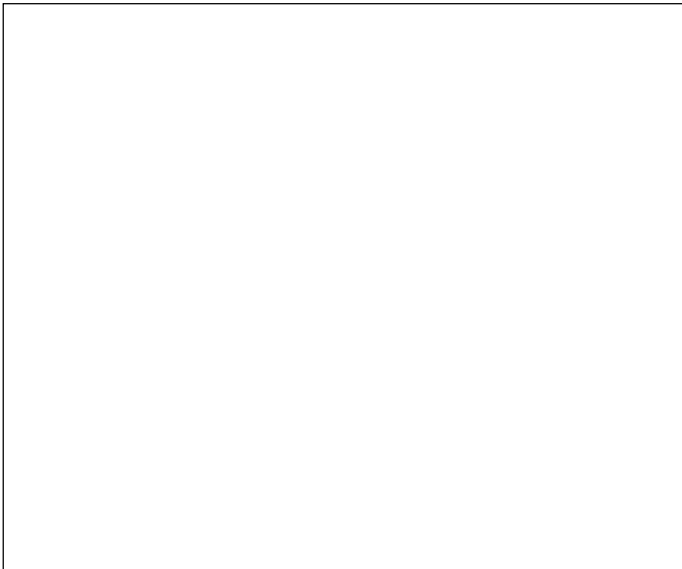


Digital Printing Expands into New Markets

Atlanta, GA - Recognizing the growing application for digital printing, **Information Management Institute, Inc.**, in cooperation with **IT Strategies**, sponsored the **1st Digital Printing Leaves the Office Conference** in November 2000. What first was thought to be small niche markets has evolved into large businesses for new digital printing applications using various techniques that place words and images on media.

David Williamson, director of **CAP Ventures**, emphasized the explosive market for signage and fleet graphics in his presentation. Williamson's market research of the large format graphics printing market indicated healthy growth. While the number of printer installations is relatively small compared to office printer installations, the peripheral supply needs generated by large format printers are substantially larger. Small format printer supplies are a moderate portion of the cost of operation while large format printers use high volumes of inks and media needed to print large areas.



An example of large format digital printing synchronized to an advertising program, is Anheuser-Busch's current program to display millions of point-of-purchase signs produced by A-B distributors. Broad based sign distribution combined with a national advertising program was organized for maximum impact. All graphics are digitally

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Route to _____

IS&T Fall Conferences draws World Class Presenters including Nobel Laureate Alan Heeger

The **Society for Imaging Science and Technology (IS&T)**, Springfield, VA continues to recruit world class digital printing specialists as they host intense, broad based, in depth conferences dedicated to advanced developments in non-impact and digital printing systems.

With the sponsorship of corporate members, IS&T offered its **16th International Conference on Digital Printing Technologies (NIP16)** in Vancouver, British Columbia in October 2000. With 863 attendees and 170 technical talks presented, the conference continued its growth as the leading technical digital printing conference. IS&T has become a gathering point for specialists in the newest printing systems. Keynote papers were presented by **Texas Instruments**, **Hewlett Packard** and **Seiko Epson** while a review of new products and technologies displayed at **Drupa 2000** was delivered by **Josef Schneider** of **MAN Roland**.

Technical sessions that followed the keynote talks were subdivided into working sessions including **Ink Jet Processes**, **Image Permanence**, **Printed Data Flow and Processing** and **Advanced & Novel Printing**. Six interactive sessions were added to the traditional format: **Digital Printing Futures**, **Organic Light Emitting Diodes (OLED)**, **Application Control in Image Quality Management**, **Color Standards** and **Printing Data Flow and Processing**.

The session on **Organic Light Emitting Diodes** was particularly interesting and well attended with the founders of the field of electroluminescence in organic materials present. **University of California at Santa Barbara** Professor **Alan J. Heeger**, the recent recipient of the Nobel prize in Chemistry presented a paper on **Plastic Electronics**. The rapid development of OLED systems offers a new frontier for color displays and other commercial applications.

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IS&T (Continued from page 1)

A new addition was a day-long session dedicated to **Printing System Engineering** and Optimization. According to the IS&T **Reporter** newsletter, "This session discussed the interplay between the different technologies comprising a printing system, how these interactions affect the ultimate image, and how one designs and optimizes a printing system."

The focus session on **Digital Printing Futures** brought together experts on the mainline generic technologies - electrophotography and ink jet. Speakers included representatives from **Presstek, Xennia, Lyra Research, Fuji Xerox, Pivotal Resources, Dupont iTechnologies and Xeikon**. Growth of hard copy printing was expected to continue well into the decade although some futurists saw a decline in paper-produced output by the end of the decade.

While business printing faces competition from the computer screen, new ventures in textile printing and flexible packaging printing offer new markets for digital printers which are just beginning to be recognized.

This large IS&T Conference included various networking sessions, exhibitions and demonstrations of processes and products during the week. According to **Al Keene**, president of **Information Management Institute** and an exhibitor at this conference, "The growth of displays, exhibits and demonstrations indicates that IS&T attracts the technical leaders of the worldwide printing industry. Our future is exciting as we produce the images and text that will propel information technology for years to come." ◇

Webster publishes History of Digital Printing

West Dover, VT - **Edward Webster**, writer, publisher and researcher whose career spans the critical years of computer and peripheral development, recently published **Print Unchained**, a comprehensive review and analysis of digital printing. Although Webster concentrates on the fifty year period from 1950 to 2000, his research carries the story of printing back to its invention by Wei Tang in China in 400 a.d.

The table top book is replete with photos, illustrations, graphs, charts, product photos all related to print evolution. When color becomes the subject, Webster inserts color illustrations to dramatize the impact of full color printing.

While his concentration is on business printing, Webster proves his point that the last fifty years have seen extraordinary advancements and variety in how machines puts words and graphics on media. The pace of development was minimal from the invention of the typewriter and the lithographic printing press at the beginning of the century until the 1950s. As the computer intrudes on business operations, the need for fast, quality, variable printing escalated. Output from large computer memory banks led to rapid, continuous and broad based development of printing systems which continues up to this day.

A strength of Webster's presentation is his decade-by-decade review of print developments complete with interviews obtained from key inventors and successful entrepreneurs.

The book is clearly useful to any serious student or professional involved with the printing industry. Its message is wide ranging and filled with information that helps us understand the vitality of the printing industry of today and its prospect for the future in the years ahead. There is reassurance provided indicating that current problems can be resolved and that imaginative solutions can lead to business successes in the dynamic world of the information age. ◇

IMAGE PRINTING DIGEST

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Printers and Print buyers move to E-commerce Internet services

Every day, e-commerce adds a new business model. The past year saw the printing industry draw a huge amount of attention. At **drupa 2000**, printing service companies, which did not exist nor was the technology available five years ago, are now hotly expanding a new way for printers and print buyers to conduct business.

The most commonly used print e-commerce Internet offering may be an on-line print shop. A buyer may log on to **Print.com**, **clickprint.com** or a similar web site to select a stock print design, choose a type font, make a paper selection, choose an ink color and indicate a print quantity and then place an order to be to be shipped by package delivery. The same decisions can be made on a web site of an Internet printer. By accessing it the same decisions needed by a local print shop can be keyed in, on-line. Simple print jobs are now easily ordered and paid for by credit card from a desktop computer.

When a print job is complex as is the case with most commercial printing, special software, large data handling capabilities, security provisions and management controls are needed to put the project on-line. What has exploded, as witnessed at **drupa 2000**, are new ways of processing the large print jobs needed by commercial print buyers.

A number of e-commerce companies offer on-line services from start to finish using multiple desk top computers, securely inter linked to an in-house computer system. The integration of such services includes both the creative side and the business side of each job including purchasing contracts, proofing, printing standards and secure communication.

Working groups of e-commerce providers and print buyers have developed Internet-based printing services that identify and resolve work flow problems by using an open, readily available business model. The first agreement was a standard format for job ticketing -- the **Job Definition Format (JDF)** promulgated by **Adobe Systems, Agfa, Heidelberg and Man Roland**. JDF is a file format standard for end-to-end job ticket specification combined with a message description standard and message interchange protocol. The commercial printing

working group **CIP3** published the first JDF specification which was recently passed on to its successor task force, **CIP4** in June 2000. JDF is designed to streamline information exchange between different applications and systems. A feature of JDF is its ability to bridge the communication gap between production and Management Information Services (MIS) within a printing plant. The JDF specification uses https (HyperText Transfer Protocol - Secure) as the default protocol for data transmission.

In June 2000, the **PrintTalk™** consortium, a group of e-commerce interested parties, became a driving force behind the acceptance of JDF. This consortium is on a fast track to promulgate an open system which combines JDF, cXML (commercial eXtensible markup language) and https to form an open, common protocol which allows secure print related communication over the Internet. The objectives of the consortium are to:

- Create an architecture with a single point of responsibility to lock-in data integrity,
- Provide a comprehensive set of business objects for the graphic arts industry, and to
- Standardize the communication method between e-commerce providers and business managers.

JDF describes the printed piece and potentially, delivers manufacturing instructions in machine-readable form to the equipment on the shop floor.

PrintTalk adds the business process communications (such as Request for Quote, Order & Change Order) to the JDF data, and provides interoperability between the business systems used by printers and their customers.

The **Association for Suppliers of Printing, Publishing and Converting Technologies (NPES)** serves as secretariat for PrintTalk with membership in the committee open to qualified applicants. Essentially, the PrintTalk consortium's goal is to standardize elements of a print job assuring that the buyer controls data in a secure environment where the printing elements of image and data can be sent over the Internet for proofing and printing.

Because large print orders placed by publishers and large corporations involve serious money, the reliability and competency of the e-commerce system is paramount. The complexity of the process requires specialists who understand communication data handling and software and who are equipped to handle large volume printing

See **E-commerce** on page 4

Bluetooth *(Continued from page 6)*

medical (ISM) band at 2.4 to 2.48 ghz. Signal hopping is built in at 1 mhz to reduce interference. The asynchronous data channel supports a maximum of 723.2 kb/s asymmetric or 455.9 kb/s symmetric.

Bluetooth has built-in security features protect against eavesdropping of false signals. Security features include:

- a challenge-response routine for authentication,
- a streaming cipher for encryption to prevent eavesdropping and assure privacy,
- a session key generation to identify each communication period.

Ericsson foresees introduction of Bluetooth using products on the following time table:

Year 2001 - Adapters for mobile phone implementation of a wireless headset;

Handheld PCs and PDAs with radio interface to a Bluetooth server.

Year 2002 - PCs with Bluetooth circuitry on the motherboard:

Printers, fax machines,

digital still cameras and industrial/medical products with Bluetooth capability;

Automotive options available (hands-free mobile phone transmission to headset or speaker).

Ericsson is committing substantial resources to this new technology touting the convenience of a low cost solution to interconnecting devices through a newly available, low cost radio transmission system. Because of escalating demands for rapid data communication, the data transfer speed of Bluetooth might be considered a limitation. Other competing radio transmissions protocols are the wireless **IEEE.802.11** LAN standard which can replace a wired network with transmitting and receiving stations. Another new radio technology, **Ultra-Wideband Radio** (UWB) is under development.

The advantage that Bluetooth enjoys today is its availability and significant support from major information technology stalwarts. ◇

Digital Printing

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printed and timed for release in an ongoing advertising effort to build recognition for the company's brands.

A technical problem, recently resolved, is image permanency in outdoor signs and fleet graphics. Advancements in ink jet pigment inks and thermal inks have improved archival properties which has caused a decline in costly thermal transfer printing applications.

Another target for digital printing outside of the office is the book publishing industry. Traditional book printing requires long lead times, high make ready expenses and long runs. Digital printers offer fast book manufacturing directly produced from a desk top publishing electronic file. **Ronald Kendig**, Manager of **Xerox Corporation's Advanced Publishing Systems**, gave examples of Xerox **DocuTech** and **DocuColor** printers in use for book publishing. A Xerox **Book Factory** initiative combines digital printing input which integrates printing output with automated paper handling that collates, stacks, binds and covers the output to produce a complete book in one machine pass. This efficient Xerox system economically produces low volume book runs at competitive costs.

Xerox's book market study indicates that many authors are unpublished due to limitations imposed by book publishers who need high sales volume on any book they choose to market. With lower production costs available, authors may find self-publishing economical or smaller publishing houses may offer new opportunities for aspiring authors. ◇

E-commerce *(Continued from page 3)*

buyers. By employing a fast, safe and reliable on line system, the older, time consuming paper pushing process long used to manage a print job is eliminated and money is saved.

Fundamentally, e-commerce printing service companies employ data asset management (DAM) techniques to bring efficiency to the publication business. Now by adding purchasing controls including financial nodes, the print buying task is integrated into a corporate enterprise resource plan (ERP).

Impresse and others offer an e-commerce printing service which can demonstrably reduce costs through administrative overhead savings. The bottom line achievement, a staple of the IT revolution, is to move business data faster, get end results quicker, minimize personnel costs, and efficiently employ corporate assets. Where printing is a major business cost, then the e-commerce solution according to **Jim Mekis** of Impresse, "Reduces administrative handling costs by one-third, while providing a two-thirds time savings and speedy delivery of a finished print job". ◇

Ink Jet Textile Printing Makes Inroads into Worldwide Market

Atlanta, GA - The November 2000 4th Annual Digital Printing of Textiles Conference cosponsored by Information Management Institute, Kingfield, ME and IT Strategies, Hanover, MA was very well attended by textile printing professionals. Al Keene, IMI's president saw expanded interest as digital printing gains acceptance by the worldwide textile industry. In Europe and the United States, specialty printer manufacturers have developed ink jet printers with increased production speed and color fast inks that offer this industry a useful, new print process.

An advantage of ink jet printing is fast production of sample designs during traditional selling seasons. Designs can be modified at a buyer's request so that short runs and fast print cycle times reduce inventories which minimize profit cutting markdown sales often used to move slow selling merchandise.

Keynote speaker, Mark Hanley, president of IT Strategies, presented market statistics drawn from research of the textile industry. A decrease in average run size of printed textile lots is affecting textile costs. Since the textile market is sensitive to fashion changes, production of each textile lot contains a risk. If the perceived demand is less than projected, overstocks result which lead to reduced prices. If demand is underestimated, stock outs may occur which lead to lost sales. Hanley emphasized that economical short print runs of textiles are a strength of digital ink jet printers.

According to Hanley, the ideal textile digital printing system requires 600 dpi color printing at a throughput of 20 to 30 square meters per hour. Appropriate software for color printing with six colors of ink can meet current quality standards. The acceptable price for such a digital textile printer would be \$120,000 to \$150,000.

Brenda Gelinas, representing E. I. duPont's textile business presented an optimistic review of current developments of ink jet digital textile printing systems. Just as computer-to-press systems save time and expense in traditional print shops, so does digital ink jet textile printing reduce make

ready costs compared to textile screen printing systems.

In January 2001, duPont introduced its new integrated ink jet Artistri™ textile printing system at the Heimtextil 2001 global textile exhibition in Frankfurt, Germany. DuPont analyzed the textile bedding industry then developed a digital printer wide enough to handle standard bedding sizes (bed coverings, sheets, pillow cases and comforters.) DuPont offers an integrated system to adapt ink jet digital printing to the bedding industry. Incorporated features of the DuPont 3210 textile printer resolve prior defects of the ink jet printing process.

Among the improvements is simulation of the same image quality as screen printing while using the same separation files employed for screen engravings. The printer's format width is 3.2 meters which accommodates large bed sheet sizes. Eight pigment ink colors produce a gamut equivalent to screen printing. Print output is rated at up to 30 square meters per hour. In-line drying and curing of printed fabric and roll-to-roll fabric handling equipment (for quick changes of substrate fabrics) is built-in. A proprietary Color Control and Management System assures color matching of screen print designs. Artistri™ pigment inks contain identical colorants as screen printing inks.

A ten year effort combines duPont's extensive knowledge of inks and textiles into the creation of an industrial fabric printer, duPont's model 3210. With its Artistri system, digital printing leaps a giant step forward -- an advancement sure to be welcomed by the global textile industry. ♦

DuPont Artistri 3210 InkJet Textile printer

Courtesy of E. I. Dupont

Harald Bluetooth: Patron Saint of Communication

During the first century a.d., Harald Bluetooth ruled Denmark and Norway in a spirit of harmony and open communication. **Ericsson, Incorporated**, a Swedish telecommunication powerhouse, developed the original idea for a new short range radio communication initiative now called **Bluetooth™**. Bluetooth wireless communication units are adaptable for data and voice using a low power, low cost interface. Central to the success of Bluetooth are transmission protocols that allow interoperability between devices. These open protocols are cosponsored by a Bluetooth Special Interest Group (SIG) which includes **3Com, Ericsson, IBM, Intel, Lucent, Microsoft, Motorola, Nokia** and **Toshiba**. There are already thousands of adopter/associate member companies that will work to promote this communication standard.

Of great interest to printer developers is a wireless, low cost, low power radio link to replace hard wired printer hookups. Short range radio communication from a Bluetooth enabled PC can be configured as a server to a piconet where individual PCs can feed data to a network printer for queuing print jobs within a defined work group. Eliminating a tangle of wires in an office is surely a benefit that could quickly popularize Bluetooth business communication.

Whenever a new and novel system enters our information technology world, the need for standards and security immediately challenges the new entry. Ericsson realized early on that an open architecture and cooperation was essential to its new product acceptance. The current Bluetooth specification offers interoperability between different devices from various manufacturers as long as they share the same profile. There is a Bluetooth qualification program that assures global interoperability between devices. Among the requirements of the specification are radio link quality, lower layer protocols, profiles and information to end-users.

Ericsson Microelectronics now offers its PBA 313 01/2 short range microwave frequency radio transceiver unit for use with mobile phones, PDAs, modems, laptop computers and other hand held equipment. The Bluetooth radio frequency used is within the unlicensed industrial, scientific and

See **Bluetooth** on page 4

Bluetooth PBA 313 Radio Transceiver

Courtesy of Ericsson Microelectronics

IMI Plans Exciting Year

Kingfield, ME - **Al Keene**, president of **Information Management Institute, Inc.** recently announced new initiatives for digital printing professionals for the year 2001.

IMI will publish the **1st International Digital Printing Industry Directory in March**. This directory includes background information on 400 digital printing industry companies. A separate 2001 edition of **Digital Printing Consultants** contains a descriptions and specialties ties of 100 industry consultants.

On March 5th, IMI and **Toner Research Services** will cosponsor the **4th Annual Toner, Ink Jet Ink & Imaging Chemicals Conference** at the Sheraton Safari Hotel in Orlando, FL. This is the only program focused entirely on the imaging chemicals industry scheduled for 2001.

The popular **Ink Jet Academy**, where basic information on Ink Jet Technology is featured, will be taught by principals of **Pivotal Resources** and **Xennia Technologies** beginning March 8th in Orlando, FL.

IMI adds a new concept on information transfer by sponsoring the **1st Ink Jet Printing Technology Developers' Conference** in Scottsdale, AZ on April 25th. This program features technology providers who will showcase their technologies, expertise and capabilities for the benefit of ink jet system developers and integrators.

All IMI 2001 conferences can be booked on the IMI web site below. ◇

Sign up early for

IMI's Year 2001 Spring & Summer Conferences and Seminars

Reservations for all events can be made by telephone 207-235-2225, by fax 207-235-2226, by E-mail imi@somtel.com or by USPS, RR1 Box 2030, Kingfield, ME 04947

For additional information check the IMI website at <http://imi.maine.com>