to get a sense of the trends affecting the wide-format output sector. Almost certainly because of the imminence of IPEX, attendance of both exhibitors and visitors was down on previous years.

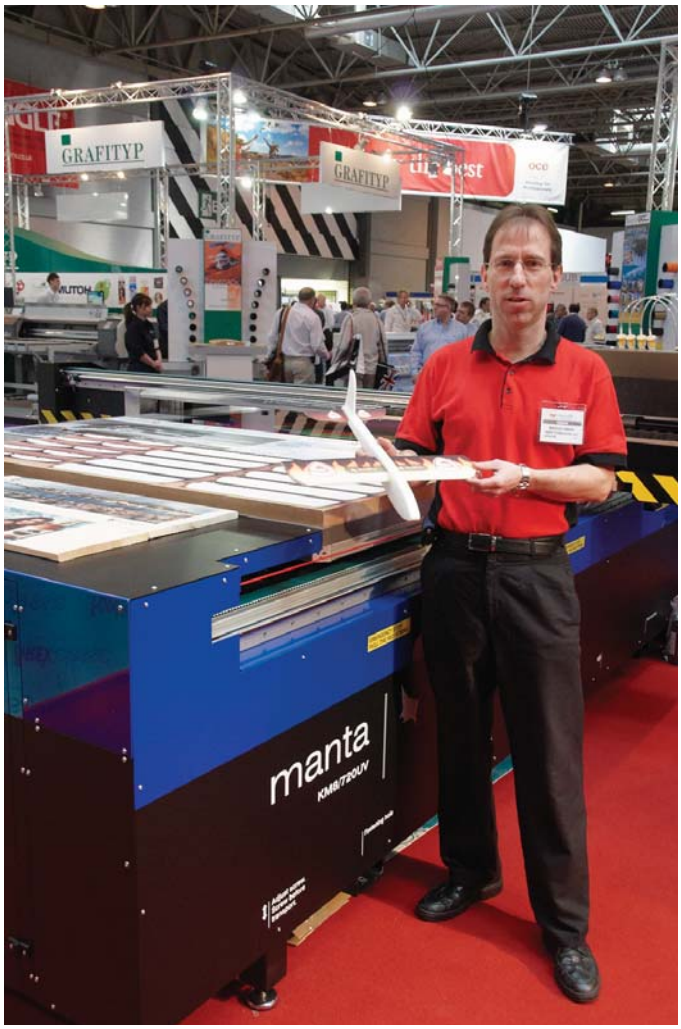
That said, if quantity was down on 2009, visitor quality didn't seem to have suffered too much. Show visitors were predominantly from the signmaking sector as might be expected, but a number of commercial printers looking to broaden their service portfolios were also there, as were promotional products companies looking for new ideas, and some print specifiers.

There were visitors with money to spend too, a welcome sign in the still-bleak UK print sector. Roland DG UK's Print Product Manager Matthew Drake commented: "The majority were looking to make a serious business investment and not just attending to see the latest technology."

That view was echoed by Duncan Jefferies, Marketing Manager at Mimaki's UK distributor Hybrid Services: "Attendance did appear to be a little lower this year, but the visitors to our – and our resellers' – stands seemed very keen to invest and very industry-savvy."

This willingness to invest has already translated into a number of orders for Mimaki equipment, from solvent-based products such as the CJV30 printer/cutter range and JV33 wide format printer to the new 'desktop' UJF-3042 LED UV-cured printer, which got its first European public showing at the NEC. Hybrid sold its April and May allocations of this unit within days of the show.

The UJF-3042 can print up to A3 (300 x 420 mm) on its flatbed, but the attention-grabbing examples on the stand were the more novel promotional items, ranging from wooden boxes to ceramic tiles. According to Jefferies, the low temperatures that the LED UV-curing process generates enables it to print on heat-sensitive substrates such as premium golf balls that conventional mercury lamp-cured UV printers would bake an unpleasant brown. "We've printed on a Prada phone and wooden cigar cases but it's also great for Correx and thin poly films," Jefferies added.



Product manager Miroslav Kadlec with the Grapo Manta flatbed UV printer and output samples.

The Mimaki UFJ-3042 can handle rigid uncoated materials up to 50mm thick and prints CMYK plus white at up to 1440 x 1200 dpi with variable dot size for improved tonal detail. Printing the full bed area takes about four minutes at a medium quality setting and because the white ink print head is offset from the CMYK one, there is no speed penalty for using white in addition to the process colours.

Another UV LED-cured printer was to be found on Roland DG's stand. The VersaUV LEC-330 isn't new, having been first introduced in September 2008 and then given a speed boost a year later. It too prints CMYK plus white but also adds a clear gloss and a digital die cutter that the company claims will allow virtually any shape to be cut as part of the printing process. This makes it suitable for the production of labels and decals, as well as preparing packaging prototypes or even short-run finished work.

Roland's VersaCAMM VS-640 solvent printer allows metallic silver to be mixed with process colours for novel effects.

The gloss coat can be overprinted in multiple layers and built up to considerable thickness for visual and tactile effects, or to print Braille, something that will become mandatory for pharmaceutical packaging sold within the EU by October this year.

Another print-and-cut machine from Roland that was brand new to Europe at the show was the VersaCAMM VS-640, a 64-inch wide solvent unit available in three different ink configurations to suit metallic and white ink applications. CMYK inks can be mixed with a silver ink to make an effectively unlimited range of metallic colours.

A 'new generation' print head allows seven different sizes of droplet to be fired to optimise detail and smooth tonal gradation. In the high production configuration, Intelligent Pass Control technology selects the three drop sizes best suited to the content being printed in order to produce higher quality even at speed. Maximum print speed is just over 23 m^2/hour in 'billboard' mode.

Although LED-based UV curing is an elegant and efficient solution, it isn't a panacea. As Mutoh Europe's Kris Berghs pointed out, "Because the LED is such a narrow spectrum, it limits the ink formulation options. We can print on heat-sensitive materials on the Zephyr 65 because we pre- and post-heat the material to 50° C so there is less thermal shock when curing."

Various unusual substrate examples from Mimaki; the golf balls and ruler were imaged with the UJF-3042 LED-cured UV printer

Berghs also referred to a customer printing 20,000 m^2 a year on uncoated Tyvek with a Zephyr printer; Tyvek suitable for printing with solvent inks would cost €0.87 per square metre more.

In addition to the Zephyr, which is a 165cm width UV-cured printer that supports both roll-to-roll and rigid media up to 20mm thick, Mutoh also showed the Viper

Extreme TX, a direct textile printer available in 165cm and 223cm widths. Soft signage seems to be an application that UK printers have been slow to pick up on, though Berghs says there are benefits to this late take-up: "The market has developed over the last six years, the products are now very professional. What would have cost £70,000 now costs £30,000 for a turnkey solution."

Jefferies also sees soft signage starting to take off in the UK, extolling its environmental virtues, from aqueous inks to the recyclability of polyester fabrics. "The indoor retail sector is starting to pick it up to achieve differentiation through the look and tactile qualities. We've also got customers using it for exhibition graphics – a stretch Lycra polyester can be mounted on modular frames and then simply folded for transport."

Another UV printer manufacturer with reservations about LED curing is Grapo Technologies, whose first UK appearance for five years included a range that all use mercury lamps. The Czech company is unusual in that it started life as a print shop and originally built printers to meet its own needs. It still uses them daily, which puts it in something of a unique position.

"We get feedback directly on everything we do," said product manager Miroslav Kadlec, "from RIP testing to how to get the best adhesion on unusual materials such as glass, or how to avoid reflective materials causing the ink to cure in the nozzles."

Grapo demonstrated the 2.05 x 3.05m flatbed Manta which uses Konica Minolta print heads and Fujifilm Sericol inks and the 2.05m width roll-fed Shark which combines Xaar 760 greyscale heads with Sun Chemical ink, all driven by Grapo's own RIP software. The Shark can also image rigid materials up to 80mm thick and 2.05m wide.

The Grapo Manta operates at up to 55 m^2/hour and its bed can be split into separate zones to allow preparation of a substrate while another job is being printed. The Shark offers up to 120 m^2/hour and Grapo claims an ink usage of under 10ml/m^2 at this speed. Both machines support standard CMYK, though there is also a variant of the Manta available that adds white ink.

Also getting a first public showing in Europe was the Océ Arizona 550 GT UV flatbed (reported in Spindrift 7-10, p5), shown too by Fujifilm who sell it as the Acuity Advance HS. The new model in this highly popular range increases productivity to 40 m^2/hour for POP-quality output on a wide range of common substrates up to 1.25 x 2.5 m in size.

One large format application where solvent remains supreme is in printing for vehicle wraps.

Océ's UK DGS Programme Manager Derek Joys pointed out that although the purchase price of the unit was higher than for comparable solvent-based machines, consumable costs and therefore total cost of ownership were more predictable. "With UV, the ink usage per square metre is pretty much fixed," he explained, "but solvent usage depends on the absorbency of the substrate, so it's harder to cost. And of course environmentally, UV is much kinder as there are no VOCs."

Both Océ and Fujifilm supply Fujifilm Sericol CMYK inks with the printer, but drive it with different software. Océ supply the ONYX Production House RIP, while Fujifilm also offers the ColorGATE Production Server, which it claims gives an improved colour gamut.

While UV is hogging much of the limelight in terms of new printer introductions, there remains a steady market at the entry level for the lower-cost solvent-based machines, where ease of use and functionality are as important as quality and productivity. Although the higher capital cost of a UV-cured machine is offset over time by its reduced

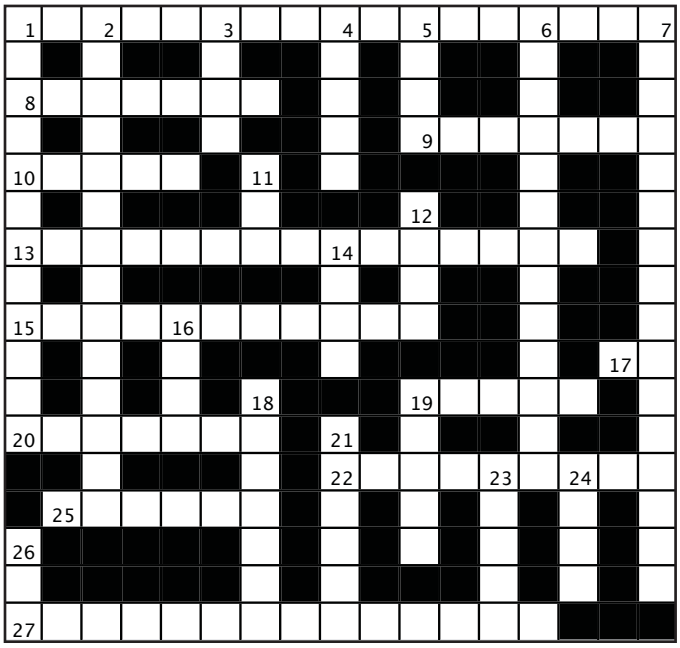
operating costs, it still remains a hurdle for smaller sign shops. “For a small print shop with only one or two solvent printers, changing up to UV is a big step,” said Fujifilm’s Peter Bray. “And UV still won’t do everything, such as vehicle wraps.”

The wide-format print sector continues to burgeon, especially in the UV-cured arena, and we expect to see further product introductions from some of the bigger players at both IPEX and Fespa.

– Michael Walker

X-word Puzzle

Number 23*



Across

1. An offset press produces one of these. (12, 5)

8. New venture. (5, 2)

9. What a bottleneck in prepress does to a workflow. (5, 2)

10. Not fallen, like bread lifted, raised and proved. (5)

13. Average rate of failures. (4, 4, 7)

15. The opposite in CIELab of yellowish blue. (7, 3)

17. Yes! (2)

19. Past participle of begin. (5)

20. The sort of shine of wet ink. (7)

22. Something carried, managed, anticipated and required for business. A heavy one? (1, 8)

25. Random reference for calibrating a digital camera. (1, 5)

27. Papers with no gleam. (8, 6)

Down

1. One of the most important advances in plate production. (5, 7)

2. Along with reflectives scanning devices digitise these. (14)

3. Too much of something. (4)

4. A machine that creates a great impression. (5)

5. Two point five seven centimetres, creeps along? (5)

6. None of us do but all of us should. (4, 3. 6)

7. Three times as is required jobs. Instructs, tidies? (10, 6)

11. Take care not to miss. (3)

12. A handsome man, or something like a rivet? (4)

14. Tediously drilling through. (4)

16. Not untidy, or diluted. (4)

18. Very deep colours, or stretched emotions, or just too much? (7)

19. Binary logs. (5)

21. Numeric equivalents necessary to describe colours in a digital environment. (6)

23. A phonic option for speedy or fast, not quick or kwik, but something in between.

24. Fini? Excess on a run? (4)

26. Central Processing Unit (3)

Number 22 – Answers

B	I	R	M	I	N	G	H	A	M	A	I	R	P	O	R	T
■	N	■	A	N	■	■	U	■	■	■	R	■	O	■	A	■
■	S	■	L	■	P	■	B	U	Y	N	E	W	K	I	T	■
L	I	N	E	A	R	■	S	■	E	■	■	W	E	E	E	■
■	T	■	S	■	I	■	■	■	S	H	O	W	■	■	S	■
P	U	B	■	O	N	■	G	O	■	I	■	.	U	K	■	I
O	■	■	■	■	T	■	L	■	■	■	■	I	■	■	■	N
■	C	H	A	M	P	I	O	N	S	I	N	P	R	I	N	T
O	R	■	L	■	R	■	B	■	O	■	■	E	■	T	H	E
■	E	■	L	■	O	■	A	■	R	■	E	X	■	■	■	R
A	M	A	Z	E	D	■	L	A	T	E	■	.	E	U	■	N
■	E	■	O	■	U	P	■	■	O	■	■	O	■	P	■	A
■	■	■	N	■	C	■	■	S	U	P	E	R	■	E	A	T
A	C	C	E	N	T	■	S	■	T	■	■	G	■	X	■	I
■	H	■	S	■	I	N	K	■	T	■	P	■	■	■	Y	O
■	A	■	■	T	O	■	A	T	R	A	I	L	■	L	■	N
■	T	■	U	■	N	■	■	■	I	■	■	U	■	A	K	A
A	S	A	P	■	■	I	T	S	P	R	O	V	E	N	■	L

* Answers at www.igaef.org