SEYBOLD

Report on Publishing Systems

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Apogee, Prinergy, Brisque

Adobe Extreme: A Look At Three Implementations 3

DON'T LOOK NOW, but evaluating workflow systems—which has never been easy—just got harder. First, we were faced with important differences in individual users' needs and in the architectural approaches of suppliers. Then we added the complication of the pros and cons of PDF workflows. Now, for systems supporting PDF, we have to consider whether or not they are built around Adobe's Extreme architecture.

What is Extreme architecture? Who needs it? To help clarify these issues, we asked one of the experts, David Zwang, to explain what makes an Extreme system and to compare the three Extreme systems on the market—Apogee, Brisque Extreme and Prinergy. Note that his article focuses on Extreme, including its use of job tickets and job ticket processors, not on the merits of PDF, which deserves its own article.

ROOM Workflow: Does It Still Make Sense? 18

THERE WAS A TIME when it made sense for a RIP to interpret a job once and output the resulting file multiple times, such as to a proofer and a film- or platesetter, without interpreting the data again. But, as computers got faster and RIP software became more sophisticated, the need for this so-called ROOM approach has decreased, although this remains a hot topic. Here, guest contributor Molly Joss discusses the issues.

Coming Soon: Digital Color Proofing Shootout

Can color-managed digital proofing really work? At Seybold Seminars Boston 2000, we'll see how proofing systems at every level of the market perform in head-to-head competition. In preparation, we have cooperated with GATF to print a test page containing an IT8.7/3 target and some images. From the press run, we selected the best sheets. Each participating vendor was assigned one press sheet. We cut out the target and sent it to the vendor, along with the page file—but not the images.

The challenge: Using the target as a press "fingerprint," make a proof that matches the whole press sheet, including the images. In Boston, a panel of expert color judges will assess how well each entry met the challenge, and the results will be on public display. In a followup issue of this *Report*, we'll recap the contest and analyze what it all means.

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Briefly . . .

Tektronix finalizes sale to Xerox

Tektronix has completed the sale of its color printer business to Xerox for $925 million (adjusted down from $950 million to take into account various balance-sheet items). Tektronix reiterated that it would return the majority of the proceeds to shareholders through a share repurchase program, as well as pay down debt and retain some cash.

Adobe to support Linux

Adobe Systems has announced initial support for the Linux platform. Beginning in the first quarter of 2000, the company will offer a Linux version of Acrobat Distiller software. Beginning immediately, Adobe customers can download a beta version of FrameMaker from Adobe's Web site. A free Linux version of Acrobat Reader is also available on the site.

Adobe said the decision was based in part on increased interest in Linux among its customers and in part because of its potential to become an alternative platform.

Harlequin offloads 2 divisions

Global Graphics, the company that acquired Harlequin Ltd. last year, has announced the formation of a software company to take over the entire Information Management (IM) and Software Tools (SWT) divisions of Harlequin Ltd., leaving the Printing and Publishing operation within the Harlequin realm. The new firm, called Xanalys Inc., will have its head office in Waltham, MA, and offices in Cambridge (UK) and Manchester (UK). Xanalys will be run as a subsidiary of Global Graphics, headed by James Dee, a member of Global Graphics' board.

During the past five years, Harlequin invested substantially in these areas, often to the detriment of the publishing operation.

Hunt offers media, inks for Epson

Hunt Digital Imaging is offering its own line of consumables for Epson printers. Called Perfect Color inks and media, they are claimed to offer comparable, if not better, print quality results from Epson small- and large-format printers than other OEM consumables. The media are available in both cut-sheet and roll formats.

Reuters supports XML

Reuters has introduced the NewsML format based on XML, saying it "will offer new applications to a wider news market and make it easier to achieve the linkage of multimedia products ranging from text, photographs and video to wireless communications." Reuters has taken the lead in creating NewsML under the auspices of the International Press Telecommunications Council, which recently established a program called IPTC 2000 to deliver a single XML-based format for managing news production.

Reed to sell Xmetal

Reed Technology has agreed to serve as a VAR of Xmetal, SoftQuad's XML-based authoring tool, which allows editors to write and edit full-text documents as well as their associated metadata. Used in conjunction with other components developed by Reed, it aids in the preparation of content for the Web and other publishing platforms accommodating structured content.

IPrint files for stock offering

IPrint.com, a provider of online print services for small businesses and consumers, has filed a Registration Statement with the Securities and Exchange Commission for a proposed initial public offering (IPO) of its common stock. All of the shares of common stock will be offered by iPrint.com, and all proceeds will represent new financing. Credit Suisse First Boston will act as the lead underwriter. Co-managers will be BancBoston Robertson Stephens and U.S. Bancorp Piper Jaffray.

Indigo allies with Pageflex

Indigo N.V. and Pageflex, a division of Bitstream, will cooperatively market Indigo Yours Truly and Pageflex Mpower systems for personalized communication. Mpower will complement Yours Truly Designer, Yours Truly Express and Indigo's new SNAP technology in higher-end personalization, operating as a front-end to Indigo's TurboStream and UltraStream presses and offering functionality for applications such as those involving complex designs or personalization formula, large databases and multiple clients. ❖

PDF Workflow and Adobe Extreme: Apogee vs. Brisque vs. Prinergy

by David Zwang

WITH THE RELEASE of Prinergy, the Heidelberg-Creo jointly developed output workflow software, and the latest upgrades by Agfa to its Apogee system and Scitex to its Brisque Extreme, we now have three competing implementations of Adobe's long-awaited Extreme architecture. Or do we? While we can compare these three output workflow implementations, it is a little more difficult to understand how the Extreme architecture plays a role in these products.

If there is one common thread that appears in the messages of each of the four companies involved in this Extreme discussion (Adobe, Agfa, Heidelberg-Creo and Scitex), it is streamlining and automating PDF output workflows. However, each of the three available approaches differs in how that should be done. The good news is that each of them ultimately allows you to realize the end result of press-ready film or plates. Unfortunately, deciding which approach is best suited to your needs requires digging deep into the intricacies of each of these offerings.

Before we go into detail on each of these approaches, we'll present background on PDF and related concepts to help sort out the distinctions between one product and another.

PDF Basics

Since the common thread among all three is PDF, we need to develop a firm understanding of PDF and its many roles in the publishing process. As a starting point, note that this Portable Document Format has been given a broader role than a file format typically is given, which is why it has been embraced by many as the "format of the future" for publishing applications. A key point, though, is that its use at different stages in a publishing workflow can yield different results, depending on where in the process it is being used.

Although we don't have space here for a complete rehash of the intricacies of PDF, it is important to point out the basic attributes that make it a desirable file format.

Benefits. The main features that make PDF attractive for output production are the following:

- *Page independence.* Unlike PostScript, which enforces no page boundaries on data within a file, PDF requires jobs to be formatted in individual pages, each of which contains all data that will appear on that page.
- *Platform independence.* PDF files can be viewed on any platform using a basic Acrobat viewer.
- *Font and image inclusion.* It is possible to include all fonts and images within a file (when it is properly prepared), thus ensuring that none of those items are required to be present on the receiving end before a job can be viewed or printed.
- *Data compression.* PDF supports a variety of data-compression algorithms of varying degrees, which can be chosen based on individual process requirements.

PDF also allows you to retain vector information, although this practice, when using PDF as a secure transfer format, is a point of contention in many professional publishing circles because of potential variations among RIPs that could, therefore, affect the output. This point has been one of the factors that has led to the development of PDF/X-1 as a standard. It has also encouraged the use of internal formats and alternative workflow approaches from some vendors.

PDF has some other characteristics that can add value, such as a limited ability to edit objects, its support for job tickets and the PDF forms capability, to mention a few items.

PDF workflows

Since the beginning of the electronic publishing revolution in the 1980s, we have been passing application files along with any necessary fonts or other supplemental files from the creator to the output provider. However, even after more than ten years, many output providers still have difficulty ensuring that they get all of the correctly prepared production files necessary to produce the final product. While preflight software has helped prevent poorly prepared files from getting to the RIP, jobs with missing or incorrectly prepared page components are still the most troublesome part of the output process. PDF files can, if properly prepared, begin to address some of these issues.

In addition, as print publishing workflows continue to evolve, fostered by increased bandwidth, E-commerce and the need to transmit files electronically for processing, there is a distinct value in a file format that has the attributes of PDF. The benefits afforded by a complete, compressed, platform-independent file—that doesn't require the originating application—has already affected the distribution of electronic documents. This is evident from the significant increases we have seen in the use of PDF among corporate enterprises, on the Web and in the use of the Associated Press's AdSend program.

Questions. On the other hand, while we can see the distinct benefits of PDF, is it necessary for all files to be maintained in PDF throughout the publishing process? Is there a point at which requiring files to be created in PDF or converted to PDF for a true-PDF workflow can become counterproductive? Would you want to keep all of your files in PDF rather than in Word or even in the format of a page layout application?

Should images be kept in PDF rather than in TIFF or EPS? Or, as is the case with both Prinergy and Apogee, should we convert all "non-PDF" incoming files to PostScript using proprietary third-party software, and then send them through the Normalizer to convert them to PDF?

While it would be nice to say that PDF can allow us to standardize on all types of file delivery, this is a more complex issue than it may seem on the surface.

What about previously processed legacy files such as TIFF/IT, CT-LW, preseparated digitized film files, etc.? And, while you may be able to transfer them, their value as viewable files that can be used in the normal page-building process is not as certain. Ultimately, while it would be nice to say that PDF can allow us to standardize on all types of file delivery, this is a more complex issue than it may seem on the surface.

In contrast, some of the other workflow approaches, such as those from Scitex, Barco and Dalim, bring these already processed files into the workflow later, usually at the time of imposition, in many cases without requiring any additional processing. For example, while Scitex does do a minor conversion to a TIFF/IT file, it doesn't convert TIFF or bitmap files. The result is the same usable page file, without the additional processing required to convert those formats to PDF; it is necessary merely to allow those files to work within the individual workflow systems.

So, while PDF has many benefits, it is important to understand that it is only a file format. Any time we contemplate handling a specific production task, the important point is to choose the best format for the task, or the one that is most compatible with a specific production workflow.

What is Extreme?

We've been hearing about Adobe's Extreme architecture for a long time, including competing claims for having the first real implementation in a product. The publicity given to IBM for having the "first" implementation (in a high-speed printer a year ago) and the recent debate among Creo-Heidelberg, Agfa and Scitex over which one had the first implementation in a PDF workflow led people to ask a simple question: What is Extreme?

Depending on whom you ask, you may get different answers to that question. If you dig deep enough, you can see some common threads of agreement and even implementation. According to Adobe, "An Adobe PostScript Extreme system provides the component building blocks for a robust, scalable, PDF-based production solution."

Two implementations. First, we need to clarify that Extreme (which went under the name Supra in an earlier context) was initially developed to handle high-volume page production. This was done using processing modules, parallel computing and sophisticated internal coordination. This implementation of Extreme does, in fact, exist, and is running successfully doing what was planned—feeding 100 or more fully processed pages per minute to a printer.

Beyond that initial application, Extreme has another role, where it remains a work in progress. Here, the requirement is quite different: feeding data to an imagesetter or platesetter, where the critical issue is dealing with pages that are more complex and carry more data. In fact, even if we could process the pages at the same high rate of speed, the output devices couldn't keep up with the data.

The most important difference between these applications is resolution, for example:

- Printing 100 pages per minute at 300 dpi produces about 630 kilobytes (0.63 megabytes) per second of processing demand.
- Imaging an eight-up plate in three minutes at 2,400 dpi requires processing about 6 megabytes per second, or almost ten times as much data.

Thus, the Extreme implementation that we are discussing is based on an "evolved" set of specifications and is tailored to handle more complex pages over a longer period of time. Keep in mind, though, that many of the same goals still exist, including full automation, based on configurable processing modules.

In the application of Extreme technology that is represented in the three products being discussed here, there seems to be uniform agreement on certain points. These Extreme systems all include job tickets (JTS) and, therefore, job ticket processors (JTPS) or task processors *(see below)*. However, there is some "creative interpretation" as to what forms these concepts take, even though Adobe supplies a set of specifications.

What Systems Can Be Called Extreme?

Adobe PostScript Extreme was designed as an open, modular, scalable architecture providing the building blocks for a robust, PDF-based production workflow system. A key function is to serve as a bridge between today's PostScript workflows and the networked PDF workflows of the future. It was intended to be compatible with existing systems and support a wide range of workflow requirements. The architecture continues to evolve, but, according to Adobe, there are five *key* requirements that define it today. It must:

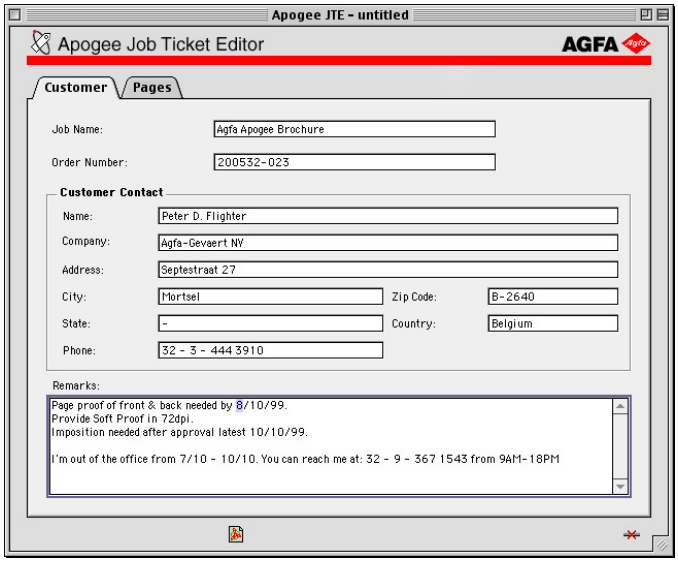
- Accept both PostScript and PDF as input to the system, but use PDF as its internal format.
- Create PDF within the system via the use of the Adobe Normalizer.
- Enable viewing and editing of PDF files within the system so that imposition assignments or late-stage changes can be made.
- Use the Adobe Portable Job Ticket Format for controlling both workflow parameters and process parameters.
- Render with an Adobe PostScript 3 RIP or Adobe's new Printer Job Ticket Processor, which combines job ticket control with the Adobe renderer.

Job tickets and job ticket processors

In an Extreme system, job tickets are the vehicles that control the actions of job ticket processors. While the basic structure of a job ticket has been specified by Adobe, it needs to be specific to its respective JTP. Since Adobe doesn't offer an application that generates job tickets, each of its OEM partners has handled the creation of job tickets differently to insure support of their individual task processors, which raises another question: how "portable" is a Portable Job Ticket? We'll get to that discussion later.

Job ticket processors are modules for processing individual tasks. Each JTP can have a specific function, *i.e.*, "Normalizing,"

Apogee job ticket editor. Apogee uses a tab interface to set up the workflow with a job ticket. This is where customer information is filled in and the operator can add remarks regarding due dates, proofing requirements, etc.



trapping, imposition, thumbnail creation, color management, etc., although a number of these operations can also be combined into *multifunctional task processors*. In theory, by taking this modular approach, you can actually tailor many different workflows to specific needs, without additional overhead.

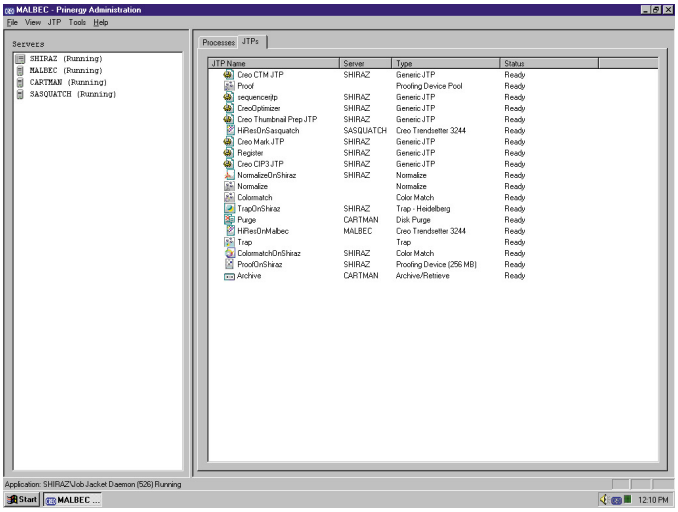
Variations. Adobe makes available certain core JTPs as part of the Extreme package it supplies to OEM partners. The OEM and third-party suppliers can choose the JTPs they want to use and develop additional ones to handle other specific processing functions. This can open many new processing paths to handle a variety of work. While the potential of this approach sounds exciting, certain realities may temper the enthusiasm. As long as Adobe needs to allow some flexibility in specifying the creation of JTPs to accommodate the development of new task processors, the ability of these specially developed JTPs to be "plugged in" to each other's systems, as well as the prospect of a fully interchangeable job ticket, is still questionable.

As an example of the diversity of Extreme implementations, consider a situation in which Adobe ships a Sequencer JTP and a Coordinator JTP to schedule and coordinate the activities of the various JTPs within a system. In this situation, Prinergy would be the only one of these three systems that currently uses either of those JTPs. Agfa and Scitex have their own internal mechanisms for handling these tasks.

Another area of contention is in the use of the Adobe Printer JTP. This Adobe-supplied JTP includes the Renderer (rasterizing engine), in-RIP color separation, the Just-in-Time Imposition module (also known as the Assembler), IRT (In-RIP Trapping) and screening. In fact, the use or specific implementation of this JTP highlights many of the differences in the three approaches.

Put in historical perspective, many of these functions have been at the heart of the various output system differences. As an example, consider the transition from typesetters to imagesetters in the late 1980s. At that time, these same three companies elected to

Prinergy Capture. In the left column of the display is a listing of the available servers. In the right column is a listing of the available job ticket processors (JTPs), the server they reside on, the JTP type and its current status.



create their own separation, rendering and screening enhancements to the basic RIP package supplied by Adobe in order to overcome some of the inherent deficiencies in PostScript and add distinct value to their respective products.

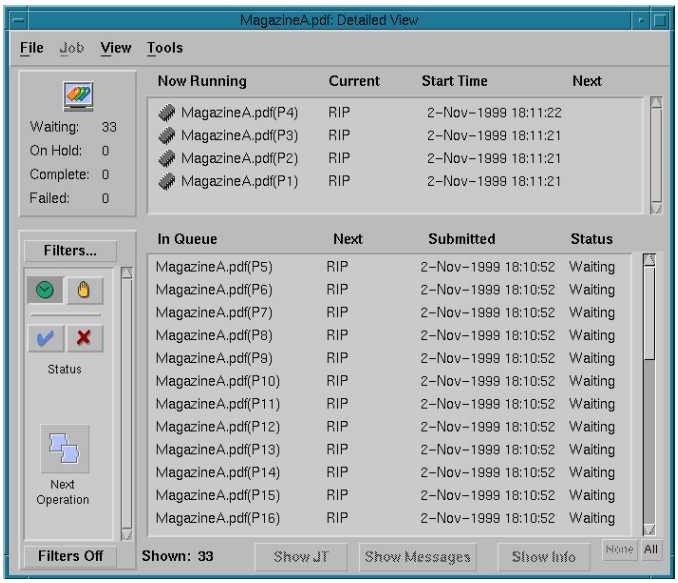
In the current system incarnations, Prinergy uses the Renderer and the JIT Imposition (Assembler), but turns off the IRT trapping engine and adds some of its own screening matrices to the Adobe Accurate Screens technology that is supplied with the system. Neither Apogee nor Brisque uses the Printer JTP, but Apogee does use the Adobe IRT, and adds Agfa Balanced and CristalRaster Screening. They all use in-RIP separation, but each has tweaked it or developed extensions and plug-ins to overcome application deficiencies that exist in a composite workflow. So, as you can see, the implementations of an Extreme system can vary significantly.

Behind the differences. The differences in JTPs or task processing engine implementations can be attributed to a number of issues:

- Extreme is a very young, evolving technology that is built on a fairly broad set of specifications.
- Each of the OEMs has a significant investment in its own technologies and installed base that needs to be supported.
- Each company has a philosophy that drives its individual product development and differentiates it from its competitors.
- Probably most important, some of the solutions that have been developed by individual OEM partners are more mature than those offered by Adobe. Each of the OEMs has expressed the sentiment that, when Adobe offers JTPs that are as good as or better than the ones they currently use, they will consider implementing the Adobe ones.

There is uniform agreement on one point: that the system needs to include at least one of Adobe's JTPs—the Normalizer *(see below)*. Outside of that, Prinergy currently uses five of the supplied Adobe JTPs and has developed many new ones specifically for its own needs. Apogee and Brisque use their own internally designed task processors along with job tickets to control them. Ultimately, it doesn't really make that much difference.

Brisque Extreme's RIP status. Scitex uses this display to show the status of the RIP tasks currently running and queued up and waiting. In this example, parallel page RIP'ing is displayed, using Brisque4 with four parallel RIPs.



Job tickets: the outlook. We have been trying for some time to standardize on a job ticket format that would enable users of disparate systems to create job tickets that would be compatible with systems besides their own *(see Vol. 28, No. 19)*. However, progress has been minimal, even in the case of Adobe's proposed PJTF. Why? One factor in this failure is that the ideal job ticket should encompass the entire process: all tasks relating to business management and production management, as well as the actual production processing. Adobe's product scope or expertise doesn't really extend to all of these areas, so it is important that, as an industry, other manufacturers and providers with expertise in those areas collaborate on the development of the ideal comprehensive job ticket.

To date, there have been a number of initiatives that have tried to address many of the issues, but each of them has been limited to a narrow view of the entire process. These include the CIP3-PPF specification, the Adobe PJTF specification and collaborative solutions such as the ETF initiative. However, none of them, until now, have attempted to address the entire process.

There is a new initiative under way, initially sponsored in part by Adobe, Agfa, Heidelberg and MAN Roland, that will attempt to address this important issue.

Called the Graphic Arts Job Ticket initiative (GAT), it will attempt to integrate the work already done in the CIP3-PPF and the Adobe PJTF specifications, along with additional developments, to create a well-defined structure that will allow information exchange across the entire process. This structure will include definition of data structures and exchange mechanisms that the industry players can use to create a standard way of communicating all of this information.

While this initiative currently isn't being sponsored by CGATS, it does have the involvement of many of the largest players in the market. This should, in theory, allow the process development to move faster, although that remains to be seen. We welcome this initiative and will cover it further as it progresses.

Job Tickets, JTPs and the PJTF

Among the key components of an Extreme workflow are these three items, defined here by Adobe.

Digital job ticket—a vehicle that contains the information that is needed to define a print job, both in terms of the intent of the print buyer and the specification and control of the prepress and printing process.

Job ticket processor (JTP)—a processing application (*e.g.,* trapping) that consumes a job ticket that will define the pages to work on and the parameters to execute as it processes the pages. The input to a JTP is a job ticket and some number of PDF pages.

Portable Job Ticket Format (PJTF)—a PDF-encoded digital job ticket developed by Adobe and supported by Extreme and some other workflow systems. The PJTF contains information for commerce (*e.g.,* job number, customer address, price quote and schedule), a prepress process plan (*i.e.,* trap, preflight, color separate, render, etc.) and the parameters to control those processes (*e.g.,* trap widths, resolution control, screen settings, etc.).

Job tracking

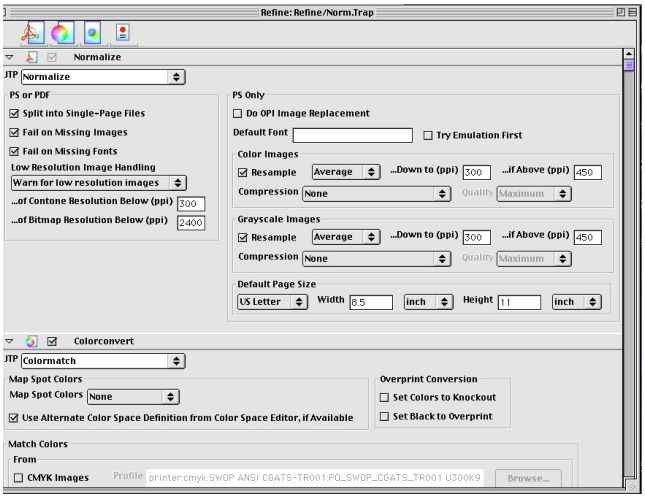
The workflow automation we have been addressing streamlines the processes and helps to increase production throughput. However, we still need to manage and monitor all of the production activities. Each of the Extreme systems has a process tracking facility built into its respective system. This tracking, depending on the system, allows you to identify where a job is in the process queue, change the order in the queue and, in most cases, even see the results of each of the individual processes. Alerts are registered for process failures, with varying degrees of error information to allow you to address the problem and send the file on its way to the next process task.

So far, though, the focus has been on tracking individual processes as they are initiated, rather than on preemptive scheduling. In other words, it is easy to find out what a particular job is in the workflow, what job on a particular RIP is processing or even how long it took to RIP a job. But it isn't easy to find out if a job is running behind schedule or if the load being assigned to the various processors is balanced effectively. Although all three solutions do offer basic load balancing, when used in a multi-processor configuration.

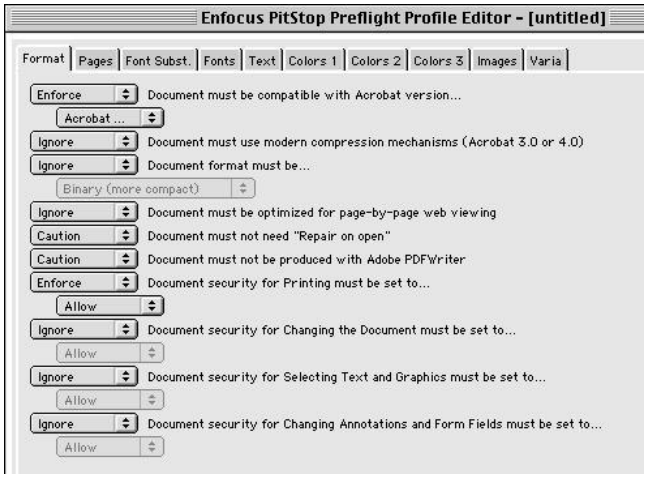
In fact, none of these systems offer any form of preemptive scheduling that would use the computer to maximize the schedule to optimize the throughput, although Agfa, in PrintDrive, does have a feature that allows you to conditionally schedule output engines based on predetermined criteria. Some of the suppliers of workflow systems believe this type of software should be added by third parties, but we expect to see progress here, either through development or interfaces to existing software, among the next steps in their development.

Automated Preflight Tools

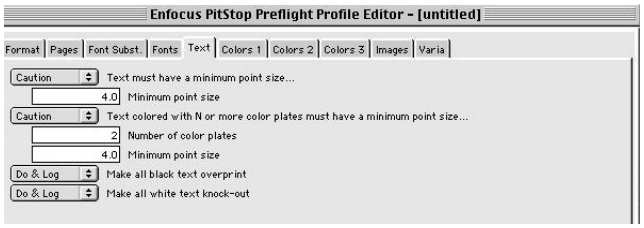
Most output systems have added a level of preflight functionality to their RIP products over the years. This functionality usually includes checks for missing fonts, missing images or images with resolutions below a certain threshold, etc., as can be seen in this Prinergy Refine job ticket.



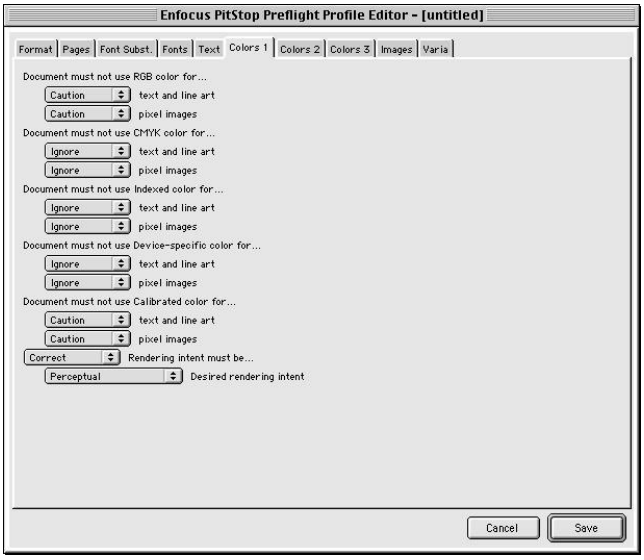
However, the Enfocus PitStop product that is being bundled with the Apogee and Brisque systems has leveraged the object capabilities of PDF to create a more complete automated preflight and correction tool. As you can see from the illustration below, there are currently ten tabs of object categories that can be set to *ignore*, *caution* or *enforce* predefined production requirements.



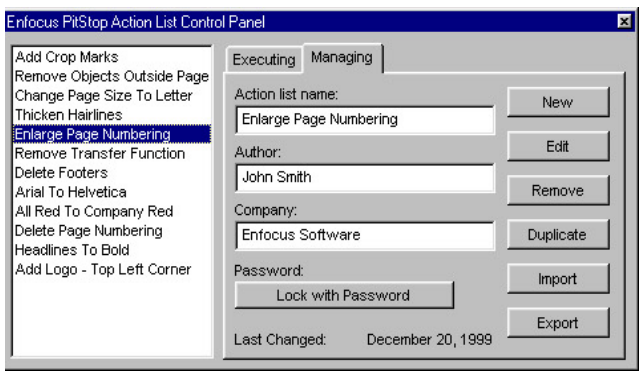
While many systems today offer ways to automatically make all black text overprint in a document, in PitStop, even specific production restrictions such as the minimum type size for text created with multiple plates can be caught.



In an effort to continue to extend the automation beyond just checking, PitStop has a setting that will allow you even to change the color-rendering intent of color-managed images in a PDF file.



Extending the correction functionality even further can be seen in the following "action list" illustration. Previously manual production functions such as changing fonts, the color of logos, adding logos or thickening hairlines can now be accomplished as part of the preflight process to ensure that the design has met specific production requirements.



If there is any raster information in the file, it limits the potential for reuse, based on normal resolution process constraints.

The Normalizer and preflight checks

The process of "Normalizing" interprets PostScript and PDF input, resolves any font embedding problems and breaks a job into individual page-independent files. It also does a limited amount of preflight testing, such as checking for included fonts, but it doesn't perform an extensive check of total process conformance.

Adobe has developed the Normalizer to be an OEM-configurable PDF generator, and all three systems include tweaked versions of what Adobe supplies. Agfa has addressed many creative application issues, such as the proper handling of spot colors, vignettes and colorized TIFF images that are inherent to the color separated files that come into the workflow. Scitex has addressed similar issues, and added things such as support for its Automatic Picture Replacement (APR). Even Heidelberg and Creo, which have worked with Adobe to get out the latest Normalizer version, have made additional changes beyond what was supplied by Adobe.

Adding preflight functions. Since the Normalization process isn't a comprehensive preflight check, Prinergy has added its own smaller PDF preflight test that finds and fixes some basic issues that would cause problems on the press or in proofing. Agfa and Scitex have licensed OEM versions of Enfocus PitStop Server to add to their software. This approach makes it possible for the output provider to create a settings file that is specific to its production requirements and send it to its customer, so that the customer can check its PDF files prior to sending them for output. When a file enters an Agfa or a Scitex system, a verification process is performed.

One of the tasks that we defined in the initial Seybold output workflow study was the transfer of production requirements upstream. This is standard practice in almost any manufacturing process. Many of the problems we face, and reasons we need preflight checks, result from the creator not having access to the requirements of the production operation.

Both Agfa and Scitex have started to address this issue with the licensing of Enfocus's new PitStop Server technology. Both will integrate this new technology with the Normalization process to address a wider range of process issues. This will allow the output provider to incorporate automated rule-based preflight checking *with correction* into the process. Because of the object-based structure of PDF, these correction capabilities will be extensive, allowing for very specific adjustments to be applied to geometry, text, fonts, images, color, etc.

Digital master or internal format?

In most output production workflows, there can be added value in retaining and storing a secure preprocessed file for a variety of outputs. Each of the workflows discussed in this article produces a digital master page file in PDF, containing all of the editable text, plus vector and raster image information, after it is processed by the Normalizer. This same file can be used for output to a proofer, imagesetter or platesetter with a relatively secure prediction of output results (still somewhat dependent on the RIPs, although this can and will continue to be argued). This "digital master," or preprocessed PDF file, is theoretically able to be stored and reused for many purposes without any concern for variations in the destination output equipment.

While this may sound like an ideal scenario, how much real benefit is there in retaining a PDF digital master?

Because the digital master has already been trapped and the color adapted to suit a particular output profile (as in the case of Prinergy), wouldn't that make it device- or shop-specific? If there is any raster information in the file, it limits the potential for reuse, based on normal resolution process constraints. In addition, is it really practical to post a print-ready PDF file with high-resolution images on a Web site for online viewing?

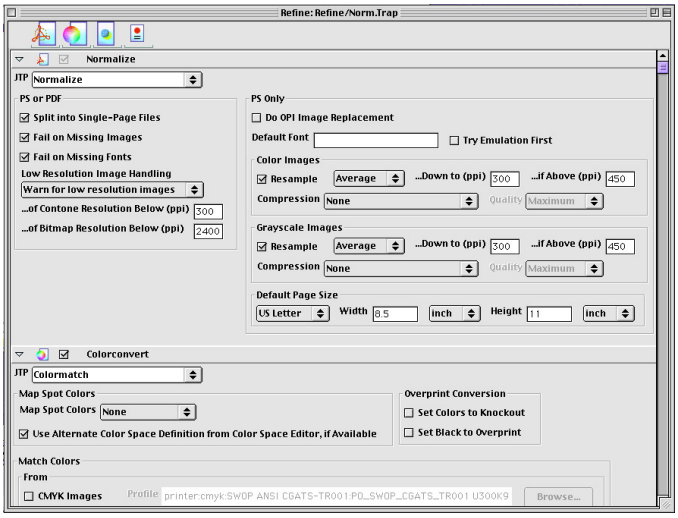
In addressing this issue, Agfa has developed, through the use of an OPI server, the ability to keep the high-resolution images out of its "workflow-optimized" PDF digital master until final processing to allow the user to specify the correct resolution for the final use each time. Scitex allows rasterized files to be saved as "secure" PDF digital masters, at varying resolutions and compressions, with the appropriate ICC profiles, depending on the user's needs. Scitex also includes an option for exporting the data in PDF/X-1 format using PDF2Go, which has passed the DDAP verifier, and already is in beta testing.

All of these digital masters can be edited to an extent using PitStop or another Acrobat plug-in. However, if we look at the total value of the prerasterized PDF digital master files that are created by each of these systems, they may need to be viewed as nothing more than an internal manufacturing format that is optimized for use with one vendor's software to facilitate its own workflow.

Where to rasterize?

All files ultimately need to be rasterized (converted to resolution-dependent pixel values) prior to being screened and imaged. The discussion of where in the output process this should happen has been going on for more than ten years. To many people, it has been like a religious issue in which the production implications have been overlooked or, in some cases, even distorted to achieve marketing objectives. The real issue is how the rasterization at a specific point in the process affects the process flexibility and overall system performance.

Scitex historically has based much of its production workflow on raster files. If fact, until the recent introduction of its Brisque Extreme, once a PostScript or PDF file entered a Scitex system, it was checked and processed to create independent, rasterized CT-LW page files before any additional processing was done. The real question is whether this limits the flexibility of the production system. There is no question that editing type and vector information in PDF is much easier than cutting and pasting blocks of data in a rasterized file. However, in some scenarios, that same editability can be a liability. In addition, there are still concerns over potential problems in rendering PDF files using different RIPs, which might be the case when producing proofs, film, plates, etc., when each device has its own RIP.



Normalizing with Prinergy. The parameters for both Normalizing and Preflight are set up in this screen. There are preflight specifications for how to handle missing fonts or images, parameters for acceptable image resolutions and the standard PDF creation settings of the Normalizer. In the lower half of the display are the controls for the Colormatch JTP, which handles spot colors and ICC color management setups.

If you look at the three systems in question in this article, all of them have implemented a way to save, pass and, in two of the cases, even edit and manage rasterized files in their processes. Although they perform rasterization at different stages in the process, they all have seen benefits to working with rasterized files later in the output process.

Scitex's Brisque Extreme allows you to edit, trap, store and ultimately impose eight-bit raster files on the fly for output. Agfa's Apogee RIPs a job to a one-bit (screened) raster file as either single pages or imposed flats that can be managed, edited (primarily cut and pasted) and output through its PrintDrive module. Even Prinergy allows you either to output one-bit raster information directly to output devices or to save the file for output to another device later, although direct output is recommended for optimum performance. With the Heidelberg Delta system option, Prinergy Normalized PDF files can be passed through the Delta workflow, in which case the file is processed to eight-bit raster page files and stored for imposition and output.

In the final comparison, each of the systems allows you to save and edit a Normalized, prerasterized PDF file, and each also offers a way to save and, in some cases, even edit (in a somewhat limited fashion) raster files. Each of these solutions affords flexible PDF editability in the early stages of the process and security (with optional, limited editability) late in the process to gain maximum process control.

System Comparisons

In a series of articles previously published in *The Seybold Report on Publishing Systems (see Vol. 27, Nos. 3 and 13)*, we defined a structure for discussion and comparison of output workflows. In those articles, we identified and defined 46 individually required process tasks, broken into three categories, each of which should be an integral part of a total solution when a fully automated workflow is created:

- Output production covers the processes involved in producing documents—preflight checks, format conversion, trapping, imposition, color management, imaging, proofing, etc.
- Process management includes the use of hot folders and pipelines, the tracking of processes, and so on.
- Business management encompasses estimating, order taking and tracking, job costing and other items.

In addition to the individual task use and process order, we identified other areas that should be evaluated to allow for the necessary flexibility required in many output workflows. These included the introduction into the workflow of legacy files and digitized film, process validation and proofing stages, and the latest point and the tools available for handling corrections.

In those discussions, we made no attempt to select a winner or to identify the best solution for a particular application. In fact, only the user can effectively select the solution that best fits specific production needs. However, when evaluating output production workflows using this method, it is possible actually to see many of the differences and similarities of the competing solutions. Once you have evaluated your individual production requirements based on this comparison, you can begin to dig down into some of the individual "value-added" implementations of the tasks, or flow, that each of the vendors has developed to further enhance, differentiate and facilitate the total output process.

Our coverage. With the following discussion of these three products, we include diagrams of the workflow that correspond closely to the diagrams incorporated in our earlier article *(Vol. 27, No. 13)*. This should facilitate comparisons of these Extreme PDF workflows with other companies' workflows (including Scitex's Brisque workflow prior to Extreme). However, we haven't attempted to include the same full descriptive material here that appeared in the earlier article, partly because much of our discussion of these three systems has been incorporated in the earlier portion of this article.

Creo-Heidelberg Prinergy

Prinergy, the jointly developed solution from Heidelberg and Creo, was developed from the ground up. In looking at the solution, it was obviously created with PDF as the main file format focus, not just for input, but also for use as an internal manufacturing format.

Prinergy is a client-server, database-centered output production system. Each of the production tasks is handled by a job ticket processor (JTP) that is controlled by the settings defined in a JTP-specific job ticket. Job tickets can be strung together to create different production paths (which Creo and Heidelberg call Process Plans), with adjustable settings to fit different production requirements. While Creo and Heidelberg claim that the system can operate with one server, the workflow is optimized when the different JTPs are distributed across a number of servers, dependent on throughput requirements. Prinergy uses many different JTPs for handling the entire process. It breaks the workflow into four primary process groups:

Notes About the Workflow Diagrams

The premise for these diagrams was detailed in our earlier article, "Print Production Workflow: Defining the Issues" (Vol. 27, No. 3), where we sought to define a set of issues and terms so that we all can communicate about this confusing topic in a more precise manner. Confusion has arisen in part because people have different concepts about the stages and tasks in the publishing and print-production process, and in part because of differing interpretations of what the various vendors offer. In addition, the marketing of workflow is problematical because now, for the first time, the industry is attempting to automate entire parts of the production process. We aren't used to buying tools that need such a degree of customization to fit our particular needs. We are used to looking at spec sheets and converting our workflows to suit the box we just bought.

Because many user environments are complicated sets of workflows, we decided to use a graphic approach with explanatory text. We created instructions and task component charts in Illustrator format for vendors and users to create their own charts, and put them, with instructions, on the Seybold Web site for downloading. We have altered the vendor diagrams to conform to a standard presentation to make it easier for the reader to see at a glance how they differ.

Whether, not how. Please note that the charts identify *whether* a task is handled, not necessarily *how* it is handled. In the case of trapping, for example, we indicate whether trapping occurs before or after the RIP process, but we may not discuss whether the approach is to use object-based trapping or to RIP to a low-resolution file and reinsert objects into the original file. Sometimes, the "how" is really what helps to differentiate the product offerings, once you have looked at the scope of the solution. We try to cover some of the highlights of those added features in the accompanying text. However, the varieties of implementation make it impossible to explain each one in depth.

The Charts and Their Boxes

As we said above, the specific scope of each of the tasks is detailed in the earlier article (pp. 39–47). However, the conventions used need brief explanation. All task boxes are shown for each vendor, albeit reorganized.

One per customer. We have tried to keep the task level to an operational level rather than at a lower level. For example, if you look closely at some of the trapping solutions, they may include an interpret task, but we felt that was more a question of the specific way they handled the operational task, not necessarily affecting the way the customer handles workflow. While we tried to keep the tasks to one per operation, in the case of proofing—both soft (monitor) and hard (paper)—this can and may need to happen in a number of places in the process. In the cases where it can happen, we have included multiple occurrences.

Little boxes. The first consideration is whether a process task is supplied by this vendor or by a third party, or isn't necessary in the environment. If a task is supplied, meaning that it is an integral part of the packaged solution, we show a clear box. If a solution is supplied, but it is manufactured by a third party with a high level of integration into the evaluated process, we added a third identifier into that box. If a task is not supplied as part of the packaged solution, we show a gray tinted box. Please note that just because a vendor doesn't supply or handle a task doesn't mean you can't buy it and implement it on your own, or through an integrator. However, you may have a more difficult time in automating the process using "nonsupported" tasks.

Where there is a redundancy—for example, "create imposed PS file" and "create a nonimposed PS file"—we eliminated anything that wasn't necessary, and put eliminated items in an area labeled "N/A Tasks." This way you can see all of the potential tasks, and how they are affected by the individual solution.

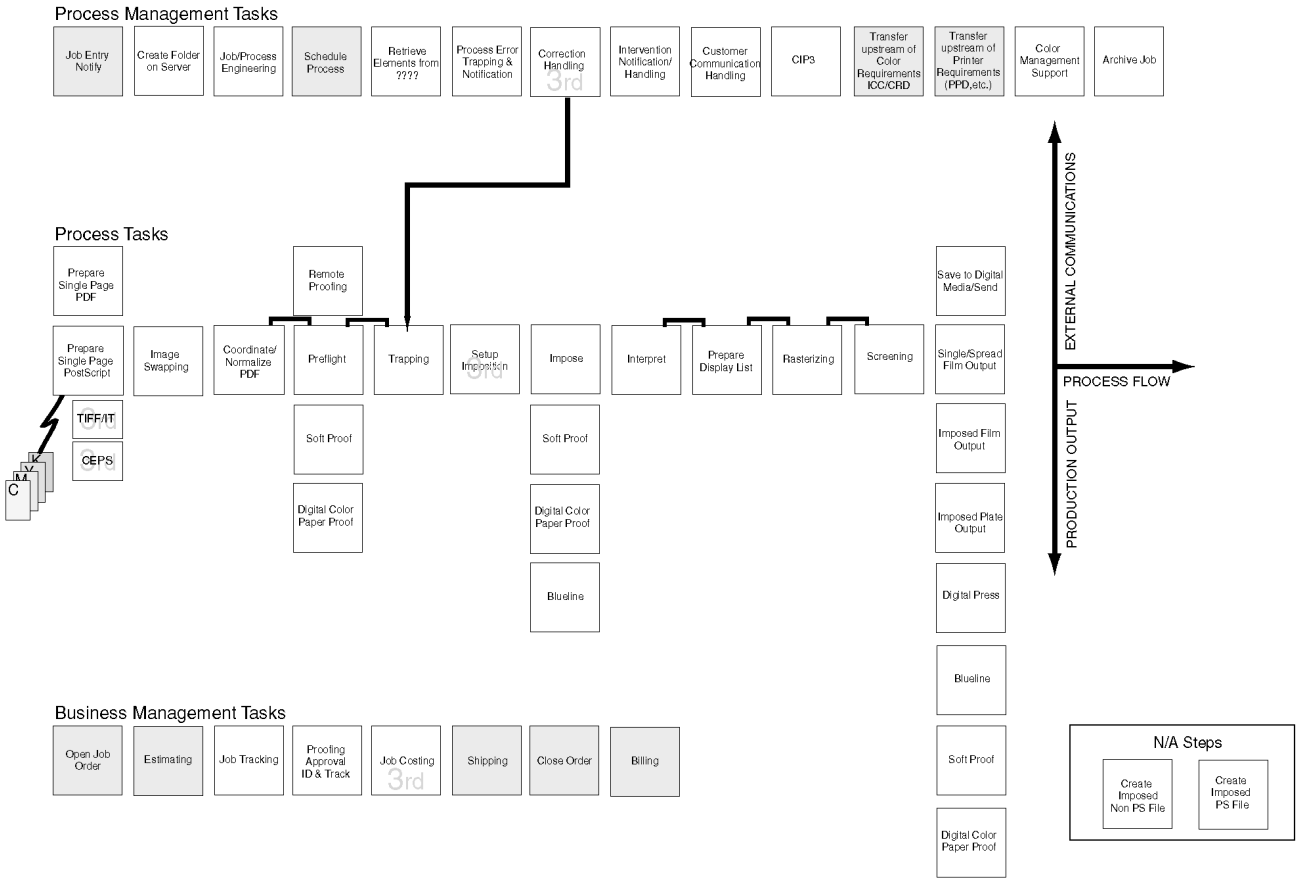
Legacy files and film. To understand if and where a solution would integrate legacy files and film into the process, we created three additional identifiers. The digitized film identifier is shown by four pieces of film with a lightning bolt on top. This signifies that the film is already digitized into an acceptable format. Those formats are discussed in the article, and their point of integration into the process is shown on the chart. Ultimately, there are many ways to scan existing film and create a DCS, TIFF/IT, screened or unscreened bitmap file, etc. None of them are particularly elegant, but, during this transition to automated workflow they are necessary. If existing film is a significant part of your current workflow requirement, you should look at the implications not only of how the film is digitized, but also what your options are for trapping, corrections, placement, etc., within the process.

The TIFF/IT box assumes TIFF/IT-P1 compliance and is shown in the chart at the point of integration into the process. The same holds for the CEPS (color electronic prepress system) box, although you need to check with each vendor to establish what CEPS formats it accepts. Most of them have a translation utility as part of the system to convert these formats into something that can be integrated with other formats.

Corrections. Corrections are usually required in day-to-day operations. However, the level and type varies by individual work requirements. We use the assumption that all files can be corrected if you go back far enough in the process (*i.e.,* application level). The correction task we identify in the chart signifies a way to do corrections mid-stream, without having to go back to the beginning. That being said, even if a vendor doesn't make provisions for handling corrections within the process, we identify the latest point at which corrections can be re-entered, with an arrow starting at the correction task identifier and ending at the point at which it can finally be introduced. In the article, we identify the type of corrections and tools that are supplied.

Previously. We noted in the previous article that tasks that take place together are joined by a black partial border. Process management, output production and business management are all kept separate by their location in three different rows in the chart. While we have arranged the process tasks in order of the individual solutions, we have not arranged the production management or business management tasks in any specific order, since these tasks will potentially occur at varying times in the process.

In fact, as we see the increasing introduction of E-commerce solutions that manage some of those business management processes, and even integrate with existing business accounting systems, we can expect that many of these vendors will also integrate their production systems with those solutions over time.



Prinergy Workflow

In the Prinergy workflow, most of the processing and process flexibility exists early in the process. Any potential corrections can be handled within the constraints of PDF using PitStop or other PDF editing tools, after the Refining process, which includes Normalizing, Preflight, Trapping and color management. Not shown is the optional Delta workflow option that accepts the Prinergy Refined PDF.

- Refining.
- Imposing.
- Output.
- Archiving.

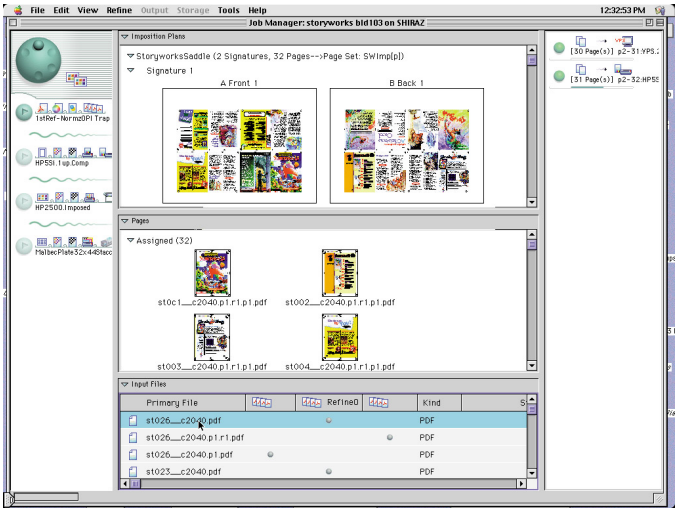
Input formats. Prinergy natively accepts PostScript and PDF file formats and, through the use of CEPSLink or CEPStoPS software (both licensed from Shira), legacy formats such as CT-LW-NLW, TIFF/IT-P1 and Crosfield Textran formats are converted, wrapped in a PostScript shell, and input into the Refiner for processing. While preseparated PostScript and DCS files can be input into the system, they remain preseparated throughout the entire process, which makes trapping and editing difficult, if not impossible, at this stage.

Refining. The Refiner is a multifunction JTP process group that includes Normalizing and preflight checking, thumbnail creation, OPI (for PostScript only; Prinergy doesn't support OPI in PDF files), color management and trapping. During this process, a "shop default PDF digital master for print" is the end product, which is then managed by the database awaiting imposition or output instructions.

Thumbnail creation is used to populate the user interface and show individual pages singly, in spreads or imposed, in a similar fashion to the way the Heidelberg Signastation imposition station works. The editable automatic trapping is done completely within PDF, using the basic trapping engine developed for the Heidelberg DaVinci workstation and now ported to Prinergy. During the refining process, OPI comments are processed and high-resolution images are inserted into the PDF digital master, with the user's choice of the standard available Adobe PDF compression algorithms. Color management processing includes spot color mapping, overprinting and ICC color profile handling based on the LinoColor Matching Method, which is all applied in the Refiner, creating pages that have been color-managed and trapped to a specific set of output device parameters.

Imposing. Using either a Signastation or ScenicSoft Preps, version 3.6 or later, an imposition template can be created and an Imposition Job Ticket can be exported and saved for later use or reuse by Prinergy. When you are ready to impose a job, the built-in interface aids in selecting an existing imposition job ticket, and page thumbnails are dragged into the template. Until the time of final output, these pages can be removed or changed by dragging individual page thumbnails on or off the template. A page can be edited by double-clicking on its thumbnail, which launches the actual PDF page in Acrobat, where it can be edited. Once the

Prinergy's Job Manager. In the left pane of the display are customizable Process Plans, which can be set up and constrained for individual users. In the center section is a view of individual page files as well as imposed flats. The right panel shows the status of individual job processing.



operator chooses to expose the imposition, actual PDF pages are imposed on the fly to the Renderer (RIP).

Rendering. All of the "print-ready" PDF digital master files are ultimately sent for output to the Renderer, which is actually an Adobe PostScript 3 RIP JTP. From the Renderer, the system sends the RIP'ed and screened file to any of the supported output devices for imaging. Available devices include the entire Creo line of output devices, plus Heidelberg's Quasar, Herkules and Signasetter Pro imagesetters and an HP plotter for imposition proofing.

Screening options supported by the Prinergy Renderer are limited to Heidelberg's HQS and Rational Tangent screening, plus Creo's Staccato. The Renderer does have ink key support of the CIP3 standard.

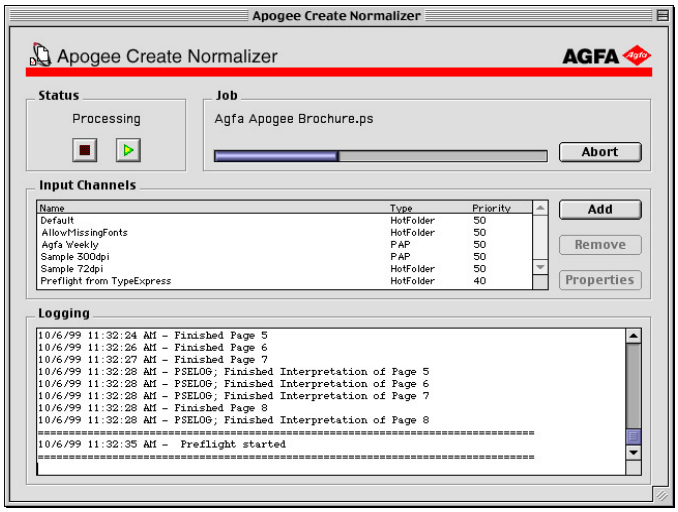
An alternative rendering solution would be to send refined PDF files, along with job ticket instructions, to a Heidelberg Delta system utilizing the new AutoFlow link option. Once a job is sent for output through the Delta system, all of the Heidelberg screening, as well as CIP3 control for ink key and cutter settings, is available with supported devices.

Agfa Apogee

Agfa's Apogee was introduced formally at Seybold Seminars in New York in March 1997, making it the first "official" Extreme-based output workflow product. The first three modules were released sequentially, with the RIP first, in the summer of 1997, followed by PrintDrive early in 1998 and then Pilot. The worldwide installed base now comprises more than 600 Pilots, 900 PrintDrives and almost 6,000 PDF RIPs.

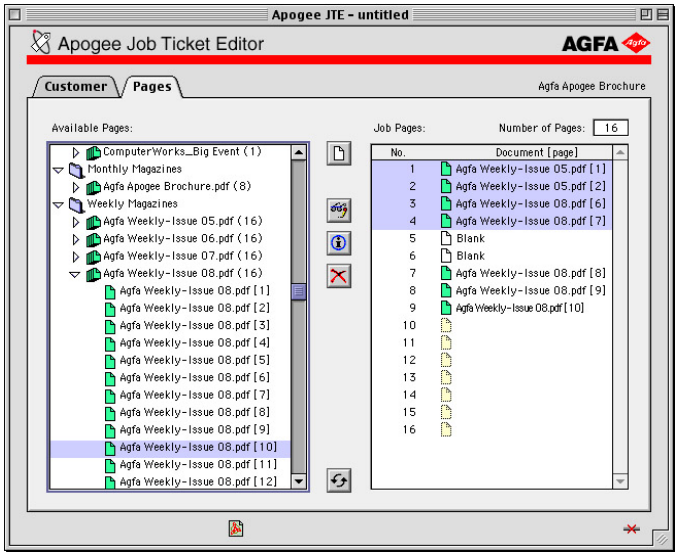
At Graph Expo in October, Agfa released Apogee Series2. In addition to new features (*e.g.*, PDF 1.3 support) and workflow and performance enhancements using the latest Extreme components, it also incorporates Apogee Create, a new fourth module. All modules are controlled by the Apogee Control Center, which drives and manages the entire Apogee workflow including job ticket creation, PDF viewing, job management, system settings and event logging.

Agfa's new Apogee Create. The newest of Apogee's four main modules, Create, enables users to create PDF files to send to an Apogee system, specifying whether hot folders will be used, assigning a priority to the job, etc.

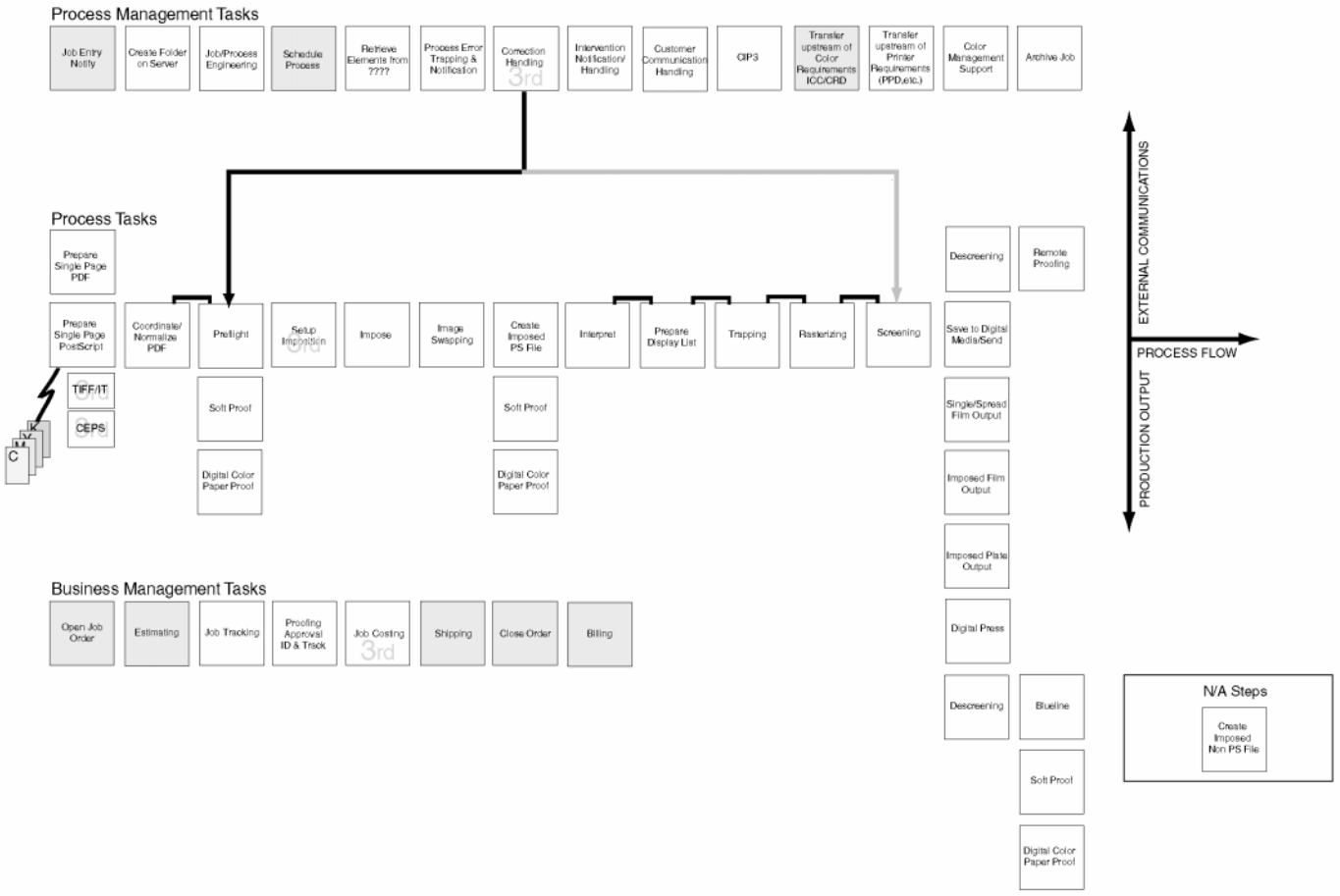


Apogee Create. Create, which resides on the document originator's machine, acts as a Distiller, but uses the same Extreme Normalizer as Apogee Pilot, to create "workflow-optimized PDF digital master" files. It supports automated "rule-based" preflight checks and corrections using the new PitStop Server technology licensed from Enfocus. In addition, it allows the operator to create a Portable Job Ticket that will continue to collect job information and travel with PDF page files through the entire output production process.

This is really the first, and only (up to this point), implementation that utilizes the job ticket concept to transfer job information (other than imposition instructions) between systems.



Apogee Job Ticket Editor. Using drag-and-drop functionality, a user can save a run-list as a new PDF file, include job tickets, and export it to Apogee Pilot. Job tickets can be saved for reuse.

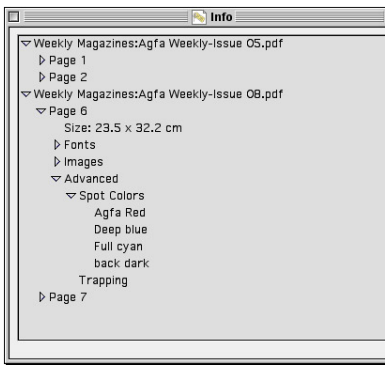


Apogee Workflow

In this diagram you can see that there are two areas shown for handling potential corrections: one right after the Normalizing / Preflight tasks, where it is possible to edit the "workflow-optimized" digital master PDF file, and the gray one that identifies very limited (cut-and-paste) editing capabilities of the screened bitmap PIF file. In addition, there is a unique extra step of descreening that can occur post-RIP to support remote and continuous-tone proofing.

Apogee Pilot. Pilot hosts multiple JTPs, including the Normalizer-preflight operation and a Job Ticket Editor to allow you to set production parameters for trapping, imposition, separation, color management and output. It also includes a number of tools that can work around some of the existing limitations of PDF.

Apogee natively accepts PDF and PostScript files, either composite or preseparated. (Preseparated files are converted to composite form.) As is the case with Prinergy, through the use of Apogee CEPSLink or CEPStoPS software (both licensed from Shira), legacy formats such as CT-LW-NLW, TIFF / IT-P1 and Crosfield Textran can be converted to PostScript and input into Pilot. Imposition is handled through Pilot, using Preps to create a template and then processing and imposing the PostScript file.

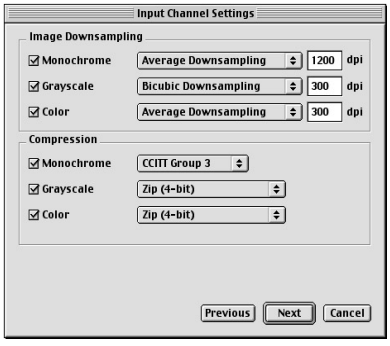


Getting page information. For any page, the Apogee operator can check font and image usage, spot colors used, etc.

In the new release, it is possible to process individual pages to create screened bitmap pages, which can be sent with imposition instructions to PrintDrive to assemble the individual screened bitmap pages "on the fly" prior to imaging. With the addition of the optional Apogee OPI module (based on software licensed from IPTech), the Pilot also manages the OPI process with both PostScript and PDF files.

Final output from Pilot is either a PDF digital master or PostScript Level 2 page files or imposed "flats." In development is a provision to allow you to choose PDF / X as an alternative output format.

Apogee Series2 PDF RIPs. Since the output from Pilot can be Level 2 PostScript, any PostScript 2 or later RIP can be supported, although Agfa has



Apogee's input channel settings. The user sets up resolution for downsampling graphics and compression algorithms through this display.

a number of PDF RIPs that complement the Apogee system and support either PostScript or PDF directly. These PostScript 3 RIPs include Macintosh and NT-based solutions. They include In-RIP Trapping (IRT) and a built-in Output Manager that can drive imagesetters, platesetters and proofers. RIPs have built-in controls for setting screen angles, dot shapes, etc.

Final output from these PDF RIPs is a screened bitmap file called a PIF (Print Image File). Since the files are already rasterized and screened, they can be proofed and printed with a very high rate of confidence.

Apogee PrintDrive. PrintDrive is an output management system that takes in screened bitmaps (PIFs) and stores them for output to an imaging device, actually creating a managed buffer between the RIP and the imager. Now available in its second version, this module can be fed by multiple RIPs through a TCP/IP connection. With Series2 you can render individual pages as they are complete and PrintDrive will assemble them on the fly. A built-in viewer allows you to view the screened bitmaps, either in single-plate or composite mode. Other tools enable quick cut-and-paste editing and black-plate changes without re-rendering the image content. The new version also supports on-the-fly imposition of individually saved screened bitmap page files.

The system drives Agfa's Galileo and Antares (Cymbolic Sciences) platesetters, as well as Agfa's Avantra and AccuSet imagesetters. It also supports certain HP and Agfa ink-jet proofers, as well as the Polaroid PolaProof.

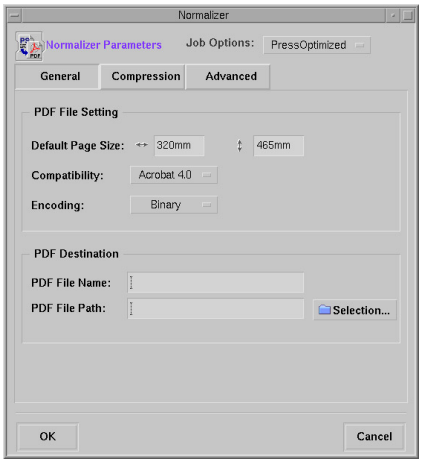
Scitex Brisque Extreme

In contrast to Agfa and Heidelberg-Creo, which built their Extreme solutions from the ground up, Scitex has chosen to take its traditional approach: build Extreme into its existing Brisque workflow, and in the process give its users—both new and existing—a secure migration path into the new technology. With the introduction of Brisque Extreme, Scitex was able to start with a mature product and extend it to take advantage of the Extreme architecture, while continuing to build in additional features.

Of the three solution providers, Scitex has the largest installed base, with more than 7,000 Brisque production systems in the field, including print-on-demand systems. All Brisque "digital front ends" are upgradable to Brisque Extreme.

File input. Brisque Extreme can input PDF and PostScript, composite and preseparated (which it composites, post-RIP, using its Merge function). Screened bitmap files and legacy LW-CT files can be added later in the process, for on-the-fly imposition, and are not converted or reprocessed in advance.

Normalized PDF. With the current Brisque Extreme implementation, Scitex has chosen to implement the Adobe Normalizer as a module within its job ticket, as well as an alternate input path to the standard Brisque. This enables Scitex to produce a PDF digital master page file as output from the Normalizer, which the Brisque user can store and transfer to any system that supports PDF and PostScript 3. Scitex is working also on an APR-OPI swap within the Normalizer to create a PDF digital master file with a "less specific" resolution.



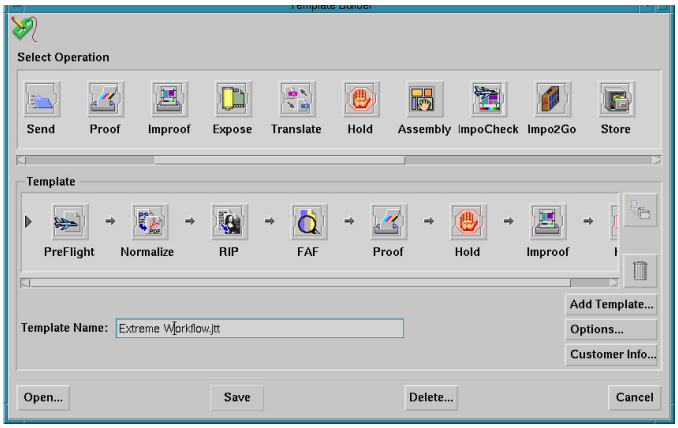
Brisque Extreme Normalizer. The Brisque user interface employs tab-like features to set up Normalizer functions, such as compression.

By postponing the rasterization to CT-LW (Scitex's internal manufacturing format) until later in the process, it makes it possible to edit the PDF files using the same tools that are available in Acrobat (and are supported by both Prinergy and Apogee). This enhancement answers many of the concerns that have been raised over the years regarding the editing flexibility of CT-LW as an internal format.

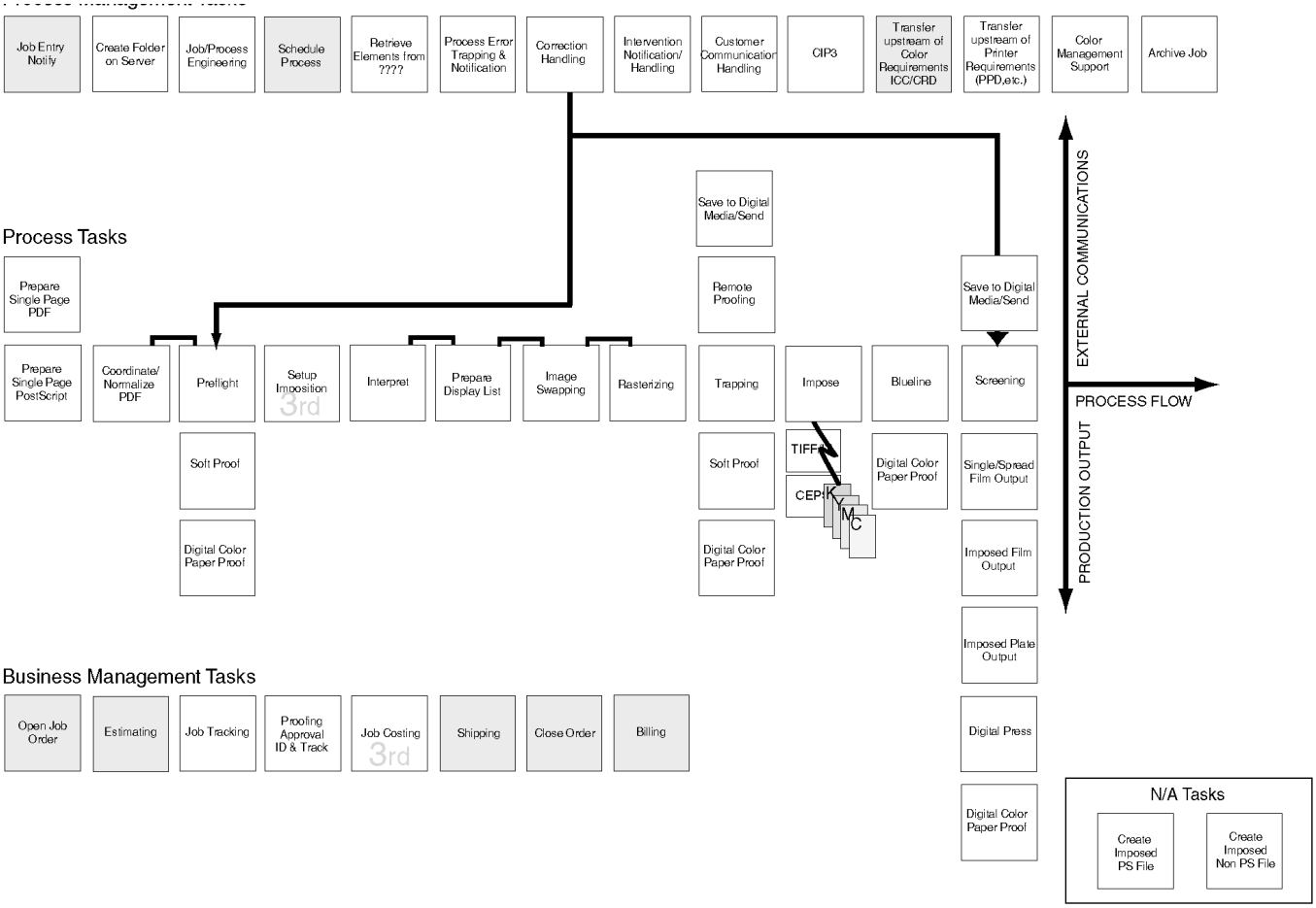
Workflow based on job tickets. The Brisque has supported automated workflows built around job tickets since its introduction in 1996, although it doesn't use any of the Adobe job ticket processors other than the Normalizer. Like Agfa and Heidelberg-Creo, Scitex feels that, when the Adobe JTPs are able to offer results that are as good as or better than its own application processors, it will probably incorporate some of them.

Scitex offers parallel page processing in the Brisque, depending on the specific hardware configuration. As Adobe's first OEM customer for the CPSI (Configurable PostScript Software Interpreter), Scitex over the years has optimized its systems to work with composite files, a feature that once was nearly unique but has become the norm with the introduction of PDF page processing.

As a result, over the years, Scitex has developed workarounds for many of the deficiencies that have existed in a composite workflow.



Brisque job ticket setup. The Scitex user sets up a workflow by selecting configurable task icons and placing them in the required order to create a template that can be saved for use in future projects.



Brisque Extreme Workflow

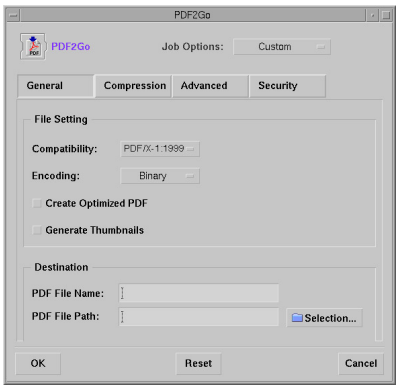
In the Brisque workflow, two potential correction areas are shown. The first one, after the Normalizing process, is similar to the other two workflows. The other one is post-RIP, on the LW-CT file, or optionally on the PDF files created with either PDF2Go or Impo2Go. In addition, Scitex chose to incorporate both CEPS files and screened bitmap files late in the workflow process, unlike the other two solutions.

This has taken many forms, including the development of plug-ins and extensions for creative applications to pass specific production information from the creator to the production system.

Brisque uses an Imposition Control File (ICF) to govern the imposition task. This file can be created using Preps or, more recently, Ultimate Technographics' Impostrip. When this file is selected as part of the Brisque Impose job ticket, it becomes part of the job pipeline, awaiting page approvals and final output instructions. Once the imposition is ready for output, the application collects and exposes individual raster pages, marks and color bars on the fly as part of the imposition process.

Scitex has recently introduced the GhostFree module, which automatically generates ghost and take-off bars to minimize press ghosting. In addition, it has also introduced the Packaging Control File (PCF) that allows the same on-the-fly imposition capabilities it has with pages, with die-shaped packaging files.

One of the benefits of retaining CT-LW as the internal format for Brisque Extreme is that it enables Scitex to continue to use its Full Auto Frame decision-based automatic trapping software, as well as all of the other editing tools it has developed previously, including Scitex Remake and the soon-to-be-released Scitex PressTouch, which combines both Scitex Remake and Full Auto Frame capability. In addition, it allows Scitex to offer the wide range of file output options it recently introduced to enhance its compatibility with other systems in the market. These tools include Export PS, which creates a fully compliant PostScript-wrapped final raster file; PDF2Go, which creates a fully compliant, post-rasterized PDF file that can even be edited using PitStop; and Impo2Go, which generates an imposed PDF flat for viewing and printing on a remote printer.



Brisque Extreme is available with up to four CPUs per computer for simultaneous file or page RIP'ing, trapping, pro-

PDF2Go. The PDF2Go module from Scitex allows the user to set all of the standard PDF Distiller output parameters to be applied to the fully rasterized files. This setup would allow you to produce a fully compliant PDF/X file.

We'd like to see better integration of status tracking to provide a better view of the exact status of all key system modules at any given time.

cessing and output. It supports output to all of Scitex's Dolev imagesetters and Lotem platesetters. In addition, it can produce output for the complete line of Iris and Kodak Approval proofers, large-format HP, Barco and Encad plotters, the 74 Karat Digital Offset Press and all of its print-on-demand printers. Brisque Extreme supports a full line of screening technologies, including Scitex's Class Screens and Turbo Screening.

Conclusion: Do You Need An Extreme Workflow?

In looking at these three Extreme workflow systems, we have had several objectives: to help explain what an Extreme system is and does, to clarify how these three systems differ from each other, and, in the process, to present a picture of the "truest" kind of PDF workflow as a means of evaluating the effectiveness of the PDF approach in today's world.

As was the case in our earlier study of alternative workflow systems, we didn't expect to pick one of these as being better than the others. Nor did we expect to declare a PDF workflow to be the only good choice of a workflow for the future. To make such declarations is impractical because too much depends on a user's specific requirements. However, we think it is possible to draw some conclusions.

First, as Adobe suggests, the Extreme architecture is designed to handle robust applications and environments requiring scalability. Thus, the benefits of an Extreme workflow system are likely to increase with the scale and complexity of the operation. Its modular approach supports a high degree of automation and control. This fact leaves room in the market for alternative approaches, both from Adobe and from competing vendors.

Second, we think Extreme's structured approach to workflow procedures is likely to contribute positively to the industry as workflow tools become more widely used. For example, the idea of job tickets operating interchangeably among disparate systems, although it presents some obstacles that must be addressed, is basically sound. Similarly, its requirement that processes be handled as much as possible directly in PDF, rather than using PostScript as an intermediate format, is a desirable objective, although we aren't convinced that everyone should move quickly to a "pure" PDF workflow.

Third, from a productivity standpoint, it is too early to judge the effectiveness of these systems or the Extreme architecture because, in some cases, either the Adobe modules aren't yet mature or the system developer hasn't completed certain aspects of its implementation. For example, we believe that each of these systems should use primarily the same job ticket processors, rather than require unique, independent development.

Similarly, there should be greater sophistication in load-balancing capabilities to optimize the performance of RIPs and imaging devices. These systems have facilities for finding an available imager, but the capabilities are quite basic. Why can't the excellent load-balancing capabilities available with output management systems (*e.g.,* ProImage's NewsWay) be offered in an Extreme environment? While Prinergy has taken a first step through the distributed processing capabilities of its JTPs when configured with multiple servers, there is still more to be done.

We'd also like to see better integration of status tracking to provide a better view of the exact status of all key system modules at any given time, especially as workflow systems reach to encompass a broader range of tasks, from creation to press and postpress activities.

Alternatives to Extreme. Finally, there is a new crop of alternative (non-Extreme) workflow systems that are designed with the objective of providing greater flexibility than a pure PDF workflow, while still supporting an all-PDF workflow for users requiring it. Because these systems have little or no field experience yet, it would be unfair to cast firm judgment on them now. But we believe some of them will be used in applications similar to those of Apogee, Prinergy and Brisque Extreme, so it will be interesting to see how they fare under those circumstances.

We've described most of these systems, at least briefly, in recent articles, but it is worth mentioning some of them again in passing.

The one with the most field experience to date is the MaxWorkFlow output management system from Harris, which has been installed in various iterations over the last couple of years, but is currently being upgraded for commercial applications. This product is constructed with a modular, task-based orientation that allows the user to configure each production task flexibly and arrange them in any appropriate order to handle output production pro-

Extreme System Pricing

Scitex Brisque Extreme. All new Brisque systems have full Extreme features. An entry-level system with a single processor starts at $35,000; Brisque4 has four processors. Existing Brisque users can upgrade to Extreme functionality for a small fee.

Agfa Apogee Series2. Apogee comprises four main modules—Create, Pilot, RIP and PrintDrive—sold separately:

- PDF RIP (software with interface board)—$12,500.
- Apogee Pilot (including Preps and a version of PitStop—$12,850.
- Apogee PrintDrive (optional; only mandatory with CTP workflows)—$11,500.
- Apogee Create—to be announced; expected to be less than $1,000.

In addition, trapping costs $5,000.

Creo-Heidelberg Prinergy. The base price of a single-server Prinergy system is $56,600, including a two-CPU, 500-MHz Pentium 3 platform with 512 MB of RAM. The Normalizer, trapping and rendering software are included. With a separate rendering server, the price would be less than $70,000.

New systems from Fuji and Barco, built around Adobe RIPs and providing support for PDF, offer similar functionality to Extreme systems.

cessing. It uses templates (job tickets) to configure each of the task modules, functioning similarly to the Extreme systems we reviewed. MaxWorkFlow can take in PDF files and even preprocess them like the Normalizer. The most recent development is an OEM agreement with Harlequin under which Harris will incorporate Harlequin's ScriptWorks Scalable Open Architecture (SOAR) in MaxWorkFlow.

In essence, MaxWorkFlow offers many, if not all, of the benefits of an Extreme system, although it isn't officially designated as "Extreme" and it doesn't use any of the Adobe modules.

Even closer to an Extreme system in functionality and architecture is the new Tureflow system from Screen, which will debut at the Seybold Seminars expo in Boston on Feb. 9. Trueflow appears to be closest to Brisque Extreme among existing Extreme systems, but it doesn't have an Extreme designation because Screen hasn't acquired a license from Adobe. (See *The Latest Word*, p. 24, for more on Trueflow.)

Some other systems that are either in development or new to the market offer similar features and functionality. Included in this group are new systems from Fuji and Barco, both built around Adobe RIPs and providing support for PDF. Both were introduced to this market at Graph Expo and were covered in our last issue. Similarly, IPTech has developed an Adobe-based workflow without opting for the Extreme designation. It is too early to predict how these systems will fare in actual field testing.

We believe Adobe will continue to license PostScript 3 technology without the Extreme infrastructure to other OEM partners.

Harlequin, which has pledged to come to battle with renewed vigor under its new ownership, has just released ScriptWorks 5.3, the latest major release of its RIP Management System. ScriptWorks offers PDF file processing, as well as a set of tools that enable its OEM developers to handle their individual output workflow needs. A key difference is that there isn't the same degree of modularity that is offered in Extreme systems, but it's too early to count Harlequin out, based on its earlier years of aggressive product development.

Differing requirements. As workflow issues work themselves out, we're likely to see different kinds of applications requiring different products, especially where there isn't the need for the same degree of automation. If you look at the average printer's needs, how much automation is practical? For example, the typical workflow of a "job"-based printer requires a lot of interaction and intervention throughout the process. While there is still value in predetermined setups and workflows, such as those provided by Extreme and other systems, the real value of an automated workflow is in a project that has many pages to process, such as a catalog or a publication.

It is true that the levels of intervention and interaction that are currently required may decline if the use of PDF as a transfer format increases, and this ultimately might increase the value offered by a fully automated workflow. In the final analysis, it is evident that PDF workflows and process automation do have many benefits in the print production process, although these three Adobe Extreme implementations address both of those issues in very different ways.

David Zwang

David Zwang is the principal consultant of Zwang & Co., a firm specializing in strategic development and process analysis in electronic publishing, design, prepress and printing. He began in the graphic arts as a commercial photographer in the late 1960s and has founded several prepress and printing operations. He has written many articles and developed a variety of industry courses. He has also participated in numerous capacities at Seybold Seminars events.

Workflow Issues: Is There Still Room for ROOM?

by Molly W. Joss

THE WIDESPREAD adoption of PostScript-based prepress workflows during the 1990s brought with it the potential for errors of various kinds and for uncertain (and possibly very long) processing times. For the past several years, one way of addressing these issues and providing efficiency and security in these workflows has been software embodying a concept called ROOM: "RIP once, output many."

Many users, and some vendors, are still avid proponents of ROOM. Some ROOM enthusiasts are so fervent in their beliefs that they dismiss "non-ROOM" products out of hand. But the ROOM concept is losing its value and may soon be obsolete. One purpose of this article is to plead the case that it is time to move on from ROOM. The reasons are clear, based on looking closely at what RIPs do, how they do it and how the industry is changing.

RIPs and ROOM. Over the years, imagesetter vendors have struggled with ways to optimize the internal workings of PostScript RIPs, including the implementation of the ROOM approach. The ROOM concept has been complicated by the fact that, although on the surface it is simple, its implementation has varied and the reality isn't always in keeping with the understanding people have built up over time. Consequently, the discussion around ROOM can be intense and confusing. (See sidebar of excerpts from the Computer-to-Plate Pressroom Forum on the Internet for an illustration of this point.)

Inside a PostScript RIP

Prior to delving into the ROOM debate, we'll review briefly how a PostScript RIP works. As related by Christie O'Malley, production marketing manager at Harlequin, "A conventional RIP converts PostScript files to raster data that can be understood by an output device. It accomplishes this in two phases:

- "First, the RIP creates a display list—a list of all the objects to be imaged. This list is usually device-independent, in that device-specific parameters such as resolution, screening and color correction have not yet been implemented.
- "Second, the RIP rasterizes the display list, translating it into dot patterns that can be output on the imaging device. At this point, device-dependent requirements are addressed."

Interpret once or rasterize once? Since there are two distinct phases in the RIP process, O'Malley continues, it is possible to vary the customary process. One way is to enable the RIP to *interpret once and plot many times.* In this case, the data are converted into a display list (or another highly structured vector format) only once. This intermediate format is stored by the RIP and retrieved and rasterized each time it is sent to an output device.

A variation of the ROOM concept is to *rasterize (partially) once and plot many times*—that is, to complete the interpretation processes and rasterization and save the result in an intermediate raster format. When the data are to be imaged, the RIP retrieves the file and modifies it as needed—say, by changing the resolution, merging with other bitmaps, adding screening and so forth, in ways that are appropriate for the output device. In this scenario, there are really three steps: interpret, then rasterize to a generic format, and finally render for a specific output device.

Both of these two approaches have been called "ROOM" by one or more vendors. And, why not? Each qualifies, in some sense, as "RIP once." In the first case, it is interpretation that is done only once; in the second, it is interpretation and device-independent rasterization.

The genesis of ROOM

The other part of the explanation requires a short review of the history of RIPs. Today, with the widespread use of many-hundred-MHz Unix and NT computers as RIP platforms, it's hard to imagine that RIPs and the RIP process were once one of the slowest, and most agonizing, parts of graphic arts production. RIP'ing, by nature, is a computation-intensive task, and the raw processing power of the hardware used for a RIP can greatly affect the speed of the overall process. Although vendors have always been careful to use the most powerful computers available for their RIP platforms, they have had to make do with whatever was the state of the art at the time. In former days, this meant that RIP'ing complex files took hours, not minutes.

It was not until the early years of this decade that software RIPs became common, which opened the door for the vendors to migrate their investment in coding and troubleshooting to each new generation of computer hardware that came along. Over time, virtually all RIPs for imagesetters, platesetters and other high-end imaging devices were developed to run in software that can be upgraded as computer speeds increase.

Oops. There was also the problem of dealing with errors—both PostScript errors and omissions of items such as fonts and images. PostScript is a programming language—a set of instructions to a computer—and not all applications created PostScript code correctly and not all RIPs could interpret the code correctly. As the industry struggled to implement the PostScript workflow, people realized that the PostScript imaging process was prone to errors—errors that either made the file impossible to image or that made the time invested in imaging too wasteful.

Dean Meyer, product manager for Delta Technology at Heidelberg USA, explains that the issues of speed (or the lack thereof) and errors were an important part of the impetus for Linotype-Hell (now part of Heidelberg) to create its Delta RIP built around the ROOM concept. "People were dealing with huge files and it was a big mess. We were trying to accomplish a smoother workflow

The Scitex, Rampage and Heidelberg ROOM systems produce contone output, save it in an internal format and turn the display list into raster data, but not a bitmap that can be imaged directly.

and, at the same time, automate more tasks so labor costs could be reduced," he explains.

Proofs for CTP. With the advent of CTP systems, the ROOM concept became even more popular—thanks to the necessity of having a contract proof that matched the plate output as closely as possible. Printing a file through one RIP on a proofing device and through a different RIP on a platesetter was an invitation for trouble as the two RIPs weren't guaranteed to interpret the PostScript code in exactly the same way. The idea of having one interpreted file (interpreted by the same RIP) imaged by two different output devices was viewed as a way to eliminate some of the variables in the production process.

Current realities

Those motivations for a ROOM technology were quite valid. But, in reality, the implementation wasn't as simple as the concept. One of the primary reasons for this, O'Malley points out, is that it is impossible to use the identical rasterized file on different output devices. "You can't output the same bitmap file on two radically different output devices," she says. At the very least, as is well known, the file must be changed to accommodate the resolution of the device—proofer, imagesetter, platesetter, etc. In addition, linearization adjustments may be necessary to get colors to match between devices.

If you aren't using the same bitmap file on every output device in a ROOM RIP, then what are you using? Dave Kaufmann, production technology leader at Creo, outlines what happens inside three ROOM systems sold today. "Scitex, Rampage and Heidelberg are examples of vendors who use RIPs to produce contone output and save these files in their internal file formats: CT-LW, CTR and Delta List." In other words, these systems turn the display list information into raster data, but not into a bitmap that can be imaged directly.

In these internal file formats, the raster data are saved as contone information, he notes, which allows the vendors to complete the interpretation portion of the process and the part of the rasterization process that interprets all the vector commands. When these files are imaged, they only have to be altered to meet the final output specifications and the final bitmap is created. Since most of the RIP'ing process has already been completed, some potential problems of missing or altered images and fonts or differences in PostScript interpretations between RIPs can be eliminated.

Kaufmann adds that Creo's Allegro RIP is also of the ROOM variety, although it does not function in the same way as the Scitex, Delta and Rampage RIPs do. "I define a ROOM workflow as one that produces pixels at some fixed output resolution. . . . As to whether those pixels are contone (Scitex, Rampage and Heidelberg) or one-bit (Creo) is an architectural choice of the vendor. Both are ROOM in my book."

Peter Gorgone, marketing manager for Rampage Systems, explains the benefits of ROOM for Rampage in slightly different terms. The benefit of ROOM for a Rampage RIP, he says, is that the CTR files are more compact than full-blown bitmap files, and, when the files are finally imaged, it is a simple process to set final output parameters such as screening, dot gain and so forth. "It provides the greatest level of flexibility," he adds.

Gorgone also feels the ROOM concept gives users a degree of data integrity that is not possible with non-ROOM RIPs. He gives the example of someone outputting a proof one day, sending the proof to a client and, while waiting for approval, someone removes elements of the file (fonts or images) from the server. Then, when

ROOMinations from the CTPP Forum

The following ROOM-related comments were taken from postings on the Computer-to-Plate Pressroom Forum and are indicative of the range of debate that ROOM can generate. *Note that these comments are the opinions of the individuals and may not reflect the opinions or conclusions expressed elsewhere in this article.*

Duane Bryant, prepress manager, L&E Packaging, Greensboro, NC: "For image integrity and consistency, the interpretation portion of the RIP'ing process is the most critical. Therefore, I propose the real goal is "interpret once, output many (IOOM). IOOM would then be output to the desired output device (ink-jet, imagesetter, etc.) using the appropriate, desired screening and ppi (never reinterpreted). This type of output would be 100% reliable for content but not for ppi, which is usually device/RIP dependent."

Bryant also proposes the use of SOOM for "screen once and output many," but advocates that ROOM "be reserved for the creation of *true* binary bitmaps—rasterized files at the fixed ppi of the output device and never reinterpreted."

Peter Dodge, system engineer MCSE, CNE: "Any device that is rasterized at any resolution and then output to various devices regardless of how those devices handle the raster image is RIP once, output many. It means that you are proofing the same image which will eventually be used to mark film or plate. It does not mean that the image will not undergo some further modification by whatever device outputs it, which may range from color correction at the proofer or application of screening algorithms at the marking engine."

Scott Tully, CTP technology team, Gamma One, New Haven, CT: "I have an alternative acronym (please disregard the negative connotation): DOOM (distill once, output many).

Tim Kohl, Krause America: "It's time to stop the madness. Here at Krause we try to define our ROOM workflow as post-RIP imposition. But you're right. It's just one flavor of ROOM. It's time to define the different ROOM workflows and identify the impostors."

There continue to be circumstances where ROOM makes sense: speed with variable data; proofing in color production; and cluster printing. Otherwise, it seems clear that ROOM's day is done.

PDF and the 'ROOM' Debate

PDF is starting to become a key intermediate format in many prepress workflows, including the Prinergy (Heidelberg & Creo), Apogee (Agfa) and Brisque Extreme (Scitex) systems. The question naturally arises: Can these be called "ROOM workflows"? Arguments are made on both sides.

Some people view ROOM loosely as a process that aids in the performance of the interpretation step in the RIP. For them, a PDF-based workflow qualifies as a ROOM workflow, since the Distiller or other PDF-generating software must interpret the data as it "cleans up" a file. In so doing, the PDF-generation process eliminates many of the uncertainties associated with PostScript interpretation—*e.g.,* a failure to specify the proper resolution or a failure to include fonts. The internal use of PDF in Prinergy, Apogee and Brisque Extreme doesn't suffer from these problems because the creation of properly constructed PDF files is handled by the software without user involvement.

But does that cleanup role (also known as preflight checking in other contexts) qualify as the "interpret" step in an "interpret once, output many" workflow? We need to point out that a PDF file created by the Distiller must still be interpreted by a PDF RIP before it can be imaged on an output device. Thus, we would have to call this an "interpret twice, output many" workflow, which provides benefits, but they aren't the same as the benefits of the strictly defined ROOM systems discussed elsewhere in this article.

Stated in other terms, if you view ROOM as a mechanism for avoiding the need to rasterize from a vector-based format for each output device, you will not accept PDF-based workflows as examples of ROOM. (An exception here might be Brisque Extreme, which supports an entirely rasterized form of PDF, one which does not need rerasterization from vector format for each device.)

If ROOM is viewed as a way to avoid discrepancies between the results of different implementations of RIP software, it would be advisable to withhold the designation of ROOM from configurations where, say, an Adobe RIP is handling output to one device and a Harlequin RIP is handling output to another. PDF could conform to this definition of ROOM only if the same engine rasterizes for all output devices.

In the end, we think that trying to understand PDF workflows using the terms ROOM and non-ROOM is counter-productive. The real question isn't "Is it ROOM?" but rather "Can I trust it?" Or "Will it give me the same results on all my devices?" Or "Is it fast enough for production?" These questions should be answered directly. Bringing the ROOM concept into the discussion only confuses the issues.

the plate is made and the file is re-RIP'ed, the final output won't match the proof. That kind of error doesn't happen with a ROOM-based RIP, he says.

One potential benefit implied by the concept that is no longer a reality today, Gorgone says, is that ROOM RIPs are faster than non-ROOM RIPs when it comes to imaging files that have been "rasterized once." "You've got to spend time somewhere; the vector information has to be interpreted and you have to create the bitmap." In other words, with today's high-speed computer workstations used for RIPs, it is not necessarily faster to recall a CTR file, or another intermediate raster format, from disk than it is to re-RIP the file.

Conclusion

There used to be three good reasons for a ROOM approach: speed, error trapping and compensating for variations in RIPs. Over time, faster hardware has almost solved the speed issue. PDF and preflight programs have gone a long way toward catching errors early. And the RIP makers have strong quality-control procedures to minimize any differences between product versions and even between brands. Nevertheless, there continue to be circumstances where the ROOM concept still makes sense.

Speed is still an issue in the area of variable-data printing because it's necessary for the RIP to stay ahead of the marking engine. Fortunately, in most such jobs the variable data are usually only a small portion of the page, so the RIP can cache a bitmap of the static areas. Thus, the processor usually has enough time to rasterize the variable data on a just-in-time basis. An example of this is Indigo's TurboStream.

A couple of proofing vendors, SeeColor and Serendipity Software, continue to make the case for ROOM in color production. They resample a platesetter's bitmap, undo its dot-gain compensation and transform the data into the proofer's color space. Although these are non-trivial computations, they are highly repeatable, and they are free from issues of fonts, OPI substitutions and brand differences.

Finally, there is one case where ROOM is obviously necessary: cluster printing. Here, an array of cheap, dumb laser printers will output the same bitmap in parallel, all driven by the same RIP. The economic case for cluster printing may be a subject for debate, but there's no question whether the concept fits the acronym.

Outside of these few niches, it seems pretty clear that ROOM is a concept whose day is done. But old concepts have a way of coming back. A few years ago, RIPs were slower than marking engines and ROOM schemes evolved to remedy the imbalance. Today the opposite is usually true. We're optimistic enough to hope that an advance in marking technology could once again tip the balance. If so, might we see the day when ROOM rides again?

Molly W. Joss

The Latest Word

Perhaps the most interesting part is the broad nature of the patents, which could lead to an explosion of claims if the awards are upheld.

EFI, Harlequin, Splash in new round of suits

Field expands beyond color patents

Electronics for Imaging, which has been known for its aggressive pursuit of companies thought to be infringing its color technology patents, is enmeshed in two new confrontations. In both cases, the adversary—Harlequin and Splash Technology—is familiar but the details involve new issues.

Here is an overview of the situation as we go to press. (Details are below and abstracts of the concerned patents are on the next page.)

- *EFI vs. Splash.* On Dec. 20, EFI sued Splash Technology over three patents, two of which had never been tested before. One of them involves the technology of RIP'ing one job while printing another. Another involves the use of a scanner to calibrate a printer.
- *Splash vs. EFI.* On Jan. 10, Splash filed its own suit against EFI, claiming infringement of a patent covering the assignment of areas of a page to accommodate static and variable data in printing.
- *Harlequin vs. EFI.* On Jan. 3, Harlequin filed a complaint seeking to enjoin EFI from contacting Harlequin's OEM customers with regard to their use of technology that might infringe EFI patents. The issue relates to a November 1998 patent infringement filing by EFI against Harlequin.
- *EFI vs. Harlequin.* On Jan. 4, EFI countered the Harlequin claim with its own statement in which it claimed to have court permission to contact Harlequin customers. Moreover, EFI said, the court had ruled in EFI's favor on 17 requests submitted by Harlequin in the case.

Perhaps the most interesting part of these cases is the apparent broad nature of the patents, which could lead to an explosion of claims if the patent awards are upheld.

EFI, Splash go after each other

EFI and Splash, whose adversarial relationship goes back to the days when Splash operated as a part of Radius, have taken their rivalry to a new level.

First, in a case that could have very wide repercussions, EFI charged that Splash's Color Server products infringe three EFI patents, two of which have never been tested in court. The suit was filed in the U.S. District Court in the Northern District of California.

- One patent, no. 5212546 (awarded in 1993), involves color-correction technology and is one of three infringement claims in an earlier suit filed against Harlequin.
- A second patent, no. 5537516 (1996), involves calibrating a color printer using a scanner for color measurements. This claim is interesting because calibration programs typically involve printing a target test pattern, scanning it and calibrating the printer based on the results of the scan. This practice is used both with color copier-printers such as those that Splash drives and with desktop printers.
- The third patent, no. 5615314 (1997), is described as "providing rasterized data to an imaging device," and also goes by the description "The RIP-While-Print" patent because it involves technology that enables a RIP to rasterize the data in one job while the previous job is being imaged on a printing device. This is one of several patents EFI obtained in its acquisition of Management Graphics last August. It has never been licensed or challenged in court, although many companies' RIPs overlap the RIP'ing and printing functions—an accepted means of printing more efficiently. This concept is important both among high-resolution image- and platesetters and the color copiers and wide-format engines that EFI and Splash drive.

Splash initially responded to the filing by stating that it doesn't believe it infringes any of EFI's patents and that it will defend its position vigorously. In addition, Splash said it has been awarded its own patent, referred to as ColorCal (no. 5760913, issued in 1998), to cover the use of a scanner in calibrating a printer. There appears to be some overlap in these two patents *(see next page)*, although neither party has ventured to compare them in a public forum.

Splash cites variable-data printing. Three weeks after the EFI suit, Splash filed its own infringement suit against EFI, also in the U.S. District Court for Northern California. Splash alleged that certain EFI products infringe a newly issued Splash patent relating to variable-data printing technology. The concerned patent (no. 5963968, issued Oct. 5, 1999) covers an "apparatus and method for controlling an electronic press to print fixed and variable information."

The patent involves the use of templates to specify areas where fixed and variable information will be printed. It also specifies the use of a database to represent variable information. As with the EFI "RIP While Print" suit, this one appears to cover techniques many companies have been employing for a long time. It will be interesting to see how the courts view it.

In addition, Splash alleged that EFI has engaged in a continuing pattern of anticompetitive practices, including "the filing of baseless lawsuits against competitors." The Splash claim falls under the California Business and Professions Code 17200, which prohibits unfair and unlawful business practices.

Splash said this EFI action had begun as early as 1995 and continued to the present, including filings against Radius and, more recently, Harlequin, which Splash said "typify the unlawful, bad faith actions by EFI undertaken for improper purposes." Splash charged that such suits are timed to aid EFI in thwarting competitors in the color server market.

EFI denied that any of its legal filings are "baseless" and said it doubted that anyone could "own" variable-data printing.

Harlequin, EFI pick up the pace

On another front, the EFI-Harlequin confrontation, which began in November 1998 with an infringement suit filed by EFI, has picked up in intensity. Harlequin began the latest fracas with a claim that EFI has violated the Lanham Act, a federal law that governs, among other things, false advertising. Harlequin charged that EFI had been telling Harlequin's OEM

The Latest Word

The Lineup: Patents Under Fire

For legal reasons, the companies involved in these suits avoid discussing details of these cases publicly, leaving observers with the primary option of studying the filings to try to determine the viability of the patent awards. Here are the abstracts of the ones discussed in this article. Additional information, including illustrations, is available on the World Wide Web, where these patents can be viewed at no charge or ordered for a fee. (See the U.S. Patent and Trademark Office site at **www.uspto.gov** or, one of our favorites, IBM's Patent Server, **www.patents.ibm.com**.

EFI vs. Splash and Harlequin

5212546 (May 1993)—Color correction system employing reference pictures

[Abstract.] The color correction system will enhance an operator's ability to edit and correct the appearance of a color image. This system is particularly useful in desktop publishing applications. A reference image with an overall desired visual impression is displayed on a screen. This reference image is known to print in an acceptable fashion and give a desired visual impression. When the image to be corrected is modified in order to approximate the visual impression of a reference picture, then the picture to be corrected should print acceptably.

EFI vs. Splash

5537516 (July 1996)—Method for calibrating a color printer using a scanner for color measurements

[Abstract.] The present invention is a method for calibrating color reproduction devices such as printers and for stabilizing the print colors generated by a computer controlled color reproduction device. Further, the present invention acts to standardize the print colors produced across a family or series of color reproduction devices. It may be incorporated into a color management system used to produce consistent colors across a variety of reproduction devices. In the first embodiment of the present invention, an object scanning device and an object color reproduction device are used. In the second embodiment, an object densitometer is used as the measuring device to measure densities. In yet another embodiment, an object colorimeter is used as the measuring device to measure CIE values. The present invention enables generation of a set of calibration curves for correcting the color output of the color reproduction device. The calibration curves provide modification functions for each of the individual color print channels of the color reproduction device (*e.g.,* CMYK). The calibration curves are used to alter the rendering of color reproductions, and thereby achieve a desired result. The calibration curves may be downloaded to a color management system to alter the rendering of color images, pages, documents, etc., and thereby achieve a desired result. The calibration curves may also be downloaded directly to the controller of the color reproduction device. The present invention further provides an improved method of measuring ink values using a subject scanner by defocusing or diffusing a target.

5615314 (March 1997)—Interface for providing rasterized data to an imaging device

[Abstract.] An interface provides rasterized data to an imaging device such as a color copier or laser printer. Rasterized image data received from a raster image processor is compressed and stored in an output queue until the imaging device is ready to receive an image represented by the data. A data output path between the output queue and imaging device communicates the rasterized image data to the imaging device. The compressed rasterized image data is decompressed within the data output path as the data is being communicated to the imaging device. Throughput of the imaging device is maximized by actuating the device to operate in a multiple copy mode while rasterized image data for different image pages is successively communicated to the imaging device. An abort command prevents the imaging device from processing extraneous substrates when running in a multiple copy mode. Image processing is provided to selectively dilate objects contained in images represented by the rasterized image data, thereby compensating for potential multi-pass misregistration errors in the imaging device.

Splash vs. EFI

5995724 (November 1999)—Image process system and process using personalization techniques

[Abstract.] Fixed and variable content is merged to produce personalized documents using a raster image processor that, for each page to be printed, initializes a frame buffer according to fixed content specified for the page. The fixed content may be specified in initialization information that is placed at the beginning of the stream of variable content to be processed or could be specified in some other manner. Such information may be specified through user input to a printer driver that processes documents to be printed from arbitrary applications into page descriptions used by the raster image processor. The specified fixed content may be preprocessed and stored in memory accessible to the raster image processor. The variable content then may be added to the frame buffer without the need to specify a region in which it should be placed.

Splash patent not yet tested

5760913 (July 1998)—Color calibration method and system having independent color scanner profiles

[Abstract.] A printer calibration method and system uses a personal computer equipped with a color laser server circuit card and a scanner to measure the color effects specific to a printer and to then calibrate print data to adjust for the measured printer effects. Each printer colorant is calibrated by printing a data file using the printer to be calibrated, thereby generating a calibration image. The calibration image is next scanned using a scanner coupled to the printing system. The scanned data is compared to the data file which was sent to the printer to determine the relationship (an association) between the data file printed and the resulting calibration image. Color comparisons are made using an absolute density scale and thus the scanned data, being in RGB (red, blue, green) format is converted to absolute density values. To determine the conversion from scanned RGB values to absolute density, a standard gray-scale test strip is scanned and compared to a data file containing the known absolute density values which correspond to the test strip.

EFI vs. Harlequin

4500919 (July 1985, the Schreiber patent)—Color reproduction system

[Abstract.] A system for reproducing a color original in a medium using an selected multiplicity of reproduction colorants, comprising: a scanner for producing from said color original a train of appearance signals dependent on at least three color values of said original; aesthetic correction circuitry for introducing aesthetically desired alteration into said appearance signals to produce modified appearance signals; and colorant selection mechanism for receiving said modified appearance signals and for selecting corresponding reproduction signals representing values of said reproduction colorants to produce in said medium a color match of said modified appearance signals.

4941038 (issued to Eric Walowit, July 1990)—Method for color image processing

[Abstract.] A method for processing color image data converts input RGB color data to output CMY color data. An input device is calibrated to a intermediate color space, and an output device is calibrated to the intermediate color space. The input RGB color data is collected from the input device, and is converted to intermediate color space data. The intermediate color space data is converted to the output CMY color data, and is outputted to the output device. During the conversion process, the image data is processed to compensate for gamut mismatch.

The Latest Word

Besides the patents already awarded, EFI has applied for about 80 new ones in this field.

customers that Harlequin's products infringe EFI's patents, in spite of the fact, Harlequin said, that EFI "knows or should know" that its allegations are false.

Harlequin said the suit was triggered by EFI's recent letters to several of Harlequin's OEM customers threatening them with legal action if they continue to sell Harlequin products.

EFI responded a day later by releasing information from a court hearing last August in conjunction with the 1998 infringement suit. We believe that this information had been disclosed by the court last August, but was never made public until now. According to EFI's statement, the court had ruled in EFI's favor on all 17 issues raised by Harlequin in the hearing in which Harlequin attempted to enjoin EFI from using its tactics against Harlequin customers.

EFI claimed that the Court last August had stated that EFI had the right to contact Harlequin's OEMs and give them the opportunity to license EFI technology and thereby avoid patent infringement liability. Harlequin hasn't responded publicly to EFI's disclosures, which, if accurate, appear to weaken Harlequin's position.

Regarding the proceedings in this case, the discovery period was scheduled to end on Feb. 7, 2000, but EFI has filed a motion to extend it to do a more complete job of gathering information prior to the trial, which is now scheduled to begin on March 19, 2001.

In perspective

Each time it embarks on one of these infringement challenges, EFI points out how much money it spends on research and development ($200 million over the last five years) and how important it is to preserve its right to that technology. The suit against Splash brings to light the new factor of technology acquired from MGI, which has added "three or four" patents to EFI's existing 16 patents in the printing area. In fact, EFI said, one motivation for acquiring MGI was to "add significant intellectual property to EFI's strong patent portfolio."

One of the MGI patents deals with "continuous printing" (preventing a copier-printer from cycling down between jobs), which hasn't been tested yet but could pose another threat to the competitors in the copier market in the future.

Besides the patents already awarded, EFI has applied for about 80 new ones in this field, we were told, and has others relating to a new Web communication product. The EFI patents are particularly strong in color management and data compression, but are now branching out into the way RIPs and printers operate.

In view of the current frenzied activity in the legal arena, it is difficult to imagine what might happen if, first, the court upholds these patents and if, second, EFI is awarded dozens more. In addition, because the issues being debated aren't obscure items that are rarely used, these decisions will affect dozens of companies making RIPs and printers. If these patents are upheld, lots of companies will be faced with the need to start paying license fees—unless they have their own patents to offer in cross-licensing deals. ❖

Presstek, Heidelberg to arbitrate dispute

Speedmaster DI technology is focus

Presstek and Heidelberg have sought arbitration to resolve a dispute over the imaging technology employed in the Speedmaster DI on-press imaging press. Details of the conflict haven't been disclosed, but both sides were reported to be hoping that a "mutually beneficial resolution would be forthcoming." No indication was given as to when a conclusion might be reached.

Neither party wanted to discuss the situation with the press, but some related developments probably give a good indication of what's behind the dispute. First, as is well known, Presstek provided the on-press imaging technology employed in Heidelberg's GTO DI and Quickmaster DI (QMDI) presses, of which well over 1,000 units have been sold. The GTO DI has been discontinued, but the QMDI continues to sell well. Presstek said the dispute doesn't involve the Quickmaster.

After the development of the QMDI, Heidelberg entered into a marketing agreement with Creo under which Creo supplies platesetters to Heidelberg. As a further development of that relationship, Heidelberg switched to Creo as the supplier of the imaging technology for its next DI press, the Speedmaster 74DI.

In a separate event, Presstek submitted its patents for on-press imaging technology to the U.S. Patent Office in order to be reexamined. The Patent Office upheld the patents in rulings announced last June and July. Shortly after being advised of a positive ruling, Presstek notified Creo that the technology it was developing for the Speedmaster DI "appears to infringe the claims of a Presstek patent that was recently reexamined," according to press releases issued by Presstek.

Creo responded to that notification by filing its own claim in U.S. District Court on Aug. 19, seeking a declaration that Creo's products "do not and will not infringe" the patents in question. Presstek said the two patents had been successfully reexamined by the U.S. Patent Office.

On Sept. 23, Presstek responded to the Creo suit by filing a countersuit formally charging Creo with patent infringement.

None of those charges have been resolved in court. Obviously, a decision in the Presstek-Creo conflict could have a significant impact on the Presstek-Heidelberg case, although neither company has said the arbitration ruling will await a settlement of the other case. ❖

Adobe's Geschke to retire

Adobe president and cofounder Charles Geschke has announced his retirement, effective at the end of March 2000. Since founding the company 17 years ago, Geschke and John Warnock have run it almost like Siamese twins, serving with equal dexterity as Adobe's spokespeople around the industry. When Geschke leaves, Warnock will add the title of president to his current roles as co-chair and CEO. Geschke will continue as co-chair of Adobe's Board. ❖

The Latest Word

Screen's new workflow competes with Extreme

Seybold Seminars debut for Trueflow

At the upcoming Seybold Seminars expo in Boston, Screen will debut its entry into the PDF workflow market. Called Trueflow, the system is built around Adobe PostScript 3 technology running within a multiprocessor NT architecture. The system enables direct interpretation of both PostScript and PDF data files in a NORM (normalize once, output many times) approach to create a master format for use throughout the system.

Trueflow uses the Microsoft SQL Server database for managing information. Workflow is controlled through the use of job tickets and hot folders. Unlike most workflow products now on the market, it uses a browser interface (Internet Explorer or Netscape Navigator) on Windows or Macintosh platforms to provide access to the system from any workstation on a network or over the Internet.

Trueflow also supports Screen's Autotrap trapping software and imposition technology; preflight checking through an Adobe-developed application; ICC color profiles; and output to Screen's imagesetters, platesetters and digital proofing systems. It can also create output-ready PDF files and transmit them for viewing and output at remote sites. In addition, the system can send other rasterized page formats, such as PostScript and TIFF / IT-P1.

Market comparison. Trueflow shares some features of the closest competitive PDF workflow products in the market, Creo-Heidelberg's Prinergy, Scitex's Brisque Extreme and Agfa's Apogee.

- Like Prinergy, it uses a standard relational database to manage processes and archive information, as well as for reporting.
- It supports a range of OPI systems to allow easy integration, making it more flexible than some other systems. It doesn't require an OPI server.
- It differs from Prinergy and Apogee, but is similar to Brisque Extreme, in how it handles data. Trueflow takes PDF, PostScript and other input data formats and converts them into a Screen internal format. It can output PDF files, but the files are not editable PDF files. The PDF output is raster data within a PDF wrapper, which means it can be opened and viewed using Acrobat, but not edited.
- Trueflow uses job tickets, but they don't conform to Portable Job Ticket Format.

Trueflow job ticket. Screen uses a job ticket, but it doesn's conform to the Adobe Portable Job Ticket Format.

Pricing. Trueflow will be available in two models, as software only or with hardware:

- Trueflow, based on a single- or dual-processor Pentium 3 system and targeted at imagesetter output, is expected to be priced at $23,000 for software and $38,000 with hardware (U.S. prices).
- Trueflow Pro, based on a dual- or quad-processor Pentium 3 system and targeted at the platesetter market, is expected to be priced at $40,000 for the software and $72,000 with hardware (U.S. prices).

The principal difference between the two is in the imposition package. Trueflow runs the Impose Editor, which imposes page files for use with film. Trueflow Pro uses the Plate Editor imposition package, which adds the required imposition functions for imaging plates.

In perspective. We were impressed with Trueflow on our first view of it recently in Japan. It appears to be quite competitive with existing PDF workflow products. The use of an SQL database for handling job information and a Web browser interface are among its most notable features.

Some people will object to the use of a proprietary internal format, in contrast to the use of PDF throughout the workflow, as is the case with Prinergy and Apogee. But Screen, like many people around the industry, contends that a noneditable file within a PDF wrapper is what printers and publishers want, since it minimizes the chances of undesired changes to the data. Both sides have good points.

At this time, Trueflow doesn't qualify as an Adobe Extreme system. (See our feature article, p. 3, for a discussion of Extreme and its first three implementations.) In its technology, we see no significant difference between Trueflow and some of the official Extreme applications. We believe that the main difference relates to the fact that Screen hasn't licensed Extreme from Adobe, not to differences in technology. Thus, we expect Trueflow to be called Extreme in the future. We'll have more on Trueflow and other news from Screen in our next issue. *—Andrew Tribute*

Scitex chip will convert film cameras to digital

Produces same image as standard lens

Scitex, the innovative manufacturer of Leaf digital cameras, is developing what might be the next revolution in digital photography: a 6.6-megapixel CMOS sensor that will enable digital cameras to produce exactly the same viewing angle as conventional 35mm camera lenses used with film. Because it conforms to the size requirements of conventional film cameras, it should fit inside a conventional film camera to make it possible to convert it into a digital input device.

The patent-pending chip, called the Leaf C-MOST sensor, will be the first full-format, 6.6-megapixel, 24×36mm sensor that can be positioned in—and will completely fill—the image plane of a standard 35mm camera. It should produce final 24-bit RGB image files of approximately 20 MB.

Significance. Until now, all digital single-lens-reflex cameras, such as the entire Kodak DCS range and the new Nikon D1, have had sensors that are much smaller than the 24×36mm film frame area. This results in an apparent extending of the focal length so that, in the case of the Nikon D1, for example, a 20mm, ultra-wide-angle lens gives the equivalent coverage of a 30mm lens used with film. With the C-MOST sensor, for the first time, expensive super-wide-angle lenses of 15mm or even shorter focal lengths will

The Latest Word

With the C-MOST sensor, expensive super-wide-angle lenses will produce precisely the coverage that photographers have paid for.

produce precisely the coverage that photographers have paid for.

Other 24×36mm sensors are currently available, but these cannot be mounted in an existing 35mm SLR body because of the extra size taken up by the connections all around the image area. Not only is the new C-MOST sensor economical in this sense, thanks to ShellCase (one of Scitex's partners—*see below*), but also in thickness, another crucial dimension if the device is to replace film in a standard 35mm camera. Here, the ultra-thin C-MOST sensor will score by being able to sit over the camera's image aperture, in place of film.

The project is a cooperative effort involving Scitex and three partners—FillFactory, of Leuven, Belgium, which designed the CMOS sensor; Tower Semiconductor, which handles wafer fabrication; and ShellCase, which custom packages the chip.

Tower. Tower Semiconductor Ltd., of Migdal Haemek, Israel, is an advanced independent foundry manufacturing semiconductor integrated circuits (ICs) on silicon wafers. It was established as a joint venture involving Data Systems & Software Inc., the Israel Corp. Ltd. and National Semiconductor. Tower acquired its facility near Migdal Haemek from National Semiconductor in March 1993, when it commenced operations as an independent foundry.

ShellCase. ShellCase Ltd., of Jerusalem, Israel, was established in 1993 to research and develop innovative packaging technology for integrated circuits. It has developed a proprietary and patented chip-size packaging (CSP) technology for silicon devices using a wafer-level process.

ShellCase's packaging technology is much more sophisticated than, for example, merely shrink-wrapping a product for display and sale. What is meant here by "packaging" is the transformation of the sensor from a silicon wafer to a finished unit to be mounted inside a camera.

History. Readers may recall an earlier effort along similar grounds, from a company called Imagek. Announced at the PMA show in New Orleans in February 1998, the Imagek EFS-1, now known as the Silicon Film (e)film, captured the photographic world's imagination when it promised to convert every 35mm camera into a digital camera. Two years later, however, we are still waiting to see the product appear. And, even when it does appear, the tiny sensor—occupying a little more than one-ninth of the film area—will mean that a 20mm ultra-wide-angle lens will produce coverage equivalent almost to a 60mm long lens with film.

The C-MOST will remove this annoying limitation imposed on professional digital SLR cameras.

Status. Leaf says we can expect its products incorporating the Leaf C-MOST "in the future." It plans to raise external funds "to expedite and expand the development of the devices and their applications."

When, precisely, is "in the future"? We don't know yet, but we know the man who does: Yossi Ben-Shoshan, program manager of digital photography at Scitex, who will explain the new technology and show a sample sensor and some images during a presentation at the upcoming Seybold Seminars Boston 2000 Digital Photography Special Interest Day on Feb. 8, 2000.

See www.epi-centre.com/seminars/seybold.html for details on the event or, to register, try www.zdevents.com/seyboldseminars/boston2000/.

—John Henshall

Nur forms subsidiary to develop inks for Fresco

Also enhances Blueboard printers

Nur Macroprinters, a manufacturer of wide- and grand-format printing systems, has established a subsidiary to develop and manufacture specialized inks for piezo drop-on-demand digital printing systems. Called Stillachem S.A. and half-owned by Nur, it has acquired technology and equipment from Techno-Ink Manufacturing of South Africa for use in its operation.

Stillachem is establishing a manufacturing facility in Belgium that will be dedicated to the manufacture of inks for the Nur Fresco production press. It has received support from Belgium's Walloon regional government.

Blueboard enhanced. Nur also has enhanced its Blueboard HiQ grand-format printing system. New features include:

- *One-pass, high-density printing.* Printing onto substrates such as carpet or onto highly absorbent textile material such as cotton often requires two sweeps to achieve the right color depth. The HiQ can now deliver more ink in one slightly longer sweep, thereby saving time on the job. Faster high-density printing will also allow for a faster workflow for printing indoor backlit prints.
- *Faster RIP.* A new on-board RIP makes EPS file preparation faster and produces higher quality than its predecessor.
- *On-the-fly screening.* Screening is more precise and performed on the fly during printing, rather than offline prior to printing, as had been necessary.
- *Improved user interface.* A new interface is more intuitive and allows for better control of the printer's mechanical functions.

These enhancements were demonstrated at Visual Communications Europe in Düsseldorf, Germany, in October. ❖

Agfa Monotype formed

The merger of Agfa Typographic Systems and Monotype Typography has been completed with the formation of Agfa Monotype Corp. on Jan. 1. The two merged companies, which have been cooperating since 1992, provide products both to OEM customers and professional designers. With its headquarters in Wilmington, MA, it employs 120 people and has offices around the world.

Bob Givens, former VP of Agfa Typographic Systems, is president of the merged company. Ira Mirochnick, who had been president of Monotype Typography, is VP. Doug Shaw, previous director of sales and marketing for Agfa Typographic Systems, is VP of sales and marketing. Al Ristow, former director of product development for Agfa Typographic Systems, is chief technology officer. ❖

The Latest Word

We would like to see this Odyssey technology employed in tracking and adjusting the front-to-back alignment of double-sided proofers.

New technology, products at Sign World

Aids to alignment, durability and printing speed featured

Much of the technology exhibited at sign industry shows hardly differs from the items at a graphic arts show, since both types of events rely heavily on the latest developments in ink-jet printing. In fact, this similarity in products has enabled many service providers in both industries to expand their operations to serve both audiences. Thus, it was no surprise that the annual Sign World USA show in Atlantic City, NJ, Dec. 2–4, featured some of the same products we see at graphic arts shows—new Epson-Mutoh printers, the latest HiFi Jet from Roland DGI and new developments from Scanvec Amiable, Cadlink and other front-end software providers.

Innovative items. In addition, though, this year's show brought out some interesting new items that we didn't see at Seybold San Francisco or Graph Expo. Among the most interesting items were these:

- A contour-cutting system featuring a new technology for the precise alignment of material being cut as it is pulled through a system of rollers. *(See Gerber Scientific, below.)*
- A material and chemical process for increasing the guaranteed durability of signs printed on a conventional ink-jet printer. *(See Compu-dif, below.)*
- Two technologies for producing more enticing signs—one to produce the effect of movement (dynamic images), the other to illuminate a sign without backlighting. *(See Charrette.)*
- The latest in "direct-to" technology: Robotic Digital's process for going directly from a computer to the side of a vehicle.

Other highlights. Along more conventional lines, there were other highlights:

- A 1,440×1,440-dpi Mutoh printer that increases its speed by printing bidirectionally. *(See SignWarehouse.com.)*
- The announcement by Scanvec Amiable of a new, two-prong strategy for making better use of the Internet to serve customers, including the offering of free E-mail support in the U.S.
- A finished version of Roland DGI's HiFi-Jet with a built-in contour cutter, shown in prototype form at Seybold San Francisco '99.

We'll cover these items and more in the following story.

Gerber aligns media precisely

Gerber Scientific Products, one of the mainstays of the sign market for years, has revamped its product line with a new printer, a new cutting technology and new software. Ordinarily, we'd probably focus on the printer and software, rather than the cutter, but in this case, the cutter has the most innovative technology so we'll start there.

GerberDrive. In conventional graphic arts applications, a cutter is used merely to make a straight cut across the imaging media to separate one job from another. For sign applications, however, a cutter serves a completely different purpose: to cut around shapes, or contours, to separate them from the background material. To make such a cut, the pattern to be cut is transferred from a computer to a cutting head. The cut is made as the sign material (typically adhesive-backed vinyl that has been imaged first by a printer) is pulled by a set of rollers in a fashion similar to the way material is pulled during ink-jet printing.

During this process, the accuracy of the cut depends to a great deal on the ability to maintain the proper alignment of the material with respect to the cutting head. That's the area where the new Gerber Odyssey is particularly interesting, both because of its technology, called GerberDrive, and because of the similarity of this application to the alignment needed in double-sided proofing.

At a glance, the Odyssey doesn't look very different from most contour cutters. It has a conventional stand with rollers, spindles for holding rolled media, a cutting head that traverses across the top, etc. The key difference, though, is the GerberDrive facility for automatically maintaining the true alignment of the substrate as it is cut.

New alignment technology. Gerber Scientific Products introduced its Odyssey contour cutter with new technology for maintaining exact alignment of the media. As the cutting head moves across the material *(top)*, two sensors at the left edge (one above the head, shown here, and one below it) monitor the material being fed through every thousandth of a second. If it strays, a motor drive on each side automatically makes an adjustment to restore the alignment.

GerberDrive is built around two sensors mounted on the left side and a motor drive on each side, left and right. As the head moves back and forth cutting the substrate, the sensors take readings of the current position of the substrate every one-thousandth of a second. If there is any slippage of the material to the left or right, the motors immediately make an adjustment to correct the problem.

To illustrate how well this technique works, the demonstrator jarred the machine by striking her hand directly on the substrate during cutting, without a trace of disruption in the cutting operation.

The reason we find the Odyssey so intriguing is that we would like to see this kind of technology employed in tracking and adjusting the front-to-back alignment of double-sided imposition proofers. The current crop of such proofers includes some that employ sensors at the top of the page, but none continue using them as the page is printed. And none of them attempt to make mechanical adjustments during imaging.

The use of technology such as is employed in GerberDrive could produce two benefits: raise the alignment standards of today's two-sided proofers and make it

The Latest Word

Lenticular technology can produce different effects: flipping between images, animation, 3D, morphing one image into another and zooming from close to far.

easier to develop fully automatic two-sided printers. The result would be significant savings in labor costs.

Initially, GerberDrive technology is available for use with Gerber's new Maxx printer *(see below)*. Support for other Gerber plotters and other plotters accommodating HP-GL will follow. We asked about using the technology in two-sided proofing, where "the other Gerber"—Barco Gerber—is a key player with a manual, sprocket-feed, sensorless machine. We were told that no discussions had been held, but that it seemed like a good idea.

The Odyssey handles material from 4 to 52 inches wide. It is fast, moving the media at a speed of up to 36 inches per second, so it can be used to measure the media prior to cutting. The list price is $12,500. Availability is scheduled for June.

Six-color printer. In another key announcement, Gerber added a high-end model to its single-color Edge2 thermal-transfer printer. The new one is a six-color model called the Maxx. The technology hasn't changed. Color is transferred to the substrate from rolls of colored foil mounted in individual "compartments" in the printer. The difference is that it is no longer necessary to change the foil manually each time a new color is needed; the six are accessed automatically as required.

The Maxx is also wider than the Edge2, offering a 34-inch printing width.

6 colors online. Gerber Scientific has upgraded its thermal-transfer printing capabilities with this six-color Maxx. Each of the six vertical compartments can be opened to insert a new roll of foil.

Resolution and speed options are the same as for the Edge: 300×300 and 300×600 dpi. The speed is 28 sq. ft. per hour at 300 dpi.

The Maxx is priced at $50,000, including design software. (The Edge2 sells for $21,000.)

New software. Gerber also debuted a new version of software, called Omega. It offers the ability to create text on the screen within a design (instead of having to import it), provides nice warp tools for distorting objects and creating blends, and offers detachable and movable toolbars. It also supports multiple concurrent views, multiple undo operations and color management.

Although the warping tool is nice and the new features are generally well implemented, most of the new items have been offered in competitive products for years. The undo function isn't up to current standards, since it doesn't permit reverting to an earlier stage, making a change and retracing the previous steps, as one often wants to do in updating an earlier version of a sign or other image. With Omega, once a change has been made at an earlier stage, all subsequent steps must be redone "from scratch" by the operator.

Charrette adds 'action images' and illumination layer

Charrette, the national distributor of ink-jet printers and consumables, featured two new items in its product portfolio, both based on imaging new kinds of materials on ordinary ink-jet plotters.

One, using "lenticular" technology, is a facility for producing images that appear to move as they are viewed. The second, called Per'f-Alite, is a self-illuminated, see-through film for windows.

Lenticular technology. The technology for creating "dynamic images" actually isn't new, although it has only recently been applied to the making of signs. Decades ago it was used in CrackerJack "Magic Rings" that changed images as they rotated. It also has been used on trading cards to present two images alternately on the same card. Now it is being applied to the digital imaging of point-of-purchase displays, where the hope is that the eye-catching nature of the technology will bring sales benefits.

The technology is built around the idea of merging two or more images into one image that is "separated" back into the original images such that when viewed through a special plastic the multiple images appear to merge. The technology can be used to produce different kinds of special effects as the image is rotated:

- "Flipping" back and forth between two different images.
- Motion or animation by creating different views of an object.
- Three-dimensional depth.
- Morphing by merging one image into one or more others.
- Zooming by showing close and distant views of an object.

The technology demonstrated by Charrette at Sign World was developed by a company called Micro Lens Technology. It begins by merging or "interlacing" one or more images into a single file that is printed in conventional fashion on an ink-jet printer driven by a standard RIP. Next, a sheet of plastic is attached to the front of the image to perform the function of a "lens." The lens is made of a rigid plastic, about 100 mils thick, with long, vertical "ridges" that optically separate the interlaced image back into the two or more original images used in the initial step.

When the image is viewed through the lens, the observer sees different portions of the image, depending on the exact angle of viewing.

Charrette is just beginning to market the product, so details were sparse. We were told that the software will be priced at about $500 and the material will cost about $9 per square foot.

In the large-format printer market, the key application is expected to be in "motion" capabilities.

Besides Charrette, products supporting this technology are available from Lex-Jet Direct (formerly Tekra Direct), which markets the software under the name Flip Motion Software. The recommended imaging film is DuPont Melinex. The lens is manufactured by Micro Lens Technology using Eastman Chemicals Spectar copolymer resin. Lenses are available in sizes of 22×28, 36×48 and 48×96 inches.

The Latest Word

Per'f-Alite. The second new item for Charrette, called Per'f-Alite Illuminated Marking Film, is a material that contains its own illumination layer, producing the appearance of backlighting without using a light. Without requiring backlighting, it can be plugged in to produce illuminated signs. One of the benefits is that these signs disappear when viewed from inside a vehicle or store, although brightly illuminated from the printed side. Another application is to offer one message during the day and another at night.

It is possible to roll up the sign for easy transport. A large sign weighs only a few pounds. The material, which costs $60 per square foot, can be imaged on standard ink-jet printers. No special software is required.

This technology, which was developed by LaserVisions Technology of Canada, won the DPI Vision Award for 1999. It is now being adapted for use with ink-jet printers.

Charrette plans formal rollouts of both products in the first quarter.

Charrette also announced the acquisition of Simco Products for Design, of San Diego, CA, a distributor of large-format printers and related supplies. It gives Charrette a presence in San Francisco, Los Angeles and San Diego.

Charrette, 31 Olympia Ave., Woburn, MA 01888; phone (781) 935-6000; www.charrette.com.

LexJet Direct, 1435 S. Osprey Ave., Sarasota, FL 34239; phone (941) 330-1210 or (800) 453-9538; www.lexjet.com.

LaserVisions Technology, 1-675 Evans Court, Kelowna, BC, Canada V1X 64G; phone (250) 491-1211, fax (250) 491-1333; www.laservisions.com.

Mutoh printer at 1,440×1,440

Mutoh, which manufactures large-format printers using Epson print heads, doesn't sell its printers directly in the U.S. market. It manufactures the six-color, 42-inch-wide Epson 9000, which is sold through Epson channels, and it manufactures other printers using the same Epson print head, which are marketed by other resellers. Among those resellers are Mile High Engineering, which we have covered in the past, and SignWarehouse.com, a 15-year veteran of the sign market that formerly traded under the name GBC (Grayson Business Computers) Sign Warehouse. (The dot-com

1,440×1,400 dpi. SignwareHouse.com, which sells Mutoh printers, is one of the first companies to offer a model with a 1,440×1,400-dpi Epson head. Called the PrismJet HiFi, it employs a new technology for bidirectional printing, called MirrorDot, that reduces banding.

movement has made its way into the sign market.)

The most important new feature of this Epson print head is its true 1,400×1,400-dpi resolution, which is enabled through a new technique of firing the ink-jet nozzles as the head traverses across the width of the imaging area. Earlier Epson heads, with top resolutions of 1,440×720 dpi, fired 720 times per inch. The new head fires twice as many times to achieve a resolution of 1,440 dpi. One of the consequences is a decrease in the imaging speed.

MirrorDot for PrismJet. To compensate somewhat for the slower speed at full resolution, SignWarehouse.com has added its own innovation to the engine. Its version, called the PrismJet HiFi, will differ from other versions of the Mutoh-Epson printer by using a new technique, called MirrorDot, that enables bidirectional printing without the banding artifacts that typically occur in bidirectional printing. Without going into great deal, we'll say that it involves changing the arrangement of colors that are printed on the return journey to reduce the chances that banding will be noticeable to the eye.

MirrorDot technology with bidirectional printing can be used with any of the machine's printing speeds: 360, 720 or 1,440 dpi. It doesn't double the speed of the unit, but it does result is a printing speed that is 18–20 percent faster than that of the Epson 9000, according to SignWarehouse.com. The PrismJet prints a 33×46-inch poster in 18 minutes at 720 dpi and 9 minutes at 360 dpi, we were told. (Testing at full 1,440 dpi hasn't been concluded.)

Other differences. Besides offering 1,440×1,440-dpi resolution and the MirrorDot speed increase, the PrismJet HiFi differs from the Epson 9000 in several other respects:

- It offers a choice of pigmented inks instead of dye-based inks for greater durability. (Interestingly, the Epson version is used only with dye-based inks.)
- In addition to offering CMYK plus light cyan and light magenta inks, it supports orange and green as the extra two colors to simulate Pantone Hexachrome output. (SignWarehouse.com hasn't licensed the Pantone technology, so it doesn't use the term Hexachrome.)
- It accommodates only one roll of media instead of two online, which helps to reduce the price of the unit.

Status and pricing. The PrismJet HiFi supporting 1,440×1,440 dpi will be available in January for a price of about $13,000, not including a RIP. A 720-dpi version is available now for about $12,000. RIPs are available from ScanVec, Cadlink and others.

A 60-inch model with the same capabilities, available now in Japan and Europe, is expected to be offered in the U.S. later.

SignWarehouse.com was showing the PrismJet imaging film supplied by Compu-dif of France for increased durability. *(See next item for details.)*

There is also a 36-inch-wide, four-color version of the machine for about $8,000.

Enhanced durability with First

Some signs are intended to be displayed only briefly, so imaging on ordinary paper or vinyl is sufficient. For others, though, the longer they last, the happier the customer will be, since the display is intended to be nearly permanent. For those situations, Compu-dif of France has a solution that surpasses the capabilities of standard pigmented inks enhanced by lamination. Called the First Polymeric System, it uses a chemical process to bind the ink into the material so it won't fade or flake off. When used for fleet graphics, it won't be affected by automatic car washes, steam cleaning and the use of chemicals.

The First System isn't new. Compu-dif has demonstrated it in Europe previ-

The Latest Word

ously. *(See Vol. 26, No. 21.)* It uses a special vinyl substrate and a chemical process to bond the ink within the vinyl. The result is an image that is rated to last for two years under normal conditions, without the benefit of lamination. (With lamination, the durability is increased to four years.)

The First substrate is imaged on unmodified ink-jet printers. After imaging, it is run through a second machine to cure the ink using polymerization. At this point, it can't be scratched without removing the actual vinyl.

For the user, this added durability involves several extra costs. First, there is the vinyl substrate with two-year durability, which costs about $2.75 per square foot. (A material with one-year durability costs $2.07 per square foot.) The material comes in 36- and 48-inch widths.

Second, the process requires a polymerization machine that lists for $9,000, to be available soon in the U.S.

Third, after imaging and polymerization, the display can be laminated, which produces four-year durability.

Status. The First System was featured by SignWarehous.com and ColorSpan, both of which have U.S. distribution rights. It has been tested successfully with printers from Encad, HP, Roland, Graphtec, Mimaki and others.

ColorSpan has performed accelerated durability testing of the material and developed color profiles to be used with it.

Extended durability. SignWarehouse.com and ColorSpan showed the First System for enhanced outdoor durability. Using a conventional ink-jet printer with special media and this device, it bonds the ink through a chemical process called polymerization.

The First System is available bundled with a ColorSpan DisplayMaker for an extra charge of $6,100. When running the First materials, the printing width is limited to the 48-inch maximum mentioned above.

Roland delivers cutter

Roland DGI has begun delivering a 50-inch version of its six-color HiFi Jet with a built-in contour cutter, shown in prototype form at Seybold San Francisco '99. Called the CammJet CJ-500, it is identical to the HiFi Jet printer, but offers two additions: a cutting head in front of the print head *(see illustration)* and an intermediate resolution of 540×540 dpi.

The price is $20,000. A 40-inch-wide CammJet CJ-400 will follow at $18,000.

The 360-dpi CJ-70 is being replaced.

Scanvec Amiable shifts its focus

Scanvec-Amiable, which has continued to struggle financially since the merger of two leading suppliers of sign software a year ago, has taken a new direction under the leadership of CEO Efi Lebel. The new, two-part strategy involves, first, consolidating its operation and product lines and, second, focusing on using the Internet as the heart of future operations.

One location, one product. The consolidation involves establishing its Philadelphia site as the world headquarters, with a separate, Internet-related R&D facility in Israel, at the former Scanvec headquarters. This plan calls for the merging of the Amiable FlexiSign line with Scanvec's Inspire into a single product platform incorporating the best features of both—one core code with specialized functionality for different applications.

Free E-mail support. Under the second part of the plan, to be offered initially only in the U.S., the company will provide all registered users with free support via E-mail. The company will guarantee to respond to requests within four hours, within extended hours of 8 a.m. to 9 p.m., Eastern U.S. time. Phone support will continue to be offered, but it will be billed to the caller.

Contour cutting. Roland's new CammJet, shown in prototype form at Seybold San Francisco, is ready for the market. It features a contour-cutting head attached in front *(left)* of the print head, which adds a few inches to the width of the machine. Otherwise it is the same as the HiFi Jet. Here it is printing and cutting these jungle animals.

Tools for building service. Also part of the Internet plan is a new type of offering that recognizes a market shift away from the supply of software, toward the supply of services. Scanvec-Amiable will offer its customers a set of tools for building an Internet-based business in which their customers will order signs online, view and annotate proofs interactively with the designer, and complete the transaction without leaving their establishments. One of the keys for Scanvec-Amiable will be to make the system so easy to operate that nontechnical people can handle it.

New products. Scanvec also showed the latest versions of FlexiSign Pro (6.5) and Inspire (1.6). Most interesting are FlexiSign Pro's ability to change its user interface to suit the operator's preference (*e.g.*, to simulate the interface of Corel Draw, Photoshop, etc.) and a collection of capabilities called Design Central.

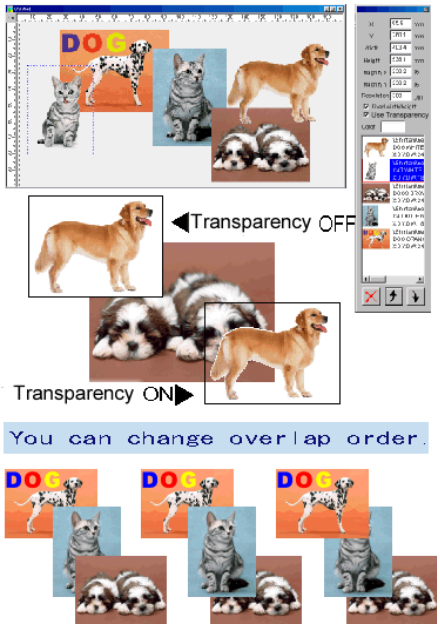
Design Central supports the automatic conversion of measurements, the use of Photoshop filters, a predefined set of borders, an option to select a background for the work area that matches the background where the sign will hang (*e.g.*, brick wall or wooden fence) and a tool for moving text items independently while maintaining their editability. (Letters can be grabbed, moved, rotated, etc., and still edited.)

Ornis to upgrade RIP features

Ornis, based in Japan and with an office in the U.S., is a supplier of graphics and RIP software to drive large-format printers. It has focused primarily on the sign market, rather than graphic arts. Its main products have been the Sign-Dex line of RIPs with sign-oriented functionality.

The Latest Word

RealPrint 2000. Ornis announced plans to incorporate the functionality of RealPrint 2000 in its Sign-Dex Plus Plus graphics and RIP software for the sign market. *Left:* RealPrint 2000 supports transparency and a facility for changing the overlap order. *Right:* Index Print shows thumbnail previews on the screen, with color adjustment parameters to help differentiate the versions, and prints a small preview of selected ones before the user commits to a large-format print.



The news at the show was that Ornis is upgrading the Sign-Dex line by merging its functionality with a new product—RealPrint 2000—from a sister company. We haven't seen the integration yet, but the RealPrint functionality is nicely implemented, with graphic screen representations of functions to help the user make layout and editing decisions. Functions include:

- The RIP supports PostScript 3 functionality, ICC profiles and eight screening options (five screen and three error-diffusion patterns).
- Index Print prints small previews of multiple versions of a job, with their color adjustment parameters, to aid in choosing one to print in large format.
- Layout and Edit imports images in a variety of formats into a workspace for designing a job. It automatically aligns objects (left, right, top, bottom), equalizes gutters between multiple objects, makes two or more objects the same size (or width or height), etc.
- Color Replacement substitutes one color for another. It also supports transparency, displaying a convenient view of how multiple overlapping objects will appear on output.
- Color Adjustment adjusts the brightness, contrast, tone, hue, saturation and luminance for each image using slider or numerical controls.
- Gray Adjustment controls the amount of ink used in printing without sacrificing quality.
- Tiling.

These features, which are available now in RealPrint 2000, will be included in a new version of Sign-Dex Plus Plus, which will sell at its current price of $2,400. Ornis is looking for dealers in the U.S.

Cadlink delivers PS RIP

Cadlink, which acquired the PhotoScript RIP technology when the PhotoScript Group of the UK went bankrupt, has begun delivering a new version of the PhotoScript RIP to drive four-color printers. As we understand it, the RIP has the same basic features as the earlier one from PhotoScript, but it has been modified to avoid legal entanglement with EFI, which had sued the PhotoScript Group on charges of patent infringement involving color technology. The new version features Agfa's ColorTune color management engine, which is protected by license from EFI.

Cadlink offers a range of versions. For driving large-format printers, prices range from $995 for the Lite RIP to $2,495 for the Plus model. For driving Epson and HP desktop printers, they range from $99 to $295.

A six-color version will follow soon. The initial six-color product will support CMYK plus light cyan and light magenta inks, but a version supporting orange and green as the extra two colors will be available shortly to drive Hexachrome printers such as those from Roland and Mutoh.

CSE focuses on RIP software

Compatible Systems Engineering, which used to appear at graphic arts shows with a variety of software and hardware products, has narrowed its focus to shrink-wrapped RIP software for driving color plotters.

Its main product is the ColorBurst RIP, which is sold through dealer channels (*e.g.*, Charrette, Martin Supply and Creative Visual). ColorBurst runs on Windows computers and drives all major large-format ink-jet printers.

Its main claimed advantages are the ability to drive printers at their full rated speeds; ColorTrack technology for avoiding the "speckled" effect; support for six-color Hexachrome files; a best-fit algorithm for optimizing the use of media; and support for digital proofing of preseparated files to show overprints and traps.

ColorBurst comes in two versions: regular for $3,495 and Pro for $5,495.

Ana works on inks

Ana, whose SpectrumJet features high-durability printing and a low retail price, didn't have any news on the printer front, but it has improved its inks. The inks are characterized by being 100% pigmented, which contrasts with many other inks that are advertised as being pigment-based but in fact contain mixtures of pigment and dye. The Ana inks are rated at more than two years of outdoor durability without lamination.

So far, Ana is offering only a 60-inch model, which sells for $36,000. A 42-inch version is scheduled to be added this year.

'Direct to vehicle' with Robotic

At the back of the hall, a company named Robotic Digital Graphics was demonstrating the latest "direct-to" technology: the use of ink-jet technology to apply text and images directly to the side of a commercial vehicle. The system, called Vehicle Art Robo, uses an ink-jet head mounted on a frame to travel back and forth along the side of the vehicle as it shoots four colors

The Latest Word

"Direct to vehicle. Robotic Digital Graphics uses ink-jet technology to print directly on a commercial vehicle. The head, mounted on a rail, squirts four colors on the side of the vehicle that is parked next to the rail.

of ink directly on the vehicle, creating what the company calls a "mobile billboard."

It is an interesting concept, using technology that could be notable—*e.g.*, a Pixel Control Pen Unit and a Curved Surface Tracing Device—although we didn't find anyone at the show who could explain the key features to us. One of the main advantages we could discern was an outdoor durability of more than five years, under adverse weather and UV conditions, which is much longer than most of the alternative ink-jet systems claim. It's not clear how such longevity can be achieved with the water-based, pigmented inks the system uses.

Besides the ink-jet apparatus, the system comes with a printing station and an editing station, where the user can preview and edit the content before it is painted.

The resolution is quoted in millimeters per pixel, but the company converts those numbers into pixels per inch, producing three options: 20 ppi, which takes 21 minutes to print a square meter; 13 ppi, which takes 14 minutes per square meter; and 7 ppi, which takes 6 minutes per square meter.

System prices ranges from $106,000 to $165,000, including two computers, a scanner, an air compressor, two hydraulic lifts and some other paraphernalia.

We don't know how many systems have been sold, but we figure the market is limited to signs that are intended to stay nearly permanently on the vehicle (*e.g.*, company vans with the logo, phone number, etc.). We also wonder about the resolution, since the trend in the grand-format market is to upgrade the quality for close viewing.

Robotic Digital Graphics; phone (888) 763-0096, fax (215) 357-3413; www.roboticgraphics.com.

—Stephen E. Edwards

Quark releases DMS, Xpress 4.1

Asset manager makes huge gains

On Dec. 1 and Jan. 10, Quark issued two long-awaited product releases that should get "thumbs up" ratings from users. First, Quark finally got Xpress 4.1 out the door, ironing out many of the shortcomings of initial versions of Xpress 4 and adding some nice customer support options. (Version 4.1 was announced at Macworld in August and was originally scheduled for release in September.)

Second, the Quark Digital Media System (Quark DMS) got the green light nearly two years after its first showing. The long wait was worth it. The released product is greatly improved over the initial one.

Among the notable characteristics of Quark DMS are its scalability to handle hundreds of concurrent users (Quark has tested it with up to 500), an Oracle8 relational database foundation, flexible platform support (Mac, Windows and browser clients and Solaris and NT servers) and a high degree of customizability.

Key features include "action folders" for routing assets and performing other user-defined functions and personalized "workspaces" in which users can gather items for quick access.

Quark DMS has been well integrated into applications besides Xpress, including Word, Photoshop and Dreamweaver, where an additional menu option provides easy access to assets. In the initial version, Xpress is more tightly integrated, enabling the user to deal with objects to the page-component level.

Quark DMS pricing starts at about $50,000 for a ten-user system.

Xpress 4.1. New features in Xpress 4.1 include improved handling of HTML conversions, better placement of PDF files in Xpress documents, new Internet communications for customers through QuarkLink and new layout capabilities, such as a scissors tool, enhanced step-and-repeat functions, optimized guides, independent bleed values for each side of a document, and the ability to print documents with composite RGB data on PostScript printers.

Xpress 4.1 includes a new Koyosha Graphics Xtension to allow Xpress users to view high-resolution previews of imported images (TIFF, JPEG, DCS and EPS formats). ❖

74 Karat press in beta tests in U.S., Belgium

Karat Digital Press's 74 Karat on-press imaging press has begun beta testing at customer sites in North America and Belgium. The first press in North America went into operation at EMR Systems Communication in New York City in early November. EMR is a high-end digital prepress shop and printer.

EMR provides prepress and printing services to leading advertising agencies, most of which require full-color ad pages appearing in major magazines. Employing more than 60 people, EMR runs three shifts to produce as many as 48 high-end color pages every 24 hours. Besides the new 74 Karat, it has two Heidelberg GTO-DI presses.

CEO Michael Reinitz of EMR said he expects to use the 74 Karat for the increasing numbers of short-run, high-quality brochures, direct-mail pieces and point-of-sale leaflets that his customers are requesting. He also noted that the GTOs are too limited in size, since he wanted to work with four-up impositions.

The 74 Karat press delivered to EMR incorporates a host of enhancements resulting from alpha testing carried out at a commercial print site in Belgium and in the Karat facilities in Germany and Israel.

Prior to the installation at EMR, members of EMR's management team visited the Karat facility in Radebeul, Germany, where they tested the press and accepted its readiness to proceed to beta.

Antilope. Meanwhile, testing continues in Belgium, where Antilope Printing, which had been the site of alpha testing of the 74 Karat press, began the first worldwide beta testing last Nov. 1, at which time its own staff began operating the press and started production use. ❖

The Latest Word

Berard is the second key executive and the seventh top manager to leave Kodak Polychrome Graphics under CEO Mark Stewart.

Sprout to print science books in Majors stores

As project for Borders proceeds

Sprout, the book distributor supplying systems to Borders to enable it to print books on demand, has signed a similar deal with Majors, a wholesale distributor of scientific books. Under the deal, Majors will install Sprout's equipment in its network of retail stores, beginning with its Houston location early next year.

The Sprout system will fulfill customer orders on demand in the Houston store as well as handle retail Web sites powered by the Majors search engine and fulfill special orders collected by the other Majors retail locations in Atlanta, Dallas, Fort Worth and Los Angeles. Later, Majors expects to install printing systems in more of its stores. Besides Majors' normal health science and technical titles, the system will handle other publishers' titles that are distributed through Sprout.

Majors, founded in 1909, claims to be the largest wholesale distributor of health science and technical publications to retail bookstores, hospitals and libraries in the U.S. It offers a large database of titles with technology for searching both book annotations and tables of contents for Web-based ordering. Majors provides E-commerce services and Web fulfillment options for a variety of health science enterprises.

Sprout provides distribution services to more than 30 publishers, including Time Warner Trade Publishing, Simon & Schuster, Random House, Amacom and a variety of retailers, including Borders. Sprout says it has received commitments for more than 8,000 titles so far. Sprout, which announced its arrangement with Borders last June, is currently installing a printing system at the Borders fulfillment center in La Vergne, TN, from where books will be available within a day at all Borders and Walden Books stores in North America and through Borders.com. The plan calls for printing books on demand in Borders' stores in the future.

Sprout says it plans to announce two more installations early this year. ❖

The Changing World of Book Distribution

Knockdown: The Harrowing True Account of a Yacht Race Turned Deadly
Available for download.
Martin Dugard / Electronic Book / Retail Price: $24.95 Our Price: $19.96, You Save $4.99 (20%)
Buy this book or read more about it

Knockdown: The Harrowing True Account of a Yacht Race Turned Deadly
In-Stock: Ships 2-3 days.
Martin Dugard / Paperback / Date Published: July 1999
Our Price: $24.95
Buy this book or read more about it

Knockdown: The Harrowing True Account of a Yacht Race Turned Deadly
Not Yet Released.
Martin Dugard / Hardcover / Date Published: August 1999
Retail Price: $24.95 Our Price: $17.46, You Save $7.49 (30%)
Buy this book or read more about it

Besides announcing its arrangement with Majors *(see separate story)*, Sprout disclosed that it is using its print-on-demand capabilities to supply paperback "preprints" of books prior to the offset printing of the same titles. The first one to be handled in this fashion was this title, *Knockdown: The Harrowing True Account of a Yacht Race Turned Deadly*, last summer. This is the listing of the title on the Barnes & Noble Web site last July. Initially, the book was offered three ways *(top to bottom)*: as an electronic book, available immediately for $19.96; in paperback, printed on demand by Sprout, in which case it was available for shipping in 2–3 days for $24.95; and in hardcover, not yet available. Note that the hardcover version was offered for $7.49 less than the demand-printed paperback version.

Berard is second to exit Kodak Polychrome

VP/GM in Europe follows MacFarlane

Patrick Berard, VP of Kodak Polychrome Graphics and general manager of its European operation, is leaving the company to pursue other opportunities in the graphic arts. He was based at the company's European headquarters in Antony, France, and is the second key executive and the seventh top manager to leave the company under CEO Mark Stewart, we were told. Stewart's role in the departures isn't clear, although it has been claimed that his management style is abrasive.

Berard was one of the founding executives of the joint venture two years ago between Kodak and Polychome. John MacFarlane, who had headed the UK operation, departed first. We believe that MacFarlane left because of disappointing results. It isn't clear whether Berard's departure could be attributed to a similar cause, although Berard stated that the company's European operation was operating profitably in 1999.

Berard was responsible for the company's move into the newspaper market with the acquisition of the Versitec newspaper CTP operation in Switzerland. He spearheaded the development of the Versitec thermal imaging system launched at IFRA last October, as well as the development in Europe of a thermal plate for newspapers.

Prior to the formation of Kodak Polychrome, Berard had headed Polychrome's operations in Europe.

Company status. At a press gathering last November, Berard elaborated on the status of the company and some of the

The Latest Word

The Israeli source said the strategy of the Scitex shareholders was to sell the remaining divisions to maximize shareholder value, after which Scitex would cease to exist as a trading entity.

factors involved in his decision to leave. He also provided a perspective on the problems associated with implementing a merger on the scale of the one that brought together the Kodak Graphic Arts, Polychrome, Freundorfer, Anitec and Horsell operations into one sales and service organization in all of the countries of Europe.

One of the consequences of the merger was a reduction in the work force of more than a thousand positions.

Berard will be missed. He was highly engaging and very customer-oriented. He also is credited with streamlining the different R&D and sales and service organizations into the new Kodak Polychrome. ❖

Acer's $800 scanner: 1,200×2,400 ppi, full bed

Acer Peripherals has announced an interesting legal-size flatbed scanner, the ScanPremio ST. Priced at $800, it is claimed to support a resolution of 1,200×2,400 pixels per inch *across the full 8.5×14-inch scanning area*. We were told that is its true optical resolution, which can be increased to 19,200×19,200 dpi through interpolation.

The scanner delivers 36-bit color depth (the density range is 3.3D) via a SCSI-2 interface. It can scan transparent or reflective copy, and comes with holders for several sizes of transparencies, including both mounted 35mm slides and 35mm filmstrips.

Bundled software includes a batch scanning utility, Photoship 5LE, Ulead Photo Express, the Monaco EZcolor calibration program and TextBridge Classic OCR.

Acer's one-year warranty, called 48-Hour Hot Swap, is also impressive. Acer promises that within one business day of a tech support call, it will ship out a replacement scanner via two-day express. The old scanner is then shipped back in the same packaging. ❖

Will Scitex Be a Casualty of the High-Flying Stock Market?

The Scitex transition from an outmoded high-end workstation company to a leading supplier in many segments of the digital output field may be under fire. The business model that turned quarterly losses of tens of millions of dollars into regular, albeit small, profits is being questioned. In an industry in which even failed companies play key roles, one of the most successful on record is facing a different kind of challenge: a call to do better by doing less.

At this point, it isn't clear how much of the information being bandied about is factual and how much is unsubstantiated rumor. But it is clear that the Scitex strategy is being evaluated. That much was disclosed by the company's chairman, Rimon Ben-Shaul. Other reports have stated that Scitex is to be broken into many entities and sold to enhance its value to shareholders.

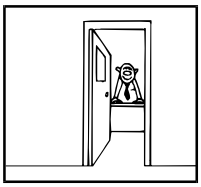
In providing the following summary of the reports that were claimed to be authoritative, we don't want to be viewed as spreading rumors maliciously. But we have given this story many weeks to either produce public confirmation or go away. It has done neither, instead continuing to lurk in the shadows.

- In the first story on Dec. 6, the Israeli newspaper *Globes* quoted chairman Ben-Shaul saying Scitex was reconsidering its strategy with a view toward focusing its activity on a small number of areas. This course resulted from the fact that "the market prefers focused companies," *Globes* said. The story mentioned the diverse areas in which Scitex participates, without commenting on which areas might be sacrificed.
- On Dec. 12, the Bloomberg News Service quoted the Israeli *Yediot Ahronot* saying Scitex was in discussions to sell two of its main units: part of its digital printing business to Creo and its wide-format printing unit to Nur Macroprinters Ltd.
- On Dec. 23, Israel's *Maariv* got into the act with a story stating that Ben-Shaoul had just returned from Canada, where he worked out the principles of an agreement under which Creo would buy Scitex's digital printing division for $500 million. The same story ran a day later as further confirmation of its accuracy.
- On Jan. 10, we were told by a source in the Israeli financial community that Creo had agreed to buy Scitex's output product lines (Lotem platesetters, Dolev imagesetters and Brisque RIPs). This story also stated that the strategy of the Scitex shareholders was to sell the remaining divisions (Digital Printing, Iris Graphics, wide-format printing, input and the new Advanced Printing Products) to maximize shareholder value, after which time Scitex would cease to exist as a trading entity.
- Meanwhile, Scitex's position has been that it doesn't comment on rumors, a position that neither confirms nor denies the reports. In keeping with this philosophy, Scitex's chairman, Yoav Chelouche, was quoted by *PrintWeek* of the UK on Jan. 7, saying, "I wouldn't bet on anything at this time."

On the possibility that usually reliable sources can be wrong (perhaps the victims of malicious efforts to undermine another situation), these rumors have to be considered just that—unsubstantiated rumors. Just like the rumors that Scitex was going to buy Indigo and Xerox was going to buy Scitex, these recent ones, too, might vanish without further word.

Before returning to our normal business of reporting the news, we would like to make one comment on a possible motivation for "maximizing shareholder value" by cutting back the diversity of Scitex. This strategy, which runs contrary to the general trend of mergers to create ever larger, more diverse businesses, could be motivated by the realization that investments in Internet-related companies currently may produce faster rewards than investments in more traditional businesses. After all, it is just that motivation that has put our own Ziff Davis Events business on the block as our owner, Softbank, focuses on its investments in Internet companies.

People



Quark has promoted **Mark Lemmons** to the new position of VP of strategic development. He has been serving as manager of Quark's Internet Publishing business unit, where he was responsible for the development of Avenue.quark and engineered Quark's cooperative alliances with Vignette and Macromedia. He will continue in that role. In his new post, Lemmons, who joined Quark more than two years ago, will take responsibility for Quark's existing business and markets, including strategic product direction, corporate and product marketing, development of sales distribution channels, and building the Quark brand. Susan Friedman, Quark's VP of corporate development, focuses on new business development.

Mark Lee has resigned as VP of worldwide sales at **Electronics for Imaging**, effective at the end of January. He will take a position as CEO of an Internet startup company. Fred Rosenzweig, EFI's newly appointed president, will take over the top worldwide sales role.

Eric Wolferman, former senior VP for technology for the **Newspaper Association of America**, has been named VP and general manager of East Coast operations at **System Integrators**, working out of a new office to be set up in the Washington, DC, area. Wolferman's career spans more than 25 years as a journalist, editor and production executive. Since 1994 he has held the chief technology role at the NAA, active in research and industry task forces. Before that, he served for six years as director of production systems for Gannett, where he helped automate the operations of dozens of newspapers. He also has served as editor of several newspapers.

T/R Systems has appointed **Jim White** to the newly created position of senior VP of operations, responsible for customer service, manufacturing and distribution. White, whose career spans 30 years, comes from Checkmate Electronics, where he was VP, operations. Prior to that he served as director of operations at Solectron Technology, VP at SCI Systems and VP of manufacturing at Hayes Microcomputer Products.

Indigo has bolstered its executive ranks with these new appointments:

- **Roger Mattalon**, new vice chairman, served as president of Indigo Europe from 1994 to 1998 and has been president, worldwide sales and marketing, for Indigo N.V since 1998. He earlier headed Screen's European operations and held VP roles at Scitex Europe.
- **Jens-Henrik Osmundsen**, general manager of European operations reporting to Rafi Maor, Indigo's president and COO, had been executive VP of Purup-Eskofot, where he headed worldwide sales, marketing and service.
- **Charles Bernitz**, general manager for distributor channels, had shepherded the growth of Indigo's European sales operations for the past four years. He will direct the company's newly announced efforts to increase its focus on indirect sales through more than 40 national distributors.
- **Rick Mangold**, former head of Purup-Eskofot U.S., was earlier named to fill the third top sales position, North America.
- **Chris Baker**, VP, sales, in Europe, has been branch manager of Indigo UK, the company's leading sales territory, which he founded in 1993.

Mel Ettinger, formerly of Crosfield, Polychrome, Xerox Graphic Systems and AGT, has been named chairman and CEO of **Corporate Technology Partners**, a consulting and support services firm.

112 Ave of the Americas, 4th Fl., New York, NY 10036; phone (212) 626-6868, fax (212) 626-6869; www.corptechpartners.com.

Advanced Hi-Tech (AHT) has named **John Lopiano** chairman of the board. He is a familiar figure in the industry, having recently retired as president of the Production Systems Group at Xerox. Prior to joining Xerox, he spent many years at IBM.

Vio Worldwide CEO **Michael Simmonds** has announced he will leave the company, making way for someone better suited to help Vio become a leading provider in the online workflow system arena. Simmonds's background is in traditional graphic arts. Vio expects to announce a replacement early this year.

Autologic has appointed **Brad Greer** commercial sales manager, selling the company's line of products to nonnewspaper accounts. He came from Gerber Systems, where he served as director of sales for CTP systems and was responsible for the marketing and sales of more than 100 units in the U.S. and Latin America.

PrintNation.com has named **Carmella Cassetta** VP of product development. She had been VP of E-commerce technology and development at Ingram Micro and earlier served as VP of Internet Technology and Development at Barnes & Noble's Internet operation. Prior to this position, Cassetta held numerous IT management positions during 12 years at Barnes & Noble and Waldenbooks.

Ed Marino has been named to two new positions: president / CEO of **Lightning Print** and a member of the board of directors at **Presstek**. He most recently served as president of Danka Services International, a provider of document management outsourcing services (formerly Kodak Imaging Services). Previous positions include VP, U.S. sales and operations, at Kodak's Professional Imaging unit and VP at Howtek.

At Lightning Print, Marino replaces **Youngsuk Chi**, president, who has been named chairman.

Marino's appointment at Presstek fills the position left vacant by the recent death of Bert DePamphilis. Also joining Presstek's board is **Daniel S. Ebenstein**, a member of the law firm of Amster, Rothstein & Ebenstein, specializing in patent, trademark, copyright and unfair competition law. He has represented Presstek on various patent issues.

At **Atex Media Solutions**, **Max Coebergh**, who had been serving as senior VP, International Operations, has taken on broadened responsibility and is now president of Global Media Operations, incorporating International Operations as well North American Operations. He has assumed the duties of **Rick Simpson**, who has left his position as senior VP of North American Operations. Also departed is **Frank Scholes**, who hasn't been replaced.❖

Comments from Our Readers

Dealing with Microsoft

According to John E. Parsons, in the December issue of *The Seybold Report on Publishing Systems*, Microsoft is now bundling Publisher with Office 2000. He says that the software is still 10 years behind the times, doesn't compare with current publishing software, doesn't make good PDF files and doesn't meet the print industry's needs. I concur with that.

However, I don't concur with his conclusion, in part: "In order to survive, the print production community must accommodate this new player, and make everyone—both Microsoft and its customers—aware of the realities of print production."

In my humble opinion, the world could do with less of this type of journalism. Especially when it promotes a substandard freeware product from a firm bent on obtaining a monopoly on every aspect of computing. Go ahead, Seybold, give Microsoft assistance in getting their junk to market and costing everyone untold time and money in bringing publishing projects back from the grave.

As fast as things are moving forward with automated publishing and E-commerce, it is insane to go back to the same scenario that existed 10 years ago. I truly hope that all of our competitors devote copious amounts of time and effort getting Publisher 2000 to work. It could give us a 10-year head start on them doing the really cool stuff to come.

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—The goal of the article was not to "promote a sub-standard product" but to describe a product that is substantially better than its predecessors and, as I pointed out, still has a long way to go.

Like it or not, the product fills a growing market segment: print buyers who won't hire designers, but want to pick from a list of predesigned formats. The reality is that the number of such customers is increasing—faster than those who produce "cool stuff" with high-end tools. The trends toward E-commerce and on-demand publishing will increase the need for template-driven production. InDesign and Quark are superior products, but they offer too many choices for this type of print buyer. Publisher, even with all its flaws, suits the business needs of the "get it done now" customer.

I agree, it's frustrating to teach Microsoft and its customers the things that Adobe and Quark, and their customers, have known for years. (Well, at least some of them do.) However, do we really have a choice? With or without our input, Publisher use will increase. Its users represent a growing portion of printers' potential revenue, which we ignore at our peril. We can proactively teach our customers how to use Publisher correctly, or we can hide our heads in the sand—which won't make Publisher "go away." Microsoft has improved the product significantly; to succeed in the future, it will have to satisfy the printing industry's needs.

—John E. Parsons

More on violet diodes

In response to the letter from Charles S. Cusumano Jr. of Citiplate (Vol 29, No. 5):

1. It is quite true that violet diodes are neither the only nor the last word with respect to plate imaging in the UV range, but they are certainly a most interesting technique for those printers preferring to work in a conventional platemaking environment. However, one needs to be careful and precise with facts and figures; otherwise people might get confused. I'm afraid readers might get confused after reading the above-mentioned letter.

2. The N91 from Agfa, which is certainly the most sensitive polymer plate currently available, needs around 0.1 milijoules of power. To get any productivity in imaging, it needs at least a 100mW laser output. So the best plate from Citiplate, stated at 5 milijoules, needs 50 times more energy to achieve a sensible speed in imaging.

3. Silver-based plates have a much better sensitivity than was stated in the letter. In fact, they go down to 0.5 microjoules, which is the equivalent of 0.0005 milijoules, to give the exact figure. And that's the point where we come to violet diodes. With a permanent output available at 5mW, it is imaging silver plates currently with these devices. When or how polymer plates can be imaged cannot be foreseen at the moment, but technically one can't say it is impossible.

Finally, with respect to the choice of plates, there are a variety of aspects to consider, UV plates or not, daylight environment, printing characteristics, compatibility with conventional plates, amount of chemistry needed, compatibility with conventional chemistry, the amount of energy needed for imaging, the lifetime and cost for the appropriate laser and, last, not least, cost of plates and chemistry. That is another reason why I see no possibility yet of an ideal plate for CTP.

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Glunz & Jensen Acquires Imacon

Processor firm expands into scanners

Glunz & Jensen of Denmark, a manufacturer and supplier of film and plate processors, has acquired fellow Danish scanner manufacturer Imacon. The price was 135 million Danish kroner ($18.75 million). The deal, which returns Glunz & Jensen into the field of high-quality digital scanning after an abortive attempt many years ago, includes Imacon's Danish and U.S. operations, which between them employ 45 people. Imacon will operate as a subsidiary of Glunz & Jensen at its existing locations in Copenhagen and Fremont, CA.

It will continue to operate under the Imacon name and will retain Imacon founders Christian Poulsen and Kasper Wodschow, who will continue to play a major role in developing the company.

One of the benefits for Imacon will be a broadening of its distribution channels through the use of Glunz & Jensen's existing operations.

Imacon, founded in 1995 to market an innovative scanner technology under the Flextight brand, has built up its business to the point where it was recently named the fastest-growing company in Denmark *(see sidebar)*. Its revenues for 1999 are expected to be 80 million Danish kroner ($11.1 million). Imacon recently claimed that its current scanner sales rate of about 150 per month is the highest monthly figure for professional-level scanners.

Glunz & Jensen, which manufactures and sells processing systems for photographic films, graphic arts films, offset printing plates and proofing materials, has revenues of approximately 700 million kroner ($97.2 million) and employs 450 people worldwide (including 5 in the UK and 25 in the U.S.). Exports account for 98 percent of its sales.

by Jan Eskildsen in Denmark

One curious aspect of the deal is that Glunz & Jensen will write off the acquisition over 20 years—an unusually long time, especially in this business.

Below: *Imacon founder Christian Poulsen with the MultiScan 3244 scanner he helped design for Glunz & Jensen ten years ago.*

Background. There's more to this story than initially meets the eye. The inventor of the Flextight principle, Christian Poulsen, used to work for Glunz & Jensen. Around 1990, he was engaged in a project to build a monochrome scanner (along the lines of a Topaz or Cézanne, with a moving bed, but scanning only black-and-white). It was previewed as the MultiScan 3244 at Drupa 1990 and shown a few times subsequently *(see Vol. 19, No. 19; Vol. 20, No. 6; and Vol. 21, No. 3)*. Before the MultiScan was given a chance to succeed in the market, Glunz & Jensen decided to halt the project because it was costing too much money to develop.

Now, nearly a decade later, Glunz & Jensen has paid $18.75 million for the same development team it had inhouse years ago. The scanner principle has changed, of course, resulting in the Flextight unit of today. Poulsen and his colleagues obviously hadn't abandoned their goal of developing a new scanner.

Early years. Poulsen and Kasper Wodschouw started Imacon in the spring of 1995 with funding from Wodschouw's father, who had sold a business of kitchen machinery. They started in small offices in the western part of Copenhagen city. We first wrote about the company after it moved to its current headquarters, just before Seybold San Francisco '95, where it operated a booth next to Umax, where it met sales manager Andy Chang, who is now manager in Imacon's Fremont, CA, office.

During those years, Imacon acquired a wealth of scanner expertise by hiring former colleagues from Glunz & Jensen and elsewhere. (This reporter recalls writing an article for *Desktop Publishing* in which they were called a "scanner dream team.") The latest to join the team is Peter Tolbøll, a key programmer working on the Stantext Danrip, who has left Flemming Stanley to join Imacon. It isn't clear what projects Imacon may have in mind for the future.

For most of its history, Imacon has been a growing, profitable company. The exception is 1996, when it lost money. For 1999, it recorded after-tax profits of 14 million kroner ($1.94 million). It has achieved a steady sales rate of about 150 units per month, and reached a record figure of 170 in November.

In perspective. The new arrangement seems like a good fit, enabling Glunz & Jensen to expand into digital imaging with a solid, well-established product line under a very familiar team of successful developers. For those developers, we understand Glunz & Jensen will let them continue on their present course, but with the aid of stronger distribution channels and an opportunity to help Glunz & Jensen grow.

Imacon Is 'Fastest Growing'

Imacon has won Denmark's Growth Company of the Year 1999 award as the fastest growing company over the last three years. Competition for the award, which is sponsored by international accountants Arthur Anderson, Unibank and Borsens Nyhedsmagasin, pitted more than 360 Danish companies vying for three titles: in manufacturing, service and trade. Imacon won in the manufacturing section and also the overall award for 1999.