

# Document Imaging Report

Business Trends on Converting Paper Documents to Electronic Format

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July 5, 2002

## THIS JUST IN!

### ABBYY RELEASES AWARD-WINNING MODULE FOR ASCENT

Character recognition software vendor **ABBYY USA** recently released a pair of software modules for **Kofax' Ascent Capture** software. *FineReader OCR Full-Page Recognition Server* is designed to work as a PDF-creation module for Ascent. *FineReader Zone Recognition Server* is targeted at users who want to do some data capture from documents, but do not require a full-fledged forms processing product.

The *Full-Page Recognition Server* starts at \$500 for a 5,000 page per month license. The *Zone Recognition Server* starts at \$850 for a similar license. Kofax will help ABBYY market both modules to its Ascent resellers.

Kofax has already awarded the *Full-Page Recognition Server* first-place in a custom modules contest held recently for its partners. According to Joe Budelli, ABBYY USA's VP of business development, it was the contest that inspired ABBYY to begin development on the modules. "What Kofax really liked about the *Full-Page Recognition Server*, and why its resellers are already getting on board, are the quality and versatility of the PDFs it creates," he said. "The software can separate text from images, apply recognition technology, and then layer the text back on top of the image."

We spoke with Budelli on the day before the products were officially announced, and he was already excited about the visibility ABBYY had gained through the announcement of the Kofax award."

For more information: **ABBYY USA**, Fremont, CA, PH (510) 226-6717. ■

## The Time Has Come For Scanners In The Mailroom

***Anthrax scare provides impetus for launch of an application that has been several years in the making.***

**IBML** has been preaching the concept of scanners in the mailroom for more than two years. For a long time it seemed like nobody was listening. The anthrax scares of last fall have changed that.

"I hate to say it, but there is no doubt that the unfortunate events of last September and October have really pushed into the limelight the potential of solutions for digitizing mail," said Craig Reeves, VP of product marketing for IBML, a manufacturer of high-speed document scanners. "Businesses can realize huge savings by implementing these types of systems, and we try to focus on that in our sales efforts. But, there is no question the visibility of, and interest in, these systems has been pushed to the forefront because of bioterrorism."



**Craig Reeves, VP of product marketing, IBML.**

The safety benefits of a system for digitizing mail are obvious. "We actually started talking about this type of system following the incident at the Murrah Building in Oklahoma City," said Paul Rome, EVP at high-end image conversion specialist **IAC**. "It was then that we first realized the danger mail could represent. After that we started studying some of the efficiencies of digitizing incoming mail, and at this time last year we were surprised that the market was not developing faster. It turns out the arguments in favor of digitizing mail needed one more big outside influence. Sadly, that was anthrax."

IBML and IAC recently teamed up with **Pitney Bowes Company MailCode** to launch a system they are calling d-mail. MailCode is a manufacturer of mail sorters. d-mail is designed to take a piece of mail from the

mailroom and deliver it digitally to its destination with as little human intervention as possible. "All three vendors share a common vision about a convergence of things that makes digital mailroom solutions attractive," said Rome. "We each have a different piece of the puzzle and a successful track record of working together on other applications."

The three companies had formerly teamed up on an installation at online bill consolidator **paymybills.com**. It was in that application that MailCode COO John O'Connell first realized the potential of scanners in the mailroom. "What I saw was the same processes that could potentially be going on in a corporate mailroom," he told *DIR*. "Although the threat of bioterrorism created more urgency, I believe the market for digitizing mail would have taken off eventually."



**"The best place to start is with the one or two applications that a large organization might already be digitizing.... For d-mail, this represents the low-hanging fruit."**

**John O'Connell, MailCode**

This urgency contributed to the tremendous response that all three vendors said they received for d-mail at the recent **MAILCOM** show where it was announced. "Two years ago we went to MAILCOM with a similar sort of idea," Reeves told *DIR*. "We were way too early. We laid off a year until we had more of a solution put together, and the interest we received this year was huge."

According to O'Connell, whose company is acting as the lead for sales of d-mail, deals should start closing before the end of the year. "The response from MAILCOM was phenomenal," he told *DIR*. "I have already visited some high-profile accounts that have expressed very strong interest. There are some niches and immediate needs in government that will be taken care of fairly fast. However, I expect the typical sales cycle for d-mail to be relatively long—probably 6-12 months."

Part of the reason for the lengthy cycle is that a d-mail system will not come cheaply. Depending on volume and functionality, MailCode sorters can run between \$200,000 and \$1 million. IBML scanners run upwards of six digits. When you throw in IAC's consulting and integration fees, it makes for a pretty hefty investment.

### **Reducing The Cost Of Mail Processing**

"I'd wager that 99.5% of organizations could not tell you the cost of processing a first-class envelope in their mailroom, routing it through the organization, doing things like reviewing and copying it, and finally delivering it to its final

## **Document Imaging Report**

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*DIR* is the leading executive report on managing documents for e-business.

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**Vol. 12, No. 13**

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*DIR* is published 24x per year, on the 1st & 3rd Fridays of the month, by:

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**PH** (724) 449-7577

**Web:** [www.documentimagingreport.com](http://www.documentimagingreport.com)

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destination,” said Rome. “Those metrics aren’t typically available. However, we’ve already done one study for a government organization that showed how d-mail could reduce headcount. When you compare the potential cost savings of installing a d-mail system, the cost of entry is really not that high.”

According to Reeves, many of the savings come from converting paper mail to digital images as soon as possible after it enters the mailroom. “Once a piece of mail is digitized, you can apply business rules to it, such as automatically routing it to everyone that needs to see it, or automatically filing it. In a typical business, you’d be shocked at how much time high-level executives spend copying, routing, and filing paper mail,” he said.

Reeves estimated that the cost of handling a piece of mail for a business is typically between \$.35 and a dollar. “We think we can reduce that to around \$.18 per piece,” he said. “That includes scanning, indexing, routing—the whole works.”

Reeves and Rome both pointed out that in addition to reducing processing costs, digitizing mail also has benefits for the emerging mobile workforce. “There is a nationwide initiative to encourage telecommuting,” said Rome. “And it’s centered on better bandwidth and improved PC

literacy. But once that infrastructure is in place, what are employees going to work on? Is telecommuting still effective if employees have to drive to the office three days a week to pick up their mail?”

Added Reeves, “Today is one of the 100 days out of the year that I’m in the office. For the most part my laptop, PDA, and cellphone are my office. Unfortunately, my physical mail doesn’t follow me around. Most people want the same access to physical mail that they have to e-mail.”

### ***Finding the Low-Hanging Fruit***

Everyone seems to agree that enterprise-wide d-mail solutions are not going to start showing up overnight. “The best place to start is with the one or two applications that a large organization might already be digitizing,” said O’Connell. “Mail for an application like accounts payable might be sorted in the mailroom, but then shipped for scanning somewhere else. For d-mail, this represents the low-hanging fruit.

“Using d-mail, we can come in and show the cost benefits of scanning the AP documents right in the mailroom. This serves as a prototype. Eventually, we start scanning other types of mail, and after we are scanning 70% to 80% of everything coming in, we move to doing all the mail.”

## ***FROM THE MAILROOM TO THE DESKTOP – A BREAKDOWN OF D-MAIL***

The technology behind d-mail is an interesting integration of existing applications. It includes intelligent mail sorting triggered by OCR performed in the **MailCode** machine, high-speed color scanning by an **IBML** scanner, and technology like document management, forms processing, and workflow applied by **IAC**.

On the front end is a MailCode Olympus sorter, which captures address information from envelopes before sorting them into pockets. Depending on the model, an Olympus can process between 13,000 and 36,000 pieces of mail per hour and sort it to between 8 and 480 pockets. The Olympus machines use OCR to capture the address information and then stamp an identifying bar code on each envelope.

According to Craig Reeves of IBML, this envelope information, although

not traditionally used in imaging applications, can actually be very valuable. “Most people, when they look at an envelope, can immediately make a good guess as to what’s inside,” Reeves told *DIR*. “However, in traditional imaging applications, we throw out this envelope and rely on forms processing software to determine what the information inside is about.”

The IBML scanning system, the ImageTrac, which is rated at between 110 and 208 full-size pages per minute, or between 6,600 and 12,480 pages per hour, scans all the envelopes and their contents. “The envelopes act as separator sheets between the pieces of mail,” said Reeves. “The bar codes are also scanned and serve as tracking numbers for each piece.”

The address information from the envelopes is passed from the Olympus

system to the ImageTrac system and is matched up to the correct pieces of mail through the bar codes. “The address information on the envelope can be valuable reference information for identifying document types and triggering workflows,” said Reeves.

Once the mail is digitized, its release into an organization’s workflow is managed by IAC’s technology. This could involve release to a variety of applications including content management and e-mail systems. “Corporate e-mail systems are typically not the best way to distribute large volumes of document images,” IAC’s Paul Rome pointed out. “Their infrastructures are just not designed to handle that many large files. Sending an e-mail notifying a user that he has a digitized piece of mail stored in an imaging repository is probably a better way to manage distribution in a d-mail application.”

## Service Bureaus Are Key To Mass Market

All the vendors involved with d-mail agree its potential is tremendous. "We are starting with our existing customer base of 160 businesses," said O'Connell. "But there are also a number of places where we couldn't justify a standalone sorter, where, because the value proposition of digitizing mail is so strong, a d-mail installation can justify the sorter."

O'Connell added that although initially d-mail installations will probably show up in the mailrooms of large entities, an outsourcing model to service smaller companies has even greater potential. "My personal feeling is that outsourcing services could digitize mail for a cost of 20 cents per piece," he told *DIR*. "This would make d-mail an attractive solution to anybody processing 1,000 pieces of mail per day. It would represent at least a 50% savings on their mail processing costs. When we get into that ballpark, the market will grow quickly."

Rome is not as sold as O'Connell on the fixed cost of processing mail. "The cost of digitizing a piece of mail varies with the amount of information you are extracting from it," he said. "If you need just enough information to deliver a piece of correspondence to the right person, that's one thing. But if you need detailed information to populate an application database, the processing cost goes up."

Nonetheless, Rome agreed that any business can benefit from a digital mail solution. "Unless you're a government organization or high-profile business, you probably don't have to worry about bioterrorism. However, you can still benefit from the cost-savings and security associated with digitizing paper mail. I think digitized mail has the potential to be as prevalent in the future as fax machines and e-mail are today. I've yet to discuss d-mail with

### ONE MAN'S TRASH...

Although it converts people's paper to electronic data, **IAC** doesn't like to be called a service bureau. "Most people have never considered using imaging technology for the type of information we address," IAC's Paul Rome told *DIR*. "We assist companies in making Web assets out of collections of information that are not very machine friendly."

IAC's marquee customers include **Avaya**, **Southern Company**, and **Chevron**. According to Rome, although IAC usually starts out as a service provider for its clients, it typically tries to transition the data capture applications into its clients' hands. "However, we have some clients who, after trying the conversions on their own, decide it's nothing they want to deal with themselves. We recently had a customer call us the 'garbage men of the e-commerce industry.' We said, 'yeah, we'll take that.'"

anyone who has said after thinking about it, 'what a crummy idea, this will never work.'"

For more information: **IBML**, Birmingham, AL, PH (205) 439-7100; **IAC**, Warrenton, VA, PH (540) 349-1985; **MailCode**, Lafayette, IN, PH (765) 447-8888. ☐

## Gauss' Gamble Proves On The Money, But Where's The Payoff?

Almost two years ago, **Gauss** took a gamble on enterprise content management (ECM). When the German Web content management vendor merged with American document imaging and workflow vendor **Magellan**, nobody had even heard of ECM. "In fact, we were calling our offering unified content management," explained Ron Vangell, the former president of Magellan who was recently named CEO of Gauss.



Ron Vangell,  
president and CEO,  
Gauss Interprise.

"Our vision was right on the money," Vangell added. "Since the merger, **AIIM** [the document imaging industry's foremost trade association] has started calling itself an ECM association.

**FileNET** [document imaging and workflow's version of the 200-pound gorilla] recently bought a WCM company, and one-time WCM darling **Interwoven** is marketing itself as a document management vendor."

So Gauss' ECM gamble has paid off, right? Well, that depends on how you look at it. Since the merger the company has yet to turn a profit, has seen its revenue decrease slightly from 2000 to 2001, and reported another slight revenue decrease (-8%) for the first quarter of 2002. Vangell, however, is a glass-half-full kind of guy. "In the first quarter of 2002, our revenue was essentially flat," he told *DIR*. "But, if you look at pure-play WCM vendors like **Vignette** and **Interwoven**—which we predicted two years ago would wane and die unless they expanded into the ECM space—their first-quarter revenue was half of what it was in the first quarter of 2001.

"On the other side, a pure-play document management vendor like **FileNET**, while not setting the world on fire, has been able to stabilize somewhat because of its tenure in the document imaging space. [FileNET actually saw its revenue decrease by 16% from 2000 to 2001.] But FileNET realized it had to make a move towards ECM and recently went out and acquired a small WCM

vendor [see *DIR* 4/19/02].

Vangell points to **Documentum** as a legacy document management vendor that has already made the successful transition to ECM. "While Documentum was making the transition, they're revenue dropped slightly," he said. "However, now that they are an established ECM player, and the ECM market itself has become more established, Documentum has bounced back strong."

Indeed, Documentum's first-quarter 2002 revenue of \$50.6 million represents a 10% increase over its first-quarter 2001 revenue, and a 20% increase over the first quarter of 2000, which was the height of the technology boom and when WCM vendors' revenue was really starting to take flight.

So, when does Gauss get to reap the reward of its ECM risk? "Who knew the IT recession was going to hit so deep and dark," said Vangell. "The current state of the economy is obviously holding us back. Also, ECM is a relatively new concept that just started to gain mindshare over the last 8-to-10 months."

ECM's growing mindshare was evidenced in

FileNET's admission that it had been shut out of RFP's because it didn't offer WCM functionality. According to Vangell, 30% to 40% of Gauss' new customers want to be shown combined document management and WCM capabilities before they'll include a vendor on their short list.

"Going forward, I would expect that percentage to increase to 80% to 90%," he added. "Typically, our customers don't need an entire ECM suite right away. Most likely they are trying to solve one particular problem. It may be a document problem, or a Web content problem. But when you show them the entire ECM suite, they are starting to understand how they can leverage it in the future. They understand the importance of repurposing their documents as Web content and the importance of integrating their WCM system with a document management and workflow system."

Vangell compared the current state of the ECM market to that of the document management market a few years back. "At one time you had separate vendors doing imaging, COLD, electronic document management, workflow, etc.," he said. "In today's market a user would never choose different vendors

## Syndication: The Next Big Thing For ECM?

Here's how we can tell the enterprise content management (ECM) market is maturing: the sales techniques are getting more refined. The current trend is to go in with a point solution utilizing maybe a piece of your full ECM offering, and let your customer know that when they are ready to install other ECM functionality in other areas of their business, you'll be there for them.

"Vendors like **Gauss**, **FileNET**, and **Documentum** are adjusting their products to address their customers' true needs," explained Louis Columbus, senior analyst at **AMR Research**. "We are finding that a lot of ECM customers are singling out one particular problem they need taken care of, but want to buy from a vendor whose product covers the entire ECM spectrum. ECM is starting to look like a handy moniker to put on the process workflow-driven solutions that many traditional document management vendors offer."

Columbus indicated that

Documentum's recently released *Content Distribution Services (CDS)* software is an example of a customer-driven ECM feature. CDS was developed from the technology Documentum acquired with the assets of **Boxcar Software**. "Boxcar developed syndication technology for delivering content," explained Lubor Ptacek, director of product marketing for Documentum. "Traditionally, syndication technologies have been used in media distribution applications, but we've transitioned it to a B2B model."

"CDS takes content management outside the firewall," explained Columbus. "There has been a lot of talk about the **Delling** of the technology industry as more companies go direct. A product like CDS, however, is great for companies that work with partners. It's a great tool for keeping partners informed and for keeping their loyalty."

According to Ptacek, Documentum's early CDS adopters have been in the

financial services, manufacturing, and information marketplaces. "Financial services businesses are required to distribute certain reports and CDS gives them an inexpensive and effective way to do this," he said. "In the manufacturing industry, it's a great way to share design and technical information with partners, and in the information market, it's a great means for distributing reports."

Columbus was especially impressed with the speed with which Documentum integrated the Boxcar technology into its core ECM platform. Documentum completed the Boxcar acquisition in January. "I think the focus that Documentum put into making that integration happen shows that there is a real demand for syndication technology in the ECM space," he said.

For more information:  
**Documentum**, Pleasanton, CA, PH (925) 600-6800, FX (925) 600-6850;  
**AMR Research**, PH (949) 471-5327, LColumbus@amrresearch.com.

for each of those requirements. It's not cost-effective. On top of dealing with three different vendors, you would need to pay somebody to come in and glue the solution together.

"Integrating Web technologies from different vendors was where Web shops like **Scient**, **Viant**, and **Razorfish** were making all their money. Now that customers have decided they want to buy integrated Web platforms from a single vendor, those integrators are suffering."

Vangell is confident that when the economy rebounds, Gauss will be in a great position to take advantage of it. "Aside from Documentum, there are not a lot of companies positioned as well in the ECM space as we are," he said. "FileNET may have acquired some WCM technology, but now they have to integrate it into their platform. They claim they've managed to do that in two months. Come on, that type of integration is a lot of work. I've been through it. Legacy document management technology is client/server based, which just doesn't mesh well with Internet-based technology like WCM."

Vangell concluded by saying he has no regrets regarding the merger of Gauss and Magellan. "I'd do it all over again because it was the right technology move," he said. "The fact that the economic storm started hurling hail balls at us is beyond our control. Without the merger, we'd be just a point solution vendor. Then, who knows, instead of our revenue dipping by 8%, it may have been cut in half. When the economic tide goes back out, we will be vindicated because we were one of the first vendors to jump in the ECM waters and are therefore one of the leaders."

For more information: **Gauss Enterprise**, North American Headquarters, Irvine, CA, PH (949) 784-8000, FX (949) 784-8200. **DIR**

## Don't Give Up On Optical

**Emerging new formats shorten the odds for traditional WORM vendors in race for market share.**

The race to become the WORM (write once read many) media of choice is on. And what once looked like a one horse race being run in obscurity is now shaping up more like the Kentucky Derby. In recent

## DOCUMENT IMAGING STILL AN UNDERDEVELOPED MARKET

**Westbrook Technologies** President Sean Donegan told *DIR* his company is not experiencing the same demand for Web content management (WCM) technology that companies like **Gauss** and **FileNET** are. "We compete with FileNET in a number of situations, and not one time has a customer told us to take a hike because we don't offer WCM technology," Donegan told *DIR*. "Of course, maybe we don't live in the same world as FileNET all the time. FileNET has an impressive customer base, and many of their large customers would probably rather buy WCM software from a vendor they're familiar with, than bring in a new vendor. I guess one of the differences between us and FileNET is that they generate a considerably larger percentage of their revenue from existing customers. Only about 25% of our business comes from sales to existing customers. The rest is new business."

It's Donegan belief that the constant desire of traditional document imaging and workflow vendors to latch onto new monikers has hurt the market more than anything else. "I would say it's the number one reason the market has not blossomed as many analysts have predicted it would for years," he said. "Does Westbrook do everything that a **Documentum**, a **Vignette**, or an **Interwoven** does? Of course not. But conversely, do they do everything that we do? No. It's really all different pieces of a puzzle that fit together. So, in that sense, we play in enterprise content management, but I'm not going to change the description of what we do just because somebody has come up with a new word."

For more information: **Westbrook Technologies**, Branford, CT, PH (203) 483-6666.

months a host of high-profile contenders have announced their intentions to challenge longtime WORM frontrunner optical technology. They are all hoping for a share of a pot that has been estimated to grow dramatically over the next few years to several billion dollars .

Recently, we've covered the entrance of both hard drive and tape vendors into the WORM space. Formerly, these vendors concentrated their efforts on traditionally higher growth markets like backup and transactional storage. But for a number of reasons the WORM market has suddenly come into vogue. These include the desire of businesses in economic hard times to better utilize their expensive high-performance magnetic storage. There is also an increasing concern about file security and tampering in the wake of the events of Sept. 11 and corporate scandals such as the one at **Enron**. Suddenly, vendors of optical storage technology find themselves competing for WORM market share with heavies like **EMC** and the tape division of **Sony**.

This competition is actually a double-edged sword for the optical vendors. On one side, more competition means more companies vying for a

piece of the WORM pie [sounds delicious, doesn't it?]. On the other hand, the marketing dollars these behemoths bring to the table could mean a larger pie.

But do optical vendors stand a chance against a multi-billion dollar giant like EMC? Long-time optical storage consultant Mark Anderson of the **TechSource Group** thinks so. "Optical storage provides a traceable record of data that hard drives cannot," Anderson told *DIR*. "EMC's [WORM offering] Centera works fine for protecting files against unintentional alterations. However, it isn't foolproof against intentional changes. In a case like Enron's, optical storage could have provided the smoking gun audit trail that no magnetic device could."

As far as challenges from tape go, Anderson said, "Sony's AIT tape has all the aspects of WORM worked out. But, if you are dealing with a lot of small files like documents, retrieval time from tape can be considerably slower than retrieval from optical. For a user storing larger files, such as medical images, or in an application in which retrieval time is not a priority, Sony's WORM AIT tape presents an inexpensive alternative to optical."

Anderson acknowledged that optical WORM needs to continue to progress to stay competitive. He predicted that magneto optical (MO), currently the most popular format for optical WORM storage, will become "economically inefficient" in 18 to 24 months. He looks to a pair of emerging optical technologies, UDO—(ultra density optical) and Blu-ray DVD—to carry the WORM torch in the future.

UDO, of course, is Plasmon's well-publicized effort to create a 30-gigabyte per disk optical storage format for release in 2003. With pricing estimated to be in line with current MO technology, the latest generation of which offers 9.1 GB per disk, it's easy to see why Anderson and many others in the archival storage arena are excited about the prospects of UDO. Essentially, UDO promises three times the capacity and equal the performance of today's MO technology. The questions concerning UDO however, are not around its potential, but around its feasibility.

In contrast to the opinions of many others, Anderson is optimistic that Plasmon can deliver the UDO goods. "UDO is either going to be a home run or a strikeout for Plasmon," he told *DIR*. "There is no in-between. A lot of people think it's going to

be the latter because they compare Plasmon's efforts to **TeraStor's** and **Maxoptix's** attempts at high-density optical. But, there's a difference. TeraStor and Maxoptix failed because they were developing a new technology. Plasmon is taking existing technology and applying it in a new way. UDO is essentially a 5.25-inch version of high-density video disk. Plasmon has mitigated its risks by trying not to invent too much."

Although Anderson believes in Plasmon's technology, he does question whether they have the marketing clout to make UDO a success. "Although they aren't a start-up, in the storage market, a \$100-million company like Plasmon is relatively tiny," he said. "Plasmon is not a market maker by themselves. They need someone like **HP**, or **Sony**, or **IBM** to make a commitment to UDO and help take it to market." While the three companies Anderson mentioned all currently sell MO technology, their response so far to UDO has been lukewarm.

#### **COLD VENDOR RECOMMENDS DVD FOR DISTRIBUTION, NOT ARCHIVING**

Count Stephen Graziani, SVP of sales and marketing at **INSCI**, among those who question the reliability of DVD-R as an archival solution. INSCI, a vendor of ERP/COLD and electronic statement presentment software, recently announced support for DVD. However, Graziani stressed that he views both CD and DVD more as distribution media than an archival solution.

"If a user wants to store anything for an extended period of time, we do not recommend CD or DVD as the first choice," he said. "The media itself is too fragile. CDs chip, they warp, they break in half if you put too much pressure on them with your finger," he said. "If you look at the bottom of a CD jukebox, you'll see it's typically littered with shavings."

Graziani said that INSCI does recommend CD and DVD as an alternative to the Web for distributing reports and statements. "When you want to send **General Motors** its phone bill, which last month consisted of 14,000 pages detailing the activity at each extension, CD or DVD is a great way to do it without having to print it. If you have to issue reports to people who travel, or to remote offices that don't have access to high-speed Internet connections, CDs are a great solution."

For archival needs, INSCI recommends either hard drive, optical, or tape technology. "It depends on how important the speed of retrieval is vs. the amount of money a customer wants to spend," Graziani said. "We do have some customers who use CDs for archiving and are very happy with them. It's just not our first recommendation."

For more information: **INSCI**, Westborough, MA, PH (508) 870-4000, e-mail: [sgraziani@insci.com](mailto:sgraziani@insci.com).

Blu-ray technology clearly does not lack big-name vendor support. Giants Sony, **Pioneer, Samsung, Matsushita, Philips, Hitachi**, and **Sharp** all had a hand in creating the Blu-ray recording specification. Blu-ray possibly represents the next generation of DVD-R technology and promises to store 27 GB of data on a single side in its first generation. It is currently slated for release in late 2003, or a few months following Plasmon's scheduled release of the first generation of UDO.

Current DVD-R technology stores 4.7 GB per disk, with 9.4 GB technology scheduled to hit streets about a year from now. A 25 GB version of the current DVD-R standard is scheduled for release in 2004, but if the Blu-ray players have their way, it may be obsolete before then. One obstacle that Blu-ray will have to overcome, however, is that it is not backwards compatible with the current DVD-R standard.


Regardless of whether it's Blu-ray or the current DVD-R format, Anderson said both make an attractive alternative for archival storage, especially when combined with some of today's inexpensive hard drive technology. "DVD-R is essentially consumer electronic technology," he told *DIR*. "As a result it's produced in a high volume and offered at a low price. But you also get the technological inefficiencies that come along with consumer components. These include slower writing speeds, single-session writing, and issues regarding drive durability. By leveraging techniques like hard drive caching and drive hot swapping, you can mask some of those inefficiencies."

For comparison's sake, we found online listings for

4.7 GB DVD-R drives and media for approximately \$400 and \$3.50, respectively. Latest generation MO drives and disks list for around \$1,700 and \$75, respectively. Anderson predicts this price discrepancy will only increase as DVD becomes more widely adopted by consumers.

"The performance of MO [and theoretically UDO] will always make sense in certain transaction-driven environments," said Anderson. "Typically though, that is only going to be 10% of the archival market. If a user is looking to create an electronic library of infrequently accessed files with traceable records, DVD is a good investment. The performance is lower than MO, but the data stability is still very high, and it's much more affordable than MO."

With respect to concerns about the reliability of DVD-R, such as those expressed by Pegasus Disk Technologies in an article we ran last issue, Anderson stated, "I am very comfortable advising people to use DVD-R for their mass storage needs." [Editor's note: To read a white paper by Pegasus Director of Market Development Jim Wheeler on why his company endorses DVD-RAM over DVD-R for archiving, visit [www.pegasus-ofs.com](http://www.pegasus-ofs.com).]

For more information: Mark Anderson, **TechSource Group**, PH (651) 439-6202, FX (651) 439-5946. 

#### **CORRECTION:**

Last issue we incorrectly printed the year in which **Pegasus Disk Technologies** was founded. Pegasus was founded in 1988 and has been in the WORM storage industry a long time.

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