Reworking
Your Production Workflow

Automating repetitive tasks will free employees to focus on strengthening customer relationships or doing tasks that require more creative or complex problem-solving skills.

Each new year brings predictions about which market trends will accelerate over the next 12 months. Here are some predictions about digital printing:

1. As brand managers and consumers continue learning about the personalization and customization possibilities of digital printing, the demand for all types of digitally printed products will continue to grow.
2. In firms that serve global brands, flexo, offset, and screen printing presses will continue to be consolidated in facilities equipped with a mix of short-run digital presses, digital production presses, super-wide digital printers, and wide-format flatbed inkjet printers.
3. Sign shops and small print firms that serve local businesses will also adopt a mix of cut-sheet digital presses, roll-to-roll inkjets, flatbed printers, direct-to-garment printers, and computer-driven finishing and fabrication equipment.

One key to making these consolidated, hybrid printing shops profitable will be highly automated workflows that can:

1. Accurately and efficiently produce more short-run jobs or high-value, data-driven jobs.
2. Keep jobs flowing so expensive equipment doesn't sit idle while job setup issues are resolved.
3. Allow jobs to be transferred to other printers — either to meet tight deadlines or maintain operations if one printer is down for repairs.
4. Enable customers to submit orders or retrieve job status information 24 hours a day, every day.

Eventually, automated workflows will streamline nearly every print project phase, from client communications, order processing, preflighting and file correction to color management, imposition, scheduling, production, finishing, and reporting. Automating repetitive tasks will free employees to focus on strengthening customer relationships or doing tasks that require more creative or complex problem-solving skills.

Many workflow automation systems are being built around the Adobe PDF Print Engine (APPE) 3, which can render

Eileen Fritsch, Industry Author

Figure 1: Agfa Graphics' Asanti PDF-based workflow for sign and display applications simplifies all of the steps needed from taking incoming data through outputting the final product.

Figure 2: Esko's i-cut Suite is an automated PDF workflow for large-format printing. Use it to preflight files, optimize layouts, and create cutting paths and bleeds, and extend graphics.

Print Engine (APPE) 3 uses a scalable Mercury Raster Image Processors (RIPs) architecture to render complex design elements in variable data jobs, drive digital presses at rated speeds, drive multiple devices concurrently, and balance loads across pages and jobs. It takes full advantage of the computing power available in multicore computing systems and networked environments.

According to an International Data Corporation (IDC) white paper on the Mercury RIP Architecture, Adobe Print Engine 3 enables highly personalized print to integrate seamlessly into multimedia campaigns for mass audiences or an audience of one. IDC analysts observe that designers "can no longer be bound by a particular output medium, output format or printing device."

With automated PDF-based prepress workflows for large-format graphics, you don't need separate RIPs that require individual operator attention, nor do you have to move among separate workstations to monitor and manage production. Many workflow suites provide ways to monitor jobs remotely from mobile devices or your PC at home.

Benefits of a PDF-Based Workflow

The Adobe PDF Print Engine can make it easier to execute the designer's intent by resolving potential printing and finishing issues during prepress. Because the APPE uses the same core technology as Adobe InDesign, Illustrator, and Photoshop, it can quickly and accurately handle live transparency stacks, 16-bit smooth shades and color conversions, mixed-color spaces, and spot-color emulation.

In a PDF workflow, "What you do in the prepress stage determines what will happen in the rest of the steps," explains Bart Fret of GMG Color. Most workflows include tools for preflighting incoming jobs and automating repetitive tasks such as: Adding bleeds, color bars, registration, and cut marks; flattening transparencies; and resizing files.

Preflighting: This step validates that the designer has submitted the correct file format and resolution for the intended output device, and that fonts aren't corrupted or missing. Errors in the PDF can be identified, reported, and/or corrected. This protects against unwanted RGB content and the appearance of data and objects that weren't intended to be printed. Preflighting ensures that layers and transparency are handled correctly and lists potential problems that will show

files for fast, accurate, and color-managed output on any PostScript enabled device. The list of software developers that incorporate Adobe PostScript or the PDF Print Engine reads like a "who's who" of print-industry leaders: Agfa Graphics, Caldera, Canon, CGS, ColorGATE, EFI, Epson, Esko, Fujifilm, GMG Color, HP, Kodak, Konica Minolta, Océ, OKI, Onyx, Ricoh, Roland, Screen, Sharp, Xante, Xeikon, and Xerox.

When Adobe PDF Print Engine 3 was announced in September 2013, it represented a major advancement in developing a common workflow for multiple types of print jobs. Adobe PDF

up in the final output. After the designer or press operator has corrected errors that have been identified during preflighting, the APPE automatically generates PDF master files that contain all of the elements required to print and finish the job.

Design Collaboration: PDF workflows can also make it easier to collaborate in the early stages of the job. The collaborative PDF workflow in Esko's Suite 14 enables designers to see 3D visualization of their packaging designs and POP displays and envision how they will look in a virtual store environment.

Tucanna's tFLOW software sets up an online collaborative workspace where legal teams, manufacturing engineers, and marketing executives can see high-res versions of a file and all comments and corrections made by others. The PDF doesn't leave the Tucanna tFLOW system until it's approved and ready to print.

Bi-Directional Communications: The APPE can combine standards such as International Color Consortium (ICC) profiles for color management with bi-directional JDF tools for transmitting data from the job ticket. Job-related data can be sent back and forth from other JDF-enabled software including Print MIS systems, digital storefronts, color-management modules, and automated cutters and finishing equipment.

Return on Investment: The ROI of workflow automation comes from a reduction of labor, ink, material costs, and an increase in the number of jobs that can be processed on high-speed printers and automated finishing equipment.
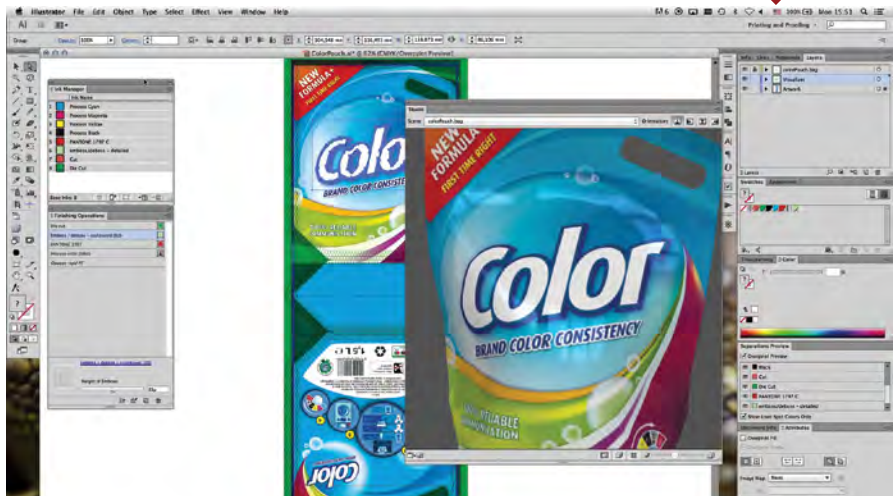

Figure 3: The Studio Visualizer in Esko's Software Suite 14 provides dynamic print visualization previews of package designs. Sharing these previews through Esko's WebCenter shortens the product-design cycle by helping all stakeholders review package or POP display designs in 3D.

For example, automated workflows can reduce costly late-stage errors that require wasting time, ink and media to reprint a job. As turnaround times and margins shrink, a PDF workflow with preflighting and error correction can drastically reduce the number of hours prepress personnel will spend fixing problems with transparency, image quality, white channels, and cut files. Plus, many of the automated software solutions are designed to optimize ink usage for each printing platform.

"The ROI will differ for every customer, but we have some tools that can help calculate the benefits," said Mark Gallucci, Manager of Technology Marketing for Agfa Graphics, North America.

Raimar Kuhnen-Burger of EFI believes all sizes and types of businesses can benefit from automated workflows — even two-person shops equipped with a single wide-format printer and finishing device. With an EFI Digital Storefront for job submission and a Pace Print Management Information System (MIS) for scheduling, the entire process can be automated. Customers can be automatically notified when their job is ready for pick-up or delivery.

Print Workflows Are Converging
While many commercial printing firms have used centralized PDF-based prepress for years, this hasn't been the case within the specialty imaging companies that built the market for large-format graphics. Many
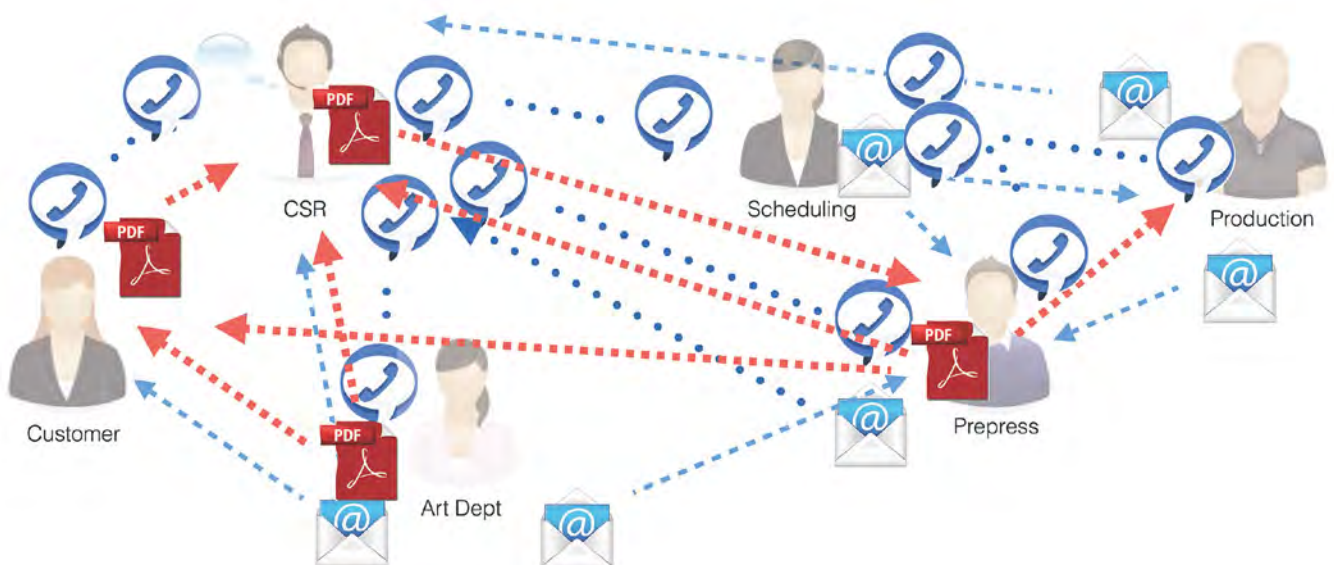

Figure 4: In an SGIA Expo presentation, Tucanna's Darrian Young emphasized that 'automation' and 'workflow' aren't the same thing. While automation controls the equipment used to process incoming files, your workflow actually starts with a series of emails and phone calls between your customers, customer service reps, art department, prepress, and production staff. Building a collaborative workflow that prevents miscommunications can also reduce the cost of changes and production errors.

wide-format graphics producers do their file-prep work in RIPs, and often use different RIPs for different printers with different ink sets.

That scenario evolved because the earliest commercial wide-format printers were used primarily to print small runs of art and photo enlargements instead of multipage, variable-data text documents. The IRIS 3047 and other first-generation aqueous dye ink printers didn't have the speed to be used in production or the color stability for proofing. Printer manufacturers and RIP software developers chose to expand the color gamuts and potential markets for wide-format printers by adopting ICC profile standards instead of limiting themselves to print-industry standards for CMYK color.

As printer manufacturers developed inks and machines that could print on substrates other than white paper, software developers focused on creating specialized RIPs that excelled in specific image-centric applications such as: Art and photo printing, dye sublimation, signmaking, billboards, textiles, and film positives for computer-to-screen systems.

After pigment inks resolved color-stability issues, aqueous wide-format inkjet printers were used in commercial printing firms to print hard-copy proofs of long-run jobs, such as magazines, marketing collateral and packaging. So, prepress software companies developed specialized color-management software that enabled wide-format inkjet printers to accurately simulate color output from offset, flexo and label presses.

Today, many commercial print providers want to use high-speed flatbed inkjets, grand-format printers, and wide-format digital presses for high-value, data-driven brand-marketing applications such as interactive POP and retail displays as well as customized packaging and labels. The press-simulation color technology developed for proofing has enabled some workflow automation systems to gang-up and print variable-data postcards and other smaller displays on high-speed flatbed inkjet printers or wide-format digital presses such as the HP Indigo 10000.

As commercial printers who have used automated, integrated PDF workflows for years expand into wide-format graphics, they expect to use similar workflows for wide-format graphics printers.

Commercial printers understand the need for a centralized workflow because

that's the only way you can maintain color and consistency" on multiple devices, said John Kaufman of Canon Solutions America.

Currently, separate workflow systems still exist for "page production" and "graphics production." But eventually the largest producers of marketing graphics will expect a workflow hub that can drive everything. For example, Agfa Graphics' recently incorporated all of the functions of their Asanti workflow for sign and display graphics into their Apogee 9 workflow, which is a comprehensive production hub for all types of printing presses, digital presses, and computer-to-plate or computer-to-screen devices.

The modules in HP SmartStream can also be configured to drive a mix of HP Indigo digital presses, HP Scitex industrial flatbed inkjet presses, HP Latex roll-to-roll printers plus dozens of special-purpose finishing devices.

Within the large-format graphics community, new owners of higher speed inkjet printers have begun to recognize the urgency of automating their workflows. According to Isabelle Noppe, Product Manager of Esko's i-cut Suite for large-format printing and finishing workflows, "Flatbed printer owners come to us for guidance because they are dealing with short runs on expensive, high-speed presses. They have invested a lot of money in these presses and really want to keep them running. They struggle because without automated workflows, they can't keep up with all of the short-run jobs."

Not All Software Uses the APPE the Same Way

Because there's so much diversity in how digital printers are used, not all programs built with the APPE offer the same level of functionality. In some automated workflows, the APPE renders the output file and delivers the data to the selected Postscript output device. Or, the APPE can send the optimized PDF master file for rasterization in the RIP or digital front-end for each printer.

For example, after preflighting the file and preparing print data in GMG software, you select the printer, print mode, materials, and finishing tools you will use to output the job. Then, the GMG software automatically routes it to your RIP, which scales it, tiles it, and adds cut marks. GMG software then generates a print file for the printer you selected, and a cut file for the finishing device you plan to use.

Conversely, Agfa Graphics' Asanti and Apogee workflows ensure color consistency by rendering the data before sending it to each printer.

The EFI Fiery XF RIP uses the APPE to render PDF files and the CPU to process JPEG and TIFF files. In the "full gamut" mode of the Fiery XF RIP, you can serve clients who are more concerned about eye-popping color than matching brand colors from multiple devices. ONYX Thrive maintains color consistency and predictability by processing all incoming files through the APPE.

Some automated workflows are built around one PDF engine per printer. This may be fine for smaller print environments, but inadequate for shops with high-speed flatbeds or super-wide printers. "ONYX Thrive can accommodate multiple RIPs for a single printer," says Bryan Manwaring of ONYX Graphics. "This means that you can process as many PDF files at the same time as your computer can handle."

You don't want your printer to sit idle while a big job RIPs, agrees Raimer Kuhnen-Burger of EFI. The newest versions of their EFI XF proServer uses application-specific chips to process large graphic files much faster than a general purpose CPU. This allows print shops with particularly heavy workflows to balance the work between two VUTEks.

Joseph Mergui, CEO of Caldera, notes that some large-format graphics workflows don't allow the use of PDF/VT for variable-data-printing within their architecture. "Caldera does, because we consider PDF/VT as a great asset for the automation of customized printing."

He adds that, "We have also firmly embraced JDF as a strong enabler for automating everything from quoting to finishing. Finishing is becoming as important, if not more important, than printing when we talk about automation. Finishing is considered one of the last bottlenecks to crack to achieve full automation."

Workflows for Digital Press Pages and Wide-Format Inkjet Graphics are Different

Printing large-format display graphics on inkjet printers is very different than printing pages of variable data on cut-sheet, toner-based digital presses. For example, EFI offers Fiery controllers for those presses and Fiery XF software and servers for wide-format inkjet graphics.

Many of Canon's high-speed digital presses include in-line finishing systems, which make it easier to automate prepress-to-finishing workflows for digitally printed documents. Canon's PRISMA workflow automation software handles high-volume, variable-data jobs on continuous-feed and cut-sheet inkjet presses that print and finish transactional documents, photo books, text-only books and newspaper inserts. Canon Solutions America recommends the ONYX Thrive PDF workflow for users of large-format printers, including Océ Arizona flatbed printers and Océ high-speed ColorWave 900 wide-format inkjet printers.

Agfa Graphics (which was a pioneering user of PDF in the Apogee workflow for commercial prepress) unveiled the Apogee 9 production hub that combines workflows for digital and traditional printing with features from the Asanti sign-and-graphics workflow software for wide-format inkjet printers.

Automating the finishing of large-format graphics is more challenging than document finishing, because graphics "finishing" can include everything from varnishing, folding, cutting, laminating, clear coating, engraving, welding, stretching, and sewing to manual installation of tiled vehicle wraps and wall coverings. Some of the new automated workflow solutions for large-format graphics include tools to streamline the production of the most popular types of graphics, including contour-cut POP displays, banners, gallery wraps, vehicle wraps, and wall murals. Some software adds cut lines, grommet placements, and extra material for banner hems of welding. In Esko's i-Cut software, you can create and save the dimensions of the irregular tiles needed for a specific wall in your local mall or exhibition space.

The HP SmartStream suite of tools can be configured to automate design, prepress, production, finishing, and shipping on a mix of HP Scitex and Latex production inkjet printers and Indigo digital and inkjet web presses. HP has partnered with more than 100 developers of color-management software, large-format RIP software, variable-data printing software, and finishing and packaging equipment to create end-to-end solutions for a large range of specific products.

Automated Workflows Can Start with Customer Approvals

The ultimate workflow dashboard for wide-format graphics might include e-commerce, customer service, file reception, project management, billing, scheduling, design, prepress, printing, cutting welding, sewing, and painting, packing, and mailing.

"But that perfect dashboard doesn't exist yet," says Darrian Young of Tucanna Software. He suggests that you automate certain steps and tasks first, so you can achieve a series of small victories.

Young also points out that "automation" and "workflow" aren't the same thing. While automation can be applied to the repeatable steps of a workflow, your workflow actually begins with your customer. While automated workflows orchestrate elements such as prepress and production, costly delays and production errors can result from miscommunications among the customer, the art department, and your customer service representative.

So, Tucanna's automation suite includes the tFLOW Approval collaboration tool for submitting, annotating, preflighting, and tracking jobs and files; and the tFLOW Production tool that automates repetitive prepress tasks, centralizes color management, and repurposes and optimizes files for different printing conditions and technologies.

From the dashboard in tFlow Approval, everyone involved in the production of a package design or marketing piece can see the status of the job online. They can see the latest, high-res versions of all files as well as all comments and annotations. This eliminates the need for countless emails and the production of multiple low-res versions as email attachments. As jobs are approved, the PDF files are automatically downloaded and processed by tFlow Production.

Esko's Software Suite 14 includes pre-production tools for collaboration among brand owners, retailers, designers, packaging manufacturers, and print service providers.

Some Software Incorporates Color Management Expertise

Not all jobs printed on wide-format inkjet printers must match output from other types of presses. But if you are producing packaging, POP displays, or other brand graphics, the designers will expect all corporate colors to match. Some workflow automation suites are specifically designed to make it easier to match brand colors generated on different types of printers and substrates. This type of software also supports automatic calibration to meet print-industry standards and options for optimizing ink usage on each type of output device. With automated color management, the need

for in-house color-management experts to manage multiple RIPs is not critical.

For example, after orders come into the Asanti workflow and are preflighted, and color settings are applied based on the output device, ink type, media, and desired quality level. The data is then put in RIP and sent to the output device. In Asanti's wizard-based "Calibrated Print Modes, " users can choose one of five quality modes, ranging from "Express" to "High Definition." Each mode is optimized for the speed and quality requirements of common sign and display applications. Agfa Graphics has certified each print mode to provide predictable quality and gray balance on a large variety of substrates used in sign making and graphics production. The calibrated print modes make it easy to maintain optimal quality, while automatically achieving a high level of ink optimization.

GMG production and color management solutions for wide format printing are modular systems that work with almost any large-format devices, including most high-speed industrial flatbed presses and digital-cutting systems. The solutions are designed to maintain color quality and consistency in a manner that isn't very time consuming for your staff. GMG's proprietary color management system doesn't use ICC profiles: "Our profiles are of a much higher quality," says GMG's Bart Fret. "We are much more precise in how we generate profiles and they are often generated differently based on the printer, inks, and media used to get the optimal result." The GMG Smart Profiler includes GMG's remote calibration technology that ensures that if you send jobs to different output devices you will get the same color on every printer.

According to the company, "Intelligent recalibration algorithms permit repeatable color results (e.g. ISO coated V2 or GRAcOL) even on challenging materials." This makes it easier to deliver repeatable color on multiple output devices if certain jobs need to be reprinted a week, month or year later.

EFI XF RIP software for large-format graphics can be used to match brand color output on whichever press in your shop has the smallest color gamut. But Fiery XF also includes color-management options specific to wide-format graphics such as Intelligent Clean Colors and a Full-Gamut mode for producing high-quality, eye-catching color images. The controls in Fiery XF can be customized for each user's workstation,

so that new hires or other employees who aren't skilled in color management can't unintentionally introduce color errors into the automated workflows you have established for each connected printing device.

"With Fujifilm's cloud-based color management system, ColorPath SYNC, you can profile all devices to a single target and achieve consistent color reproduction in your wide-format production environment," said Mike Barry of FUJIFILM North America, Graphic Systems Division.

According to HP's Bob Raus, the ability to reproduce colors accurately on multiple presses, technologies and in multiple locations is a challenge for any printing technology. He believes GMG and other color-management systems can help print-service providers deliver the consistent quality that makes digital printing a viable alternative to conventional printing on a large-scale basis.

Changing Your Workflow Requires Management Commitment

Because so many options exist and changes can disrupt your existing workflow, it's easy to get paralyzed by indecision. Comparing modules, features, and costs can be a challenge.

Companies such as HP, Canon, Agfa Graphics, EFI, Fujifilm, and Ricoh provide consulting services and project-management assistance that can help businesses of all sizes build workflows that unify your existing printers with higher-speed inkjet presses, toner-based presses, and UV flatbed printers. The printer manufacturers understand that if they make it easier for your printing business to get things right in prepress and production, you will be able to go out and get more business.

Gallucci suggests to "do some homework to clearly identify the desired outcome and requirements" including the types of products you might want to produce in the future. Then, you can ask the right questions of each vendor. You can also consider whether each vendor is asking you the right questions. He says, "The better the vendor understands your needs, the better the outcome will be." Your vendor should provide a detailed project scope and mutually agreeable outline for training and implementation.

Make sure all of the selected modules have options that will let you connect to Print MIS, digital storefronts and other modules you might want to add in the future.

Engaging your IT personnel and production staff in your process is also important. Make sure employees understand that automation will relieve them of repetitive chores and free them for more rewarding assignments.

"Automating workflows requires infrastructure changes that usually take more time and cost than expected," admits Bob Raus of HP. "Unwavering executive commitment is required to drive change throughout the operation… The key is to motivate teams to embrace change and enlist their creativity and commitment to deliver." He suggests implementing the project in phases and installing new systems that parallel your existing operations, then destroy the old systems quickly so there is no going back. Extending the implementation process can waste time and resources and jeopardize possibilities for business growth.

New Solutions

The HP Workflow Solutions Navigator website (www.hpwsn.com) can help you identify how to combine HP SmartStream modules with HP printers and dozens of other products for variable-data printing, color management, large-format graphics printing, and job finishing to build end-to-end automation solutions for producing specific products such as: Brochures and booklets; corrugated packaging; corrugated displays; digital labels; flexible packaging; personalized marketing; photo books; exhibitions and event graphics; vehicle graphics; retail graphics; temporary textiles and window graphics.

To minimize workflow disruption, companies such as GMG Color and Agfa Graphics have built large-format workflows that use terms and procedures familiar to their commercial printing clients. Likewise, companies such as ONYX Graphics, Caldera, and ColorGATE have developed workflow tools that will be familiar to large-format graphics companies, including those who want to expand into décor, textile, and industrial-printing applications.

"The same tools and workflow that customers are accustomed to using in ONYX RIP software can be found in ONYX Thrive," explains Manwaring. "We have made this PDF workflow an under-the-hood type of change that will not negatively impact a customer's workflow."

Caldera has developed tightly integrated modules that enable large-format graphics producers to set up digital storefronts (WebShop), manage their

business (Flow+), send nested and cut-marked files to specific digital cutters, and develop digital signage programs.

The Professional Services Group at Canon Solutions America can help customers from all types of businesses integrate new hardware and software with existing equipment to be more productive, cost-effective and innovative. "Using RIPs for for each large-format device can be cumbersome," said John Kaufman of Canon Solutions America. "A centralized workflow simplifies the process for operators" and fewer operators will be needed to manage work on multiple devices.

"Fujifilm's XML suite of workflow solutions has been influenced by three factors: Their long history in understanding many different printing sectors; their launch of the high-end Fujifilm inkjet J Press series; and their constant drive to enhance, automate, and integrate solutions to best fit their customers' needs," said Jason Kammes, Business Development Manager, of Fujifilm Workflow, Digital, and Inkjet Solutions.

"When Canon Solutions America sells our workflows and wide-format technologies to printing firms, there is confidence that our company will stand behind it," said Kaufman.

Finding a provider you can trust to deliver the right combination of optimal workflow integration and timely technical support will be critical. Buying a workflow system developed by the same company that makes your high-speed printer and inks can reduce the risk of finger-pointing among multiple vendors when problems arise.

EFI's Raimer Kuhen-Burger reminds printer buyers that product's specs such as a printer's throughput speed and costs per square foot won't affect your shop's profitability if your shop can't generate a continuous stream of new orders and print and process them in a timely, error-free, color-accurate manner.

Not All Wide-Format Graphics Must Be Printed on Inkjet Printers
As all types of digital presses become more technologically advanced, not all wide-format jobs will have to be printed on inkjet devices. Toner-based presses are becoming more versatile, both in terms of sheet sizes and media types. For example, users of HP's Indigo 10000 can print on sheets up to 20x29
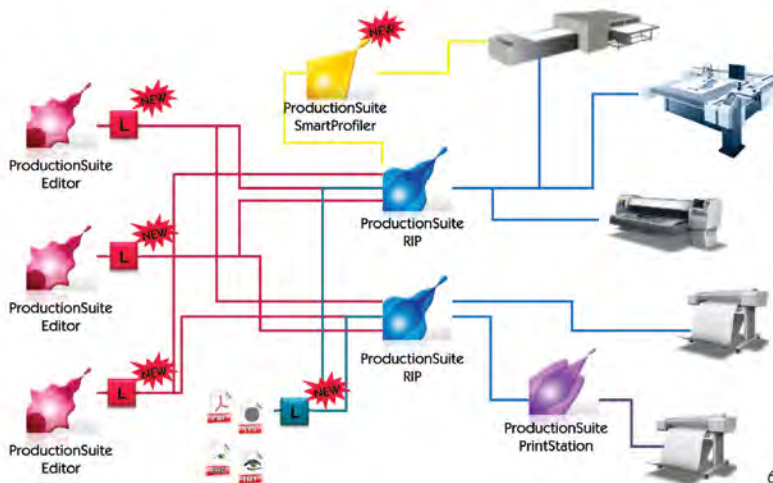

Figure 5: According to Bart Fret of GMG, "GMG production and color management solutions for wide format work well for high-volume roll-to-roll and flatbed production." The tools have been updated with functionality and processes that are more familiar to commercial printers who are investing in wide format flatbeds.

Figure 6: The latest version of Fujifilm XMF Workflow 6.1 uses speed and performance enhancements with Adobe's Mercury RIP architecture to allow parallel processing of multiple jobs--outputting to platesetters, digital presses, and a portfolio of inkjet presses.

inches including specialty materials such as poster boards and POP display materials.

Conversely, advanced imposition tools in the Agfa Graphics' Asanti workflow make it possible to lay out everything from posters, placemats, POP signs, and menus on a wide-format flatbed or super-wide printer. Once the dashboard shows you which orders have been approved for production, you can gang up smaller jobs based on the type of substrate and quality level that will be required.

With an automated workflow in a multiprinter shop, the production manager can use a PDF workflow to send specific jobs to the device that can produce the job most cost effectively. Plus, if one device goes down, you can shift the work to another device.

Marketers are Learning How to Create Personalized, Data-Driven Communications

Adobe, HP, Canon, Agfa Graphics and other companies are helping brand marketers and corporate clients understand what's possible with digital printing.

Adobe is positioning itself as the hub for the creation of content for online, mobile and printed communications. Since 2012, the number of people who subscribe to Adobe Creative Cloud has soared from 92,000 to more than 3.4 million. Adobe also makes a Digital Publishing Suite for magazine publishers who want to produce interactive digital editions and apps, and Marketing Cloud, which helps marketers use data analytics to understand and apply data analytics to create personalized, engaging experiences across every marketing channel.

Because so many photographers, designers and marketing professionals now rely on Adobe Creative Cloud for content creation, digital publishing and cross-media marketing, it makes sense that all print-service providers would want to migrate to PDF-based workflow. Adobe is teaching Creative Cloud subscribers to use the PDF format to prepare print-ready files, including variable data jobs.

Adobe Creative Cloud has also become a hub for making print more interactive and helping designers become more versatile. Adobe software now includes plug-ins for augmented-reality markers, QR codes, 3D printing, and structural design for packaging and displays. In the large-format arena, ONYX Thrive offers Adobe Illustrator plug-ins for vehicle wraps and banner and sign production.

Automated PDF Workflow Solutions for Wide-Format Printers and Flatbeds

Each modular software suite can be configured to meet specific production requirements. Most include options for PDF preflighting, job layout, proofing, ink savings, compliance with color standards, and remote monitoring of print jobs. These solutions also offer JDF tools so they can be integrated with Print MIS and job-submission programs. The software developers are continually adding new features and modules to meet specific requests of their customers.

Agfa Graphics Asanti *www.agfagraphics.com*	Simplifies and integrates steps for color-consistent, error-free production of signs and display graphics on wide-format printers from many manufacturers. PDF preflighting, easy-to-use color calibration modes, and robust imposition tool for ganging smaller jobs on large printers. Place cut lines for efficient automated cutting of standard or nested irregular shapes. Connects with Asanti Storefront.
Agfa Graphics Apogee 9 *www.agfagraphics.com*	Comprehensive production hub for graphic arts drives computer-to-plate devices, supports digital printing, and delivers optimal output for sign and display applications. Connects with Web Approval proofing portal and Apogee Storefront.
Caldera version 10 *www.caldera.com*	Uses 64-bit data handling of APPE 3.3 for faster processing of massive and complex files. PrintBoard production overview enables remote monitoring of print jobs. Supports production of wall graphics, textiles, ceramics, glass, wood and CAD printing. Connects with Caldera PDF Preflight and Flow+ modules. Nexio JDF toolkit connects Caldera RIP with Print MIS, accounting, and logistics software. Read more about Caldera's approach to automation and the APPE in their "Gamut" magazine which can be read on their website or downloaded in PDF format.
ColorGATE Production Server *www.colorgate.com*	Production RIP software for optimal color rendering and consistent reproduction in large-format printing, textile or screen printing, digital presses or print-and-cut workflows. Family of products include options for brand-marketing campaigns, entry-level production, computer-to-screen, and industrial inkjet production, HP Indigos, flexo packaging. Manufacturer Editions for Canon, Epson, HP, Mimaki, Mutoh, and Roland
Fiery XF RIP *w3.efi.com/fiery-wide-format*	**EFI Fiery XF RIP** software connects with most major eco-solvent, solvent, and UV-curable printers, including models from HP, Epson, Canon, Mimaki, Mutoh, and Roland. Uses color-management tools specific to wide-format graphics such as Intelligent Clean Color and Full Gamut mode. Fiery XF Spot Color option automates the color matching of brand colors on multiple devices.
EFI Fiery XF proServer *w3.efi.com/fiery-wide-format*	**Fiery proServer** is a high-performance hardware/RIP software combination for fast processing of files EFI VUTEk superwide format UV inkjet printers. Uses APPE with application-specific chips for fast processing and load balancing of PDF files on two 5-meter EFI VUTEk printers. Integrates seamlessly with EFI Digital Storefront and Pace Print MIS system. Bi-directional communication between Fiery XF proServer and select VUTEk printers allows direct job submission from Digital Storefront.
Esko Production Suite *www.esko.com*	Pre-production software tools for packaging, signage, and display production. Facilitates collaboration between brand owners, retailers, designers, package manufacturers and print-service providers. Suite 14 includes modules for: structural packaging design and manufacturing; 3D design and in-store simulation; step and repeat and imposition; workflow automation; color management; RIP, screening and output control; asset management; and palletization and shipping optimization.
Esko iCut Suite for Large-Format Printing and Finishing *www.esko.com*	Esko Automation Engine streamlines preflighting and editing of PDF files, layout, tiling, nesting and cutting of signs, POP displays, folding cartons, and custom shipping boxes. Can add bar codes, create packing sheets, and extend graphics for banner, flag, and textile finishing. Optimizes cutting paths and creates bleeds for contour-cut images. Tiling supports billboards, building wraps, printed walls, and store displays. Saves templates for frequently decorated walls that require irregular sized tiles. Generates backside layout for double-sided printing. I-cut Vision Pro reduces set-up time at the digital finishing table by correcting for slight distortions between printed graphics and contour cuts.

"More than anything, the drive to PDF-based workflows has come from design," said Bryan Manwaring of ONYX. "Today, PDF is the preferred format for most of our customers. Even companies that have traditionally used raster formats such as TIFF and JPG are now using PDF in their workflows, partly so they can easily add cut marks and other content around the artwork."

The demand is growing for "high-value" data-driven print projects as global brands learn what's now possible with digital printing. HP used the new Mosaic feature in HP SmartStream Designer to generate more than two million unique labels for Coca-Cola bottlers in Israel.

"Part of that campaign demonstrated the ability to reprint each exact design on other items such as billboards, POP displays, T-shirts, buttons, bags and more," said Raus.

"High-visibility campaigns such as the one with Coca-Cola have proven the impact of variable data in retail." According to HP's Avi Basu, other brand managers who saw the success of the Coca-Cola package personalization project have expressed interest in coming up with their own new creative campaigns.

Agfa Graphics is reaching out to creatives and brand owners with the "Produce More Powerful Messages" campaign.

Get the Right Workflow

The Automated Pdf Workflow Solutions For Wide-Format Printers And Flatbeds chart below provides a quick overview of some PDF-workflow solutions for automating large-format graphics printing and finishing workflows. As you investigate these (and other) options for workflow automation for large-format graphics production, you will discover that not every software developer defines an "automated workflow" the same way or uses all of the capabilities of the Adobe PDF Print Engine.

While this complicates your decision-making process, getting the right combination of workflow automation software, computing power, and digital printing equipment in place now can lay the foundation for future growth. For example, a good way to bring new orders into your system is to link your automated workflow to a digital storefront that makes it easy for your customers (or print resellers) to send ready-to-print PDF job files your way.

"The pace of print production continues to accelerate with shorter runs, faster digital presses, personalization

Automated PDF Workflow Solutions for Wide-Format Printers and Flatbeds	
Fujifilm Edition of Caldera Grand RIP *www.fujifilm.com*	Renders PDF files for output on more than 800 proofers, cutters, computer-to-screen systems, and many models of inkjet printers including Fujifilm printers. Analyzes cost of each printed job. Helps designers match corporate spot colors with new Color Book. Optimizes ink usage. Backed by Fujifilm service and support.
Fujifilm Edition of Color-GATE Production Server *www.fujifilm.com*	Uses APPE engine to render PDF files for more than 750 proofers, wide-format flatbed and grand-format inkjet printers, computer-to-screen systems, and industrial cutters. Modules for custom profiling, device synchronization, quality assurance, C7 calibration, cost calculations, proofing, and print-and-cut workflow.
Fujifilm XMF Workflow Production Suite *www.fujifilm.com*	Includes Workflow module for imposition and proofing. Options include PrintCentre module for hosting web-to-print online ordering and generation of static and variable data print. XMF Remote enables remote job submission, review, and approval on a wide range of platforms. XMF ColorPath is cloud-based color management for ensuring color-matched output on screen print, offset, digital presses, and wide-format inkjet.
GMG Production and Color Management Solutions for Wide Format *www.gmgcolor.com*	Uses proprietary, high-end color management system to produce consistent, repeatable brand colors across multiple print platforms, including superwide and flatbed inkjet, digital presses, and offset, flexo, gravure, and screen-printing presses. Works with more than 800 devices, including industrial flatbed presses and digital cutting systems from Zund and Kongsberg. Includes tools for PDF preflighting and editing and definition of pole pockets, hems, grommets, and cutting lines. Real-time output preview of job set-up. Generates separate print files for printers and cut files for cutting devices. Modules for variable-data printing, true-shape nesting.
HP SmartStream *www.hpwsn.com*	Workflow modules that can be used to design scalable end-to-end workflows for specific products, such as: brochures and booklets; photo books; labels; personalized marketing campaigns; corrugated packaging; vehicle graphics; outdoor graphics; temporary textiles; and exhibition and event graphics. HP Workflow Solutions Navigator shows which HP SmartStream modules to use to manage production on HIP Indigo presses or HP Scitex or Latex inkjet printers driven by EFI, Caldera, Onyx, or ColorGATE RIP software. Modules can automate finishing, including binding, assembling, packaging and shipping. Other features include automated reprinting, kitting, and job prioritization. Production Center supports all digital front ends and provides instant visibility to each job at every step of production. Automatically flags jobs that are late.
ONYX Thrive *www.onyxgfx.com*	Scalable, end-to-end PDF workflow that renders all incoming files (including PS, EPS, and PDF) in Adobe PDF Print Engine. Can RIP multiple jobs simultaneously to keep work flowing. Higher-end versions include ONYX Color for generating color-managed previews. Quick Set automation tools are familiar to ONYX RIP users. Optional add-ons: ONYX Textile Edition RIP; Adobe Illustrator plug-ins for Vehicle Wraps and Sign and Banner production. ONYX Connect JDF module allows connections with Print MIS and job-submission programs.
Tucanna tApproval *tucannatflow.com/tflow-approval/*	Streamlines production of print-ready PDFs by facilitating communications between customers, art department, and customer-service rep. Collaboration tool for submitting, annotating, preflighting, and tracking jobs and files. Cloud-based or self-hosted.
Tucanna tFLOW *http://tucannatflow.com/*	Accepts preflighted and approved PDF files and processes them for printing on large-format digital printers, digital presses, and offset presses. Files are preflighted, automatically corrected and optimized, and sent to the printer with the correct ICC profiles for job requirements.

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and less margin for error," said Mark Lewiecki, Senior Product Manager for Adobe Systems. "Designers can take advantage of new features in Adobe Creative Cloud applications and create complex graphics."

"The boundaries between our separate print disciplines are becoming less distinct," says Joseph Mergui of Caldera. "Design, fabrication, and distribution are all being rethought as consumers expect greater customization and responsiveness from retailers. Brands have anticipated this need and are positioning themselves as leaders in the personalization race."

Before investing in that next piece of high-speed digital printing equipment, consider how you will keep it printing without interruption. Automated workflows with preflight, color management, and file correction can help ensure that the engine is driven to capacity.

"Large-format graphic producers who switch from the RIP they have today can have a smoother, more automated workflow without having to take files out into Photoshop or Illustrator to fix them,"

says Gallucci. "Plus, one server can drive multiple printers, and different operators can access it from multiple workstations. You can move a job from one printer to another, or from one media to another, and have the color management automatically done."

Here's one final prediction for 2015. As the demand for customized, digitally printed products continues to expand, more newcomers will start printing-centric businesses without any prior knowledge or experience in offset, flexo or screen printing. After designing online storefronts, these new entrepreneurs will either build automated workflows to "manufacture" their products or outsource the work to someone who can. In other words, the emerging new generation of digitally savvy entrepreneurs can either be your customers, strategic partners, or competitors.

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