…all our yesterdays have lighted fools the way to dusty death.

– *Macbeth,* Shakespeare

Dear Reader,

It is amazing how hindsight makes everything so clear. In the past few weeks we have seen the break-up of Manroland and Kodak's retreat into Chapter 11 bankruptcy protection, so that its business is now essentially conducted behind the walls of the court.

How is it that these mighty giants are fallen? Is there anything they could have done differently to avoid treading the path that has led them to this point? Probably. Definitely. But the point is that they didn't, despite plenty of signs along the way. More interesting is why they didn't respond, and the answer to that is that neither company was able to see farther than their own horizons to the world beyond.

The lesson to learn is that we must always look beyond what we know, no matter how difficult or tedious it is. For huge companies this is extremely difficult because they build their own ecosystems and cultures. But just as a music fan should listen to more than their core interests, so should company executives listen to more than the sound of their own voices.

Enjoy!!

Laurel, Nessan, Paul and Todd

In This Issue

Sure thing

Standards are absolutely crucial to modern printing operations, but many printers find it hard to work out which standards are applicable and how best to implement them. Laurel Brunner starts a series of stories explaining how to implement ISO 2647-2.

Kodak's now or never moment?

With the news that Kodak has filed for chapter 11 protection, Laurel Brunner assesses what went wrong for the imaging giant and what chance the management has to turn the company around. Probably best to skip this article if you a) don't like sad stories or b) work for Kodak.

In the news

We all know that newspaper circulations are falling even faster than run lengths in the book sector so Nessan Cleary wonders if we are likely to see a sudden move to inkjet printing amongst newspaper publishers.

Regular Features & Special Treats

News Focus

Tickets for **drupa** are on sale now from the drupa.com website, with reduced prices for online tickets and help for overseas visitors needing visas. Tickets start at €40 and include free transportation on buses, subway and trains in the area.

Mimaki has a new desktop UV printer, the UJF-3042HG, which will sit alongside the 3042FX. This is another A3 flatbed that uses LED curing and has six colours plus white and clear. There's a choice of hard and flexible inks. It takes materials up to 150mm high and prints to a wide range of substrates including plastic, metals and wood. Maximum resolution is 1440 x 1200 dpi.

Presstek has announced a new CtP plate, the PhD830, a negative-working thermal pre-heat plate that uses significantly less chemistry than other brands. It's capable of run lengths of 250,000 without baking and a million plus with an optional post-bake. It supports screen resolutions of 1-99% at 300 lpi and is FM screening certified.

EFI has bought Cetaprint, a Spanish inkjet developer specialising in ceramic tile printing. The tile industry has seen a rapid take up of inkjet printing so this will add to EFI's revenue stream. At the same time, EFI should be able to enhance Cetaprint's offering with its workflow and colour management expertise.

EFI also released preliminary figures for its fourth quarter with revenue expected to rise from $145m to $163m, the eighth consecutive quarter of double-digit growth. This is mainly driven by the inkjet and MIS sectors.

Axaio has a public beta of a new InDesign plug-in, MadeToTag, which can quickly tag files so that they can be exported as PDFs with a defined structure. These can be used for accessibility devices such as screen reader software, and are also compliant with some business regulations. Anyone signing up for the beta will qualify for a 50% discount when the product ships.

Enfocus has added annotated error reporting to its Instant PDF creation program. Version 10 also supports OS X Lion as well as Adobe's Creative Suite 5.5, and makes use of PitStop Library 10, which underpins all of the PitStop family.

Dynagram has sought to take advantage of Kodak's bankruptcy by offering Preps customers a 50 percent discount to switch to its own DynaStrip and inp02 programs. The offer is available until the end of March of this year.

Quark has updated its QuarkXPress program to v9.2 with new ePUB features, ePUB 3 audio and video support, and more options for App Studio. This means that designers can now, in addition to converting a print layout to ePUB, create a new project specifically for ePUB export. The App Studio templates now support iOS 5 Newsstand and meet new Apple guidelines for iCloud storage. There are also new Play controls for media such as video and audio and three new pop-up styles.

Xerox has introduced an additional tool for its iGen4 digital presses to show the status over the Internet of any number of these presses at a given plant. The Production Information Management System can be viewed anywhere and shows real time information that can help identify bottlenecks and production issues to improve workflow, and provides historical data that can be used for trend analysis.

Four Pees, the European distributor for a range of workflow products, has signed a deal with Twixl media for its iPad publishing tool, Twixl Publisher. It's available as an InDesign plug-in or a standalone Mac application and can be used to produce anything from magazines and newsletters to manuals and brochures.

Lucid Dream Software has launched ArtAffirm, an online PDF editor, preflight and layout tool developed with HTML5. As such it will run on most platforms and browsers via JavaScript and is also available as a Web app for the iPad.

It can be used through an OEM license as a web framework for prepress systems or integrated into Web2Print solutions.

Apple has updated its iBooks app and added a new iBooks Author app to target the textbook market. This free app allows anyone to create their own textbook, and to distribute it anywhere for books that are offered at no cost. However, books that are charged for can only be sold through Apple's App store, and the books themselves can only be read via the iBooks2 app. It's also a direct challenge to book printers, many of whom have invested in digital printers primarily for textbooks.

Xeikon has bought Flexolaser, a manufacturer of CtP devices for flexo and letterpress applications. Wim Maes, CEO of Xeikon, has said that Xeikon intends to concentrate on the label and packaging markets and that this acquisition strengthens its CtP business. Xeikon also bought the rights to the Thermoflex trademark from Kodak.

EFI has claimed victory in a long-running patent lawsuit in Germany started by Durst Fototechnik Digital Technology GmbH. The German appeals court ruled that Durst's utility model, a kind of patent to protect intellectual property rights, is not valid or enforceable.

Caldera has released version 9 of its wide format RIP, now based on the latest version 2.5 of the Adobe PDF Print Engine, which has led to an average 20 percent faster RIP'ing. There's also better support for spot colours and colour management in general, including the integration of X-Rite's i1Prism v2 for better control of ICC profiles. Other features include a new Ink Saving option and monitoring of print queues via LiveSpooler.

Océ has released v4.06 of its Prisma Production Server for digital document management and delivery. The new version has a Preprinted Forms Replacement application that eliminates the need for preprinted paper. A Production Dashboard gives an overview of operations and there's also JDF and JMF integration.

Logic Print has a new 2012 version of its estimating and management software. This now lets users print out the work order and has enhanced invoicing and supplier ordering processes. It's also easier to search records for invoices, budgets and order elements. It runs on Windows, Mac Os X and iPads.

SAi, which produces software for the wide format market, has a new production printing offering, PixelBlaster, due to be launched at Fespa. This is a modular all-in-one tool capable of preflighting, colour management and RIP'ing of wide format jobs.

The **Norwegian Color Research Laboratory** and its project partners has received a training grant for the EU to enable it to look for seven PhD students and one postdoctoral researcher for full-time research posts each due to last for three years. These researchers will be integrated in high-level international research environments at one of the project full partners: Gjøvik University College (Norway), Technische Universität Darmstadt (Germany), Voxvil AB (Sweden), University of the West of England (UK), Linköpings Universitet (Sweden), and Océ Print Logic Technologies SA (France). They will work in close collaboration with other researchers from the Colour Printing 7.0 consortium which also includes eight industrial and academic associate partners throughout Europe. For more details about the project, consortium, research topics, and application procedures please visit **http://www.cp70.org**, or write to Prof. Jon Y. Hardeberg at **jon.hardeberg@hig.no**.

Datacolor has announced a new range of its Spyder colour calibrators. The Spyder 4 series includes three versions: Express can profile single monitors and laptops;

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Pro supports multiple monitors and includes an ambient light sensor; Elite includes advanced monitor quality analyser software and will also calibrate projectors.

Epson is to bundle EFI Express Edition RIPs with its SP-WT7900, SP-4900 and SP-3880 inkjet printers to form Design Editions. These will be targeted at proofing needs and should cost less than buying the printers and RIPs separately. They will also include Epson media profiles.

PrintCity, the loose alliance of companies originally set up to demonstrate interoperability between different vendors' systems, has now published a new report on Process Colour Standardisation. It covers a range of topics from colour management to job preparation and proofing as well as managing makereadies. It can be ordered online from the printcity.de website.

GMC Software has joined Screen's Equiosnet partnership program, meaning that its users can now enjoy verification of the interface connectivity between GMC solutions and Screen's products. GMC is a leading developer in variable data and transactional applications so this is an important boost for Equiosnet, which aims to promote collaboration amongst vendors in this area.

Océ has updated its Repro Desk Studio large format print management software together with its Client Tools, a Windows-based job submission application, to include support for Canon's ImagePrograf wide format printers. Repro Desk is designed to allow customers to manage multiple Océ wide format printers so it's an obvious move to include the Canon devices.

HP has signed a long-term contract with Francotyp-Postalia Holding AG, of Birkenwerder, Germany, to supply thermal inkjet cartridges for use in franking meters. HP has developed four special inks to meet postal requirements, two red inks and two types of blue, which are used by Francotyp-Postalia.

News Analysis

In the last issue we covered the problems at Manroland, noting that an auditor had been appointed to resolve the situation. Manroland has three factories within Germany but a deal appears to have been struck now which will see all three factories remaining open in some form.

The UK's Langley Holdings has acquired the Offenbach site, which had dealt with sheetfed printing systems. The insolvency administrator, Werner Schneider, notes that the plant has a solid economic foundation and good future prospects.

The Augsburg site, which produces the bulk of the web fed presses, will be sold to the Possehl Group from Lübeck in Northern Germany, which also bought envelope equipment specialists Bowe Systec out of bankruptcy in 2010. Possehl apparently also has plans to establish long-term supplier relationships with the Manroland factory in Plauen in order to secure full capacity at that site.

The factory in Plauen will be set up as a new company, which will continue to be run by the administrator, though there's speculation that the Possehl Group will also buy this. However, American venture capitalists Platinum Equity have also expressed an interest in buying one or more of these factories, as has an unnamed Chinese firm.

In all, these arrangements should safeguard some 1473 jobs at the Augsburg factory, 740 at Offenbach and 300 at Plauen, though this is less than half of the 4,700 jobs that existed across the three factories before the insolvency. Strangely, the unions have welcomed the deal, though most commentators believe there will be further job losses.

For now, each of the three factories will continue with the Manroland name, plus the name of the relevant factory to distinguish each separate entity. As yet, there's no word on what is to happen to the worldwide subsidiaries.

Heroes & Zeros

Hero

Apple's salvation and the wonder of its continued success is not purely down to the genius of its mercurial co-founder, Steve Jobs. You only have to look at Apple's stock price and recent financials to understand that Apple is much more than the sum of its parts. And one of the key architects of the company's success is Jonathan Ive, Apple's chief of design, having worked for the company since 1992. Mr Ive was made a CBE (Commander of the British Empire) in 2005 and was recently knighted. Sir Jonathan Ive's team are responsible for the iconic look of all of Apple's products, setting an expectation for digital devices that has yet to be matched.

Zero

Lamar S. Smith is a Republican Senator from Texas and the person behind the Stop Online Piracy Act, better known as SOPA. It is designed to protect intellectual property online however, this is a draconian initiative at best. Companies can be hit with court orders to stop them conducting business if they do business with websites deemed to be infringing a copyright owners rights. This includes advertising supported sites, payment processing sites and search engines which could be required to block access to the sites.

But this law would be the greatest threat to the Internet since its inception. It counters free speech, and the rights of individuals to share content and information. It sets a dangerous precedent for creative communications and ideas interchange. How far it would go is anybody's guess because entire slabs of the Internet's ecosystem could be blocked on the basis of just one claim that a single webpage infringes copyright. No individual or institution would be safe from the SOPA reach.

drupa Watch

Benny Landa is planning a spectacular return to the industry, according to the Landa Labs website which says "Landa's line-up of digital nanographic printing presses will be unveiled at drupa 2012". However the details of whatever it is that he is doing are typically cloaked in absolute secrecy until the day before drupa.

Landa Labs has a 1,500 square metre tent in the show grounds, which is expected to house a 200-seat amphitheatre. The new printer and its clever inks will be presented five times daily throughout the show.

This much we know from industry sources:

Landa has spent at least $40 million per year for the last two years on his new project, which he is funding without external capital.

He has been working on it for ten years.

Landa Labs is adding many new employees to its base of around 150 many of whom are theoretical physicists and chemists. The company is also expanding its space in Israel. The new folk include ex-HP and Kodak employees including Koby Waldman (operations manager and vice president) and Nir Zarmi (Director of Digital Printing).

The announcement we expect:

According to Calcalist, an Israeli version of the Economist, Landa Labs is working on miniaturising nanopigments for use in digital inkjet heads. At 200-300 nanometers (from 0.1 to 0.0001th of normal inkjet droplets) they are so tiny that they don't cause jet clogging and they respond to light more effectively. This could mean lower costs in terms of coverage, higher quality and more flexibility for customers when it comes to ink choices. Landa Labs is also working on a printhead that can image the new inks on virtually any material. The inks are expected to be more durable and vibrant than any others because of the nature of the pigments. The target applications are
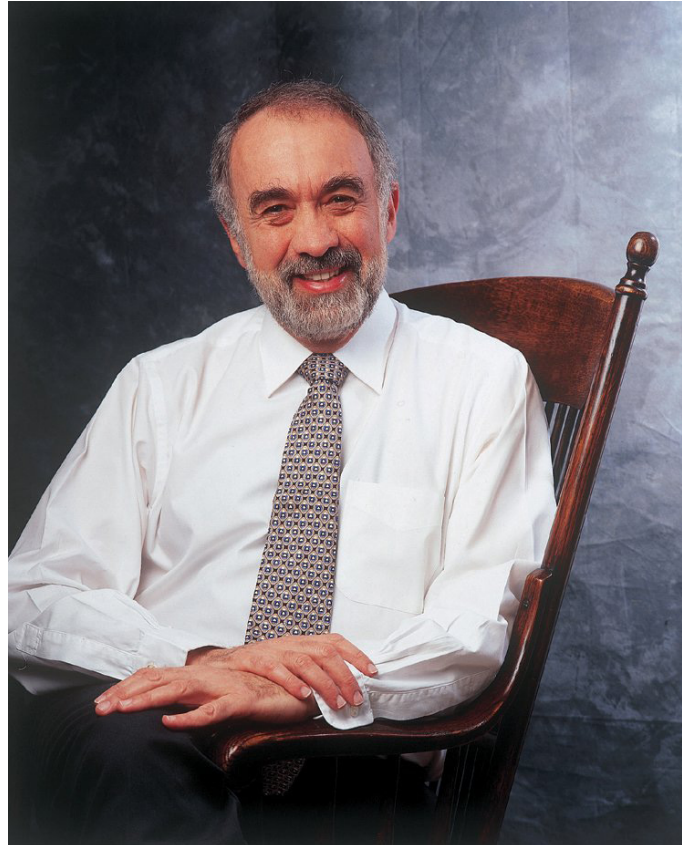
signage, traffic signs, packaging and equipment surfaces. Landa's technology could also be used for cosmetics in the future.

According to Benny Landa "I want to take nano-pigment printing into the printing mainstream". He told Calcalist that this launch of the new ink at drupa would mark the start of "the rise of nanographics". So this drupa will be the nanodrupa.

Picture This

At last! Finally we at Digital Dots have been properly recognised, and the well-esteemed Adnams brewery (awarded the title Brewery Of The Year 2011 in the UK) has launched a beer in our honour. The Spindrift beer is a well-balanced classical English bitter, or pale ale if you prefer. The colour is dark amber, and the taste is rich with hints of flowers and fruit. The bottle is of a lovely deep blue colour.

We can't praise Adnams enough for their achievement in brewery craftsmanship. But there are unfortunately a couple of flaws. On one of the labels the designer has used the number zero instead of a capital "O" by mistake. Naturally, our typographic sensibilities shudder at the sight of this. The other flaw is that it turned out that

Adnams had never heard of the magazine Spindrift when we contacted them. Never mind – it's a delicious beer!
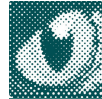
Green Shoots

Benny Landa is returning to the graphic arts fray with an alternative energy technology based on nano technology. The same base nano-materials technology can also be used for pigments, drug delivery and composite materials.

Ricoh Europe has won the prestigious International Green Awards' silver award for the Ricoh Sustainability Optimisation Programme in the 'Best Green Service Innovation' category. This award recognises services that minimise resource use and add value to a business. Over 4300 Ricoh customers have brought down carbon emissions by averages of 35%, and reduced their cost of ownership of Ricoh's engines by 28%. The carbon balancing programme conforms to ISO 14064 (quantification and reporting of GHG emissions) and is available as a part of Ricoh's Managed Document Services.

The **EcoPrint** show taking place 26th/27th September is gaining momentum and support. The list of exhibitors is growing with Mimaki the most recent addition. ESMA, the European Specialist Printing Manufacturers Association and Verdigris are working with the organisation to develop a comprehensive conference programme including live debates on topics such as the comparative carbon footprints of electronic versus print media, and whether or not paper recycling is a good thing.

The **World Print & Communication Forum (WPCF)** is working with PrintCity to present an International Environmental Conference at drupa on Thursday, the 10th May. It costs

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around €200 and will "focus on the duality of mutual economic and environmental benefits (Lean & Green) as an industry strategy" with presentations from individuals within and beyond printing and paper. There will be three sessions: Environmental Footprint, Sustainability Challenge, Labels and Certifications all of which should be fascinating.

Agfa has been recognised for its environmental manufacturing approach, winning the Institution of Mechanical Engineers Manufacturing Excellence Award for sustainable manufacturing. This is down to the way that Agfa achieves sustainability through energy management, concern for its workers' safety and its health and environmental compliance at factories around the world.

Heidelberg has extended the closing date for its ECO Printing Award to the end of February 2011. The company has a fund of €50,000 to distribute to sheetfed offset sector winners across two categories. These are for sustainable companies and forward-looking solutions, both of which are gloriously vague. Prizes will be presented in June 2011.

For more green news, check out The Verdigris Project:

Verdigris

http://verdigrisproject.com

Sure thing

Standardised Print Production & Certification according to ISO 12647-2

Over the last few years we have been heavily involved in standards work, working internationally with ISO and with print federations in both Sweden and the UK. This work has led us further than we would perhaps have liked into the intricacies of the various standards however, when it comes to ISO 12647-2, we have much to share.

So this is the first of a series of articles explaining what printers and print buyers need to know about using the ISO 12647-2 standard for offset lithography process control. We call it Standardised Print Production, (SPP) and full and complete details for implementing ISO 12647-2 will be available on the Digital Dots website (**www.digitaldots.org**) at the end of February.

SPP is a tool to help printers everywhere to reach a level of production that complies with the requirements of industry schemes from organisations such as FOGRA (PSO), UGRA, the Swedish Printers' Federation and the BPIF. We hope that this series of summary articles plus the actual production details, will together provide prepress professionals, printers and print buyers with a useful resource. Our overview articles combined with the material on the website, provide the implementation information required to get the most out of ISO 12647-2 and ultimately certification to an industry scheme. We further hope that this will help the industry to actively use ISO 12647-2 for high quality production control and colour printing.

ISO 12647-2 in Context

ISO 12647-2 is one of several parts in the ISO 12647 series. This series provides the control parameters for various printing processes, with each part specific to a different printing method. ISO 12647-2 is the part for high quality offset lithography, the most widely implemented in the

market. Various entities, such as the British Printing Industries Federation, the Swedish Printers' Federation, FOGRA in Germany and UGRA in Switzerland have developed certification procedures, with more or less rigour.

These schemes are the basis of various accreditation procedures, some of which are audited by independent auditors and some of which are not. A printing company successfully fulfilling the requirements of an ISO 12647-2 accreditation scheme receives a certificate confirming

A systematic approach to monitoring and measuring all the critical sub processes of print production is the core of working to ISO standards.

their achievements. The certificate's value depends, of course, on who has done the certifying and the scope of their authority. Print buyers are understandably cautious of certifications provided by organisations who are also consultants to the company.

The work we have done at Digital Dots is not to come up with our own certification procedures, but rather to work with the Swedish Printers Federation and the BPIF to assist in the development of their national certification schemes. Both schemes are audited by external specialist standards auditors, rather than industry consultants or associations. We are also working within ISO to develop a standard for schemes used to certify a printer's compliance to the ISO 12647 series and others. SPP provides the information printers and publishers need to achieve certification to one of these schemes.

Compliance, Conformance, Certification

There are many ways in which a printer can shout about how they use ISO 12647-2 and their quality control procedures. Compliance or conformance is a simple

claim that states that the printing company follows the primary process parameters and technical requirements of a standard, such as ISO 12647-2.

But compliance or conformance is not necessarily a guarantee of a quality result. For instance, some developers and industry associations have their own
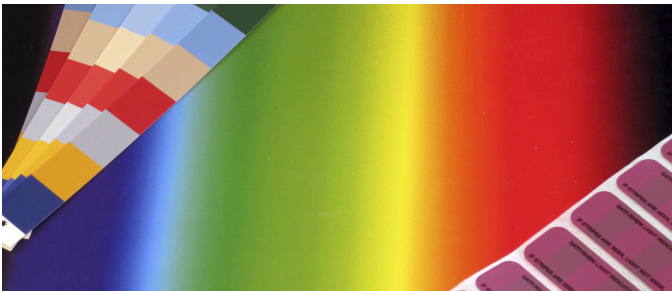
When evaluating prints and proofs it's important to view them under correct viewing conditions. Not all light sources comply to standard daylight D50, so RHEM Light Indicators (the brownish-orange label to the right in this picture) are useful aids for checking this.

procedures, and issue certificates for conformance. We believe that the only objective confirmation that a printer can consistently achieve a measure of quality control that meets the ISO 12647-2 targets is certification to the standard by an accredited and qualified external auditor.

Such certification is generally pretty robust, which is what makes it so valuable for printers who want formal recognition for their production standard. It can also be an incidental aid to cost control because compliance with a rigorous management and production scheme can help get production and related factors under complete control.

Certification is also of value to print buyers because it provides assurance that service providers can achieve a specified output quality measured and judged to a robust compliance scheme. This in turn helps print buyers ensure value for money and to select print service providers on the basis of proven and qualified competence.

Standardised Print Production (SPP)

The objective for Digital Dots' Standardised Print Production (SPP) is to provide printers with a defined

procedure and implementation guidelines for compliance to ISO 12647-2. The guidelines summarised in this article and available online provides everything prepress professionals, publishers and printers require in order to produce high print quality and cost effective production processes. We have provided guidelines for printers specifying the nitty gritty of what they need in order to prepare for (and hopefully pass) an accredited ISO 12647-2 audit, regardless of whose scheme is used. We will shortly provide similar documents on the website for print buyers with a stronger focus on file preparation and prepress.

The SPP procedure obviously follows ISO 12647-2 and is consistent with established certification schemes based on this standard. It integrates the core elements of ISO 9001 (requirements for quality management systems) with ISO 12647-2, so it addresses quality control and management throughout the organisation, not just on press.

The SPP guide does not require a full ISO 9001 implementation however, it does include some critical components relating to customer satisfaction, planning, measurements, analysis, improvements, and control of non-conforming products. All of these are vital for successful and systematic quality control and colour management. We believe they are also vital for a modern print company's competitiveness and profitability.

That Nitty Gritty Stuff

In this first article we describe the principles of what is required in prepress to control colour in order to comply with ISO 12647-2. This is the foundation work that must be done if a printer wants to fully implement the ISO 12647-2 standard.

Into the Light

Colour is all about light, so colour and data control in prepress begins with controlling ambient light and viewing conditions. The processes required in ISO 12647-2 and SPP outline parameters for visual control and colour critical inspection of hardcopy proofs and print samples. The main reference here is ISO 3664, the standard which describes viewing conditions for graphic technology and photography. According to this standard

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the viewing light source should be of the correct colour temperature, spectral distribution and luminance, more commonly referred to as brightness. For instance the colour temperature of the light should be 5000 K, corresponding to D50 and the light source's luminance or brightness, should be between 1500 and 2500 lx (lux).

Data Trails

SPP explains digital data exchange requirements, plus those for document preparation and assessment. It also outlines the preflight checking processes involved for receiving and assessing incoming digital data files and covers file preparation. This includes details such as checking for correct ICC profiles and what to do if they are wrong.

As with the requirements for light control, data control is also based on existing standards. All modern colour management uses ICC profiles to describe the output conditions. Generally ICC profiles are created using standardised characterisation data taken from print

One of the most important measuring devices in print production is the spectrophotometer. This should be serviced and calibrated regularly by an ISO 17025 accredited laboratory.

samples from several printing presses printing onto a certain type of paper. The ISO 12647-2 standard currently classifies five different paper types, however the next version of the standard will probably have more.

Electronic documents must be prepared to comply with a printer's expectation as defined according to the print

method used to produce the file. For most workflows and in SPP, we strongly recommend using the PDF/X-1a standard. PDF/X-1a requires that the ICC profile is embedded in the file and also supports CMYK separations as well as the usage of spot colours. By defining preflight settings for the PDF/X-1a files, those files can be controlled to contain high enough resolution in the images, fine lines and small type.

An alternative to PDF/X-1a is PDF/X-4, but correct processing of PDF/X-4 depends on the RIP system being

Recommendations on Tone-value sum (TIC, Total Ink Coverage)

Printing conditions	Recommended maximum
Sheet-fed offset, coated paper	300-330%
Web-offset and sheet-fed with perfecting, coated paper	300%
Sheet-fed and Web offset, uncoated paper	260-280%

Note: The recommended values above are not taken from the ISO 12647-2 standard.

Note: Both of the "Uncoated FOGRA29" from Adobe and "ISO Uncoated" from ECI ICC profiles use a higher TIC than is recommended here.

able to process it so run some tests before you stipulate PDF/X-4. Equally designers need be be sure that their design and layout software can generate and preflight PDF/X-4 files. If in doubt, stick to PDF/X-1a!

When deciding which ICC profiles to use, or when creating custom ICC profiles, use table 2 as a guide to what Total ink Coverage is suitable for different paper types.

Softies

Once files are ready for production, colour critical content is generally viewed on a monitor. SPP requires colour critical evaluation of incoming documents, and when possible, comparisons with hardcopy proofs and reference prints. With the improved quality of monitors, not least the newer LCD monitors, proofing documents for colour accuracy on the monitor is gaining broader acceptance. But it's important that the monitor has a large enough colour gamut and is correctly calibrated.

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The ISO 12646 standard defines how a display should be calibrated, and also defines other aspects such as luminance, colour accuracy, uniformity, colour temperature and sharpness. The goal is to simulate on screen how a hardcopy proof or print will look when evaluated in a standardised viewing booth. As in ISO 3664, ISO 12646 has quite generous tolerances when it comes to luminance (brightness). For CRT monitors this can be set between 80-120 cd/m² (Candela per square meter), while LCD monitors must be set to 160 cd/m² or higher.

The gamma value for the monitor must also be established. The gamma value is how bright a pixel looks on the screen and its numerical value. The higher the value, the darker
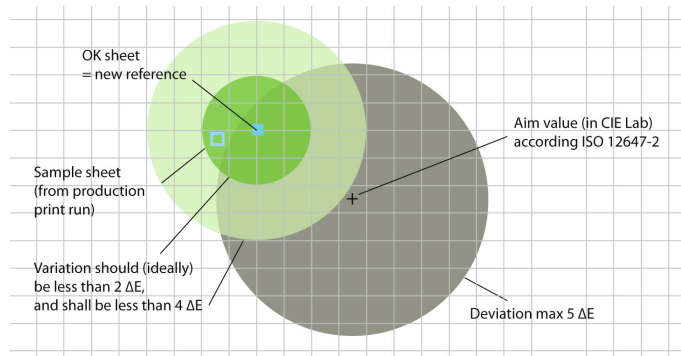
This illustration captures ISO-compliant printing in a nutshell. The OK sheet shouldn't have a larger colour deviation than 5 ΔE (Delta E), and the variation during the print run should not exceed 4 ΔE. To achieve this is a challenge for many printers, and to understand the benefits of ISO compliant printing is the challenge for many print buyers.

the image will appear. SPP suggests setting the white point to 5000 K, the gamma to 1.8 and brightness to 160 cd/m². If the black point can be set, use approximately 0.6 cd/m².

Software tools such as the UDACT (UGRA Display Analysis and Certification Tool) are available for checking that a monitor and its ICC profile comply with ISO 12646.

Hardcore

Hard copy proofing requires assessment of incoming hardcopy proofs or of hardcopy proofs made in-house. However direct-to-plate production is rapidly superceding film-based workflows, so contract proofs are generally printed on digital colour printers.

SPP follows the requirements covered in ISO 12647-7 which is the part in the series dedicated to proofing processes working directly from digital data. ISO 12647-7 defines factors such as the colour, gloss and brightness of the substrate, plus colour accuracy. However several of the factors in the ISO 12647-7 standard are not likely to be

Tolerances for digital hard-copy proofs

Tolerances when measuring a control strip for a given paper type	
Primary colours (CMYK) maximum colour deviation ΔE 5 (ΔH 2.5, where H means Hue)	
Maximum colour deviation for a single patch	ΔE 6
Average colour deviation for all colour patches	< ΔE 3
Maximum colour deviation for the grey balance patches	ΔH 1.5
Maximum colour deviation of the substrate colour (paper whiteness)	ΔE 3

evaluated on a daily basis at the printing site. SPP therefore recommends using a proofing system that has been tested and certified against the ISO 12647-7 standard, and to select a few factors to check in daily production of hard-copy proofs ie contract proofs.

Hardcopy proofs should contain information about the type of ink and paper used, and the simulated printing condition using a correct ICC profile and paper type. It's also a good idea to inform the customer of the importance of viewing the proofs in correct viewing conditions.

Platemaking

The current edition of the ISO 12647-2 standard assumes the use of repro film in the workflow, however SPP assumes computer-to-plate production workflows, since this is the market norm. If an analogue workflow is used ie using conventional film, contact frames and analogue plates, control mechanisms must be in place for the exposure and processing of both film and plates. The plates should be measured with a measuring device suitable for the plate type in question.

Platemaking requires calibration of the platesetter and validation of the imaged plates. ISO 12647-2 recommends using AM screens of 110-200 lpi and to

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follow common practice for screen angles: 30° between C, M and K, 15° angle between Y and any of the other colours, and K normally at 45°. However screening technology has evolved dramatically over the last few years, with widespread use of improved FM screening as well as hybrid screens. A CtP workflow produces a first generation dot so it is possible to expect even higher quality in print using higher screen frequencies and more sophisticated screening technologies.

CtP plates should include a control strip placed outside the printable area, to check the plate exposure. Control strips such as the UGRA/FOGRA Digital Plate Control Wedge, or similar control strips provided by the platesetter or plate manufacturer are suitable. Besides a control strip for plate exposure, the plate should also contain a control strip for measuring the print, according to various criteria such as tone values.

If a digital press is used instead of platemaking for a conventional press, the front end must be capable of processing incoming PDF/X-files. It must also be able to correctly calibrate and linearise the press.

All of the topics covered in this article need to be understood both by publishers and print media producers, in order to implement ISO 12647-2 fully. Coming articles describing SPP will focus on the requirements for the press, overall quality control for the business, and finally provide an executive summary for the people in the business making investments and keeping the ink from under their fingernails.

This last is a sort of SPP mission statement for ISO 12647-2 implementation that addresses the business arguments relating to technical quality control and management. This ISO stuff is pretty heavy going but we hope that presenting it in user friendly chunks, makes it more digestible. Standards compliance is never going to be warm and fuzzy, but hopefully using SPP the experience will be far less spikey than trying to go it all alone.

– Laurel Brunner

Kodak's Now or Never Moment?

The news that the venerable Eastman Kodak Company was getting ready to file for Chapter 11 bankruptcy protection was a terrible start to the year.

On the 19th January Kodak duly filed for Chapter 11, and announced a $950 million line of debtor in possession financing from Citicorp, putting Citicorp at the front of the debtors queue; $650 million has apparently already been accessed. Chapter 11 gives Kodak protection from creditors and the Citicorp money gives it the means to survive while it reorganises. The company expects this to be completed within the next eighteen months.

The Chapter 11 status gives Kodak a breathing space so that it can work out how to save itself. Kodak is underwriting the deal with Citicorp with its considerable IP assets, although it has been trying to monetise those for some time. The company's strategy has been to either raise debt, sell patents or sell its cash generating businesses, which may include some of its graphic arts interests. All of this is clearly happening (such as Xeikon's recently acquired rights to Kodak's Thermoflex brand), but is it too little too late?

Kodak's fortunes are in the hands of Antonio Perez, current chairman and CEO who came on board in 2005. This ex-HP honcho was hired to shed the liabilities of Kodak's history and turn its fortunes around. He said in November 2011 that Kodak had already "received cash proceeds from two non-recurring intellectual property licensing transactions … which will contribute about $120 million to our fourth quarter cash generation." Or maybe not.

Losses, debt and unfortunate timings have clearly hampered and delayed Kodak's efforts to generate cash, so Chapter 11 was inevitable. Kodak has delayed reporting its Q4 or 2011 year end figures, but has said it expects its short term cash flow to yield an operating cash balance of $336.3 million by the week ending 6th April 2012. It is all

about the numbers but thus far the numbers don't look too good.

And the most important part of the puzzle, the selling of patent portfolios, will now be under the auspices of the court and if liquidity continues to collapse, the
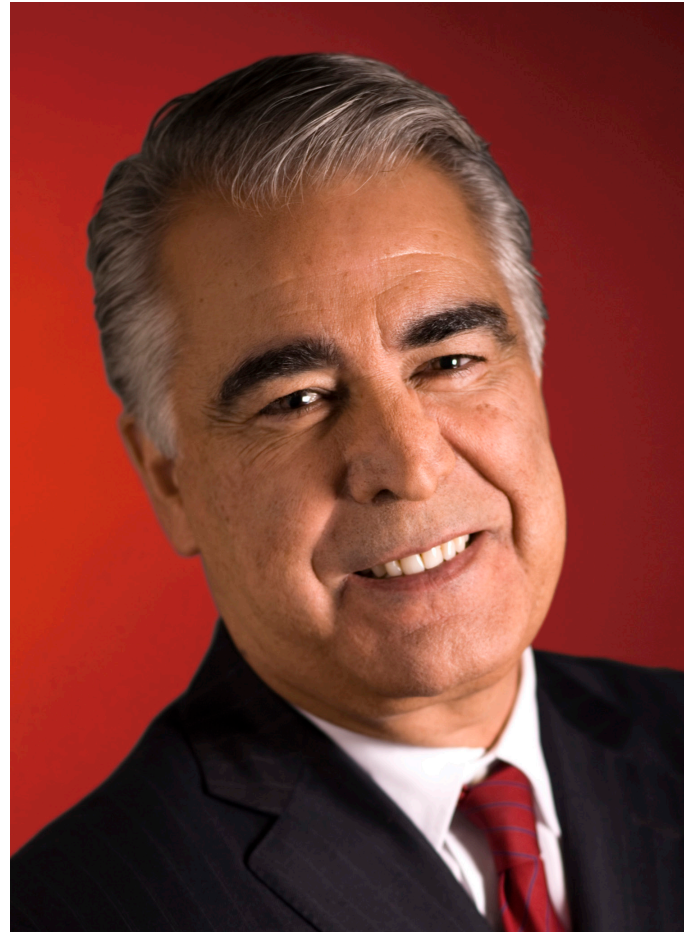
Antonio Perez hasn't got much left to smile about.

patent sales will likely be more difficult. The 2011 figures will be released sometime in March. Chris Payne, Kodak's director and vice president, business to business marketing explained the delay: "Under Chapter 11 we don't report them in the way we did before … it has to go through the courts".

Kodak had been considering bankruptcy for quite some time, according to a Business Week article last October, which was roughly when the IP sales started to wobble. It would seem that the problem all comes down to a matter of timing. In the fourth quarter of each of the last seven years, Kodak has sold off and/or licensed intellectual property asset portfolios, plugging balance sheet holes

in the process. This has helped Kodak to transition the business into new areas of focus, including commercial digital printing.

In November 2011 Perez said that he expected a 25% growth in Kodak's business for the year, adding: "Our expected year-end cash position does not contemplate a new financing or the sale of our IP portfolio." Instead, the plan was to sell "non-strategic assets of approximately $200

Chris Payne: "…we are still committed to Prosper and we are still going to drupa and we are still going to meet all our obligations".

million, and intellectual property licensing transactions between $250 million and $350 million … we expect to finish the year with $1.3 billion to $1.4 billion in cash." But this year's patent sales didn't work out, income from commercial printing sales efforts have faltered, and cash has dried up. Chapter 11 is Kodak's only option.

International Impact

Chapter 11 is a US mechanism that does not affect international operations, so the impact on Kodak's

international businesses will be minimal. At least that's what Kodak says. According to Chris Payne "… the international business is completely free of Chapter 11 … from a restructuring point of view and from a GCG [Graphic Communications Group] point of view we will continue with an uninterrupted supply of the products we supply today". He added that "…we are still committed to Prosper and we are still going to drupa and we are still going to meet all our obligations". Sadly it's naive to think that such a traumatic event for the parent company will not affect its children.

The restructuring and realignment of Kodak's US business is a massive distraction for Kodak's international employees, customers and service providers. It will of course affect international operations as Kodak states on its website "reorganisation will enable Kodak to bolster liquidity in the U.S. and abroad" so although this sounds positive, the international picture is also under shadow. Surely GCG cannot be immune to change?

Ann McCorvey, Kodak's CFO, said last November that GCG's "third quarter revenue was $665 million, essentially flat with the prior-year quarter. GCG's third quarter segment loss from operation was $55 million compared to a loss of $35 million in the prior-year quarter. This increase in GCG's loss from operations was primarily due to continued placement of Prosper printing presses with higher than previously forecasted start-up costs".

The policy for the Prosper and S Series of imprinting heads at least must change because thus far the cost of placement is far too high to be profitable. Kodak is aware of this, but will not explain why. One would hazard a guess that there are too many people involved in each sale and that too few of them are willing to make decisions, so that the cycle time for each sale carries a high human resource overhead.

Most of the 12+ engines installed around the world, including three at Toppan in Japan, are primarily printing colour trade books for higher education, however a handful are doing direct mail as well. There are more installations, but Kodak won't say how many. According to Greg Gresock director, market development for digital printing solutions: "Our placements are done in a number

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Kodak Numbers

	2009	2010	2011	Quarters 1-3
Revenue	$7.61 billion	$7.19 billion	$6 billion*	$4.27 billion
Gross Income	$1.77 billion	$1.95 billion	??	
Sales Growth	-19.22%	-5.51%	??	
Gross Income Growth	-18.49%	10.35%	??	
Net Income	-$216 million	-$687 million	??	-$665 million
Net Operating Cash Flow	-$136 million	-$219 million	-$165 million*	
Free Cash Flow	-$288 million	-$368 million		

* According to Kodak's Chapter 11 filing document

of different models, some cash, some with annuity plans, service, ink and heads". Such complexity has an efficiency price that will bite harder as installation numbers rise. Prosper installations are carefully supported so that companies that install the machines get full support for transitioning their workflows and applications to Prosper. Mr Gresock could not confirm that Kodak is getting the expected return on its investment.

Why Did the Kodak Moment Go Sour?

Kodak has been a leader in the imaging business for over one hundred and thirty years. But along with Agfa and Fujifilm it has had to drag itself out of the analogue swamp left in the wake of the digital tsunami. All three companies faced either collapse or the prospect of managed decline. To some extent Kodak has managed this process reasonably well, ever since Antonio Perez came on board in 2005. Over the last seven years Perez has closed factories, off-loaded non-core operating units, and bludgeoned the employee base, which is down from over 145,000 in 1988 to around 17,000 today.

However, the cost of all of this has been very high. Kodak's asset base is around $5.1 billion, but the company has debts of $6.75 billion, including $2.55 billion for pension and related liabilities, with a shortfall of $1.21 billion. Last November Perez said that the "expected year-end

cash position does not contemplate a new financing or the sale of our IP portfolio. We expect to reach this range by executing our operational plans, in generating full-year sales of non-strategic assets of approximately $200 million, and intellectual property licensing transactions between $250 million and $350 million. Things didn't quite work out that way.

The trauma and cost of such dramatic change was inevitable for an analogue giant. The choice was clear: lose the business or reinvent it. The problem lies in the way that reinvention is being managed: too little, too slowly, too lazily and too internally focused. Whatever Perez' vision, it isn't being articulated effectively or quickly enough on the ground. Over the last few years Kodak has let complacency and the myth of its own corporate culture cloud collective thinking, and distract it from the world outside. Kodak's future depends on how and when this corporate culture changes.

"Push the Button ...

Alarm bells started ringing in September when Kodak drew down a $160 million line of credit to tide it over while awaiting payments from customers. Bells rang louder in December when Kodak lost three board members, two of whom have since been replaced. Kodak has made a loss in five of the last six years, and we have no reason to think that 2011 won't add to this sorry parade,

because sales have declined every year since 2005. But Kodak doesn't appear to change even though it simply must. Kodak's market value in 1997 was $30 billion and on the 31st January its market capitalisation was $86.66 million, down from $576 million in August. Kodak had cash reserves of $862 million in November, and now is operating with $650 million of the Citicorp money and a mere $300 million buffer.

Bloody and gory as this is, it should come as no surprise. Massive reinvention can only be painful but it is in the Perez plan. Last November he said that "our 2012 cash performance from our digital business will be significantly better than this year. 2011 was the peak of our cash usage. It was there in the plan … by the end of 2012, we are going to get to this self-standing digital company. So, we are ready for the fourth quarter, and we are ready for 2012."

As far as the transition to a digital paradigm goes he said that: "I am disappointed with the results of our legacy inkjet – Commercial inkjet because the new products – I wish we would've had them a little earlier. But, I'm very pleased with Prosper. Forty percent growth in a market like this is just extraordinary, and you can only get that with something that is truly different and differentiated.

"Even with the problems we have in installations, which by the way, we're done with … a lot of the growth from the fourth quarter comes from installations that already are there … and the results of the fourth quarter will show that we are going to get paid for those. And, we are getting now repetitive orders, too. The same customers now are placing their second order and their third order of this – that is the best sign for us." Is really this true? We don't know and Kodak won't say.

Even though it appears to have struggled to embrace the digital changes battering its shores, Kodak should have known that its future was in digital imaging: the company invented the digital camera in 1975 and for a little while did well in its home market. But today we understand that Kodak has only 22% of the US digital camera market, having failed pathetically to compete with Canon and Nikon's digital cameras and Apple and Samsung's smartphones. Shouldn't every smartphone have had a teensy Kodak camera inside?

Kodak's efforts to dominate the digital printing sector, now central to its future, have been underway for a while but are similarly lacklustre. Despite superb technologies in the form of Versamark, Nexpress and Stream, access to a worldwide base of offset printers who use Kodak printing plates and chemistries, and an apparently excellent relationship with Heidelberg, the marketing machine for Nexpress has meandered instead of galloping straight and fast as HP Indigo's has done.

The Heidelberg-Kodak wheels fell off in 2004 when Kodak bought out Heidelberg's digital printing interests. The comparative success of Versamark, acquired from Scitex in 2003, is almost in spite of Kodak, rather than because of it. The problem hasn't been weak technologies or products, but in monetising them and in building an enterprise to execute the Perez transition strategy. The vision may be there but there has obviously been a failure to implement it effectively.

The move to develop Kodak's technologies and market positions has been feeble compared to the activities of its major competitors. The most egegregious example of this is the Stream technology, which Kodak is taking such a very a long time to capitalise on. We first saw this technology in 2008 yet it has three taken years to place probably less than twenty machines, most of those monochrome devices. In comparison HP introduced its Inkjet Web press technology at about the same time and has now placed more than forty engines worldwide.

Ever since Antonio Perez took over the Kodak helm, the company has been monetising its intellectual property assets, in line with Kodak's strategy to be a profitable digital company. Google, Microsoft and Samsung are all said to be interested in the over 1100 non-core patents which include image processing, storing and editing. This is only 10% of Kodak's total patent library and it is expected to generate $3 billion. Patent lawsuits and licensing fees have generated $1.9 billion in revenues since 2008.

To generate more value Kodak is suing Apple, HTC Corp and Fujifilm in order to boost IP values and secure fresh licensing income. Apple and HTC are being sued for using Kodak technology for image transmission and sharing. Its two year old suit against Apple and RIM for image preview

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patent infringement which they both deny, is bogged down in the courts but Kodak reckons on $1 billion from its resolution. However last year Fujifilm filed suit against Kodak for four patent infringements in the company's Easyshare C340 and Easyshare M520 cameras.

… and We'll Do the Rest"

According to Kodak's new restructuring programme, the business is organised into commercial and consumer divisions each generating 50% of company revenues in line with 2010/2011 performance, and headed by Philip Faraci and Laura Quatela, both named president and COO, reporting to Perez. This is a logical consolidation of Kodak's interests, and encourages it to focus better on commercial digital printing.

Kodak's new structure should allow it to capitalise on its investments over the years into the graphic arts (printing plates and chemistries, proofing systems and digital presses). Commercial printers who use any of this stuff should now expect to find themselves at the centre of Kodak's attention, because the restructured Kodak expects a return to profitability by 2013. Maybe.

What Went Wrong?

Analysts are calling Kodak a dinosaur, saying that it has failed to adapt. We would disagree with the first, but partially agree with the latter. Clearly Kodak has been too slow to react to external competitive threats or recognise the toxicity of internal complacency and management dysfunction in today's market. It has been too gentle and too slow to capitalise on its patents, and unable to control the intensely complex patent asset monetisation process.

The expectation that the 2011 numbers would come right as they have done since patent selling and licensing started, was dashed. Despite its hopes, the company has been unable to control financial markets or the value of its pension liabilities.

For years Kodak has existed in a well-padded and uncritical cloud, apparently immune to its changing relationship with the market. The company has tried to adapt, but the Perez vision has suffered from a lack of structured implementation, with chronically poor engagement on

the ground. There has been ample noise and bluster, but no sense of cohesion. For too long is has been virtually impossible to get a Kodak employee to respond promptly or responsibly to the smallest decision. We hope that over the next eighteen months all this will change drastically. Kodak must get its new structure implemented and its business back on track. The clock is tick, tick, ticking.

– Laurel Brunner

In the news

With newspaper circulations falling fast is it time for digital newspapers to emerge?

It's no exageration to say that for the last couple of centuries billions of people have relied on newspapers as their main source of information, helping to spread news of great battles and innovations alike to the general populace, not to mention dangerously seditious ideas like free speech and democracy. Yet, as with other forms of print, newspapers are facing dwindling circulations and falling run lengths. But unlike other sectors in the print industry, we havn't really seen much in the way of digital alternatives developing.

It's not for want of trying, with Océ in particular having pushed its Digital Newspaper Network for over ten years, albeit with limited successes. More recently other vendors have talked about newspapers as a potential target market for high speed inkjet machines. Doug Sexton, Publishing Global Market Development consultant for HP, says that inkjet is more attractive to the newspaper sector, rather than toner-based digital printers: "Before the advent of pigmented aqueous ink systems like the web press you really couldn't get the same look and feel as a conventional newspaper, or have the same productivity that you need to hit deadlines because you typically have fairly narrow windows to produce the newspaper. The toner machines just don't have the productivity or the cost point that you need."

There is an argument that says that as newspaper run lengths come down so inkjet will become a more cost effective option than offset, as is happening in the book printing sector. However few commentators think that this is a realistic option for national titles, mainly because the whole premise of printing a newspaper in the first place will be threatened if the run lengths do drop to the level that would make digital attractive.

It's a lesson that Steve Brown, managing director of Stroma, has learned the hard way. Stroma was initially conceived as being primarily a short run digital newspaper printer.

The company is based near London's Heathrow airport and one of its early targets was for the foreign print market, both with short runs of British newspapers being sent abroad, and printing overseas newspapers in the UK for holiday makers and expatriates. But in today's highly connected world customers are generally unwilling to pay a premium for news that may be a day or two old, forcing many newspapers to reconsider their foreign

Steve Brown, managing director of Stroma in London.

sales strategy. The Guardian, one of the leading British newspapers, recently abandoned foreign sales altogether, preferring instead to concentrate its efforts on developing the newspaper as an iPad app. Nonetheless, Stroma has had some successes, printing an Australian title for Quantas airlines thus allowing Oz-bound passengers to read that day's news even before the paper has hit the newsagents back home.

However, Brown estimates that today newspaper production accounts for only 20-25 percent of his

turnover, with the rest being general commercial work including books, pamphlets, and leaflets, adding: "But going back 10 years ago it was 85 percent, but it's because newspapers are fairly static and there doesn't appear to be a lot more business."

But then Brown says: "I think the bigger question to ask is whether there's a future in newspapers?" He argues that the main competition comes from the Internet, and from 24-hour TV and radio news: "People used to go past a shop and buy a paper but these days you have heard most of what's in the paper by the time you have got to work. And also people's lifestyles have changed and I don't think there's time to sit and read a newspaper any more."

The threat from tablets

It's certainly true that many people do have access to a computer and to the Internet and that most newspapers do now exist online. Newspapers have struggled to monetize their online offerings, through advertising, paywalls and more recently app editions. Sexton says that electronic media is having a huge impact on publishers: "We are seeing some people migrate over to get all their news and reading on an electronic device and that is decreasing printed run lengths but that actually plays to the strengths of digital."

But he doesn't believe that tablets will take over completely, adding: "There is still a large fraction of the population that will remain for a long period of time that prefers to get their reading experience in a printed form. The browsing experience is different on a broadsheet, it's much more serendipitous than an electronic device."

Split production

Many others also believe that there is still a desire for printed newspapers in some sectors. Brown, for example, remains sceptical about the long term viability of many national newspapers but he does see a bright future for local and regional press where there's less competition to provide localised news from TV and radio.

Sexton says that the newspaper market is undergoing a transition right now but that inkjet is still not economically viable for most larger newspapers. However, he adds:

"There are some newspapers like the Chicago Tribune that have been looking at zoning where certain portions of the papers are designed for one area or another." This means that a single long run title can be split into several shorter run titles, where digital might become more attractive. This is particularly true of regional titles which can be split into even more localised versions.

Tim Taylor, marketing director for Screen Europe, agrees that zoning would help make newspapers more attractive to short run inkjet printing. Screen already has a couple of installations around the world that are printing

There's a small but definite demand for many overseas newspaper titles, particularly amongst businessmen working abroad.

newspapers and Taylor says there is some genuine interest in the technology amongst mainstream newspaper producers, though he cautions that it may be a couple of years before the market really takes off, adding: "But the level of interest suggests there's a long term opportunity for inkjet in newspaper production. The costs are coming down and the speeds are going up."

Taylor points out that in some places external factors may also play a part: "In certain countries the traffic or the geography doesn't lend itself to national distribution, such as in mountainous areas. In some countries they have to finish the print run earlier and earlier because the vans get caught in traffic so they might consider remote production."

Yet another option is to use inkjet to print localised advertising collateral alongside a conventionally-printed newspaper. CN Newsprint in Carlisle in the North of England invested in Kodak's Prosper S10 printhead modules, which have been integrated with the existing

This shows a newspaper going through a Hunkeler finishing line at Stroma, having just come off an Océ Jetstream inkjet printer, which is in the background.

newspaper press. This allows CN Newsprint to produce vouchers, barcodes for promotions and short run inserts.

Personalised news

Personalisation may offer another possible market but it's harder to make this work with newspapers because you still have to physically deliver the newspaper which pushes the distribution costs up. Several entrepreneurs have tried this in the past, most notably two young Germans, who launched the Niuu newspaper in Berlin at the end of 2009.

Niuu was a personalised newspaper, printed initially on an Océ JetStream. This relied on licensing pages from up to 20 other newspapers, including the New York Times and Bild. The idea was that customers would sign up for the service, choosing which sections they wanted from the other newspapers taking, for example, the international news from one title, sport from another and business from yet another. Niuu also sold advertising personalised to some extent to the reader's gender and location. It was a brave venture which found a loyal band of readers but it proved hard to expand on the initial concept because of the difficulty of arranging distribution.

Swiss Post has recently started a pilot of its own personalised paper, called MyNewspaper. As with Niuu, users select the sections they want from a range of titles from the Swiss Post website. Swiss Post already has a control over a wide distribution area which should give it a good chance of success, given that fast, cost effective distribution is the key to success in the newspaper business. MyNewspaper has all bases covered as it is also available as an e-paper.

Conclusion

So it would seem that there are opportunities for inkjet-printed newspapers although not on the same scale as we have seen in the past with conventional print. But as Sexton points out there will be a fundamental change in production: "Newspaper printers have typically been just that, dedicated to newspaper production so that during most of the day you are not working and there's just a narrow production window with a very high speed. But if I bought a T series printer, to have that machine sitting around most of the day just doesn't make economic sense so I think we will see mixed use printers."

Then again, newspaper publishers have themselves become more diverse, branching into TV and radio, as well as websites and apps as they prepare for a digital future.
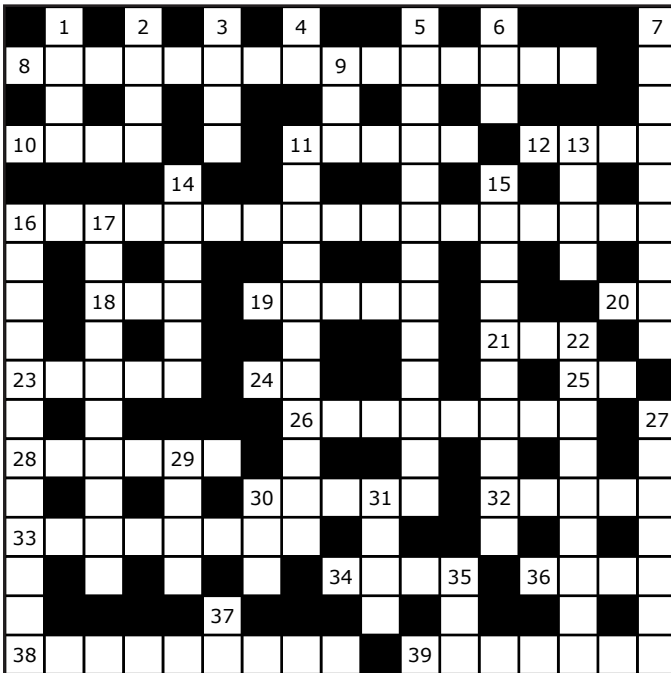
– Nessan Cleary

X-word Puzzle

Number 34*

This month's puzzle is middling to easy we reckon. Something gentle to get you into the swing of what looks likely to be a very busy year. We've filled the puzzle with plenty of little words to get you going on the bigger clues.

Across

8. Messe Düsseldorf is just one example of many. (10, 5)

10. Leave this correction as it was. (4)

11. Identical copy or replica. (5)

12. Europe, Middle East, Africa. (4)

16. The only form of print immune to replacement by the internet. (9, 8)

18 Absolutely perfect. (3)

19. Strange. (5)

20. Alternating current or too cold air? (2)

21. Also known as. (3)

23. Opposite of flexible. (5)

24. Personal assistant. (2)

25. Don't stop. (2)

26. The new journalism or just a platform for ranters? (8)

28. Not rough or bumpy. (6)

30. Hardly at all, not even very equally real. (5)

32. Watchful and attentive. (5)

33. Something pressmen don't need so often? It tears you apart. (8)

34. It is the beginning of everything. (4)

36. Naughty dots do this on press. (4)

38. Alongside facts, the basis of every decision. (9)

39. Those still in the game. (7)

Down

1. The way out. (4)

2. Somewhere between a fully saturated colour and white. (4)

3. A receptacle for data. (4)

4. Two. (2)

5. Every trade show has to have one of these, preferably many. (5, 8)

6. Zero's partner in binary counting. (3)

7. The inks we will all be watching for digital presses this year. (9)

9. Oleo. (3)

11. Profitability depends on accurate pricing here, if you can swallow it. (11)

13. Electronic or otherwise, sounds definitely not female. (4)

14. Files that are zipped, blankets that are tight? (6)

15. Pulp ground up without chemical pretreatment. (10)

16. Colour management, preflight checking, it's all the same. (8, 4)

17. Keep the press running between jobs to achieve this without halts. (10)

22. The collection of stuff into a single entity. (9)

27. A means of qualifying different classifications or categories. (7)

29. The stickiness of ink. (4)

30. Total after adjustments. The number everso tempting? (3)

31. Stops. (4)

35. An old line, for a bulletin board. (3)

37. Who's doing this? (2)

*If you get stuck, the answers are at http://www.digitaldots.org

Number 33 – Answers

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