

Document Imaging Report

Business Trends on Converting Paper Processes to Electronic Format

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Distributed Capture Drives Next-Generation Imaging Processes

Emerging paradigm offers reduced costs, faster turnaround time, and greater security when capturing documents from remote and branch locations.

DIR SPECIAL REPORT

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EXECUTIVE OVERVIEW

Distributed capture drives paper transactions closer to the speed of e-commerce.

During the start of the new millennium, when the Internet was initially being widely adopted for business, there was a belief that the proliferation of e-commerce would rapidly eliminate the use of paper in business transactions. Yes, the transition from paper to e-commerce was all the rage. However, like many things associated with the early Internet boom, those presumptions proved to be untrue.

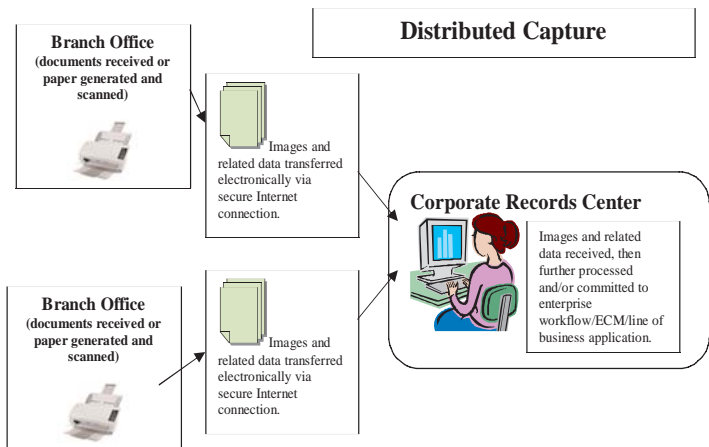
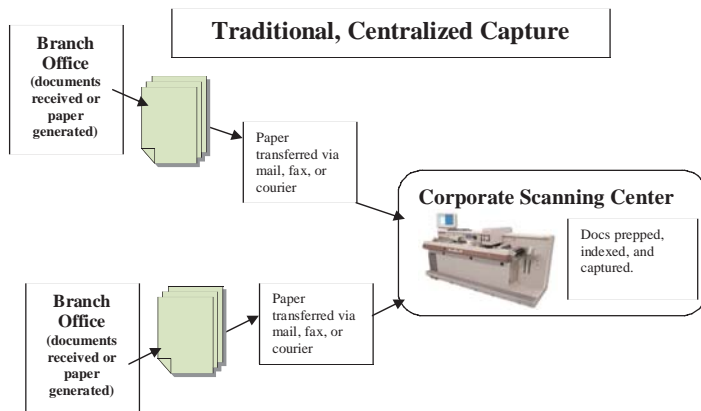
This is not because e-commerce is a bad idea. After all, what's not to like about being able to conduct transactions more efficiently, and with more auditability and traceability, than with paper? No, the main hindrance to adoption of e-commerce seems to be that old habits, and systems for conducting business, die slowly. In recent years, there has been a realization that the paperless office is a myth. According to the research firm InfoTrends, on average, each man, woman, and child in the United States will use more than 4,500 pieces of paper in the year 2008. In light of this, there has also been a realization that the best way to deal with paper is the adoption of a document imaging strategy.

Document imaging involves the conversion of paper to an electronic format such as a TIFF, JPEG or PDF file. Technology like automated workflows and character recognition (OCR/ICR) can be applied to electronic images to speed along their processing. One key advantage to document imaging is that it can upgrade the efficiency of paper-based transactions closer to the levels of e-commerce transactions.

Traditionally, scanning has served as a bottleneck in the document imaging process. This is especially true in large organizations with multiple branches. That's because scanning has been done at a single location

where documents have had to be shipped from branches before they can be scanned.

While this single location or centralized scanning approach offers the management advantages of consolidating document capture at single site, in many cases, it can also create inefficiencies. For example, paper mortgage loan applications, which are created at branch offices, need to be shipped to the centralized site before they can be scanned and subsequently processed through an electronic workflow. This can delay a loan approval process, and if, to speed things up, the document shipping is done through courier services, it can also get expensive. (Around 2002, during the height of the mortgage boom, one FL-based broker estimated it was spending more than a half-million dollars per year on courier costs related to centralized scanning.) Further, documents can be lost in transit, which can lead to more delays and lost business.



DISTRIBUTED DOCUMENT CAPTURE: CHANGING THE RULES OF THE GAME

In recent years a new capture paradigm has emerged that eliminates many drawbacks of centralized document scanning. Distributed capture, which involves scanning documents at branch sites and then electronically sending them to a centralized location for processing and archiving, is now a viable alternative to centralized capture. Recent

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developments, such as increased adoption of Internet broadband, falling prices for higher quality document scanners, and the introduction of scanning on digital copiers or MFPs (multi-function peripherals), have all come together to help distributed scanning evolve from a compelling concept to a realistic option for businesses with multiple sites.

Early distributed capture applications relied on traditional client/server technology with documents scanned on the client side and then sent through a dedicated FTP (file transfer protocol) connection to a centralized server. This type of setup can be both

expensive and cumbersome to manage. In today's market, the emergence of web-based capture applications is further contributing to the increasing adoption of distributed scanning.

ORACLE DISTRIBUTED DOCUMENT CAPTURE: A PROVEN LEADER

Oracle, with its acquisition of Captovation, a recognized market leader for distributed capture solutions, is firmly positioned to participate in and lead the transformation of the document capture landscape from centralized to distributed environments. Today, many industry leading

DEFINING DOCUMENT CAPTURE

Document capture is a subset of a document imaging or ECM (enterprise content management) system. Capture can be divided into two processes:

1. Scanning a paper document
2. Extracting data from the scanned image

The scanning process can also be divided into two sub-processes. These are document prep and image processing. The data extraction process can be manual, semi-automated or fully automated. Let's take a brief look at the steps in a document capture process.

Document prep: getting ready to scan

Preparation can involve removing paper documents from their envelopes, unfolding them, removing staples, repairing tears, orienting pages directionally, separating document types or classes, and inserting separator sheets. The time and effort associated with document prep should not be underestimated. In 2003, as part of a study that involved visiting more than 60 document capture sites, a scanner manufacturer estimated that document prep accounts for 38% of the labor costs related to a document capture operation.

In recent years, there have been developments in image processing technology that are designed to help reduce document prep. Image

processing involves steps like deskewing (auto-straightening), despeckling, and auto-cropping an image created from a scan. Technology like grayscale thresholding and compression can also be applied to improve the quality and usability of an image. In addition, image processing steps like blank-page removal, auto-color detection, auto-rotation, auto-orientation based on the direction of text and even auto-document classification based on keywords and page layout, can be introduced. Many of these additional steps can be utilized to reduce document prep steps like manually sorting, orienting, and separating pages.

Options for data extraction

Data extraction involves the entry of information from a scanned document into a line-of-business or ECM system. Document data is typically extracted for two purposes. One is to create meta data, which enables a user to search for and retrieve a document image. The second is to populate a data-driven application with information from the document. Capturing invoice data for an ERP system is an example of this.

Data extraction can be done manually through key entry, or it can be assisted and/or automated through techniques like automated database lookups, bar code reading, and automated document and character recognition technologies like OCR/ICR (optical character recognition/intelligent character recognition) and IDR (intelligent document

recognition).

OCR/ICR basically uses pattern recognition to match shapes on a scanned image with a library of images that it recognizes as alpha-numeric characters. In other words, an OCR/ICR application can be used to automatically convert printed words on a scanned page to ASCII or XML data that can be utilized by a line-of-business or ECM application. OCR/ICR can be applied to all the words or characters on a page (a process known as full-text OCR), or to certain pre-defined zones or areas (zonal OCR). The advantage of zonal OCR is that it enables users to select certain areas on a form where they know a specific piece of data always occurs and assign a tag to it. For example, a health insurance organization knows that a claimant's name always appears in the same spot in the upper left-hand corner of a HCFA form, so it can program its OCR/ICR software to automatically tag the data found there as "claimant," which is a recognized data field within its claims adjudication software.

IDR is often referred to as the next-generation of OCR/ICR. While zonal OCR works great on forms like HCFAs that have a consistent structure, IDR is designed for forms like invoices that vary depending on the business and application that is used to create them. IDR technology is designed with contextual understanding that can also be applied in some cases to completely unstructured documents such as customer correspondence.

organizations are using Oracle Distributed Document Capture (formerly Captovation Web Capture) to facilitate desktop scanning and indexing from remote locations. These customers range across industries, including healthcare, financial services, automotive sales, manufacturing, and education.

Oracle customers have gained many documented benefits from their distributed capture implementations, including:

- Reduction in courier and delivery costs to get documents from branch to central locations
- More immediate availability of files and forms across the enterprise, as documents received at branch or remote sites can be scanned on-site and then uploaded to corporate servers for archiving within an ECM system such as Oracle Imaging and Process Management (I/PM) or Oracle Universal Content Management (UCM)
- Reduced cycle time of transactional documents, such as invoices, that are received at branch locations
- Reduced storage costs, as, after documents are scanned and uploaded to an ECM system, they no longer need to be stored locally for reference

- Improved document image quality due to the elimination of fax transactions
- Improved document indexing consistency due to centralized Oracle Distributed Document Capture controls
- Improved compliance with regulations such as Sarbanes-Oxley, as all documents related to financial transactions received at remote sites can be captured and stored as fully auditable electronic records.

DISTRIBUTED CAPTURE ADDRESSES PROCESSES THAT SPAN VERTICAL MARKETS

The benefits of distributed capture can be realized across vertical markets, in a variety of business processes. Distributed capture is being deployed successfully in markets such as banking/finance, insurance, healthcare, manufacturing, transportation, government, education and retail. Popular processes being automated include accounts payable, records management, product/project management, shipping and receiving, employee onboarding, order processing, and case management.

DISTRIBUTED CAPTURE ROI

In July 2007 the ECM trade organization AIIM (www.aiim.org) conducted a survey of 456 organizations regarding their use of distributed capture. A variety of vertical markets were represented, including state and local government, banking and finance, insurance, and manufacturing. Fifty-one percent of the organizations surveyed had more than 1,000 employees.

The results were published in the fall of 2007 and entitled Distributed Capture: Moving Capture Closer to Document Creation. According to the study, when asked to name the top two benefits, or potential benefits of distributed capture, the following responses were received:

Improved efficiency (get access to information immediately; eliminate "mail float")	59%
Automate processes (improve processes by eliminating paper at point of origin)	45%
Information security (document is captured at its origin and securely stored electronically)	27%
Eliminate or reduce shipping costs (no longer need to ship documents back and forth between offices)	20%
Risk management (transform paper information to electronic information that can be managed through disaster recovery procedures)	16%
Scan in one location and index in another (optimize labor cost differentials across regions)	15%
Reduce software implementation and administrative costs (a distributed solution eliminates the need for "fat client" installation and maintenance)	9%
Reduce equipment costs (less reliance on high-end production scanners in every location)	9%

Following is a look at how distributed capture has been deployed to automate four specific business processes:

Accounts payable

Organizations in areas like retail, food service, manufacturing, government, and healthcare often have multiple branches that receive invoices for goods and services they use. These invoices typically have to be approved and paid by a corporate accounting department, which means the invoice documents need to be transported from the branches to the corporate offices for processing. Distributed capture has proven an effective means for accomplishing this transfer.

Centralized capture of invoices has long been a popular document imaging application, as it can be used to improve both workflow and data capture associated with accounts payable. Distributed capture can further improve the efficiencies gained through imaging invoices. In addition to standard distributed capture benefits like reduced document shipping costs and improved auditability, distributed invoice capture has the benefit of reducing the turnaround time associated with processing an invoice. This can lead to increased

vendor discounts for early pay and reduced penalties for late pay. It can also open up a larger window of time to negotiate a disputed invoice.

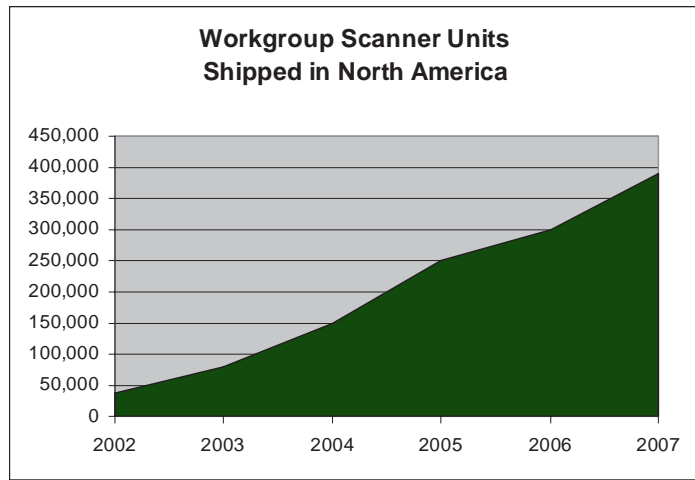
Personnel records management

This application can also be applied across industries. It not only pertains to human resources records that every organization needs to manage, it can pertain to industry specific records like healthcare forms and student transcripts. Oracle Distributed Document Capture customer Embry-Riddle Aeronautical University, for example, has plans to install distributed capture at 130 sites around the world to reduce the amount of time it takes to process and approve student applications (see case study on pg. 9). Another customer in the healthcare industry has installed distributed capture at its registration stations to reduce bottlenecks that were being created by having to scan several thousand patient records daily at a centralized location.

Customer Service

Distributed capture can be applied to improve customer service processes in several areas. The most basic is account management. If a customer comes into a branch office to apply for a new service, such as a loan or an insurance policy, distributed capture can be used to reduce the turnaround time needed to approve the application. Distributed capture enables branch offices to capture items like signatures, forms, and collateral documentation and electronically forward them for processing at a corporate office.

In addition, when a customer requires service on an existing account, such as a claim on an insurance policy, distributed capture can be used by agents in the field to speed up the process. Items such as claims forms, accident photographs, and police reports can all be captured at remote sites and sent electronically to a corporate adjuster. This can accelerate the claims cycle and improve customer satisfaction.



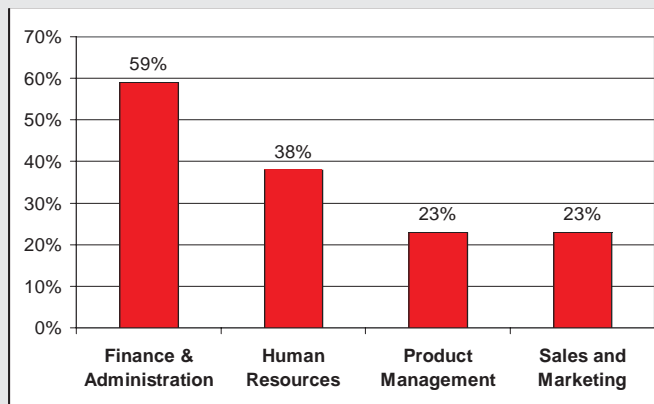
This chart shows the growing number sub-\$2,000, sub 20 ppm scanners that were sold in North America from the 6-year period 2002 through 2007. While sales of workgroup scanners popular in distributed capture applications have increased 10-fold in that time period, sales of production scanners typically used in centralized capture, have remained flat at around 30,000 devices per year. (Sources: 2002-2005 numbers from InfoTrends; 2006-2007 numbers from Moyse Technology Consulting.)

Product Management/Shipping & Receiving

Product management often requires input from several manufacturing, design, and research sites. Distributed capture can be used to complement electronic collaboration on projects, reduce approval times, and improve tracking and records management of vital product documentation.

Shipping and receiving is one of the product management areas being addressed by distributed document capture systems. Shipping and receiving can involve large quantities of paperwork received and generated at remote sites. This includes bills of lading, proof-of-delivery, and customs forms that need to be reconciled with centralized ERP and/or accounting systems. Being able to capture these documents remotely through a Web interface,

WHERE'S DISTRIBUTED CAPTURE BEING USED?



From the study Distributed Capture: Moving Capture Closer to Document Creation, published by the ECM trade organization AIIM (www.aiim.org) in the fall of 2007 [for more details see table on page 4]: Of 456 organizations surveyed, 249, or 55%, indicated they were using distributed scanning and capture in some form within their organization. The graph shows the top four processes in which distributed scanning and capture was being utilized and the percentage of organizations that said they were using it in each area.

instead of having to send them physically to central processing locations, reduces the time it takes to reconcile them. For shipping companies, remote capture can help reduce the billing cycle and improve customer service by ensuring that documents are available more immediately for reference during customer inquiries.

SOME ESSENTIALS FOR A STRONG DISTRIBUTED CAPTURE SYSTEM

Web-based interface and TWAIN drivers create direct avenue for scanning.

Distributed capture software that is web-based typically involves a user logging into an http:// address and being able to capture documents from his workstation. Web-based capture is typically deployed as a thin-client application. It usually includes some sort of ActiveX download, although with Java-based, zero-footprint document image viewing clients now becoming more common, it's likely that similarly structured document capture applications are on the way.

A web-based capture application can be set up to

receive images from a scanner in a few different ways. The most direct method is by utilizing a TWAIN interface. TWAIN is a driver, or piece of controlling software, that comes packaged with most scanners and MFPs. A typical TWAIN configuration enables users to control several scanning parameters, including whether a user wants a simplex or duplex scan, the resolution of the image, and whether it should be saved as color or black-and-white.

By connecting to a scanner through the TWAIN interface, the web-based capture application assumes control of these parameters. Because web-based capture applications are controlled centrally on the server, a TWAIN interface essentially provides distributed capture users with centralized control of their scanners, including the ability to lock-down the scanner settings to provide optimal document images. (For example, if a distributed site is capturing only invoices, a centralized administrator could lock-down a scanner to capture everything at 300 dpi in black-and-white to optimize downstream OCR results. If a different site is capturing primarily correspondence that includes graphics, its scanner could be pre-set to produce 150 dpi color images.)

CASE STUDY: ORACLE DISTRIBUTED DOCUMENT CAPTURE: A PROVEN WINNER

WEATHERFORD INTERNATIONAL - STREAMLINING ACCOUNTS PAYABLE WITH ORACLE DISTRIBUTED DOCUMENT CAPTURE

Weatherford International, a leading manufacturer of oilfield service equipment, is an example of a customer that has received many of the benefits that we've mentioned from its Oracle Distributed Document Capture implementation. Weatherford operates in more than 100 countries with 87 manufacturing facilities supporting 730 service bases. Weatherford implemented Oracle Distributed Document Capture primarily to solve its invoice processing problems.

Weatherford receives supplier invoices at its various locations around the world. Data from these invoices needs to be entered into the company's ERP system. Previous to installing Oracle Distributed Document Capture, the invoices were being forwarded through inter-company mail channels to regional offices for data entry. This mailing typically took a number of days, which delayed the invoice processing.

If there happened to be a problem with an invoice, the delay was compounded because the invoice had to be sent back to the location where it was originally received. This much physical movement of paper was also leading to lost and misplaced invoices.

Weatherford purchased 150 seats of Oracle Distributed Document Capture that it rolled out at the same time it implemented its new JD Edwards ERP system. Remote users now scan and index the invoices and related documentation, leveraging database lookups against the JD Edwards system to streamline data entry. For example, if a user keys in an "order number" field, Oracle Distributed Document Capture will automatically query the ERP system for data related to that particular order number. This might include the customer name, the date a related P.O. was issued, etc. This information is then presented to the user for approval.

Once the images and indexing information are captured, the Oracle Distributed Document Capture server submits them to Weatherford's Oracle Imaging and Process Management system.

Weatherford lists multiple benefits from its distributed capture implementation. These include

- improved information sharing across the organization
- complete control over the indexing information being entered into the ECM system
- significant improvements in the time it takes to process invoices
- reduced storage costs related to no longer keeping paper invoices and related documentation at remote sites for reference (it's now available through the ECM system)
- improved compliance with Sarbanes Oxley because of the creation of a transparent and auditable system for storing customer invoices and back-up documentation.

Centralized control eases system administration

Maintaining centralized control is a key attribute of a distributed capture application. One complaint about early distributed applications was that they had to be managed like several small centralized applications. Whenever a distributed site was having problems, or the application had to be upgraded, each site had to be addressed individually.

With a web-based application, upgrades and updates should be automatically downloaded when a user logs-on. Also, diagnostic controls should enable Internet-based trouble-shooting, as well as centralized monitoring of activity at distributed sites. This helps with audits. For example, if 10 pages of a loan form were scanned at a distributed site, but

only nine are showing up in the workflow queue at the central processing site, the distributed capture application should alert the user, so they can reconcile the discrepancy before a serious processing error occurs.

Flexible indexing addresses application-specific data extraction requirements

Once a document is scanned, the second part of the document capture process, data entry, begins. Data is captured from scanned images for two primary reasons. One is to populate data-based systems, such as ERP or accounting systems with information that is important to doing business. After an invoice is scanned, for example, the accounting department needs the information from it so that it can pay its bills.

EASE-OF-USE, BREADTH OF SPEEDS, KEYS WHEN SELECTING SCANNERS

by Pamela Doyle, Director, Imaging Products Group Spokesperson
Fujitsu Computer Products of America, Inc.

Distributed scanning is typically associated with lower volume scanners, such as workgroup, or sub-\$2,000 models. However, the fact is that once users get a taste of document imaging, often their appetite will grow and the volume of documents being captured will increase. This will lead to hardware upgrades, and many distributed scanning applications utilize production scanners that capture documents at speeds greater than 100 pages per minute (ppm).

No matter what type of scanner is being used in a distributed application, ease of use is a key element. As scanning moves away from centralized sites and toward distributed locations, it is often knowledge workers who are doing the scanning, in contrast to the dedicated scanning operators utilized in most centralized applications. Because these knowledge workers have full-time jobs in addition to scanning (for which they typically received a higher salary than dedicated scanning operators), it is important that the distributed scanning processes be made as unobtrusive as possible. One way of accomplishing this is through automated image processing technology such as Kofax's Virtual ReScan Software (VRS).

VRS offers automated features like grayscale thresholding to create higher quality bi-tonal images, cropping and deskew, color detection, blank-page deletion, and rotation based on textual orientation. All these features can run behind the scenes without the user even realizing it. They help ensure that quality images are captured at distributed sites and reduce the number of pages that need to be rescanned—always a challenge in a distributed environment.

In addition to image processing, a quality paper feeder that can handle documents of various sizes and thicknesses, without being adjusted, is an advantage in a distributed environment. A feeder that minimizes the number of jams that need to be cleared contributes to ease-of-use.

Fujitsu Computer Products of America, Inc., (FPCA) is a leading vendor of scanners for distributed capture, due both to the breadth of its product line as well as the features on its scanners. Fujitsu offers everything from desktop (the sub-\$500 ScanSnap) models to high-volume production (the 120 ppm fi-5900C). Every model from the workgroup (the 40 ppm fi-6130) on up includes Kofax VRS and the Fujitsu ADF (automatic document feeding) technology, including ultrasonic double-feed detection.

For information on FPCA scanners go to: <http://us.fujitsu.com/scanners>



Pamela Doyle is responsible for forming and driving key imaging industry relationships as the worldwide spokesperson for Fujitsu. In her capacity as Fujitsu's industry luminary, she frequently shares her imaging experience at numerous events, including global conferences such as AIIM, JIIMA, and ARMA. In dedicating a major portion of her career to the enterprise content management (ECM) industry, Doyle has distinguished herself with a forthright style, a compelling market vision and a solid technical background.

She currently serves as chairperson for the TWAIN Working Group and was recently elected to the Board of Directors for the AIIM International. Most recently, AIIM awarded Doyle with its "Education Award" and CompTIA awarded her with its "Volunteer of the Year Award". Both awards recognize Doyle's vision and commitment to the advancement of the ECM industry.

The second purpose for capturing data from images is that it provides indexing information so the images can be retrieved for reference. For example, when vendor ABC calls a customer with a question about an invoice they sent out on August 10, "ABC" and "8/10" should be able to be used as search criteria to locate the corresponding invoice image.

In a distributed capture application, data entry can be performed either locally (at the distributed site) or centrally. One advantage of local data entry is that it enables the branch office to keep its own indexed image and/or capture data for its own line-of-business application. However, as many organizations want to avoid duplicate data and documents, this advantage is often nullified.

The other advantage of local data entry is that it puts information capture into the hands of people who are closer to the creation of the documents. For example, the most qualified person to index a loan application is most likely the officer who helped the customer complete it.

Conversely, it can be argued that having a dedicated data entry operator at a central site is a more efficient way of doing data entry. Because it is her focus, the dedicated operator will be able to develop a proficiency in data entry, which can speed up the process. A data entry operator is also likely to earn a smaller salary than a knowledge worker, such as a loan officer. So it can be argued that it is more economical to utilize centralized data entry.

The bottom line is there are valid arguments for both centralized and local data entry. It's important to keep in mind that data entry can be assisted with technologies such as OCR/ICR, bar code recognition, and automated database look-ups. These options, which in a strong web-based capture system can be deployed either locally or centrally, help make data entry both faster and more efficient.

CONCLUSION: POTENTIAL READY TO BE TAPPED

Distributed capture is gradually moving from the early adopter to the mainstream adoption stage in its lifecycle. A number of factors have come together to facilitate this evolution. These include improved hardware, software, high-speed data connections, and a desire of businesses to have their paper transactions behave more like e-commerce transactions, in areas of both speed and security.

Market research indicates that organizations in multiple vertical markets are implementing, (or considering implementing) distributed capture to augment and displace centralized capture operations. Common areas of business being

addressed with distributed capture include accounts payable, records management, customer service, and product management/shipping & receiving. The benefits of distributed capture can be realized by both large and mid-sized businesses—any organization that creates and/or receives paper at multiple sites is a candidate.

We've detailed several benefits and cost justifications being reported by distributed capture users. These can be summed up as covering three major areas:

- Reduced transaction processing time
- Reduced costs related to document shipping
- Greater security and control over documents that originate at branch sites (this includes reducing the risk of losing paper documents in transit).

These benefits can be most readily realized through installation of distributed capture hardware and software that has the following characteristics:

- An easy-to-use interface designed for operation by knowledge workers or personnel who are not dedicated scanning/data entry operators.
- Ease of administration through centralized control of distributed sites
- Flexible indexing and data entry options to ensure maximum productivity and accuracy.

The emerging distributed capture paradigm is creating many new opportunities for organizations to take better advantage of document imaging technology. There are cases where a centralized scanning application was not even considered a viable option because of logistics associated with collecting paper documents from distributed sites.

One example of this is the international humanitarian organization World Vision, which had concerns about the reliability of the physical mail service in many developing countries in which it operates. World Vision is now installing a distributed capture application covering some 1,250 remote locations. Other organizations, like Embry-Riddle (whose story is detailed on page 9), are leveraging distributed capture to significantly improve what had previously been strictly centralized capture implementations.

The bottom line is that the potential of distributed capture is enormous. Organizations are only beginning to realize how to take advantage of the significant workflow improvements that distributed capture can bring about. Improved efficiency and security, as well as reduced costs, are all results of document process re-engineering that can be facilitated by distributed capture technology. If these sound like goals your organization would like to achieve, Oracle Distributed Document Capture may be able to help you reach them.

CASE STUDY: ORACLE DISTRIBUTED DOCUMENT CAPTURE: A PROVEN WINNER

ORACLE DISTRIBUTED DOCUMENT CAPTURE HELPS EMBRY-RIDDLE ONBOARD STUDENT RECORDS FROM 130 SITES WORLDWIDE

Embry-Riddle Aeronautical University has purchased Oracle Distributed Document Capture to facilitate the capture of student records at its 130 education centers around the world. Because of its international presence, primarily on military bases, Embry-Riddle faced challenges in transporting paper records from its remote locations to its main campus in Daytona Beach, FL.

"The biggest benefit of the distributed capture system is that it is going to speed up our application process and get students admitted into the school as fast as possible," said Keith Mattingly, systems analyst at Embry-Riddle. "The majority of our students are involved in some sort of continuing education program, so there are all sorts of student records that typically go along with an application.

"Under our centralized scanning paradigm, all of the paper records needed to be packaged up and sent to Daytona Beach. If we were expecting paperwork from Europe, it might take a week to get there, not to mention the expense associated with international postage."

Embry-Riddle is integrating Oracle Distributed Document Capture, along with Oracle's Commit Server and Import Server, for capturing scanned images, e-mail messages, and faxed copies of student records into its Oracle I/PM workflow system. To enable a distributed scanning process, all that is needed at each remote site is a scanner with a TWAIN driver. "Depending on the TWAIN driver, most of the scanner settings can be controlled from a central location. We are using an interactive on-line training tool to help users get up to speed and make any necessary scanner adjustments," said Mattingly. "In most cases, they should be able to load the paper and just hit the scan button in the Oracle Distributed Document Capture interface."

Embry-Riddle is doing a combination of remote and centralized data entry. "After documents are scanned, the operators go through a review process, in which they can rotate documents and zoom in and zoom out on the images to make sure they can read what needs to be read," said Mattingly. "After the operators decide they have acceptable images, they index the documents by entering a student ID number. This triggers a database query of our server-based student record system."

The query results are displayed on a grid screen within Oracle Distributed Document Capture, which shows information such as the student's name, major, and year. "As long as there's already a record for that student in our system, the operator just needs to approve the data and an XML index will be automatically created for the image," said Mattingly. "If it's a new student, the operator has to manually create a record."

Mattingly stressed that a simple indexing interface was a key element in the selection of Oracle Distributed Document Capture. "A lot of employees at the remote sites are spouses of military personnel," he said. "Because military personnel are frequently reassigned, we end up with a high turnover rate. So, it is very important to make the indexing process as simple as possible and able to be used with a minimal amount of training."

Additional indexing is done at the Daytona Beach campus where the school's records department is headquartered. "Ultimately, the records department is responsible for the authenticity and quality of the records," said Mattingly. "They add values like the document type, date, and the scan-date."

Oracle Distributed Document Capture releases documents to the Oracle Commit Server, which then handles their ingestion into the Oracle I/PM workflow system. "Based on the student ID, I/PM can pick up additional information related to the record," said Mattingly. "It pulls in information such as what program a student is in, if there is a hold on their records, if it's an international student, etc. Based on this information, I/PM routes the record to the appropriate person for processing."

Mattingly concluded that in addition to being easy to use once it's installed, the set-up of Oracle Distributed Document Capture is also relatively simple. "There is a Web-based Java applet for setting up the scan profile that the end users utilize for scanning into a file cabinet," he said. "This is very easy to use with drop downs, check boxes, etc."