Sales Guide

SGI's Role in Digital Publishing

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1.0 Overview

By taking advantage of computer technology, the publishing market has made incredible changes and is now at the leading edge of technology advancements. SGI, the leader in visualization, high-performance servers, and digital infrastructure, together with our digital publishing development and channel partners, can provide great benefits and results to meet the digital publishing requirements of larger companies and government agencies.

Digital publishing is a union of several high-tech areas, namely media, manufacturing, and entertainment, as well as asset management, collaboration, and networking. Commercial printing segments include those companies that produce catalogs, magazines, books, etc. The creative side involves designing collateral and includes multimedia production such as that used for Web pages or interactive displays. That's where the entertainment and media aspects enter into the discussion. Relevant to all these areas is the need for asset management—locating and keeping the pages and images in order, or perhaps transferring huge files of 256GB or more, preferably automated on a 24x7 basis.

With the help of SGI and our Channel partners, publishers can produce more output, faster and more efficiently than before. They can also maintain tight control over their intellectual property or royalty-bearing licensed material. Printing and publishing have gone digital, and SGI, along with Dalim Software, Helios Software, Fusion Systems International, and Xinet, Inc., is leading the revolution!

2.0 History of Printing/Publishing

You might recall some facts about the history of publishing from social studies class. You may have learned that clay movable type was used in China as early as 1041. You likely learned in some detail about Johannes Gutenberg, who is known as the father of modern printing. Before Gutenberg's innovation, however, most books were produced by and for the church and made from vellum. Vellum (calf or lamb skin) was used because of its durability. Craftsmen produced books via wood engravings by cutting away the background, leaving the area to be printed raised. When a page, often comprising a number of blocks joined together, was complete, it would be inked; a sheet of paper was then pressed over it for an imprint. The susceptibility of wood to the elements gave such blocks a limited lifespan. Only the church and royalty had access to the printed word.

In 1440 Gutenberg completed his wooden press, a punch-and-mold system that allowed the mass production of the movable type used to reproduce a page of text. Letters would be put together in a type tray that was then used to print a

page of text. If a letter broke down, it could be replaced. When all copies of one page were printed, the type could be reused for the next page or the next book. In 1455 Gutenberg completed work on his 42 Line Bible, known historically as the Gutenberg Bible. By 1499 printing had become established in more than 250 cities around Europe.

The 16th century was a period of consolidation for the new publishing industry. Of course, by modern standards the typical output from a press was still very small, with production reaching no more than five books a year. A large printing operation would consist of perhaps five workers, with three working the press and two compositors. The work was extremely laborious and the rewards limited. The compositor would sit or stand beside an angled frame, on which he would set type. Words were compiled using an iron composing stick that was just over eight inches long and two inches broad. This was held in one hand while the other was free to select the required type, piece by piece. The compositor could work on six or so words at a time and would often have to rearrange at the end of a line to justify. Each line was then carefully set into a metal frame that resembled a picture frame, and each page would have to be proofread before the next could be started. Mistakes were commonplace, and rectification was time consuming.

So few technological changes were made between Gutenberg's time and the invention of lithography in the late 18th century that printed matter remained an expensive acquisition enjoyed by relatively few. The majority of the population remained illiterate, and the printing process continued to be both slow and tedious. During the 19th and 20th centuries, lithographers increased the production of books, manuals, magazines and newspaper bringing about a huge growth in the publishing industry. Media conglomerates grew, and the demand for material was fueled by social changes taking place in society, including more education, expansion of libraries, and the growth of printing trade unions.

Now let's jump to more current times. In the 1970s some of you probably used "instant printers," such as Pip Printers, which were used for offset printing for small businesses and individuals. These print shops were noisy and oftentimes messy. They provided access to technology but not directly. More recently, many of you have become familiar with the application packages that work right on your desktop computer, allowing you to print fliers, white papers, sales guides, birthday cards, manuals, etc.—your own mini–print shop in the comfort of your home or office. Advancements in personal computing, desktop publishing, and the Internet have produced an electronic publishing boom in the past 10 years that has revolutionized the entire publishing and printing industry.

3.0 Solution Overview

Solution name	Digital publishing
Solution type	Developer application software plus SGI® hardware
Solution readiness	Field-ready, many major sites installed and running
Sponsoring business unit	Media
Target industry (ies)	Media; digital publishing
Application segment(s)	Digital publishing, prepress
Customer problem	Access and organization of digital images on a worldwide, 24x7 basis; also need to have record of changes/updates made to files/images
Customer business title(s)	IS manager, production managers
SGI solution	SGI® Origin®300, SGI® Origin® 3000, SGI® Origin® 200, SGI® Origin® 2000 series with Dalim Software, Helios Software, Fusion Systems International, Xinet (see details in this guide)
Features and benefits	Solid products with good quality and technical capabilities for high-end publishing requirements; scalable server solutions with good margins on the SGI hardware for resellers
SGI value proposition	Origin® servers add reliability, uptime, failsafe feature; SGI® IRIX® is a stable operating system; as business expands, SGI offers easy upward scalability; CXFS™ supports Windows NT® clients and in the future will support Linux® and potentially Mac® clients
Cost to customer (U.S.)	Starting at $30K for SGI® Origin® server hardware for 2-CPU systems, disks, and memory; up to $100K for 12 CPUs; - an additional $20K (approximate price) for each third-party application
Solution maturity	Systems deployed and operational; enhancement features still being requested and developed
Primary internal contact(s)	Mietta Rigali, Global Alliances Partner manager E-mail: *mietta@sgi.com* Phone: (650) 933-3522

4.0 Target Market Analysis

4.1 The Customer's Problem

The digital publishing industry has suffered economically in the past few years, and many medium-size and smaller companies are very cash strapped. As larger publishing houses have merged, the consolidation of conglomerates and increased competition from in-house publishing have eroded margins. To match the big guys, companies now offer the complete spectrum of publishing services. Bottom line: The workload has increased, but the delivery timeframes and the workflow output have remained the same, if not become more aggressive, for the bulk of the players in this industry.

4.2 What Do Users Need?

- Complete workflow—the whole business run off a single solution
- Uptime/reliability—key aspects to the business, as critical as the requirement for speed
- Ease of use for both hardware and software
- Integration—need to interface with all types of systems and equipment

- Productivity—turnaround time and higher throughputs are key differentiators
- Collaboration—either within or between facilities
- Price/performance value—immediate value and potential for long-term expansion; scalability is critical, especially for larger, growth-oriented companies
- Failsafe capability—because contracts are written for 99.5% uptime, and missing deadlines can also incur significant penalties

4.3 Size of the Market

- Printing, in the generic sense, is a $160 billion business in the United States alone
- Printing is the third-largest manufacturing business in the United States
- In the United States, 1.2 million people are employed in the printing industry in approximately 46,000 establishments, most of which are small to medium size and employ 20 or fewer employees
- All Fortune 1000 companies are de facto printing and publishing companies (just think of all the collateral that SGI generates and publishes internally and externally on a daily basis!)
- Europe (excluding the Eastern European countries) has a printing industry with sales of approximately $100 billion
- European sales are concentrated in six main countries: Germany, France, U.K., Italy, Spain, and the Netherlands

4.4 Market Growth

The key goal in all business endeavors is to make money, and this has become particularly challenging in the digital publishing business. In recent years the industry has suffered significantly in the economic downturn. Potential digital publishing customers are cash strapped, mainly due to the drop in advertising revenue and alternative media outlets. It is important, therefore, to understand the business metrics—especially in the reprographics arena, in which SGI and its partners do most of their business.

Reprographic houses merge the editorial with the pictures; they handle page layouts, retouching, and coloring and grading of images. They organize final output into specific magazine formats. Editors review proofs online but will sign off only on digitally printed proofs. Reprographic companies charge by the page and usually work in three eight-hour shifts.

As more magazine titles enter the market, advertising dollars decrease due to increased competition. Consolidation within the media conglomerates has also affected profitability. Margins are squeezed, and revenue remains flat or decreases. Therefore, the business goal is to increase throughput by

streamlining processes to keep revenue margins high. Many of these companies have a turnaround time from receipt to delivery that is less than one day, all with many stakeholders involved in the production and approval process. Digital publishing businesses are working in distributed environments requiring real-time results, and with delivery deadlines that, if missed, often have penalties attached.

There is also a significant focus on developing new services or a set of services that will differentiate one firm from another. New areas on which digital publishing firms are focusing include:

- Database printing
- Short-run customizable printing for one-to-one marketing (probably the fastest growing segment)
- PDF file merging
- Interactive project review
- Digital delivery services

In each of these areas firms are reaping the benefits of having computer-to-plate or -press capabilities, availability of preripped files, and the capability of merging databases—all features offered by our ISVs.

4.5 Digital Publishing Industry Trends

There has been a significant move in recent years toward consolidation in the printing industry. Many assumed that larger companies would therefore become the top competitors, because their size allowed for better economy of scale. However, these large companies did not necessarily become more efficient; often they lost momentum by changing processes that had run smoothly in the past. Capitalization costs for this market segment have also decreased, and many former employees of large digital publishing firms have started their own businesses, purchasing used equipment and hiring key employees. These newly launched but experienced outfits have quickly become as competitive as the larger, established shops.

All digital publishing shops have become technology dependent, offering efficient production workflows running on high-quality hardware. There is very little specialization left, and almost all shops offer complete packages, from commercial printing to sign printing. Digital publishing employees are becoming more knowledgeable about software and hardware technology, as well as truly understanding customer requirements. Due to the strong dependency on technology, it is key that companies follow, evaluate, and use up-to-date technology.

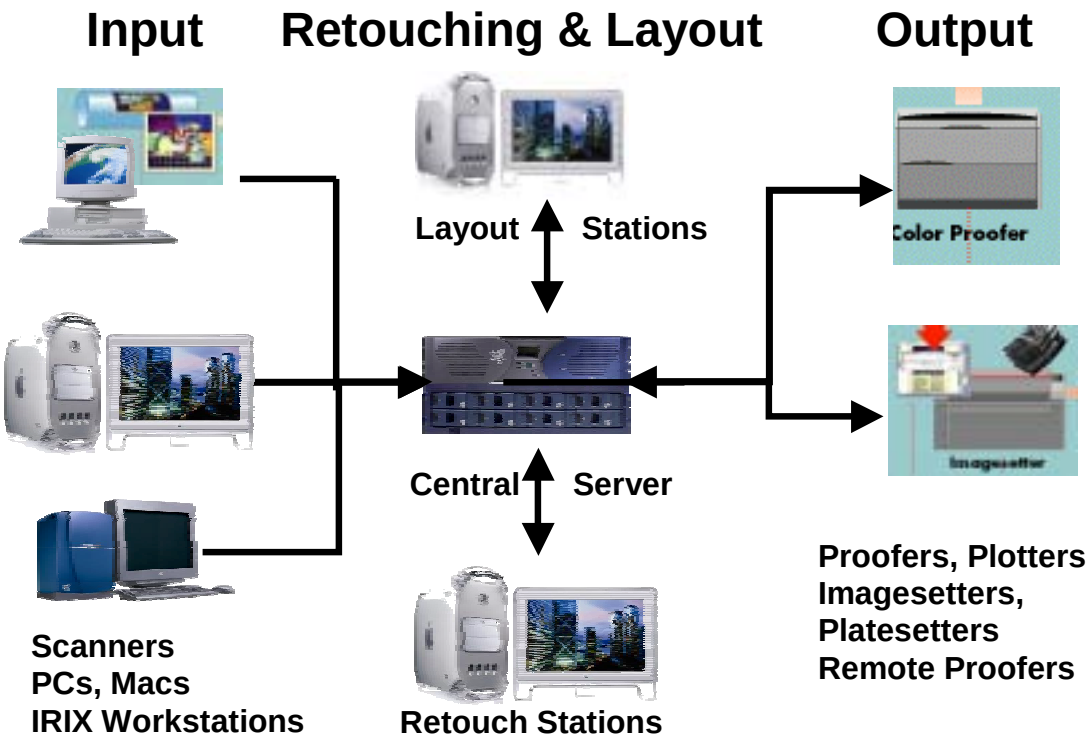
The current equipment available in the market—cameras, scanners, plate setters, etc.—is as high-caliber as needed. So the trend will be toward more automation, not necessarily toward better products. More automation will also

lead to more efficient production workflows and, therefore, shorter production cycles and time to market. To compete with Internet technology that produces almost instantaneous results, digital publishing must continue to focus on even shorter turnaround times while maintaining high quality.

Also key are asset management and interoperability. Asset management speaks for itself—publishing is the epitome of dealing with and managing large files. We are seeing a concerted effort to avoid special customization and instead use simple processes that minimize training and headaches. This is especially evident in the need to standardize to the extent that there is stability across all output devices. Industry players are looking at cross-integration testing—among all vendors and applications, thereby moving away from closed production systems to an open environment—with the ultimate goal of reducing costs. The ideal situation, then, is to be able to take documents from one site to another, regardless of each site's setup, equipment, or workflow process, and always obtain the intended results.

5.0 User Needs

5.1 Customer Workflow



5.2 How Does the Customer Become More Efficient?

The customer becomes more efficient by purchasing solutions that are reliable and increase productivity. The application solutions offered by SGI and the ISV partners, through our digital publishing solutions partners, are key to customer success. These applications, running on SGI hardware, provide key features such as scalability, reliability, streamlined workflow, support for heterogeneous environments, and improved data management. Applications adhere to industry-standard file formats. These products are compatible with most types of equipment on the market today and are designed to remain compatible in the future. Production facilities can achieve higher productivity, at lower price points, using SGI IRIX server applications, which also offer greater reliability and ease of maintenance.

6.0 How to Sell the Solution

6.1 Where Are the Customers?

Main contact points for the digital publishing industry are found in the IT departments of larger companies. Keep in mind that IT managers do not necessarily understand the workflow process but rather will adhere to the corporate policy for computing and operating systems. In smaller companies the owner would make the financial decision to improve technology. See Appendix I for a sample list of digital publishing customers.

There are significant opportunities outside of the standard printing areas, and these are documented in the section “Other Possible Selling Opportunities.”

6.2 The Approach

Digital publishing applications are sold through the reseller channels. SGI and the ISVs work to find a reseller that is educated in the market requirements and trends and can speak the same language as its prospects.

6.3 Key Points to Always Keep in Mind

- Understand the business reasons behind needing digital publishing solutions
- Keep in mind the price sensitivity of the market; although this market is labeled as “price sensitive,” a better term might be “value-centric,” because companies can be swayed to pay for performance and reliability

- Sell through an authorized reseller, because a completely integrated software and hardware solution and service supplier is needed

6.4 SGI's Value Proposition: What SGI and Our Development and Channel Partners Provide

Heterogeneous environments:

- **Multiple-platform support**—We work well in heterogeneous computing environments, supporting a wide variety of systems and interfaces, including Apple® and PC/DOS™ as well as proprietary systems. Flexible spoolers for large print jobs, Macintosh® terminal emulation over AppleTalk®, and full integration in UNIX®, including yellow pages/NIS, are just a few of the capabilities we offer.
- **Excellent software—**Very stable operating systems and application releases that have full binary compatibility and are carefully tested before release.

Product features:

- **Server performance—**Processor-heavy tasks are moved from workstations to the central server, and a single server can drive many workflows simultaneously.
- **Product scalability—**In today's economy everyone is value conscious, and with SGI, customers know they can easily expand their systems as their requirements grow. They can start with a very cost-effective solution immediately, have the opportunity to prove the workflow efficiency, and then can add more horsepower later as needed. Our server architecture and reliable and extensible filesystem differentiate SGI in the market.
- **Powerful digital infrastructure capabilities—**SGI storage solutions are designed to solve the data access and management problems involved in large-scale computing. With SGI SAN Server™ systems running CXFS shared filesystems, we deliver nearly instantaneous shared access to data from multiple computers and multiple processes within a workflow. (See SGI white papers on storage and CXFS for further information.)
- **High-bandwidth networking—**In addition to offering Ethernet, Fast Ethernet, HIPPI, and Gigabit Ethernet devices, SGI has network load-balancing software. This robust application enables dynamic load sharing and bandwidth aggregation of mixed IP traffic and is compatible with most vendors' 10/100/1000Mb-per-second Layer 2 switches, including switches enabled for Cisco® Fast EtherChannel®. Load balancing, bandwidth aggregation, and fault tolerance are mission-critical features that customers require today in their high-performance networks.
- **RIP (raster image processor)/ROOM (raster once, output many)—**This is where an SGI server makes a great deal of sense. The requirements are

hefty, and reliability is key to supplying the bandwidth needed to drive multiple output devices—all of which SGI servers can easily fulfill.

- **Data archiving and retrieval—**SGI® Data Migration Facility (DMF) provides an enormous advantage for digital publishing of catalogs and other media in which image files or other assets need to be repurposed quickly and seamlessly.
- **SGI FailSafe™—**This dual-system configuration ensures that one set of processors continues to drive your production in case of a failure. At the same time, load sharing occurs between the FailSafe systems.

Full collaboration:

- **Automated workflow**—This alleviates the bottlenecks that are encountered with large image files. With a centralized workflow, managing file sharing, minimizing network traffic, and sending output to any device becomes easier. This workflow also reduces costs and increases output.
- **Full digital asset management infrastructure—**This becomes a competitive advantage, as it allows for even faster searching, organizing, and categorizing of data at the customer level. The customer controls all aspects of the digital files.
- **Full viewing on both private intranet and the Internet—**Worldwide access for multisite companies means that anyone can log in to check project status, see which authorization checks have occurred, or verify where a project is in the production cycle. If you're at home and you have a terrific idea for revision, you can log in via the Web and modify the image. The system will record the time and history of the transaction, and the revision will be viewable to the production and/or management staff for sign-off!
- **Consistency and efficiency—**The task of maintaining image consistency and branding is simplified. Streamlined job submission and shorter approval cycles shorten production deadlines. This also allows easy repurposing of digital collateral and documents among different departments, because original images and artwork are centralized in a single location.
- **Multiple views and uses—**Many views of a single high-resolution file can be presented to users. Users can work with automatically generated low-resolution FPOs (for position only), Web-ready GIF and JPEG files, or high-resolution originals. Any changes made to the original files are immediately apparent in all corresponding views.
- **Perfect printing—**Wide ranges of input and output formats are available. Operators can direct jobs to print queues that automatically apply unsharp masking algorithms to the images, which helps preserve the quality of image detail whenever images are being scaled in size. Support for Device N allows multichannel (DCS, etc.) files to be sent to separating RIPs in composite. This allows customers to send multichannel jobs to the RIP and have the spot color information preserved.

7.0 Guide to Specific Solutions

7.1 Key Developers and Applications

Dalim Software, GmbH
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Kehl, Germany
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Web: *www.dalim.com*

LiTHO™ is a high-end, high-quality image retouching and page assembly software package. It is a powerful combination of an illustration, page makeup, and retouch application. Training is facilitated by a single user interface, and there is no need to shift from one application to the next for performing various tasks. It enables operators to produce stunning results with maximum productivity and is particularly well suited for handling the requirements of the packaging market.

The **TWiST™** product line offers a range of customized automation solutions that can streamline prepress and publishing production processes. Quality control checks can be made for these at any stage of the production process. TWiST handles a wide range of complex workflows. Event-driven reactions can be triggered and determined by a variety of options such as file origin, naming conventions, or absence or presence of certain data such as text or images.

FiCELLE®, Publication Production via the Internet, is a unique and innovative system for the display, tracking, and administration of publication content over the Internet. For the first time in the industry, users can have access to real-time information on the progress of a publication's production from anywhere in the world.

SWiNG™, Automated Workflow Suite, is the result of many years of extensive experience in developing standard-setting solutions for the fastest and most reliable production throughput possible. Based on TWiST technology, SWiNG offers small- and medium-size companies an affordable yet extremely powerful tool to process prepress data automatically and consistently.

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HELIOS EtherShare, highest-performance server for Macintosh clients, allows easy integration of powerful servers into Mac networks. It provides an extremely fast, reliable, feature-rich file and print server, compatible with AppleShare®, to unlock UNIX performance for Macintosh clients. It is well known for its reliability, performance, and ease of use.

HELIOS ImageServer is a server-based image replacement and conversion solution with color separation and proof-printing support. It is designed to shift very CPU-intensive image-processing tasks from desktops to servers, resulting in faster workflows that save time and money.

HELIOS PCShare, highest-performance server for Windows® clients, allows easy integration of powerful servers into Windows networks. It provides an extremely fast, reliable, feature-rich Windows OS-compatible file and print server to unlock UNIX performance for Windows PCs. It is fully compatible with standard Windows programs, including multiuser applications, and excels in ease of use. Sharing files and printers is simple and straightforward because there is no additional software necessary for Windows clients. Windows users enjoy full Windows compatibility, mounting drives and printers via the Windows network browser. PCShare ensures a smooth growth path.

HELIOS Print Preview offers convenient and reliable last-minute production checks of print jobs prior to final output. Any PostScript® job sent to a HELIOS EtherShare spool queue, be it separation or composite, can easily be previewed as a PDF file. It does not matter which application on what platform generated the print job. The previews are based on the final output devices' PPDs and are true representations of the final output in all aspects regarding completeness and accuracy of page elements, correct colors, typography, and font use. The previews are stored on the HELIOS server. They contain job ticket information and the final pages in composite and/or separation mode. They can be accessed and printed from any client with a PDF browser—e.g., Adobe® Acrobat® Reader on PC, Macintosh, or UNIX.

HELIOS PDF HandShake fully utilizes the benefits of PDF use in your existing production environment without the need to upgrade applications or output devices and without retraining people. The package offers correct PDF printing of separations and composite PDF documents on any PostScript-compatible output device. ColorSyncICC color management and proof simulation support are also included. PDF HandShake offers capabilities

beyond the default Acrobat printing features—e.g., printing registration marks, custom page sizes, grayscale detection and conversion to black, printing always with correct fonts, conversion of embedded TrueType and CID fonts to Type 1, and more. PDF HandShake is the perfect printing solution for any PDF document. It does not matter if the PDF was designed with Microsoft® Office, QuarkXpress™, or Adobe® InDesign®; PDF HandShake printing will always print correctly on any output device.

HELIOS and EtherShare are trademarks of HELIOS Software GmbH.

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Color Ray™
ColorRay's key advantages include the ability to drive multiple wide-format devices simultaneously via LP, providing exceptionally fast file processing throughput and the distinction of running on one of the industry's most stable operating systems, Silicon Graphics IRIX. ColorRay has built-in support for all major Epson and HP wide-format devices. ColorRay also supports most other major "RTL" output engines and is not tied to any one particular output engine manufacturer. ColorRay accepts all major input file formats, such as PostScript, PDF, EPS, TIFF, DCS, etc. Maximum output resolution is 1500 dpi. ColorRay includes ICC Color Management and advanced dispersed (HDS) or error diffusion screening (EDS).

Core Raster Image Processor Products (RIPs)
There are three versions of the core FSI RIP. A single-processor version (Fusion SP), a two-processor version (Fusion DP), and a fully scalable symmetrical multiprocessor version (Fusion SMP). A number of layered options are available for each RIP version. Layered options available are In-RIP Trapping, file conversion for the input and output of TIFF/IT-P1 files, color management features, CIP 3 data extraction, and a full range of output device drivers for imagesetters, CTP devices, color plotters, and proofing devices.

Fusion DigiPage Workflow Option is a ROOM (render once, output many) workflow option that generates a complete set of (production) workflow files. DigiPage allows all work to be rendered only once, including: trapped and screened separations, a down sampled, descreened color composite proofing

file generated from the bitmap separations, and a 72 dpi preview file. Because the color composite proofing files are generated directly from the high-resolution (bitmap) separation data, the proofs are an exact match to the final printed work. DigiPage's unique proofing process prevents errors from reaching film, plates, and press by making it extremely easy to catch common production file problems.

DigiPage files can be used in conjunction with any OPI solution and any imposition application. Because DigiPage is based on industry-standard file formats, it can seamlessly integrate into and enhance any existing prepress environment to provide greater workflow efficiency and complete digital integrity between a low-cost Epson or HP ink jet digital proof and the final printed work. Fusion System's raster management products provide unparalleled performance through scalable implementations and modular workflow accelerator plug-in technologies, developed by Fusion Systems International.

Fusion TrapPro™ Option is a layered option for the core Fusion RIP products listed. TrapPro is an object-based trapping engine that uses the device-oriented display list generated in the Harlequin RIP. This allows the trapping engine to trap everything the RIP renders, with pixel accuracy and great speed. TrapPro requires a Fusion high-resolution license and 512MB RAM.

Fusion FazTIFF Accelerator is a layered option for the core Fusion RIP products listed above and a must-have for any configuration that is designed to feed 1-bit TIFF files to a film imager or plate setter. This option leverages the 64-bit compute environment to provide 200 to 400% file-processing acceleration in the creation of 1-bit TIFF files.

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Web: *www.xinet.com*

FullPress® is a robust server-software engine for optimized graphics production. The system provides client-server file sharing, print spooling, and automated output for PostScript, PDF, TIFF/IT, and much more. FullPress removes networking bottlenecks and allows PDF/X-1a to be easily integrated into a variety of workflows. FullPress enables magazines, newspapers, ad agencies, printers, and prepress companies to deploy PDF/X-1a generation into

their workflow—reducing errors in transmission, lowering costs, and removing the friction of distance. FullPress allows workgroups to confidently harness the speed and power of a central server. Systemwide savings include more efficient use of disk space, reduced network traffic, and more reliable image processing—all to save time and money.

WebNative™ brings collaborative partners together via the Internet. The system is a companion to FullPress that enables businesses to extend the services they provide and strengthen relationships with their customers and production partners. WebNative provides secure, 24-hour access to digital assets and allows users to search, download, upload, preview, and repurpose digital assets from any location. Through WebNative, users have immediate access to their files and archives—anytime, anywhere. This high degree of access allows efficient, multisite collaboration, resulting in faster job turnaround and higher customer satisfaction. WebNative users can preview PDFs, native QuarkXPress documents, and more than 20 other common and proprietary image file types. Users can zoom in and view output files such as TIFF/ITs at the pixel level. The Image Order feature allows users to create new custom versions of high-resolution originals, on the fly. Any image on the server can be quickly converted to a new color space, resolution, and file format.

WebNative Venture combines the functionality of WebNative with a powerful SQL database that integrates automatically into your workflow. WebNative Venture provides unlimited customized metadata, unlimited database connections, and straightforward, browser-based administration. Its customizable metadata, user privilege controls, and rapid searching capabilities allow large and growing organizations to effectively handle the ever-increasing amount of data of which they must keep track.

7.2 Sizing the Solutions

Dalim and Xinet are the largest resellers for SGI and the developers with the longest SGI history. Helios has a significant installed base in Europe for the Apple desktop but does not leverage as many SGI server sales. Fusion Systems International is the development arm of LDR Intl Inc., an SGI reseller. Fusion Systems develops its own products, as mentioned above. ColorRay, Digipage, etc., are sold along with Dalim and Xinet application packages, through resellers.

8.0 Resources and Assistance

Any questions or concerns with the developer relationships can be addressed to Mietta Rigali, SGI Global Alliances, at *mietta@sgi.com*, or by phone at (650) 933-3522.

9.0 Competitive Information

SGI's major competitors in the digital publishing market are Sun and Apple. SGI cannot compete with Apple for the page-layout aspect of this market, but the SGI Origin 300 server can certainly be an excellent server for a Macintosh workgroup. Our relationship with Apple is a collaborative one, in which SGI enhances the performance of Apple workgroups in a heterogeneous environment and does not compete with them on the desktop. Although Apple is targeting their Xserve server line for many of these applications, SGI plans to continue working alongside Apple Macintosh OS X clients and servers and to focus more on the higher end of the publishing market, where there is a strong need to work with larger files and more scalable servers. SGI can support a significant PC workgroup as well. The one concern is the number of PCI slots available on the Origin 300. PCI slots are critical, and the lack of additional PCI slots in the base Origin 300 unit has negatively impacted some SGI sales.

SGI servers are extremely powerful, especially in such areas as bandwidth and network performance, as well as with interoperability, and therefore compare quite favorably against the Sun™ servers. SGI's benefits also come from multiple processors and load sharing. In a typical multiprocessor device, the work is assigned to a specific processor; but in SGI boxes, that work can be spread to other processors that may be available at the time. SGI continues to have more upward scalability than Sun, which is a key asset because digital publishing can grow significantly once the workflow has been architected and proves to be robust.

SGI also has a strong reputation for high-quality OS maintenance releases, which are available on a quarterly basis and have full binary compatibility. Sun has suffered in the past due to confusion and incompatibility problems with their patch sets. Operating system stability provides easy upgrading and continued uptime. The ease of use of IRIX and the SGI® XFS™ filesystem is also important because many target market companies have not made an investment in dedicated, technical personnel.

SGI has been unable to penetrate the storage requirements portion of this market, due mostly to price sensitivity. There is massive potential here, but Apple and other storage vendors currently own digital publishing direct-attach storage businesses. SGI needs to continue to focus on SAN solutions with RAID storage products that can nicely complement a complete workflow solution and better direct interoperability with Macintosh OS X clients.

In summary, SGI is known as the leader for server technology that is fast, stable, and extremely scalable. SGI performance in file sharing and open

prepress interface (OPI) accounts is well known. Although we no longer have a significant role in the content-creation part of the digital publishing business, we perform well with the RIP applications. These advantages, combined with significant I/O capabilities, make SGI an excellent high-end platform for the digital publishing industry. We will also be focusing more on digital infrastructure solutions for data management in production, which can potentially help us land large digital publishing accounts. In addition to the large publishing companies, opportunities in large corporate named accounts—education and government agencies that produce and publish their own catalogs, books, and manuals—are potential customers for SGI and our digital publishing development and publishing partners.

10.0 Other Possible Selling Opportunities

Remember that the digital publishing market is not limited to printers and prepress shops. In fact, pure prepress shops have all but disappeared. Currently, ad agencies are a growth market; next year it may be biopharmaceutical corporations. All business entities have a large need for publishing—in fact, most are medium- to large-scale publishers and just do not realize it. Other areas of potential opportunities include:

- **Education and sciences**—These areas have a need for in-house publishing applications on a continual yearly basis
- **Museums and entertainment centers**—Most have large publication departments that are responsible for their catalogs, posters, exhibition schedules, etc.
- **Manufacturing**—Technical documents are key to this market segment. Product packaging is fully tied to the graphic arts industry, where SGI and our partners can excel
- **Large media companies** that need a "control-of-content" plan
- **Large multisite companies** that have significant print/content demands. These can include stock brokerage firms, banks, retail outlets, etc.
- **GIS (geographic information systems)**—This area relies heavily on computer systems capable of assembling, storing, manipulating, and displaying large raster images
- **Medical imaging**
- **New services areas** mentioned in State of the Business
- **Digital delivery services**—WAM!NET integrates the SGI servers into their WAM!BASE™ storage centers; see *www.wamnet.com/services/wambase.phtml* for more information
- **Any company needing asset management**

The real key is to explain to people that most of the components they deal with in their day-to-day jobs are digital assets. If you can make people look within their infrastructures and come to this realization, they will quickly understand

the importance of dissemination and organization of these digital assets. Asset management requires a dedicated infrastructure, and our partners know how to maintain and optimize this information. SGI and our digital publishing partners can help corporations take this first step toward being more competitive and more productive. SGI and our partners offer corporations the flexibility to improve, succeed, and ultimately win!

11.0 Supported Platforms

SGI platforms: SGI Origin 200, Origin 2000, Origin 300, Origin 3000, and Silicon Graphics® Octane™
OS releases: IRIX® 6.5.x

12.0 Glossary

A

Absorption	The process by which an object captures light
Achromatic color	A color with no saturation; for example, black, white, or gray
Acrobat Reader	A free application that allows users to view, print, and navigate through PDF files. This program can be downloaded from the Adobe Web site (*www.adobe.com*).
Additive color	The mixing of light according to the RGB model. Red, green, and blue are the additive primaries. When the three primary colors of the color space (red, green, blue) are used at full intensity, the result appears white to the human eye.
Advance copies	(1) Finished books sent to a customer, usually by air, prior to bulk shipment of the balance of the order; (2) Copies of a new book sent to reviewers before the publication date; also called review copies
Airbrush	Electronic equivalent of a can of spray paint used to achieve a soft-edge design
Alignment	(1) Positioning of the letters of a line of type into exact juxtaposition with one another and with the other accompanying lines; (2) The positioning of printed pages so that they register with adjacent pages, as well as their reverse sides
Analog	Continuous wave or signal used for voice or computer data communications. Analog signals consist of various voltage levels rather than binary on/off states, as compared to digital, which is binary (on or off).
Anti-aliasing	A way of reducing the jagged edges in an image using a mathematical pixel-mixing technique on all the edges. This feature makes the image look smoother, noticeably improving the appearance of curves, diagonal lines, and fonts. It is also known as removing the jaggies.

B

Banding Banding is often used to describe a number of separate imagesetter artifacts, although strictly speaking it refers to the way that graphic information is sent (in groups of data known as bands) from the raster image processor (RIP) to the imagesetter.

Bit The smallest piece of information in a binary system of notation. One bit can represent 2 states, four bits can represent 16 states, six bits can represent 64 states, and eight bits can represent 256 states; therefore, an 8-bit scanner can capture 256 levels of gray. Bit is a contraction of the words “binary” and “digit.”

Bitmap image A graphic composed of a series of square dots, or pixels, rather than a set of lines or vectors. Bitmap files are usually created using a paint program (MacPaint or PC Paintbrush).

Bitmapped graphics Images that are created piece by piece in the same way that a tile floor is laid. These pieces can be described mathematically as coordinates on a grid. Bitmapped graphics cannot be increased or reduced in size as effectively as vector images. Ultimately, all information that is fed into a RIP is turned into a bitmap for final output. Compare with *Vector graphics.*

Bleed Printing a halftone, tint, or color image beyond the edge of the page

Blend An area in a synthetic image that merges from one color or gray tone to another. Blends are also known as graduated tints, gradations, fountains, degrades, or vignettes.

Blind embossing A design that is stamped without gold leaf or ink, giving a bas-relief effect

Blind stamp A design that is impressed (stamped) by the die alone, without foil or ink

Blocking out Eliminating undesirable backgrounds and portions of negatives by opaquing the image; also called opaquing and spotting out

BMP An abbreviation for “bitmap”—a file name extension indicating that the file contains a Windows-compatible bitmapped graphic image.

	These files are limited to 24-bit color (RGB) and cannot be CMYK.
Broadside page	A page on which the text runs sideways. The book or magazine is turned clockwise to read it.
C	
Calibration	For imagesetters, the process used to assure that the requested halftone dot percentage is the halftone dot percentage measured on output. Sometimes imagesetter calibration is referred to as linearization. Calibration of scanners and monitors is also recommended but not always possible due to the lack of software and hardware required to achieve it.
Camera-ready	Copy (often called a mechanical or paste-up) that is ready to be shot onto film that will then be used for plate making. See *Plate- ready*.
CCD	Charge-coupled device. A device that converts light values into voltages that can then be converted into digital values.
Chroma	See *Hue*.
Chromatic color	A color with noticeable saturation
Chrominance	The color part of a signal relating to hue and saturation but not to brightness (luminance). Neutral colors (grays) have no chrominance, but any color is a combination of luminance and chrominance.
CMYK	Cyan, magenta, yellow, and black (the process colors). Color printing is based on the CMYK color space. Cyan, magenta, yellow, and black inks are mixed on paper to produce a given color. The definitions of the basic colors cyan, magenta, yellow, and black are slightly different in Europe (Euroscale), the U.S. (SWOP), and Japan.
Coated paper	Paper with an added coating that gives the surface added smoothness. Compare with *Uncoated paper.*

Colophon	(1) Trade emblem or device of a printer or publisher; (2) An inscription page sometimes found at the end of a book, listing details pertaining to production of the book, or the printer's imprint; or - technical details of the product. Items listed include the fonts used, the paper stock used, and equipment used to manufacture the book.
Color cast	An overall tendency within an image toward one color, as if the image were shot through a colored filter
Color correction	The adjustments that must be done to ensure that the most accurate color reproduction is achieved despite ink imperfections and inherent problems in the color separation process (i.e., sensitivity of the light source of the scanner); any method, such as masking, dot etching, re-etching, and scanning, used to improve color rendition.
Color gamut	The range of colors that can be reproduced from a given set of inks
Color matching	The process of adjusting colors to achieve maximum similarity from the gamut of one color space to another. In practice, the color data delivered by a given device—e.g., a scanner—has to be transformed so that the colors can be reproduced exactly by a second device—e.g., a printer.
Color scanner	Equipment used to make color separations by photoelectrically reading the relative densities of the copy; also called electronic scanner
Color separation	Division of the colors of a multicolored original into three (sometimes four) basic black and white negatives, each made using a different color filter, and with the purpose of making a separate printing plate to reproduce a primary printing ink color. The term is now also used by some to describe almost any process that involves creating a separate piece of film of another color.
Complementary color	A color that stands directly opposite another on the color chart. For example, magenta is the complementary color of green, cyan is the

	complementary color of red, and yellow is the complementary color of blue.
Composite negative	A final negative that incorporates all reverses, double burns, etc., previously made by means of intermediate negatives; also called combination negative
Contact screen	A halftone screen made on photographic film and having a line or dot pattern; used directly in contact with the film or plate to obtain a halftone pattern from a continuous-tone original
Continuous tone	Any image that has not been screened and contains gradient tones from black to white; may be a photograph, oil painting, wash drawing, etc. *Abbreviated contone*.
Contrast	The difference (in density or dot percentage) of neighboring areas in an image. A large difference or increase in density when changing exposure indicates high contrast, while lack of difference or only slight increase in density for a similar increase in exposure indicates low contrast.
Contrast index	Average slope of the characteristic curve of a film between two points representing the maximum and minimum densities. Index is determined by measuring the slope of a straight line between these two points and is generally more useful than the gamma curve because it uses the toe portion of the characteristic curve normally used in high-quality negative making.
Crop marks	Marks used by the printer as an indicator of the size of the page for cutting

D

DDES	Digital Data Exchange Standard. File format for the transfer of color images on high-end scanner systems
Densitometry	The measurement by instrument of transmitted or reflected light and the translation of this measurement into numbers

Density	A measure of the light-stopping ability of an image
Desktop publishing	Use of personal computers and software applications that allow integration of text and graphics with true typesetting standards; frequently abbreviated as DTP
Developer	A chemical bath used to make the silver-halide specks on a light-sensitive emulsion visible
Didot	The European system of graphic arts measurements; 12 didot points equal one didot pica
Die repro	Camera-ready copy of material to be stamped
Digital deliverable	The return of files used for producing a printed product. In essence, this digital deliverable is a "digital negative." Digital deliverables can be requested as either "as printed" PostScript or as corrected native application files.
Digitone	The intermediate stage between a continuous tone and a digital halftone. A digitone is the file of numbers that an imagesetter and RIP can turn into a digital halftone.
Dingbat	A typographical symbol or ornament such as bullets, arrows, and check marks; most common use is for decoration
Direct color separation	Making of color separations directly onto film through a halftone screen
Dithering	Technique used on monitors or low-resolution output devices to reproduce an image; somewhat similar to a halftone in that a cell is chosen and the individual elements within the cell are either turned on or off, but the internal pattern is not similar to halftone dots
DOI	Digital object identifier. A standardized code that identifies a whole or part of a document (e.g., book, chapter, figure, figure caption).
DPI	Dots per inch. The unit of measure for output resolution, the DPI refers to the number of dots that will fit in an inch. DPI is also used to measure the quality of input when using a

	scanner. The DPI in this case becomes a square function measuring the dots both vertically and horizontally. Consequently, when an image is scanned in at 300 dpi, there are 90,000 dots or bits of electronic data (300 x 300) in every square inch.
DTD	Document type definition. An SGML construct associated with a class of documents that describes their syntax and their structure
Dummy	(1) A preliminary layout showing the position of illustrations and text as they are to appear in the final reproduction; (2) A set of blank pages made up in advance to show the size, shape, form, and general style of a printed piece
Duotone	A two-color halftone reproduction from a one-color original, requiring two halftone negatives for opposite ends of the gray scale, one emphasizing highlights and the other emphasizing shadows. One plate usually is printed in dark ink, the other in a lighter one.
Duplex paper	A paper or cover stock with a different color, finish, or texture on each side, usually produced by laminating two sheets
Dylux	A fast, self-fixing photographic proofing paper that is sensitive on both sides.

E

EFT	Electronic file transfer. The transfer of files by digital means (telecommunication, etc.). EFTs include modem transfer, File Transfer Protocol (FTP), e-mails, etc.
Embedded files	Files that were created in one program and inserted into another. If a file is embedded, a complete copy of the embedded file is included in the file in which it is embedded. Not to be confused with the external linking of files. In Adobe® PageMaker® embedded files are stored in the publication file.
Embossing	(1) Impressing an image in relief to achieve a raised or depressed surface, either over printing

	or on blank paper, for decorative purposes; (2) The swelling of the image on an offset blanket, due to its absorbing of solvents from the ink; (3) A finish on paper or cloth
Emulsion	The light-sensitive coating of a film material
EPS	Encapsulated PostScript. A high-resolution, electronic file format used to transfer PostScript image information from one program to another. The file includes PostScript code and a low-resolution (PICT) representation of the image.
EPSF	Encapsulated PostScript File format is meant for pictures that are to be used in different applications or on different platforms. EPSF files contain a text file that lists the PostScript instructions necessary to create the picture and, in addition, may contain a PICT preview of the image. If an EPSF file is created by or exported from an illustration or DTP application (e.g., Macromedia® FreeHand®, Adobe PageMaker®, QuarkXPress), this file contains object-based PostScript instructions and can only be placed in other documents; it cannot be reloaded or edited again. Editing is possible only if you are using an image-processing application such as Adobe® Photoshop®, which is able to create raster-based EPSF files. Please note that EPSF files and PC-EPSF files (for Windows computers) are not identical. PC-EPSF files contain LZW-compressed TIFF previews (instead of PICT previews) and, therefore, behave differently in certain situations.
Euroscale	Defines the European ink set for the process colors cyan, magenta, yellow, and black
Exposure	The quantity of light that strikes a photographic material determined as a product of light intensity for a period of time
Exposure index	Number assigned to photographic material to relate its speed to other photographic materials; used in traditional camera work to determine correct aperture and exposure time

F

File format	Computer convention for the transfer of files. Some common graphic file formats are EPS, PICT, TIFF, and RIFF.
Film	Light-sensitive material on either a paper or transparent base used for the creation of images. Within the graphic arts industry the term “film,” when used alone, usually refers to film on a transparent base, although photographic paper may also be referred to as film.
Film negative	Tonally reversed record of an image; negative output on film
Film output	Film generated by an imagesetter
Film positive	Tonally correct record of an image; positive output on film
Film processor	A device that develops, fixes, washes, and dries large volumes of exposed photographic material
Filter	A material, commonly dyed gelatin or glass, placed in the image light path intended to reduce or eliminate light of certain colors while allowing light of other colors to reach the emulsion. For example, a yellow filter will allow only the yellow component of white light to pass through it, while blocking out the cyan and magenta components.
FITS	Flexible Image Transport System. A format for exchange of data, widely used in the astronomical community
Flap	(1) In copy preparation, a single piece of copy used more than once that notes changes on a piece of paper or an overlay. The copy is then photographed with the flap up for one page and down for another, with the only differences being the contents of the flap; (2) The portion of a dust jacket that wraps inside the front and back covers and is made visible by opening the cover; (3) A protective covering of tissue over artwork, which is hinged at the top; also called tissue overlay

Flexography	A printing process that uses a flexible plastic printing plate with a raised surface to transfer ink to paper. Similar in concept to letterpress printing, flexography is used for packaging, newspapers, and printing on unusual materials (plastics, metallics, etc.).
Fluorescence	The emission of stored light energy by certain kinds of paper brighteners. These brighteners are often used in photographic papers to make them appear particularly white. However, they may distort how a camera or scanner will see the image that is on such paper.
Focoltone	A color-matching system used by QuarkXPress, Adobe Photoshop and Adobe® Illustrator®, Macromedia FreeHand, and Adobe PageMaker to create more than 700 four-color combinations to mimic process colors or inks
Font family	Includes several different styles of type under the same name. These styles range from the standard roman face to the extra black face, but each face shows a common basic design (as Helvetica, Times New Roman, etc.).
Form 952	The Government Printing Office form designed to explain the nature of furnished EDPP files; commonly known as the Disk Information Form
Form SF-1	The government's standard form for printing and binding requests
Four-color process	The printing process in which full-color reproduction is obtained by printing successive images from photographic plates in yellow, magenta, cyan, and black inks; also called process color and full-color printing
FPO	For position only. Refers to an illustration positioned on camera copy to indicate position only, not for reproduction; may be a Xerox copy, a blueline, or a print. The original must be photographed separately and stripped in or used to make a composite negative.
French spacing	In typesetting, putting extra space after the punctuation and before the start of the next sentence

FTP	File Transfer Protocol. A standard means of transmitting digital information from one computer to another over modem or high-speed line
G	
GCR	Gray Component Replacement. A process by which components of the color that combine to make the image gray are removed and replaced with a corresponding portion of black. For example, in an image that is primarily blue, any yellow in the image serves only to make the image darker because blue and yellow are complements. The yellow could therefore be removed and replaced by black, resulting in a brighter image and one that uses less colored ink. GCR is done to reduce the total amount of colored inks printed and to make reproduction less susceptible to color shifts. GCR is done all over an image. See *UCR*.
Ghosting	The undesirable appearance of faint replicas of printed images, caused chemically or mechanically
GIF	Graphic Interchange Format. A standard file format (developed by CompuServe) for displaying images on the World Wide Web. These files are low-resolution RGB or indexed color files and should not be used for print publishing.
Gigabyte	An electronic unit of measure equal to about 1,000MB of data (or 1,000,000 bytes). Gigabytes are abbreviated as GB.
Glossy print	A photographic print on a shiny-finished paper. Prints intended for reproduction are usually made on such paper.
Graduations	Variations in the ink values between white and a single color. The different tint values pass smoothly from one value into another value.
Grain	Minute variations of density in a developed photographic image, caused by irregular distribution or clumping of the silver crystals

Gravure	A printing process used for long run, high quality printing. Gravure uses engraved cylinders to carry the ink and transfer it to the paper. The creation of a gravure printing plate (or cylinder) requires special techniques, particularly for the creation of photographic images, and therefore the half toning that is used for offset lithographic films is not suitable for gravure.
Gray balance	Within a process color image, maintaining a neutral gray in those areas that contain one. It is usually easy to see if a neutral gray has shifted toward any of the hues, and therefore it is important to ensure that this does not occur.
Grayscale image	An image made up of various levels of gray and not restricted to just black and white. The number of bits defining the image determines the number of levels of gray available.

H

Halation	Blurring of a photographic image, particularly in the highlight areas, caused by light reflected from the back surface of the material base.
Half toning	The process of converting a continuous tone into a pattern of tiny dots that give the illusion of shades of gray. Halftones consist of a regular pattern of fine marks of a uniform density, usually dots equally spaced center-to-center but varying in size, presenting the illusion of continuous tone when seen from normal viewing distance.
Halo effect	Occurs when ink accumulates at the edges of printed letters and halftone dots, making the centers appear lighter
Hard copy	A printout, either low resolution or high resolution, accurately representing the electronic file. (A printer cannot be held liable for the quality of high-resolution output if hard copy is not provided with the disks.)

Hard proof	A prediction of what the final job will look like when run on a press (such as a Cromacheck). Compare with *Soft proof*.
Hickey	In printing, a blemish in the impression caused by dirt, hardened specks of ink, or any dry, hard particle working into the ink or onto the plate or offset blanket. A hickey is generally characterized by a solid area surrounded by a white halo.
HiFi color	A color printing module based on a six- or seven-color process to increase the reproducible gamut
Highlight	The lightest portion of a positive image; in a negative, the area of highest density, as these areas correspond to the lightest area of the original
Hone-off	To erase an image on a plate using an abrasive; also called etch out or polish out
HSV	Hue, saturation, and value. A color model used in some graphics programs. HSV must be translated to another model for color printing or for forming screen colors.
HTML	HyperText Markup Language. An instance of an SGML DTD for the creation and interlinking of hypertext information on the Internet
Hue	(1) In color, the main attribute of a color that distinguishes it from other colors; (2) The wavelength of light of a color in its purest state (without the addition of white or black); (3) A visual attribute of color determined by the strongest wavelengths of light, either reflected or transmitted
Hypertext	Text in which related topics are directly linked. In electronic hypertexts, markup permits links to be followed automatically by a hypertext browsing application.

I

ICC	International Color Consortium. A group of vendors who defined the ICC profile format. This format is a cross-platform specification that

	allows third-party vendors to develop profile tools and applications supporting the ICC profile standard. The founding members of this consortium include Adobe Systems, Inc., Agfa-Gevaert N.V., Apple Computer, Inc., Eastman Kodak Company, FOGRA (Honorary), Microsoft Corporation, Silicon Graphics, Inc., Sun Microsystems, Inc., and Taligent, Inc. These companies have committed themselves to fully support this specification in their operating systems, platforms, and applications.
Image assembly	Either manual or electronic stripping
Image editing	Any operation that is done to change, rather than exactly reproduce, an image. Airbrushing, cloning, and correcting for a color cast in the original are all examples of image editing. See *Color correction*.
Image orientation	See *Right-reading* and *Wrong-reading*.
Imagesetter	Machine capable of creating text, line art, and halftone images and outputting them to photographic film or paper
Impact printer	A computer printer that uses arrays of needles (dot-matrix printer) to print the image; makes direct contact with the printing ribbon
Imposition	The process of arranging pages on a press sheet so that they will be in the correct order and orientation when the press sheet is cut and folded
Intensification	Addition of density to negatives or positives, generally by a chemical treatment
Intensity	The relative strength of a source of light
ISBN	International Standard Book Number. Assigned by the publisher, under a system administered by the R. R. Bowker Co. It uniquely identifies the particular book. This number should appear on the copyright page and usually on Cover 4.
J	
JPEG	Developed by the Joint Photographic Experts Group, (make this continguous)

	JPEG is a file format and, at the same time, a mode of compression. Images are compressed by replacing several similar colors by one color only. Thus, much color data is lost and cannot be recreated when the files are reopened.
Justify	To set type or prepare text composition to a specified width or measurement so that the left- and/or right-hand margins of the printed matter will be aligned. Justification may be accomplished by adjusting the spacing between words, or between words and characters (letter spacing), so as to fill the measure with each full line of type.
K	
Kerning	Altering the space between two characters (either taking space away or adding space between) to achieve a more visually pleasing and readable result
L	
Laser printer	A high-speed computer printer that produces hard copy of computer data, using laser technology to project an intense light beam with a very narrow width. This light creates a charge on the printer drum that picks up the toner and transfers it to paper.
Latent image	The invisible image created by the laser on the film material, before that film material has been processed and the image rendered visible
Lateral reversal	Left to right, or mirror-image reversal. See *Wrong-reading*.
Lithography	A generic term for any printing process in which the image area and nonimage area exist on the same plane (plate) and are separated by chemical repulsion
Low-resolution placement	A low-grade (low-resolution) image containing a relatively small amount of file information—i.e., either a low number of dots per inch, such as a graphic made in a paint file format at 72 dpi, or a high-resolution image displayed in low

	resolution to save time in monitor or printer rendering
LPI	Lines per inch. (1) The measure of the number of lines printed per vertical inch; (2) Defines the size of the halftone cell of an electronic image. A 150 line-screen image will have finer dots than a 133 line-screen image.
Luminance	The brightness component of a color independent of the color. A monochrome (black-and-white) photograph is a map of the luminance of a scene as viewed by the film. It is possible to display luminance without chrominance (color component), but it is not possible to display color without luminance.
LZW	Lempel-Ziv Welch. This lossless compression technique can be applied to images when converting to a PDF file. LZW compression works best on monochrome images that contain repeating patterns.
M	
Mark up	(1) The process of preparing a manuscript for setting with standard markings for the typesetter; (2) The operation of converting typesetting specifications to computerized typesetting instruction codes and the process of indicating these codes on the manuscript as items to be included during the keyboarding
Mask	In traditional prepress, the material used to block off portions of an image area so that they will not be affected by any changes made elsewhere in the image. (This works in the same way as a stencil.) It can also be a photographic image mounted in register with a negative or positive to modify certain tones or colors. A mask may also be created electronically.
Matching color	A category of photographic reproduction in which the original matches the reproduction as closely as possible, given the limitations of offset lithography

Mezzotint	A patterned screen used to create the effect of a true mezzotint, which is a copper or steel engraving that creates the effects of light and shadow
Mid-tone	The tonal range between highlights and shadows
Moiré	Undesirable patterns occurring when reproductions are made from halftones; caused by conflict between the ruling of the halftone screen and the dots or lines of the original, usually due to incorrect screen angles
Monochromatic	Composed of tints and shades of a single color
Montage	The insertion of an image into another by means of a photographic or electronic mask
Mortice copy	An open space cut out of the background so type can be printed in the space; also called blurb or white inset

N

Negative	A photographic image whose tonal values are reversed from those of the original, with darker areas reproduced with lighter tones and vice versa
Neutral density filter	Filter that reduces uniformly all colors of light
Newsprint	The coarse, inexpensive, absorbent paper used for printing newspapers
Nipping	The binding operation in which the binding edge of folded sheets is squeezed free of air

O

OCR	Optical character recognition. The analysis of scanned data to recognize characters so that they can be converted into editable text
Offset lithography	A printing process by which ink is transferred to a printing plate and then to an intermediate surface and finally to the printed surface (or substrate); the most common of today's printing processes. See also *Gravure* and *Flexography*.
OPI	Open Prepress Interface. An OPI-based workflow allows for individual documents to

	contain low-resolution placement images with reference calls to the high-resolution images when output to high-resolution devices. The result is less transported data.
Orphan	The first line of a paragraph that is at the last line of a page
Orthochromatic	Term applied to photographic materials that are sensitive to green, in addition to blue and ultraviolet light
Output device	An imagesetter, printer, or film recorder. Some may even consider a monitor an output device.
P	
Panchromatic	Term applied to photographic materials that are sensitive to light of all colors; range of sensitivity closely approximates that of the human eye
PDF	Portable Document Format. A file format developed by Adobe Systems, Inc. PDF files were originally designed for online reading on all platforms.
Pica	(1) A printer's unit of measurement used primarily in typesetting. One pica equals approximately 1/6 inch; (2) Measurement equaling 12 points
PICT	The native Macintosh image format
Pixel	The smallest unit of a digitized picture. It includes additional information related to color or levels of gray. "Bits-per-pixel" refers to the tonal scan resolution of an image, while "pixels-per-inch" may be used to refer to the spatial scan resolution. Pixel is a contraction of the words "picture" and "element."
Pixelization	Effect that leaves an image looking like it is made up of little boxes. It occurs in scanned images when the screen ruling is greater than the actual resolution of the image.

Plate	A photographic emulsion coated onto a rigid glass, metal, or mylar base
Plate-ready	Films that are ready, without any alteration, for the plate-making process
PMS	Pantone Matching System. An ink color system widely used in the graphic arts. There are approximately 500 basic colors, for both coated and uncoated paper. The color number and formula for each color are shown beneath the color swatch in the ink book.
PMT	Photo mechanical transfer prints. Camera-generated positive prints used for paste-up and for making paper contacts without the need for a negative; also called contact print or T-print
Positive	A photographic image whose tonal values are the same as those of the original, with darker areas reproduced as darker tones and lighter areas reproduced as lighter tones
PostScript	An industry-standard page-description language invented by Adobe Systems and introduced in 1985 for printing documents that integrate text, graphics, images, and color; built into printers from more than 55 major manufacturers worldwide. Character information is given in PostScript code. PostScript printers require PostScript fonts or some sort of software able to transform non-PostScript fonts. PostScript also allows paste-up, drawing, half toning and color separation to be handled electronically.
PPD file	PostScript printer description file. A file format developed by Adobe Systems, Inc. PPD files contain information enabling software to produce the best results possible for each type of designated PostScript printer. A PPD file contains information on screen angle, resolution, page size, and printer.
PPI	Pages per inch. (1) The number of pages contained in a one-inch stack of paper; (2) The number of pixels that fit (horizontally and vertically) into one square inch; generally used

	when explaining the effective resolution of scanned images
Process camera	Camera designed especially for copying, half toning, color separation, and similar work with flat copy, as opposed to subjects of varying depth
Process color	Refers to the ink colors cyan, magenta, yellow, and black (often abbreviated CMYK). These are the inks used in color printing to give the illusion of full color.
Proof	Sample of a job yet to be printed. There are several categories of proofing: position proofs, overlay proofs, laminated proofs, press proofs, and direct digital proofs.
R	
Raster device	An output device that builds images by laying down pixels in rows and columns. Compare with *Vector device.*
Raster graphics	See *Bitmapped graphics*.
Reflectance	The measure of the ability of a surface or material to reflect light. Reflectance is an absolute, as opposed to brightness, which is relative, and does not change with changes in illumination.
Reflection densitometer	Meter that measures light reflected from a surface
Reflex copy	Copy made by placing photosensitive material emulsion-side down on an original and exposing through the back of the photosensitive material. More light tends to be reflected from the light areas of an original than from dark areas.
Register marks	Cross-hair targets on a color separation that are used to ensure that the image will align on the press
Registration	The accuracy with which images are combined or positioned. Registration is of crucial importance in multicolor printing.
Repurposed deliverables	Files that, after being saved in a different format, are used for completely different purposes.

Resolution

Most often used to describe how many spots, dots, or pixels are to be found in a given inch. Strictly speaking, this is “addressability.” What “resolution” really should describe is how many spots, dots, or pixels can actually be seen on output. This depends on how big the spot, dot, or pixel is—a factor that is often overlooked. The dots per inch (dpi) value of an image indicates its resolution. The dpi value of a given device (e.g., scanner, printer) defines its resolution capacity. Very clear and sharp images require input/output devices with a high resolution (about 300 dpi or more). Monitor resolutions usually range from 72 to 100 dpi.

-

RGB

Red, green, blue. Screens and monitors produce colors by means of red, green, and blue light (RGB). The light intensities make up a given color. Scanners also work with RGB colors. They read the amounts of red, green, and blue light that are reflected from an image (or transmitted, if you scan transparent images). RGB images contain three components per pixel—namely, a specific amount of red, green, and blue.

RIFF

Raster Image File Format. A format created by Letraset and used for the exchange of scanned and bitmapped images

Right-reading

Describes an image whose parts are spatially oriented to one another as they are on the original, in contrast to the way they would appear reflected in a mirror or viewed from behind through a transparent substrate. The term applies regardless of whether any written matter is included. Compare with *Wrong-reading*.

RIP

A raster image processor (RIP) performs the final calculation of the data sent to the output device in either hardware or software. The RIP can be an external unit or part of the output device itself. A PostScript laser printer, for example, contains its own RIP.RIP facilitates the plotting of dots to film, plate, paper or other substrates and involves a process whereby a

	raster scan technique assembles an electronic page in a bitmapped format on a pixel-by-pixel basis.
S	
Saturation	The relative strength of a color
Scale factor	Ratio of the final size to an original size of an image
Scanned color	Color separations that are created by scanning from a continuous tone original as opposed to being created synthetically. Compare with *Synthetic color*.
Scanner	An electronic input device used in making color separations and tone-corrected color separations that convert the original medium (a photograph, a drawing, etc.) into a digitized, bitmapped image or file. This file can then be manipulated electronically to accommodate size, color correction, cropping, or whatever artistic designs are warranted. Flatbed scanners use CCD (charged couple device) technology, while drum scanners use PMT (photo multiplier tube) technology.
Screentone	A halftone film having a uniform dot size over its area and rated by its approximate printing dot size value, such as 20%, 50%, etc.; also called screen tint
Shade	See *Tint* and *Tone*.
Shadow	The darkest parts of a positive image. In a negative, the low-density areas correspond to the high-density (dark) areas of the original.
Sharpness	Refers to line and halftone resolution of detail in an image
Silhouetting	Opaquing out the background around a subject on a halftone negative
Silkscreen printing	A printing process in which ink is forced through the pores of a fabric screen stencil bearing a reverse image of the design to be printed; can be used to print on almost any surface; more ink is applied than with other printing methods

Sinkage	White space left at the top of a page, in addition to the top margin, most often at the beginning of a chapter
Skeleton black	The black plate on a color reproduction when that plate is used only to add detail and also darken the darkest areas of the image. Such a minimal use of black gives the plate the barebones appearance of a skeleton.
Soft proof	The image as viewed on a video monitor. Compare with *Hard proof.*
Spatial scan resolution	The number of samples that a scanner can capture in an inch
Spectral highlight	A very bright highlight of an image, such as light reflecting on shiny metal
Spectrogram	Diagram showing relative sensitivity of a photographic material to different wavelengths or colors of light
Spectrum	The range of visible colors from the short wavelengths (blue) to the long wavelengths (red)
Spooler	A set of programs that manage print jobs. A spooler acts as a buffer for the files that have been sent to an output device. In this documentation, “printer queue” may be used as a synonym for “spooler.”
Spot color	Printed color created with specially mixed inks, often PMS colors
Stairstepping	The jagged effect noticeable in line art; most often found in bitmapped graphics or low-resolution scanned images.
Straight-line portion	Section of a characteristic curve that is essentially a straight line. It represents the range of exposures in which the increase in density is proportional to the logarithm of the exposure.
Substrate	The material on which the image will be printed. Often it is paper, but it may also be metal foil, plastic, or fabric.
Subtractive color	Subtractive color refers to the mixing of pigments. Cyan, magenta, and yellow are the subtractive primaries.

Synthetic color	Synthetic color refers to color created either manually, or electronically with a drawing program; also referred to as built or flat color. Compare with *Scanned color.*
T	
Tagging	Or “tagged files.” Used to specify that an image file or PDF document contains ICC profile information (either embedded or by reference)
Threshold	Point at which a scanner determines if a pixel is to be read as black or white
TIFF	Tag Image File Format. A standard graphics file format used for files that are to be exchanged among several applications and environments, including Apple Macintosh, Microsoft Windows, and UNIX; created by Aldus Corporation and Microsoft Corporation
Time-gamma curve	Curve that indicates the changes in gamma obtained by changes in time of development
Tint	A halftone that contains dots that are all the same size and therefore represent only one tone
Tonal range	The range, measured in density from the whitest white to the blackest black
Tonal scan resolution	The number of gray or color values that a scanner can capture; often described in bits per pixel
Tone	A subjective description referring to the value of white, black, or color within an image or image part. See *Tint* and *Shade*.
Tone compression	The compression that must take place within an image to reproduce it on ink and paper. This is necessary because the density range of the photograph is usually longer than the density range of a printed reproduction. (This is simply because the printed inks cannot make a black that is as dark as a black on a photograph.)
Tone reproduction	The reproduction of continuous-tone images by means of some printing processes that simulate continuous tone

Transfer curve	Method of adjusting halftone dot size in PostScript via a table of values
Transmittance	The measure of the ability of a material to pass light
Transparency	A positive colored photograph on transparent film (commonly called a slide) such as Kodak Kodachrome™ or Ektachrome™
Trapping (color)	The overlap of adjacent colors required by printing presses because of minor variations in register from one sheet of paper to the next. Trapping is referred to by a number of different terms, including spreads and chokes, shrinks and spreads, fatties and thinnies, and grips.
Trapping (ink)	The ability of a layer of ink to stick to paper that has already had one or more layers of ink applied to it
TrueType fonts	TrueType font files have their own character descriptions; they do not contain code compatible with PostScript. TrueType fonts are very popular—especially in Windows PC environments—but require special treatment when printing to a PostScript printer.

U

UCR	Under color removal. A process by which equal portions of the cyan, magenta, and yellow halftone dots (that together make a neutral gray) are removed and replaced with a corresponding portion of black. UCR is done to reduce the amount of ink printed in dark areas of the image. UCR is only done in neutral portions of an image where the total ink coverage exceeds a defined amount. See *GCR*.
Uncoated paper	Medium-quality paper without any special coatings. Uncoated papers tend to have a higher level of dot gain because they are more likely to absorb the ink. Compare with *Coated paper*.
Undertone	The hue or color of a thin film of ink
Unjustified	Type set with lines of unequal length; these lines will usually be aligned at the left; also called ragged right

Unsharp masking A technique for enhancing the edges of a scanned photographic image, thereby sharpening the image; also referred to as a sharpening filter

V

Value The measure of the white or black component of a color

Vector device An output device that draws lines rather than making marks on a grid. A pen plotter is a vector device. Compare with *Raster device*.

Vector graphics Images that have mathematical formulas as their basis. They may be resized without distorting their output. These images are sometimes called draw, object-oriented, or resolution-dependent. Compare with *Bitmapped graphics*.

Vignette An illustration in which the background fades gradually until it blends into the unprinted paper

Virtual memory Increasing the memory available in a computer system by shuttling data between main and external memory so that the computer seems to have more memory than it really does

W

Widow A short single line at the top of a page or column, usually the last line of a paragraph; to be avoided in good typesetting; also, a single word or syllable standing alone as the last line of a paragraph

WORM Write Once, Read Many. An optical disk on which the publisher or user can write files directly, without mastering, but which cannot be erased or rewritten

Wrong-reading Copy that is mirrored—i.e., characters are backwards and read right to left. Compare with *Right-reading*.

Z

Zeroing Setting a densitometer to a known value, often to a given black or white standard that is delivered

	with the densitometer on a filmstrip or ceramic plaque
Zip	A compression technique that can be applied to images in the conversion to PDF; best used on images that contain repeating patterns.

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Appendix I: Sample List of Digital Publishing Customers

Newspapers	Advertising
Tribune Companies	Big Flower Holdings
New York Times	Leo Burnett Group
Hartford News	J. Brown/LMC Group
Gannett Company	Stars Digital
Times Mirror	Bozell
Knight Ridder	McCann Erickson
Washington Post	Foote, Cone and Belding
EW Scripps	
AH Belo	
Primedia	

Printing Companies	Publishing Houses
Dai Nippon Printing, Ltd.	McGraw-Hill
Toppan Printing Company	Bertelsmann AG
Quebecor/World	
R. R. Donnelly & Sons	
Banta	
Anderson Litho	

Retail	Catalogs
Albertsons	Lillian Vernon
Best Buy	Oriental Trading Co.
Costco	
Saks Fifth Avenue	
Target	

Magazines	Miscellaneous
Reader's Digest	American Greetings
Sports Illustrated	Standard Register
Time Asia	Reynolds & Reynolds
Undersea Journal	Deluxe

Stock Companies	
Dow Jones	
Lagardere Groupe	

Appendix II: Digital Publishing Resellers (U.S.)

NAME	CONTACT	E-MAIL
Blanchard Systems	Keith Zibilich, VP	*keith@blansys.com*
Cadapult Graphics Systems	Duncan Yates, VP, Sales	*yates@cadapult.com*
GSI (North American Systems Intl.)	John Bettenburg, GSI division manager	*jbettenburg@nasi.com*
IO Integration (IOI)	Mike Holt, president	*mike@iointegration.com*
NAPC	Rob Steinburg, president	*rjs@napc.com*
Torque	Sam Bogoch, president	*sam@torque.com*
Tri-Tek	Andrew Parsons, strategic partner manager	*aparsons@tri-tek.com*

SGI internal contact: Jennifer Braun, Channel Mktg. Manager, *jenbraun@sgi.com*

Digital Publishing Resellers (EMEA)

NAME	CONTACT	E-MAIL
GROUPE FOLIO (France)	Arnaud Mazon	*amazon@folio.fr*
Turning Point Technologies (UK)	Graham Blanks	*gblanks@t-point.co.uk*
Silicon Systems Ltd. (UK)	Paul Rowley	*paulr@siliconsystems.co.uk*

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