



Ghent
Workgroup

PACKAGING & LABELS

Is the next big thing
already here?

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About the Ghent Workgroup

The Ghent Workgroup (GWG) is a worldwide assembly of graphic arts stakeholders (user associations, vendors, consultants, educational institutions, service providers, and end users) founded in 2001. It was formed in response to increased needs for standardization of the different processes in graphic arts workflows, especially in an increasingly globalized service provider landscape. The rules of the group have been carefully conceived to ensure that the group remains practically oriented, and the priority is focused on the needs of the end users.

The GWG focuses on developing best practice guidelines and specifications for graphic arts workflows. While the group started its work developing guidelines for PDF quality control, it has expanded its scope. The group is now involved in magazine, office, and packaging specific specifications, the development of job ticket metadata specifications for delivering PDF files for advertisements, packaging, digital print and signage, preflighting PDF files, and in developing test suites to ensure workflows and applications are configured and used correctly.

All material created by the GWG is disseminated free of charge through the website of the GWG (www.gwg.org) and through the vendors and user associations partaking in the work of the group.

The mission statement of the Ghent Workgroup states that the group will “establish and disseminate process specifications for best practices in graphic arts workflows”. In practice this means that the group:

- Develops and maintains process specifications and associated documentation for best practices in graphic arts workflows.
- Develops tools to implement best practices and/or find areas of improvement
- Develops and maintains reference implementations to ensure the specifications it develops are usable in the real world.
- Actively promotes adoption of its work in both the graphic arts user and vendor communities.
- Streamlines and coordinates the decision process between its members.

Much of the work of the group is done through teleconferences and e-mail discussions. Three times a year, the members come together for a three-day face-to-face meeting. To streamline the work and decision process, subcommittees have been organized around specific topics to do the actual work. To learn more about the different subcommittees, or to find out how you can contribute to this effort, visit the Ghent Workgroup website(www.gwg.org).

Introduction

Throughout the history of the digitization of printing technology and processes we have seen a fairly repeatable model of change. It goes something like this; a new technology is introduced; it drives new PSP creativity in how it can be used; PSPs introduce it to their customer base who see new applications; with that come new requirements; which drives new technology development; and the cycle continues... While all of this is going on, the consumers (whether it is of information or product) are adopting and redefining their expectations as well, creating new demands. As this cycle continues, so does the adoption rate and the transition from legacy technologies and processes.

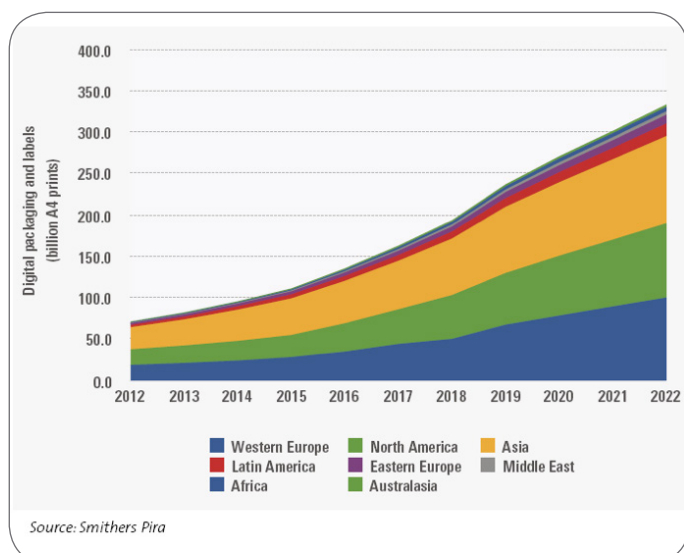
If we translate this model to the label and packaging market, we are already well on our way. While the annual total market for retail packaging is hard to pin down, it seems to fall in the \$400 to \$500 billion range. Estimates are that only about 3% is currently digital production, most of that in labels and flexible packaging, creating significant opportunities for growth, but in which applications and at what rate?

Opportunities abound

Packaging production is projected to grow at up to 5.3% annually through 2020, and digital print for packaging is projected to grow annually at 15.4% to 2022. According to the Smithers Pira 'Future of Digital Print for Packaging to 2022' report, it is estimated globally packaging printing with toner and inkjet at \$13.4 billion (€11.4 billion) for 2017. Of that figure, labels accounted for 78.6% of total value and 86.0% of the print volume in 2017. This rate of growth is being affected by new packaging applications and market segmentations. Growth in non-label print segments will significantly exceed that for labels across 2017-2022. Digital packaging is growing strongly because it is cost effective for short runs and offers brands and retailers new functionality.

Global digital packaging and label market share 2012-2022

The US labels market is forecast to grow 3.4% annually to \$19.8 billion in 2021. Growth is largely determined by the pressure sensitive label segment, which accounted for 76% of total demand in 2016. Digital printing will continue to grow at the fastest rate of any label printing technique through 2021.



Historically, label production had been driven predominantly by flexography and offset, with gravure picking up some of the larger runs. In the mid 1990's we started to see the early use of the digital electrophotographic process for label production, with the Xeikon DCP/32S. Since then we have seen a shift to a variety of electrophotographic and inkjet technologies, from Konica Minolta, Mark Andy, HP Indigo, Gallus, Canon and others. This shift has driven the growth of short run label production, offering CPCs the benefit of customized branding, targeted marketing and quicker time to market.

At the same time this has been going on we have seen an increase in the use of flexible packaging which has also impacted printed label production. The flexibility and cost advantages of direct to package printing, especially with the introduction of inkjet, are now starting to impact label and some rigid packaging print production as well. So here, as in labels we see not just a shift from analog to digital, but also a shift in the type of print demand. These new applications are impacting growth beyond shifting from analog to digital through the introduction of new applications.

We are beginning to see a similar scenario start to emerge in the folding carton space. There has been some growth in digital folding carton migration from offset, with electrophotographic and inkjet technology, primarily driven by and offering some of the same benefits of digital label production. In addition, we are now starting to see shades of alternative packaging methods in the expanded use of flexible packaging and corrugated in place of folding carton. In both of these production inkjet technologies are now making it to the market. Flexible packaging's latest entry is the new UTECO/Kodak Sapphire EVO, and in corrugated there are two new entries, the EFI Nozomi C18000 and the HP PageWide C500. The movement in this space is still early, and it will be interesting to see what directions it takes.

Labels and packaging have many different and unique requirements over what we see in print for publication or marketing collateral. Media and ink compatibility and regulatory compliance, especially for food and Pharma. Broader and



more stringent color requirements to enhance visibility and maintain brand identity. Specialized converting needs and streamlined design to distribution workflows to enable faster time to market, are just some of the areas that are impacting the adoption and growth of digital print technologies in this space. If you add to that some of the new opportunities for the CPCs like personalization, on package promotion and embedded intelligence just to name a few, you can see that there are some challenges and exciting times ahead.

While most of these types of systems are somewhat unique by design, in general they all have some of the basic requirements we see in a traditional printing process. Minimally you need an imaging system with ink and media, a transport system, and a digital front end with some workflow and process control as well. But that is where the similarity stops. As you start to dig into more specific requirements, you realize that in a bespoke system, each of those components can be very different by design. The imaging can be offset, flexo, gravure, inkjet, etc. The inks can be dye based, pigment based, electronic components, and more. The transports can be roll-to-roll, roll-to-sheet, sheetfed, static, or even dynamic; and the media can be almost any surface you can imagine. While this may sound almost too far-fetched to be real, it is already starting to happen; and we can expect the rate of

growth of these types of systems to increase.

I use the term bespoke to delineate purpose-built custom solutions, as compared with hybrid systems that are built with multiple technologies but can be used or configured for different applications. Some of these systems are being created by and for companies that have a very specific use case, although many are being developed by the current crop of press manufacturers. Press manufacturers are purposely designing some of their new presses to be modular, to meet customer requirements for this new level of customization. We have already seen examples of this from HP Indigo and KBA/Xerox, and most recently Durst and OMET, with the released the new OMET XJet, a new hybrid printing platform integrating Durst's Tau 330 digital inkjet system with OMET X6 flexo stations and converting units. Most of these are targeted at label production and enhanced design capabilities, in this latest case by integrating the Durst printing with OMET X6's finishing and converting units like cold foil, hot foil, lamination, varnishing, die-cutting and slitting in one pass.

Yogev Barak, Director of Strategy and Business Management at the Indigo Division of HP Inc., takes the concept one step further. "I think that that flexo combined with inkjet is important, but there are other areas and certain kinds of embellishment, like our Indigo GEM technology, that aren't using flexo". HP Indigo GEM is a fully digital one-pass printing press for embellishing with foil, screen, tactile, varnish and other special effects. Developed with JetFX, it uses one workflow, one operator, and one design file without the need for tooling, utilizing GEM Coat and GEM Clear dispersants.

Others agree that there seems to be more of an underlying demand for new and unique applications. According to Kevin Abergel, Vice President of Sales and Marketing at MGI USA, "I think people are beginning to realize that ink on paper isn't necessarily enough anymore to be a sustainable business model, and people need to find new and different ways to interact with the final consumer. We've been hearing this more and more almost on a monthly basis".

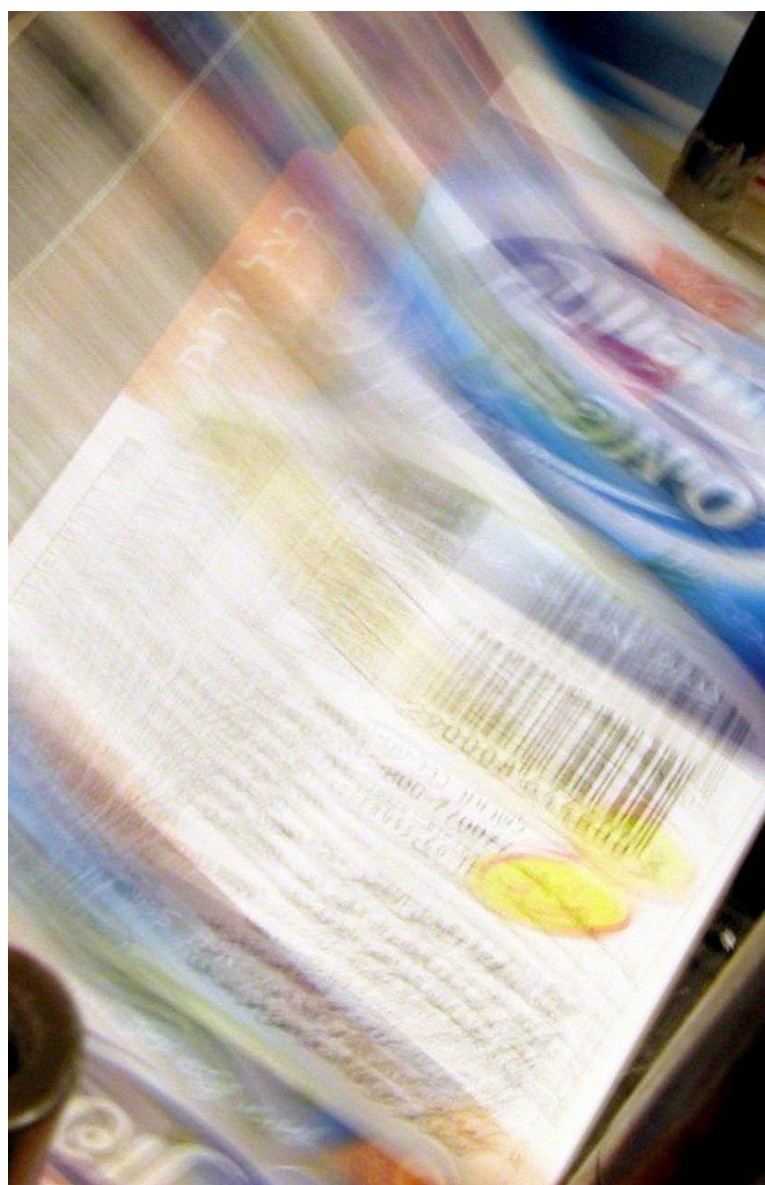
In the end, these bespoke/hybrid systems are designed for different use cases. For example, they could be designed for a more efficient production solution with lower entry or operational cost than a more generic press. They can become an integral part of a manufacturing process, add security or create 'smart' functionality in a label or package, or just add new creative design capabilities. We are also seeing this approach fill the disparate and growing needs of what we are currently calling 'functional printing'

Print has historically been used as a way to connect with people; however, new technologies are now enhancing how print can connect with people, just as the internet and social media are finding new ways to connect with people. While variable data and targeted marketing materials have become more of a mainstay in commercial print, Labels and Packaging are the target for much of this new development of bespoke and hybrid systems.

While a 'standardized' PDF file format to support the unique needs of packaging is still not here, we are now much closer to the realization of that goal. With the release of PDF 2.0, also known as ISO 32000-2:2017, the first significant update since 2008, we are further along on the path to a standardized solution. PDF 2.0 is on its way to implementation in DFE workflows, and you should start to see it in product upgrades throughout 2019. In addition to many other newly added features in PDF 2.0, there is support for CxF/X-4 (ISO 17972-4), which allows spectral color values to travel along with the PDF file. In further complement to that, the development of iccMAX (ISO 20677) will provide a way to support the standardized use of extended gamut, spectral values and non CMYK colors in images, amongst other valuable features that support packaging design and production requirements.

The recently published 'Processing Steps for Packaging and Labels' Part 1 (ISO 19593-1) provides a way to include processing steps beyond design content in the PDF file. Using Optional Content Groups (OCGs), or what most think of as layers in a PDF file, you will be able to include finishing and other processing information in the PDF file as

well. The GWG (Ghent PDF Workgroup) is working on further extension of this standard, along with new ways to use the optional content structure to support other workflow requirements. One of the final pieces of this new standardized workflow structure will be the introduction of PDF/X-6 (ISO 15930-9), still in development, which will tie all of this together in a file for reliable, standardized packaging print production. It is anticipated that PDF/X-6 will publish sometime in 2019, and then brands will be able to have their special colors used in packaging design and production workflows in a standardized and non-proprietary way.



Optimizing and Automating

While we are waiting for the day that PDF/X-6 solutions that support standardized production are a reality, it isn't stopping the development and use of PDF in packaging production. In fact, we are already starting to see the implementation of some of these individual components finding their way into software vendors' products. Processing Steps has already found its way into products from Esko, HYBRID Software, CHILI publish, and others. The 'standards gap' for color support is being filled by products like GMG OpenColor, Kodak COLORFLOW, and Esko Equinox and Color Engine, amongst others. This has led many large converters to rethink and retool their production workflows.

For example, last year was a watershed year for HYBRID Software, the developer of Packaging Software solutions that optimize and automate packaging production. In 2017 the company doubled its rules-based PDF workflow automation software Cloudflow installed base. Esko and Enfocus, both divisions of Danaher Corporation, also develop PDF production tools and automation workflows for packaging and

commercial print; both are seeing increased interest in process optimization and automation. This interest was highlighted in the recent Idealliance Capital Investment Study, which reported that 67% of the over 1000 respondents identified "More efficient workflow" as their primary investment objective for the next 3 years. We expect that 2018-2019 will be great years for PDF workflow solutions for packaging and other segments of print production, all leading up to the 'big show' Drupa 2020.

The adoption and automation of PDF packaging workflows, as we saw with commercial print and publishing workflows in the late 1990's and early 2000's, will not only increase margins and reduce cycle times, it will further drive the adoption and use of digital print technologies. It will also help support the increased use of hybrid printing devices that are beginning to find their way to the market. In fact, we expect to see a significant increase in both hybrid and bespoke specialty production inkjet presses and we look forward to seeing them.

About the author



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David Zwang, travels around the globe helping companies increase their productivity, margins and market reach. With over 40 years of industry experience, David specializes in process analysis, and strategic development of firms in the fields of publishing, design, premedia, and printing across the globe. He began in the graphic arts as a commercial photographer, and has since founded and sold several prepress and printing operations. His experience includes expertise in pre-media and cross media publishing, with an extensive background in digital, offset, and flexo printing processes. His expertise in production optimization, strategic business planning, market analysis, and related services to companies in the vertical media communications market has transformed many businesses.



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