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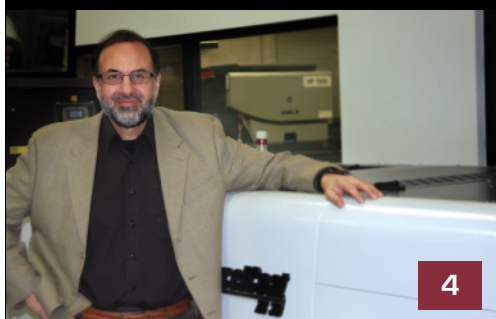
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MARKETING MINUTE

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STEVEN J. SIMSKE

2015 ROBERT F. REED TECHNOLOGY MEDAL RECIPIENT

Kayleigh Smith, Manager, Marketing & Media, Printing Industries of America

Since 1974, Printing Industries of America has been recognizing outstanding engineers, scientists, inventors, and researchers in the graphic communications industry with the Robert F. Reed Technology Medal. The medal perpetuates the memory of Robert F. Reed (1905–1973), “Dean of Lithography,” whose contributions to the understanding of lithographic processes and materials were perhaps the most significant and important made by any man of his time. As the 2015 recipient, Steven Simske’s nomination was recognized by the judging panel for the high diversity in the application and the growth of his work from year to year. This month, we spoke with Steven about his work and where he thinks the future of print may be heading.

Q: We can see that you’ve been doing some kind of research for the industry for a very long time. Could you tell us a little bit about your background and what you do at HP?

SS: I’m a biomedical, electrical, and aerospace engineer by formal training. I’ve had the opportunity to work with in-depth experts in many areas through the years, which as a generalist has really helped me appreciate how much further one needs to go in a given area to be really stellar. The rotation between many different topics for research focus (or defocus!) also prevents complacency and has given me a directive to learn how to make the most out of multiple ways to solve a research challenge. At HP I get to work on aspects of security printing; printing of content for mobile reading, brand protection, and security; and more recently 3D printing and life sciences. The most satisfying work has been with HP’s global social innovation folks, trying to solve the world’s problems. This included mobile readers to authenticate anti-malarial medication in developing areas, global authentication services, anti-human trafficking initiatives, and other really meaningful work. Again, here I might be working with the world’s smartest people in a nontraditional area, like anti-corruption or the future of electronics and manufacturing. I get to envision the future with people who are really creating it.



Steven J. Simske

Q: One thing about the graphic communications industry is that there are so many ways to get involved and work. What is it that made you particularly interested in the researching field?

SS: Wow. So many things. I’ve always loved reading, and especially magazines and books where you can impose your own structure on the material through bending, scribbling, folding, remembering cues like page numbers or photographs, etc. Reading is such an intellectual process. Then there’s advertising. On the surface it might be considered a misuse of the power of print—junk mail, spam brochures, catalogs. Ah, but wait, done right this stuff is amazing. How can every print be amazing? Is it simply variable data?

No, it’s a lot more. . . it’s aesthetics and layout and flow and attention direction and re-direction. The more you dig, the bigger the hole in your knowledge. Printing is pretty much an inexhaustible learning experience.

Q: With so many areas in the industry to explore, why have you decided to focus your research on digital and 3D printing?

SS: The decision is pragmatic, dogmatic, and enigmatic.

Pragmatic because the company I work for is very keen on digital printing and moving into 3D printing. Also, these are areas of continued growth for the next decade, as labels and packaging become an important part of the cyberphysical workflows that allow people with their ubiquitous supercomputers (smartphones) to meaningfully interrogate more and more of the world around them.

Dogmatic because I earnestly believe that the advantages of printing—among them the modularity of substrate, printing processes, and finishing processes—provides the means for repurposing into many other interesting and profitable processes. 3D printing and the associated reconsideration of manufacturing from the ground up being the most obvious example, we see that the “distribute and manufacture” model for business can be efficiently addressed by printing technologies and their adjacent industries. Reducing inventory, shipping costs, and wastes, digital printing motifs are better for the stewardship role we are

increasingly seeing addressed in the manufacturing sector. Keep in mind, the manufacturing sector worldwide is on the order of 15 trillion dollars per annum.

Enigmatic? Well, that's for reasons I'm not going to tell you. OK, really, that was just for alliterative purposes. There's no hidden agenda here.

Q: You've already dived so deep into many facets of the industry, but what other of areas in printing would you like to explore further?

SS: I am really interested in how printing evolves into 2½D printing, not just the flavor of the day 3D printing. Using printing or printing-inspired processes for mass customization as a complement to the mass production that will likely always occur in some areas (due to economy of scale, production, etc.), printing for 2½D means layering additional surfaces onto an existing object. This so-called surface manufacturing, or conformal manufacturing, relies on continued advancements in imaging, materials, and robotics. It will change forever how hobbyists work, how parts are replaced, how cars and other objects are restored—in short, how everything is made.

I am also very interested in how every printed item can be later uniquely identified. For branding, brand protection, supply chain, etc., printing is very important. I am still very interested in the role printing plays in education. Learning is still much better for printed textbook readers than for electronic readers.

Q: As we know, the industry is always changing and evolving. That being said, what are you most looking forward to in the future of the printing industry?

SS: Printing is one of the most exciting areas in the modern world. As we start to see some aspects of printing evolve into electronic-led or even electronic-only workflows, we see the possibilities for printing change from a focus on flat surfaces to a focus on **all** surfaces. I guess by definition that is really un-focus. The bottom line is, printing is so closely tied to creative expression, it is one of the ways in which people, rather than machines, will be able to express themselves as we progress. The movement of print from 2D to 2½D to 3D is as compelling in many ways as the movement of printing from the Book of Kells to the Gutenberg Bible. What is the right mix of cybernetic and physical learning and printing? I don't know the answer, but I'm interested to see where it goes.

Q: What does it mean to you to win the prestigious Robert F. Reed Technology Medal?

SS: Well, first and foremost, it means that I am receiving credit for having worked with some of the world's best researchers and thinkers over the past 20 years. Any time someone wins an award, it is a public acknowledgement that the person has been fortunate in her or his choice of colleagues, friends, and field of work. Occasionally, there is even some personal merit. The reality of it is that an award is bigger than the recipient. Each time an award is given, it is a good time to celebrate the "adjacencies" around the award and the recipient, and recognize the small section in the continuity—in time and space—of a given area that the person and the particulars of the award represent.

For me, as a generalist in printing, and someone who has stood on the shoulders of giants such as Robert F. Reed to apply printing to new areas (security, mobile interaction, supply chain workflows, etc.), winning this award is a very pleasant surprise. My printing experience comes from the digital printing continuum, for which the jury is still out on how it stands the test of time (outside of the obvious areas such as labeling and packaging). Lithography? Well, that has dominated intellectual thought since the aforementioned Gutenberg. My hope is that

while I stand on the shoulder of giants like Robert F. Reed, I do not leave dirty footprints that require dry cleaning.

Steven J. Simske is the recipient of the 2015 Robert F. Reed Technology Medal. For information about the TAGA Conference, visit www.tagaatc.printing.org.



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GROWING STRONG

CEDAR GRAPHICS

Sam Shea, Manager, Publications, Printing Industries of America

Like the tree of the same name, Cedar Graphics has deep roots. Today, thanks to strategic investments in technology and top-notch customer service, this Iowa-based printer continues to grow. With a headquarters in Hiawatha and offices in Peoria and Quad Cities, Cedar Graphics has become a powerhouse in the region. By offering a variety of services, including UV offset printing, digital printing, large-format inkjet, finishing, mailing, and variable-data printing, Cedar Graphics stays true to its motto of "Yes, We Can Print That!"

Cedar's Roots

Hassan Igram, owner of Cedar Graphics, was fascinated by the printing industry at an early age. When he was around six years old, his father, Charlie Igram, and uncle, Bill Hutchings, started a printing company in the back room of the family grocery store, which was owned by his grandfather, H. K. Igram. This original company relocated after a time to downtown Cedar Rapids and took the name Igram Press.

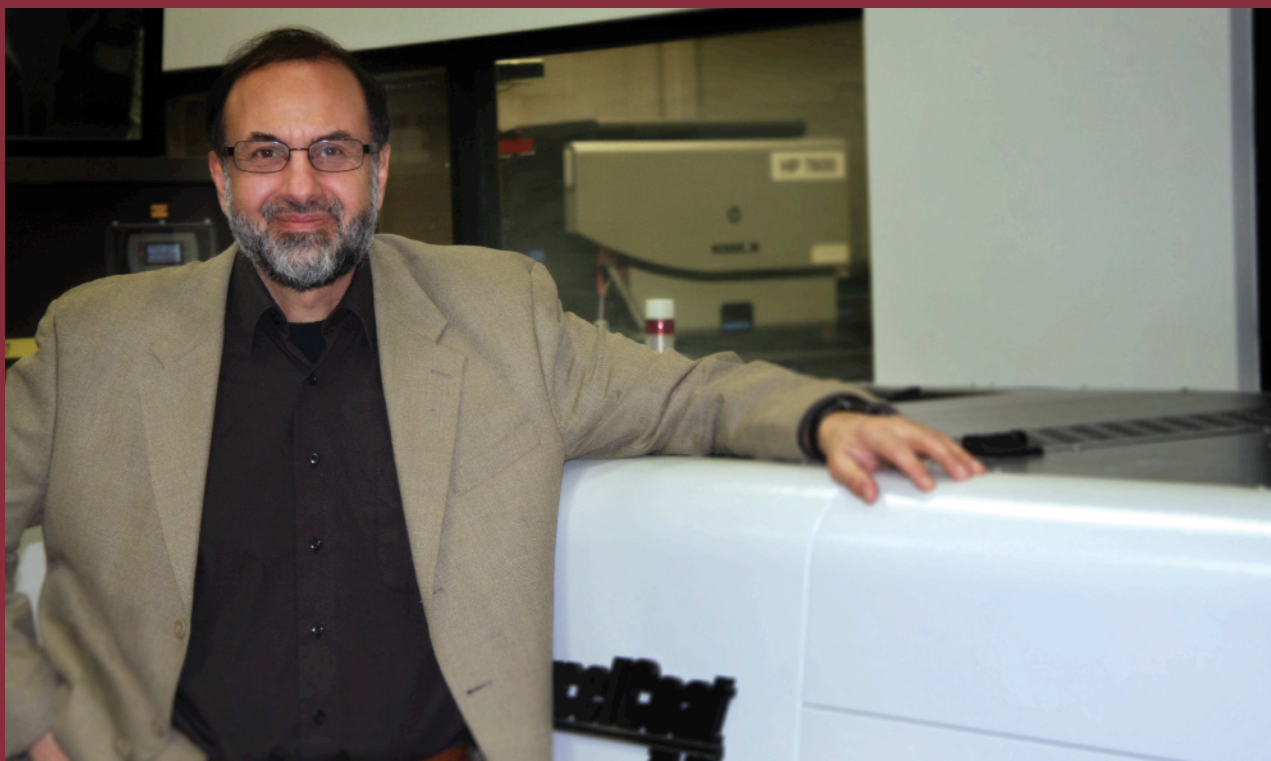
Although Igram Press was successful, Charlie Igram eventually decided to move on, selling the business to Davenport-based Wagner's Printers in 1963. Bill Hutchings, however, decided to remain with Wagner's and became one of their top salespeople.

Some years later, around 1979, Charlie Igram and an old colleague of his, H. Pierce Alexander, started a forms company called Allied Business Forms. One year later they purchased The Laurance Press Co., a then 50-plus-year-old Cedar Rapids printing and publishing company. It was around this time that Hassan Igram went to work for his father and discovered he had a strong affinity for the industry. From 1980 to 1983, Igram immersed himself in printing, learning estimating, bindery, and prepress. In 1983, he purchased the company from his father and took on a few partners. In 1986, he changed the name of the company to Cedar Graphics, and in 1989 he bought out his partners. Later, Igram purchased Wagner's and hired back his uncle.

The Magazine

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Hassan Igram, owner of Cedar Graphics, views printing as a combination of art, science, manufacturing, and service.

Cedar Graphics Today

From those early roots, Cedar Graphics has now branched out into a full-service printing and communications company with a client base that includes Fortune 500 companies, publishers, ad agencies, storefronts, and entrepreneurs. Today, their 96,000-square-foot facility holds an impressive assortment of printing, finishing, and mailing equipment.

On the offset side, Cedar Graphics offers state-of-the-art UV printing, which is more environmentally friendly than printing with traditional solvent-based inks and allows for a wide array of textures and special effects. With their KBA 10- and 6-color UV offset presses, Cedar Graphics has the ability to produce unique, high-quality applications on a variety of substrates.

On the digital side, they can fulfill on-demand jobs with their HP Indigo 10000 and 7500 presses, which use liquid electro-static ink to create vibrant, scratch-resistant images. Of course, the most important consideration about any piece of equipment is what it allows a company to offer its customers. In that respect, Cedar Graphics' digital presses have added tremendous value, attracting a loyal group of customers who now rely on Cedar Graphics for prototype packaging, window clings, and short-run business cards.

For wide-format jobs, Cedar Graphics employs an HP Latex 360 printer. In regards to their wide-format capabilities, an anecdote on the company website speaks volumes. "We received a call from one of our clients who asked, 'Hey, can you guys print a 66-inch by 42-inch banner on adhesive vinyl?' Our answer was 'Absolutely! When do you need it?'" At Cedar Graphics, technology and customer satisfaction go hand in hand.

Finally, to complement their imaging technology, Cedar Graphics boasts an enormous bindery with many finishing capabilities. They can cut, fold, stitch, drill, punch, collate, and UV coat in house, which allows them to produce high quality work on a quick turn around because the product does not leave the facility until it's finished.

Of course, Cedar Graphics also recognizes the critical need to broadcast these capabilities on a regular basis. For this purpose, their company website features useful resources and tips, including a blog and several different tutorials on subjects such as job preparation, mailing, folding, and packaging. Alongside their company website, Cedar Graphics also offers Web-to-print capabilities such as branded storefronts, which provide their clients with an easy-to-use system for ordering customized material online.

Keeping Up with Technology

Cedar Graphics has always focused on technology. Not only do they believe it is vital to stay competitive, but more importantly they want to provide the most advanced services available to give their customers an edge over their competition.

Igram in particular constantly strives for Cedar Graphics to become more efficient and to offer their customers the latest tools. However, he also knows that investments in equipment and other technology must be done in a diligent manner. He has seen some companies take a cutting-edge approach to too early—and he has seen it hurt them. The key is to mitigate risk while maintaining a forward thinking attitude.

In the early days of his ownership, Igram and a few upper managers assumed the responsibility for keeping the company up to date. He recalls spending a lot of time modernizing the company's prepress capabilities—acquiring a film setter, a plate setter, and getting involved in digital proofing. Later, in the early 2000's, Cedar Graphics became one of the first companies in Iowa to offer variable-data printing. They were also one of the first in the state to have a high-end HP digital press after they purchased their first Indigo in the mid-2000's. These days, Cedar Graphics has a sharp group of young professionals who stay on top of the latest advancements to their array of services and who can scale those services and products to best fit their customers.

The Future

Igram's goal is for Cedar Graphics to continue to serve their customers as a print-on-demand service provider, whether it be offset, digital, or wide-format print. In particular, he sees digital and ancillary services driving a lot of growth going forward. He also recognizes the importance of being able to finish what is printed digitally. For this reason, much of the technology that Cedar Graphics added in 2015 was in the area of digital finishing, including near-line finishing for their HP Indigos.

Although they have been expanding in the digital area, Cedar Graphics still places a lot of emphasis on their offset work, and Igram does anticipate a resurgence in conventional print. He also believes that as more companies downsize, the process of consolidation and acquisition in the industry will continue.

In the end, a company has to have the right people who can build it and make it work. In this regard, Igram displays tremendous optimism in his belief that Cedar Graphics does indeed have great people who provide world class customer service and are always working to provide consistent, repeatable quality.

Igram considers printing a combination of art, science, manufacturing, and service. Through careful attention to all of these aspects of print, he and his team at Cedar Graphics have placed their company on an optimal course for growth.

FOR MORE INFORMATION



Learn more about Cedar Graphics
www.cedargraphicsinc.com

WHEN PACKAGING BECOMES SMARTER

RESPONDING TO CHALLENGES THROUGH INNOVATION

Claire Virazels, Marketing Manager, Production Colour & Packaging Technology, Xerox Europe

Safe and stable: these two adjectives perfectly describe the packaging market. But beyond this relative “steadiness,” the industry is going through major changes, in large part due to the evolution of consumer habits.

In fact, packaging is now more than ever subjected to the frantic pace of mass consumption, with the lifespan of products becoming more and more limited. In the same way, the number of variants of a product are increasing, which requires that packages should be adapted to each configuration. “High-tech” equipment and smart phones are illustrative examples of these consumer goods bound to develop rapidly and thus require continual updates in their packaging.

But beyond these changes intrinsic to the market, packaging has also become smarter!

In addition to its primary function, packaging has become a key element to fight counterfeiting and to secure products. Some packaging is capable of tracking products that are likely to be stolen or counterfeited, while others include safety measures capable of certifying the origin of a product.

For marketing, packaging has also become a way of interacting with the consumer through technologies such as QR codes and augmented reality.

These examples illustrate very clearly the changes that are taking place in the world of packaging—changes that come with the printing industry.

For optimization and cost-saving purposes, it has been imperative for the supply chain to redesign and produce the right quantity at the right time. In a sector where printers were once producing in large quantities, the market now sets a new rule that is to produce in much shorter runs, often less than 10,000 boxes!

To meet these new challenges, digital printing technology offers undeniable advantages to

efficiently face the new market obligations. By providing print quality more and more close to that of offset technology, digital printing offers the flexibility required in the modern business of packaging. Today, a printer can, in a single day, manage the production and finishing of ten to twelve different designs of boxes—a move simply inconceivable with any other form of technology!



The packaging sector is at the dawn of a new era, the final contours of which have not yet been defined. Even if it is difficult to anticipate future needs in a fast paced, changing world, the market must respond to new consumer habits and new challenges facing brands by innovating with cutting-edge solutions.

This article originally appeared on the Xerox Passerelles Digitales blog and was adapted in English for the Xerox Digital Printing Hot Spot blog, which offers ideas, insights, and trends to help you grow your business and get the most out of your production digital print technology. The Digital Printing Hot Spot blog can be accessed at <http://digitalprinting.blogs.xerox.com>.



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METALLIC INKS

MORE CONTROL ON PRESS

Martin Habekost, Dr. rer. nat. Associate Professor, School of Graphic Communications Management, Ryerson University

In the past, the color control of metallic inks on press was not an exact science. Most of the time when metallic inks were on press a visual acceptance by the client was used to control the color. Metallic inks cannot be measured with a densitometer or spectrophotometer that uses a 0/45- or 45/0-degree configuration because the gloss from the metallic ink gives false readings. Previously, the only option to measure metallic inks was to use a spectrophotometer with diffuse lighting or d/8-degree measurement geometry. However, this type of spectrophotometer is usually not found in a pressroom.

In 2009 and 2010 I did a study on the measurement of metallic inks using densitometers that have a polarization filter in the light path, and this worked out quite well. The findings of this study were presented at the 2010 TAGA Annual Technical Conference in San Diego, CA and published in the conference proceedings. The only issue was that the type of polarization filter could vary between the manufacturers of the densitometers.

With the new ISO 13655 standard, three measurement modes have been made public and they clearly define the measurement conditions. The following measurement conditions have been specified:

- **M0**—legacy mode (any illumination source, mostly tungsten-based)
- **M1**—D50, UV-included mode (devices can use two different methods to achieve this mode)
- **M2**—UV-cut mode (no UV light below 400 nm)
- **M3**—polarizing mode

The M0 mode is known as the legacy mode and is for all the measurement devices that are currently in use in many pressrooms. Instruments using the M0 mode usually use a blue-corrected tungsten bulb to illuminate the samples. Tungsten-based instruments have a very low amount of UV-light, in the 300–400 nm wavelength range.

The M1 mode is known as the “D50” mode or “UV-included” mode. The light source in the instrument must adhere to the CIE standard illuminant D50. The improvement over previous specifications for D50 is that the spectral power distribution of the wavelengths present in the D50 illuminant clearly specifies the amount of UV light that should be present.

The M1 mode from ISO 13655 goes hand-in-hand with the updated ISO 3664 standard for viewing booths. ISO 3664 also specifies the amount of UV light that has to be present in the viewing booth.

The M2 mode is defined as the UV-cut mode. An instrument in the M2-measurement mode can only use a light source that emits light above the 400 nm wavelength.

The M3 mode is the polarizing mode. It is also UV cut and uses two polarization filters—one in front of the light source and one in front of the measurement sensor. ISO 13655 states: “M3 has the same sample illumination requirements as M2 and includes a polarizing filter in the influx and efflux portions of the optical path with their principal axes of polarization in the orthogonal or ‘crossed’ orientation.”

The M3 mode was originally defined to measure wet ink films and to eliminate all surface reflections, but it can also be used to measure special effect inks. In this case the M3 mode was used to measure metallic inks.

The instruments used for my study were the X-Rite eXact and the Techkon SpectroDens. Both spectrodensitometers allow users to switch between the various measurement modes. They also come with software for capturing the data. Both instruments also offer the option of transmitting the data wirelessly either over Bluetooth (X-Rite) or WiFi (Techkon). This handy feature allows for remote measuring of color, and the computer does not have to be directly tethered to the instrument.

Initially, ten metallic inks were printed on the Prüfbau printability tester, and a Pantone® metallic ink swatch book was used as the color reference. For the determination of the color difference between swatch and print the DE2000 color differencing equation was used. DE2000 was used because the calculated color difference values correspond well with how we, as human observers, perceive color differences. The spectrodensitometers always measure the light reflected back from the sample and then calculate the $L^*a^*b^*$ values and the printed ink density. Therefore, it is possible to measure metallic inks using the M3 mode and get the printed ink density—a number that many press operators can relate to quite well.

For this project the following metallic inks were used: P874, P877, P8063, P8083, P8203, P8283, P8682, P8783, P8824, and P8863. As mentioned before, the metallic inks were printed to match the color of the Pantone® metallic swatch book. Once this was achieved, consecutive prints were made. This was necessary to see the change in $L^*a^*b^*$ values and also the change in the printed ink density. This test on a laboratory printing device was used to establish a bench mark for printing six of these ten

metallic inks on a Heidelberg Quickmaster QM46-2. On press, the following inks were printed: P874, P877, P8063, P8203, P8682, and P8824. Once the target ink densities were achieved, the ink ductor was turned off and 200 sheets of coated paper were printed. The coated paper was similar in color to the paper in the Pantone® book. From the 200 sheets, a sample was taken every ten sheets and the L*a*b* values and the printed ink density calculated by both instruments was recorded.

A critical result here is that two different instruments—the Techkon SpectroDens and the X-Rite eXact—agree in their measurements of the same sample. A main result from this project is that there is close agreement in terms of density between the Techkon SpectroDens and the X-Rite eXact for the metallic colors. The density function on both measurement devices allows easy tracking of the printed ink density on press. Differences start to show up when thick ink films are being printed, as when one tries to print a very intense or dense color. At this point the measurement values start to drift apart, but you have to keep in mind that at a heavy ink film and high ink densities very little light reaches the light sensor, and therefore the calculated L*a*b* values and calculated ink densities can start to differ slightly.

Another option would be to track the L* value of the printed ink. L* is a lightness measurement, so if the measured L* value is below the target L* value, then the ink is too dark and too much ink has been applied on press. If the measured L* value is above the target value, then the ink is too light and a little bit more ink has to be printed.

In many print shops there are different devices used in prepress and press, or a printer may have different locations with an instrument in each facility. The new ISO 13655 standard brings all these different instruments into close alignment. Further, ISO 13655 enables different measurement modes for UV-included and UV-excluded measurements and also the M3 mode for measurement of metallic inks. Together these changes provide huge advantages to practical color measurement and color matching at press-side.

It is not marketing hype, press shops should genuinely seek to upgrade their instrumentation.

The Techkon SpectroDens and X-Rite eXact meet the new ISO standards and are easy-to-use, software-driven devices. Specifically, in this testing, the Techkon SpectroDens and the X-Rite eXact were both used to measure metallic inks on press using the M3 measurement mode. A relatively easy to understand metric for on press control is the printed ink density that both instruments can show in their LCD displays. Using the printed ink density allows press operators to measure and control metallic inks like they are controlling four-color process inks!

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ESSENTIAL XML

FOR EVERY PRINTER

Dr. Abhay Sharma, Ryerson University and Josh Ramsbottom, Norquest College

Extensible Markup Language (XML) is a computer-to-computer communication technology that now touches every aspect of print media, printing workflows, and printing applications. Today XML is widely used on the Internet; by all Adobe, Corel, and Microsoft applications; in Kodak Preps; and in Job Description Format (JDF). XML is used for publishing e-books on tablets and mobile devices in EPUB format. XML-based job dockets enable seamless communication from digital storefronts to imposition to ink key settings to the bindery. Emerging print specifications such as the new iccMAX for v5 ICC profiles utilize XML. The new Color Exchange Format (CxF) uses XML to communicate spot color information across print workflows. Today every owner, manager, prepress operator, production coordinator, and salesperson needs to understand some simple XML basics.

XML is a very easy technology for non-technical audiences because there is no requirement to learn a programming language. The underlying syntax of XML uses simple, English word-tag names such as `<Separation>` or `<ScreenRuling>`. There are no encrypted files or special software needed to implement XML, and it can be viewed using a simple text editor or any browser—Firefox, Chrome, Internet Explorer, or Safari. The simplicity of XML has contributed greatly to its widespread use today. In this article, we will explain the basics of XML and demonstrate a number of practical print applications.

Markup Languages

In many technology areas today markup languages form the fundamental method for data storage and information exchange and display. Markup languages consist of open and close tags, with the information stored in between. Most of us are familiar with Hypertext Markup Language (HTML), which is a markup language used for encoding in web-based applications. In HTML, information is stored within pre-defined open and close tags, e.g. `<h1>This is a heading</h1>`, which is interpreted and rendered by a web browser such as Chrome or Firefox to display the content as **This is a heading**.

What is XML?

XML also uses open and close tags; however, unlike HTML that has predefined tags, XML is an extensible database language, which means that it can be extended or adapted to suit individual needs. XML is used behind the scenes in nearly all modern technologies from Microsoft Word

to the most sophisticated MIS system (and especially MIS systems as they need to talk to many different products). XML is not encrypted or encoded, and the ability to easily view XML and understand the code is fully intentional, leading to very wide adoption and implementation.

The main components of XML are elements, attributes and schema. Elements and attributes are the basic building blocks of XML; these are HTML-like tags that are used to store data. A schema is a type of rulebook where a technology area or industry group has agreed to use only specific XML element names and attributes. Elements are used to store data and communicate information. The data in an XML document is stored between open and close tags, and this structure is called an XML element, e.g. `<Address>25 Birch Drive</Address>`, where **Address** is called an XML element and **25 Birch Drive** is the content of the element. The opening and closing tags must match exactly, including upper and lower case letters and the closing tag has an added backslash.

Further information pertaining to an element can be stored in an associated structure called an attribute. An attribute is always contained within the opening element and the attribute value is enclosed in quotation marks. Attributes are usually features or characteristics of an element, as shown in the following example where the **Address** element has an attribute that indicates if it is residential or business.

```
<Address>25 Birch Drive </Address>
```

```
<Address Type = "Residential">25 Birch Drive </Address>
```

XML is extensible, which means that new element and attribute names can be created to suit the user. A problem exists if one user chooses to use an element called **Location**, while another user may use **Site** or **Venue**. Data files with such mismatched element names cannot be easily sent from one source to the other.

Today many different technology areas and industry groups have agreed to use only specific XML element names and attributes so that files and data can flow freely between systems within that industry. Whole industries such as the finance, printing, news media, and the music industry have adopted and agreed upon a given set of XML element names so that information and data files can flow freely between equipment and systems within a confined ecosystem. The creation of standard vocabularies has greatly increased interoperability and efficient information

interchange between applications and systems. A schema document is an external document that contains a list of approved element names and attributes, and the order in which they must be used.

XML and EPUBs

So how does XML relate to e-books and the EPUB format? The EPUB format is widely supported and used by tablets, smartphones, and dedicated e-readers such as Apple iPad, Amazon Kindle, Kobo, or Nook. The EPUB format is different than a PDF file, as the content in an EPUB is dynamic, so that if the user increases the font size the index still directs the user to the correct page. EPUB is a standard developed by the International Digital Publishing Forum (IDPF), and we see that its XML schema links to www.idpf.org. An EPUB file is delivered as a single file; however, it is actually a zipped archive containing a set of resources that are managed using XML instructions. Go ahead and try it—change the extension of your favorite EPUB book to “.zip” and unzip the file to view the XML code.

EPUB files have an XML directory file that points to the different files defining the book's images, front matter, contents, etc. The EPUB format is useful for books, instruction manuals, flight manuals, and other long documents. Programs such as Adobe InDesign are able to take conventional documents and export them as XML-based EPUBs that can be viewed on a range of tablets and devices. The EPUB technology separates formatting (fonts, font sizes) from the content, thus allowing one to be easily changed without affecting the other. For this reason, a user can choose any range of fonts in which they wish to read their favorite EPUB title. The EPUB community has adopted XML as their underlying data storage format, so an understanding of XML nomenclature and syntax becomes very valuable in this area of digital publishing.

XML and Print Automation

Now let's consider an example that demonstrates the benefits of using XML in printing and workflow automation. There are many instructions required for a print job that typically may be specified by a customer in a digital storefront. After creating the order, the customer file and instructions are often routed to an MIS system and finally to a digital press to be printed. The instructions can be stored in an XML file that consists of XML elements and attributes created according to a specific schema, and in this instance the schema comes from an organization called CIP4 and the XML file is JDF.

The CIP4 schema establishes an XML vocabulary for the printing industry, such that the XML file can be passed between systems from different manufacturers. In the example described here, the storefront may be the EFI Digital StoreFront, the MIS system may be Avanti Slingshot, and the printer controller could be Xerox FreeFlow Print Server. The different stages involve products from different manufacturers to produce the final printed product. The XML file can contain information on what images to use, where to place them on the page, whether to print simplex or duplex, and how many copies to print. If the job is routed between these systems via instructions in an XML file, we benefit from an automated process that is fast, efficient, and free from labor costs or human errors. Further we note that if all companies agree to the XML file format and to only use XML elements that are in accordance with a given schema, there are no proprietary files and we do not need to conduct integrations where a user coerces the data to transfer between systems. In other words, we move towards a true “plug-n-play” system, even for complex, sophisticated multi-vendor systems.



Figure 1: EPUBs can be viewed on different tablet platforms—Kindle, Kobo, iPad—as the file format is based on XML. Here we clearly see the XML relating to this e-book.

XML in Spot Color Workflows

Printing spot colors has long been challenging, especially if we change the media type or printing process or both. Another level of complexity is added if the file contains spot color tints. One way to monitor and manage spot color information from prepress to press is to have spectral data for the spot color and its tints, which can be used to compute accurate printing instructions or new color mixes based on the final printing parameters. But how should this spectral data be stored in emerging PDF document formats so that everybody can easily use it without having to rewrite their applications? You might have guessed correctly—we should all use easy-to-read and -write XML.

The XML format for spot color encoding is called CxF. It originated from X-Rite and was originally used for color information exchange between their instruments and software. X-Rite provided CxF to the wider community and it has now been adopted in ISO 17972 to store spectral measurements for spot colors as metadata in a PDF file. If we browse the internal PDF structure, we can see the stored spectral metadata that

allows for accurate reproduction of these spot colors on any media type. There is no special program needed; all this information is clearly visible

to the user or technician as we see in Figure 2. The PDF and the XML/CxP encoding of spectral data ensures that anybody can read and process the spot color information to print accurate spot color information in newly enabled workflows, such as CGS ORIS CxP Toolbox. All of this works because of XML.

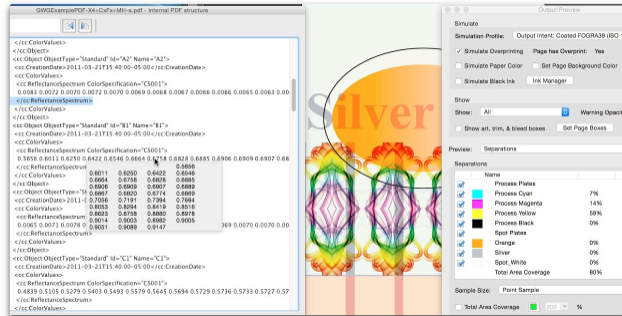


Figure 2: A PDF file is opened in Acrobat Pro, clearly showing the orange and silver spot channels (right). Via Preflight > Options (left), we can see the XML stored spectral metadata that allows for accurate reproduction of these spot colors on any media type.

Conclusions

If your company is buying any new equipment or software, be sure to ask the sales person, “Is this XML compatible?” If the answer is yes, get

them to show you the XML file—after reading this article you have all the information you need to intelligently ask this question.

An important conclusion of this work is to show that if customer or job information is stored as XML, we benefit from an automated process that is fast and efficient, as a human does not need to re-key the job information. The use of a non-proprietary file format also ensures that a user is not locked into a legacy proprietary file format from a vendor who may no longer be competitive or may go out of business. The future of all prepress and press technologies lies in XML.

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FUTURE OF PERSONALIZED MARKETING

BOOK PREVIEW: HANDBOOK FOR DIGITAL AND VARIABLE-DATA PRINTING, VOL. 2

Penny K. Bennett, Ph.D., Professor, Graphic Communication and Howard E. Vogl, Professor, Graphic Communication, California Polytechnic State University

Marketing has evolved over time, and today personalized marketing has become quite popular. Personalized marketing, sometimes called one-to-one or customized marketing, involves sending a targeted message to a specific person. Of course, the more that is known about someone, the more targeted this message can be, and for this reason marketers expend a lot of effort developing individual profiles on people. Marketers do this by gathering data through a variety of sources such as census records, mailing lists, credit card purchases, phone bills, coupon returns, and surveys.

Before gathering this data, though, marketers first determine the most important candidates for their message. For most companies, 80 percent of their business comes from 20 percent of their customers. In the airline industry, for example, frequent fliers generate the most profit. Therefore, most airlines have special programs set up to offer incentives and perks to those frequent fliers to keep their business. When targeting new customers, the keys become identifying someone with a potential interest in your product and also identifying their income and spending habits. The best customers are not only those who have money but also those who have a history of spending money—hopefully on your product.

As the trend toward personalized marketing progresses, we will continue to see creative ways of receiving marketing messages based on acquired data. Even now in grocery stores coupons will sometimes print on the back of your receipt based on your current buying habits. When you order pizza and pay with a debit card, the database remembers whether you like pepperoni or mushrooms on your pizza and prepares an offer for your next visit. It won't be long before coupon holders in the grocery store aisle communicate with us because they recognize the radio frequency identification (RFID) tag stored in our loyalty card and “know” we might be interested in purchasing that particular item.

Issues of Privacy

Personalized marketing is unique to an individual, and this appeals to most people. It breaks the stereotypical model of mass marketing and gets closer to the needs of the consumer. However, it also brings up the issue of consumer privacy.

How much information is too much to share with an individual consumer? Where do you cross the line between relevancy and an invasion of privacy? Many consumers are concerned about the amount of information that is known about them. For this reason, caution should be used when developing a personalized campaign. Identity theft is an increasing

reality with many consumers, and more and more people are shredding their mail to avoid becoming victims.

On the other hand, with the ubiquity of the Internet and the culture developing from its use, some consumers are becoming less sensitive about the information they share. Young adults today are technologically savvy and do not seem as reluctant to reveal information about themselves. They are creating blogs; posting pictures; and using email, social media, and other forms of Internet activity to socialize with their peers.

It remains to be seen, however, what consumer trends will be with our society as our younger, technologically savvy generations advance into a generation with more purchasing power. The digital era has changed so much of our society, and this is likely to continue as we create a database culture where consumers will readily give up bits of information in exchange for some reward. This trend should allow cross-media personalized marketing to grow, and variable-date printing will likely remain a viable component of that process.

This article is an excerpt from the upcoming Printing Industries Press publication Handbook for Digital and Variable-Data Printing, Volume 2, by Penny K. Bennett and Howard E. Vogl. Keep on the lookout for this book in the second half of 2016.

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WHAT PROFIT LEADERS DO

AND THE LAGGARDS DON'T

Dr. Ralph Williams Jr., Middle Tennessee State University, and Dr. Ronnie H. Davis and Tai McNaughton, Printing Industries of America

For decades, Printing Industries of America has provided the printing industry with an extremely valuable management tool—the *Ratios* studies. This resource equips industry professionals with a tool for comparing overall performance and individual cost items to profit leaders, the top 25 percent of performers in our industry. Profit leaders are organizations that have historically been successful through recessions, recoveries, and the most challenging times our industry has experienced since the turn of the millennia.

From 2002 to 2013, profit leaders generated between 8.0 percent and 9.9 percent of the overall profits in the printing industry. This amount is consistently three to four times the average for all printers, with only 2010 being the exception at 7 percent. By benchmarking the industry profit leaders, the *Ratios* studies have always provided valuable intelligence on how best to focus business energies.

Profit leaders, though, can not only be defined by the amount they spend on ink, paper, and factory labor; the revenue and value-add they produce per employee, or the proportion of their assets they invest in equipment—although the *Ratios* studies do track all of these metrics. What we want to know is what makes profit leaders tick? How do they operate so efficiently in order to earn increased profits?

Knowing the answers to these questions would benefit *all players* in the industry. Profit leaders will see what makes them different, which can help them focus on practices critical to sustaining their success. Likewise, those firms striving to achieve profit-leader status may find ways to improve marginal results by studying industry best practices.

In 2014, Printing Industries of America conducted a preliminary study and found that successful performers in our industry tend to engage in strategic planning; however, more research is needed to further this examination. On February 29, a survey conducted by Printing Industries of America in cooperation with the Management Department of the Jones College of Business at Middle Tennessee State University will attempt to gather this much-needed information.

The purpose of this survey is to measure the correlations between various strategic management methods and performance. The management methods explored in the study include the following: strategic planning, goal setting, financial ratio analysis, operations management, community involvement, and entrepreneurial orientation. In addition, the study will explore how various types of family involvement affect the relationship between strategic management methods and performance.

The findings from this study will provide significant benefits to all printers by shedding light on the key strategies and tactics that improve profitability. Regardless of where an organization ranks in terms of profitability, the insights gleaned from the survey responses will aid in the reevaluation of management practices and provide guidance to help propel the company forward.

Completing the survey should only take about 15–20 minutes, and there are incentives for those who participate. By completing the survey, participants will receive a comprehensive report of the findings (valued at \$500) and a free volume of the *Ratios* studies—a total value of more than \$700. However, the greatest incentive for participating in the study is the potential knowledge gained. Our industry is growing, but there are fewer printing companies competing for business—from this study you may learn how to best manage your company in this ever-changing environment!

To participate, please visit our website at www.printing.org or scan the QR code found below. The survey may be taken from any computer, tablet, or mobile device. Visit www.printing.org/strategicsurvey.



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DESIGN FOCUS

DON'T IGNORE THE DETAILS

Jon Hall, Graphic Designer, Printing Industries of America

There is a lot of truth in the old saying, “the devil is in the details.” That saying applies to many situations but it’s especially important to designers. Creating effective marketing pieces can be challenging, particularly when it comes to dealing with the graphic details that many people take for granted. These design details can include the subconscious effects of color, the influence of typeface on readability and legibility, and the relation between column width and reading fatigue. Here are some tips that relate to these devilishly important details of design.

Color Really Matters

When it comes to choosing a new logo or creating a design piece, color is usually the most important factor. According to a University of Maryland, Loyola study on color psychology, 60 percent of the time people will base their attraction to a logo or marketing message solely on color. Think of the McDonald’s logo. If it was purple and green, it probably wouldn’t be as recognizable or even appetizing for most people.

As many designers know, color affects subconscious tendencies as well. Based on a color psychology study from the University of Winnipeg titled *Impact of Color on Marketing*, consumers are more likely to be converted to a buy a product if the color appeals to them. There is also a significant amount of research on the general qualities or emotions that people associate with certain colors. For example, red is the color most commonly associated with power and decisiveness, while blue signifies trust and intelligence.

Typefaces Change Thought Processes

According to a *New York Times* experiment, people are more likely to believe a message if it’s written in a traditional serif font, like Times New Roman or Baskerville. One of the hypothesized explanations for the results of this experiment is that a serif font is more “traditional” and therefore has more history, which makes it inherently trustworthy.

Apart from connoting abstract ideas like “trustworthiness,” typefaces also affect legibility and readability. Legibility deals with how well someone can see the letters—size, shape, clarity, and color all play a part in how well someone can tell each letter apart. Readability, on the other hand, refers to how easy something is to read.

According to numerous studies, many people achieve greater comprehension of text on a printed page when it’s set in a serif typeface as opposed to a sans serif (Arial, Helvetica, Verdana). The reason behind this is that the small serifs found on a serif font lead the reader’s eyes to the next word, guiding them in a way through the copy. When set in a serif

typeface, people have better comprehension, retain more information, and read faster.

Column Width

Most people tend to get reading fatigue easily when they encounter long, wide lines of text on a page. Conversely, people have an easier time reading if the same amount of text is set in two or three narrower columns on a single page. Surprisingly, the length of the materials doesn’t matter, but the width of the column on the page contributes significantly to people not finishing an article.

There are many factors to consider when dealing with the details of design. Knowing how people interact with color, typefaces, and column width can help your designer know what works best in certain situations.

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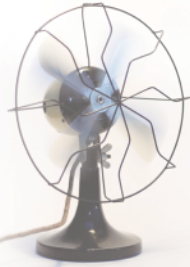
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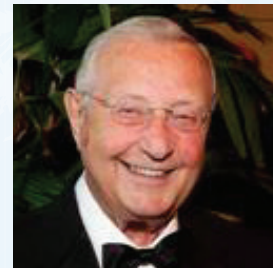
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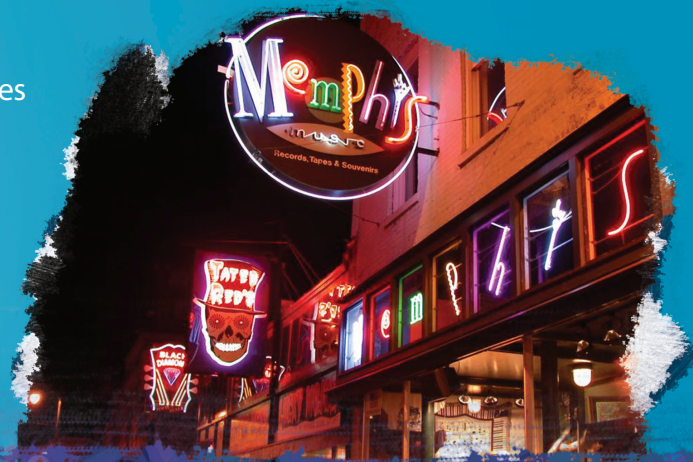
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