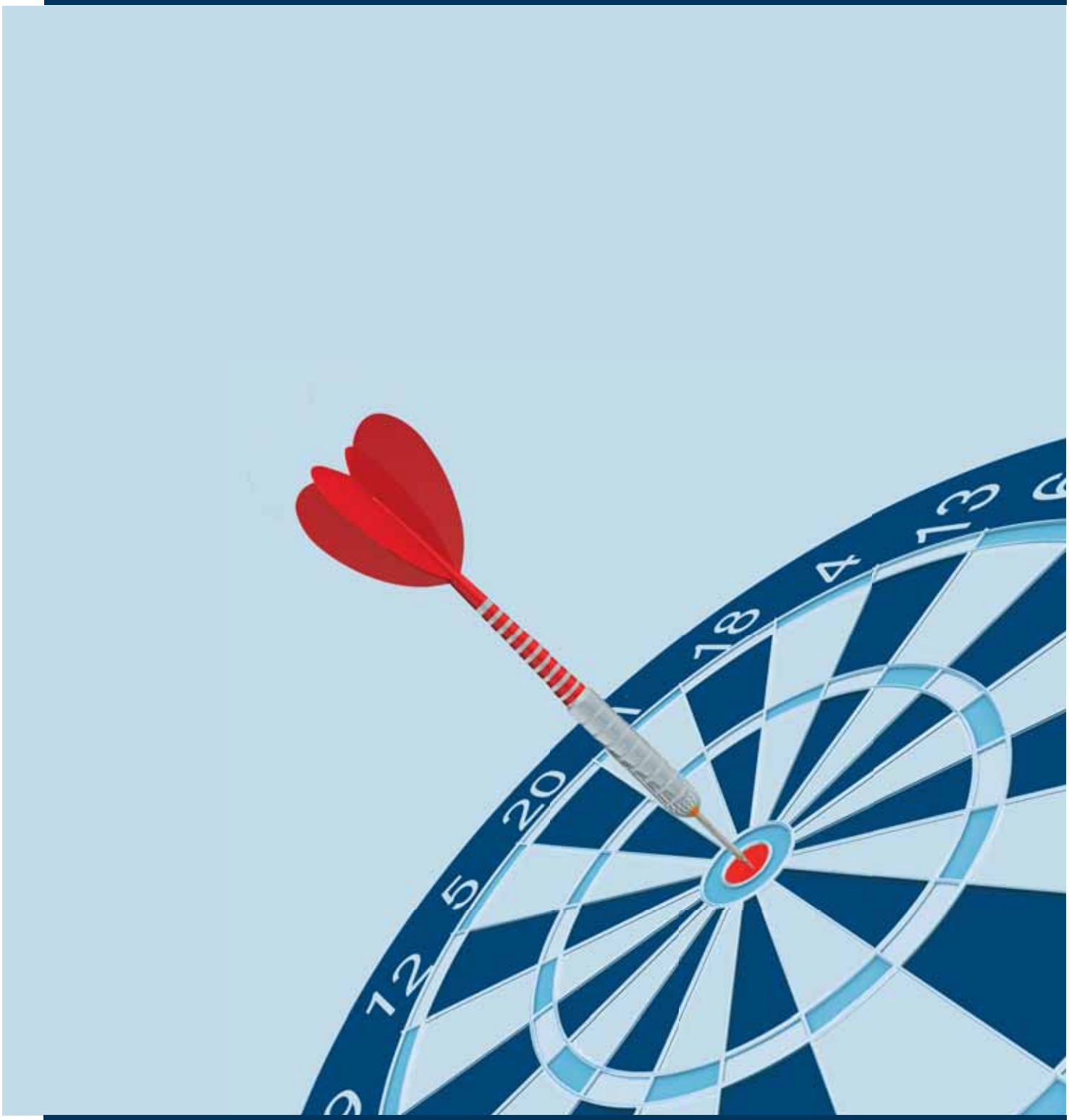
Document Management Overview



A guide to the benefits, technology and implementation essentials of digital document management solutions

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Laserfiche®

Document Management Overview

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Foreword

Welcome to the revised edition of *Document Management Overview.*

With rapidly-changing technology and an increasing emphasis on managing information properly, clients are looking for experts to help them address business-critical issues. Organizations have unique needs that are not often met by consumer products; for example, the search and retrieval functions of common consumer products are not appropriate for organizational purposes. And while you may know that you need assistance figuring out how to help your organization improve efficiency, profitability and productivity, you may not know where to begin.

Here at Laserfiche®, we have a commitment to keep moving forward. As a part of this commitment, we actively support business education initiatives to increase knowledge about digital document management. From Webinars to white papers, the Laserfiche Institute™ is committed to providing industry-leading educational resources to help businesses worldwide increase efficiency and productivity.

You shouldn't have to change the way you work to improve the efficiency of your work processes. With a quality digital document management solution, you can work the way you always have, just without the clutter and limitations of paper. In fact, according to research conducted by the Gartner Group, **when you implement a digital document management solution, your organization can reduce overall document-related costs by 40%**.

This new edition focuses not just on how digital document management can help you solve the business-critical problems you face on a daily basis, but also on how to evaluate different document management systems, choose the right solution for your unique needs and implement it quickly and easily. With the right solution—one that fits your organization's needs and operating style—you cannot only devote your staff's time to more productive tasks, but also empower them to make better-informed decisions.

We hope that you find this new edition of *Document Management Overview* informative and useful. From all of us at Laserfiche, we wish you the best of luck in your search for a digital document management solution.

The Laserfiche Institute

Introduction

Using Digital Document Management to Increase Efficiency

Streamlining business processes and increasing efficiency are fundamental concerns for any organization, regardless of size or sector. In today's increasingly-strict regulatory environment, compliantly managing documents and records of all types, whether paper, electronic, audio, video or e-mail, takes significant time and money that could better be spent achieving mission-critical objectives.

By implementing document and records management software, business owners can realize many benefits that noticeably improve organizational efficiency. Digital document management systems can help your organization succeed by:

- Saving money.
- Saving time.
- Increasing efficiency.
- Increasing productivity.
- Increasing inter-departmental and inter-organizational communication and collaboration.
- Generating revenue.
- Enabling automation.

While these systems have many benefits, they are complex undertakings that require a significant investment of both capital and staff. Because of the significant investment required, it is crucial that organizations thoughtfully evaluate their current and future needs before deciding on a solution.

The Laserfiche Institute created this guide to help organizations determine their needs and identify the best method of implementing a digital document management system. We are providing this handbook as an educational resource derived from over twenty years of experience helping clients solve their most pressing business problems. It also represents our commitment to educating both organizations and individual users about the technology of digital document management.

This guide is divided into sections exploring the functional areas of digital document management. The introduction briefly outlines the features and benefits of digital document management systems. Section One discusses how digital document management can assist organizations in solving business-critical problems, while Section Two provides an in-depth look at the basics of document management. Section Three will help your organization determine what needs your document management system must fulfill and develop an implementation plan for your new system. Finally, Section Four discusses the discipline of records management and explains how it differs from document management.

The included worksheets will help your organization evaluate document management options, accurately assess your needs and develop an implementation plan. Frequently Asked Questions and a Glossary of document imaging, document management and records management terms are located at the back of the book.

A Brief Guide to the Features and Benefits of Digital Document Management Systems

Digital document management systems are software applications that capture paper documents and a variety of electronic files while providing for the storage, retrieval, security and archiving of these documents. Records management is a separate discipline focused on the life cycle of records; for a full discussion of what records management is and how it differs from document management, please see Section Four, "Records Management Specifics."

The document management process begins with the conversion of paper documents and records to electronic files. Conversion eliminates many of the obstacles created by paper: labor-intensive duplication procedures, slow distribution, misplaced originals and the inconvenience of retrieving files from off-site storage. Because paper files are also costly to process, duplicate, distribute and store, digitizing paper archives ultimately reduces operating expenses and overhead.

All document management systems should have five basic components:

- Capture and import tools to bring documents into the system.
- Methods for storing and archiving documents.
- Indexing and retrieval tools to locate documents.
- Distribution tools for exporting documents from the system.
- Security to protect documents from unauthorized access.

Document management applications enable more efficient distribution of and control over information, files and records throughout your organization. These software programs simplify business procedures, document routing and e-mail notification. Document management systems expedite business processes by allowing instant access to information; greater collaboration within and among departments and offices; enhanced security for files and records; and the application of procedures that facilitate compliance with record-keeping requirements imposed by SEC and FINRA regulations, HIPAA, Sarbanes-Oxley and others.

Document management makes it possible to:

- Manage millions of documents and retrieve the right one in seconds.
- Share documents with colleagues while protecting confidential information.
- E-mail and fax files instantly.
- Access documents while traveling.
- Publish documents to CD, DVD or the Web, as appropriate.
- Back up files and records for disaster recovery.

To implement a successful digital document management system, you must choose the right system for your organization. This guide will enable you to take a consultative approach to choosing an appropriate solution, whether acting with a vendor or outside consultant or on your own. Once you understand your needs, as well as what solutions are available, you will be able to make better-informed decisions about what is appropriate for your organization.

The vendor you choose to facilitate your transition to digital document management will play a major role in the overall success of your investment. Your vendor must make the commitment to learn how your organization currently organizes documents, what type of information you currently file and retrieve, and the specific rules and regulations you must adhere to. The more you know about your specific organizational needs and goals, the more easily you will be able to work with your vendor to develop a solution that will help you succeed.

Section One

Solving Business-Critical Problems with Digital Document Management

Recent estimates show that a typical worker will take 12 minutes to process a single document. Nine of these 12 minutes are spent searching for, retrieving and refiling the document—meaning that only three minutes are spent actually using the information they've found.

The average office:

- Makes 19 copies of each document.
- Spends $20 on labor to file each document.
- Loses 1 out of 20 office documents.
- Spends $120 searching for every misfiled document.
- Spends $250 recreating each lost document.
- Spends $25,000 to fill a four-drawer file cabinet and $2,000 annually to maintain it.

The volume of paper documents that organizations must process has increased tenfold in the last five years. Increases in paper volume drive the cost of paper handling higher, which greatly reduces profit margins.

Digital document management can help you deal with the rapidly-increasing burden of creating and maintaining your organization's paper archives. By reliably managing and protecting the documents that support organizational processes, inform organizational choices and preserve organizational knowledge, document management solutions increase efficiency, support profit-building activities and provide a balance between security and accessibility.

Save Time

A recent PriceWaterhouseCoopers study reports that the average worker spends 40% of their time managing non-essential documents, while **the IDC estimates that employees spend 20% of their day looking for information in hardcopy documents and that, 50% of the time, they can't find what they need.**

With a digital document management solution, instead of searching for information you spend time meeting the needs of your current customers and acquiring new ones. Instead of spending their days searching for information or filing documents, your staff spends their time more productively.

A document management system can help you save time by:

- Answering information requests immediately, eliminating call-backs and phone tag.
- Responding quickly to auditors' requests for information.
- Immediately locating documents and highlighting essential information.
- Eliminating lost documents that must be recreated and refiled.
- Cutting time spent copying and distributing documents to staff, branch offices and outside contacts.
- Speeding document-handling workflow by enabling automation.

By implementing a document management solution, you stop spending your time handling paper and start spending your time doing what you do best—serving your clients.

Client Story: Bloss & Dillard

Reducing processing time for new insurance policy applications by 20 minutes

Thousands of paper policy documents instantly found their way to underwriters' computer screens as Bloss & Dillard, Inc., aggressively implemented a paperless system.

The Huntington, W.V.-based managing general agent (MGA) represents more than 1,500 independent agents throughout four states. Bloss & Dillard handles a wide scope of risks, from simple property to highly-sophisticated excess and umbrella coverage. IT manager Tate Tooley wanted a way to make their 350,000 documents easily accessible.

As each of the 7,000 policies enter the Laserfiche Document Imaging system, Quick Fields™ technology automatically sends the digital documents to the appropriate underwriters. Within hours, the same policies that once required a deep dig through a file cabinet now are a mouse click or two away.

After batch-processing the old documents, Tooley set up Quick Fields to automatically route new policies, e-mail and faxes in the same manner. A paperless mail system soon replaced the mail cart.

"Many of our clients had switched to digital documents and the paperless office in recent years, so we were a little out of date with our paper filing system," Tooley notes. "The key was to mold this new system to our current workflow pattern, with minimum lag time during the integration process."

Quick Fields also reduced labor costs that would have been associated with such an ambitious project. Without Quick Fields, staff would have had to manually find each folder after scanning it into Laserfiche. **Quick Fields saved 20 minutes per policy, which factored out to approximately $23,000 worth of saved labor costs.**

"Laserfiche allows users to build a library of digital documents," says Nien-Ling Wacker, president and CEO of Laserfiche. "Quick Fields automatically writes the library catalog, so critical information can be shared and re-purposed as organizations see fit."

"Many companies want to go paperless, but the biggest challenge is finding a solution that molds well to the current system," says Larry Lambert of nCompass networks, the Laserfiche value-added reseller (VAR) who worked directly with Bloss & Dillard. "Laserfiche could organize the system to mimic what they had been doing for years."

Increase Profitability

While implementing a document management system can result in up-front costs, it does lead to long-term savings. In fact, **a recent IDC study pinpoints the return on investment (ROI) of document management at less than one year, with a five-year ROI of 404%.** Half of the organizations studied had payback within six months. In fact, a quality document management solution can deliver a rapid return on investment without overtaxing IT resources.

Digital document management increases profitability by reducing costs and by increasing revenue. EDI Group, Ltd., estimates that implementing a document management system results in a cost savings of $1-5 per document, while Gartner, Inc., estimates that **a document management system can reduce overall document-related costs by 40%.** There are the benefits of reduced overhead, lower costs for both on-site and off-site storage, reduced costs of regulatory compliance and, often, the elimination of staff positions or reassignment of staff to more strategic positions.

Because a document management system helps you better utilize your time, you generate more revenue. You spend more time meeting with clients and closing deals, offer the value-add of a quicker response time to customer queries and provide quality customer service which ultimately leads to more referrals.

Cut costs and increase revenue by:

- Lowering paper-handling costs.
- Cutting the filing, duplication and retrieval costs of off-site storage.
- Reducing organizational downtime in the case of a natural disaster.
- Simplifying business continuity planning.
- Using space currently needed for paper storage for more productive revenue-generating activities.

Overall, lower costs and increased revenue result in enhanced profitability and greater business value. The cost of implementing a document management solution is ultimately an investment in your future organizational success.

Increased Profitability by Business Size*

Business Size	**$500,000 in annual revenue**	**$1,000,000 in annual revenue**	**$4,000,000 in annual revenue**
Technology Investment	1.4% of revenues ($7,000)	2% of revenues ($20,000)	1% of revenues ($40,000)
Staff Savings	1000 hours (0.4 of a full-time employee)	1500 hours (0.6 of a full-time employee)	6000 hours (2.4 full-time employees)
Overhead Savings	8.6% of revenues ($43,000)	8.9% of revenues ($89,000)	8.6% of revenues ($342,000)
Profit Increase	41.2%	55.9%	40%
Business Value Increase	$216,000	$626,000	$3,421,000

**Based on Laserfiche research. Download the full white paper, "ROI for RIAs," at www.laserfiche.com/ROI.*

Client Story: Iredell Memorial Hospital

Saving $40,000 a month and eliminating 80% of paper, without losing a single record

For Iredell Memorial Hospital, lost records meant enormous losses in revenues. But keeping critical information available to those professionals who need it is also a tremendous challenge at the facility, which delivers outstanding, cutting-edge care. With 135 physicians on staff, several specialized treatment centers and nearly 5,000 emergency room visits per month, Iredell staff found their workflow and productivity hampered by their records system, which involved assembling, distributing, storing and retrieving volumes of paper.

With as many as 300 ER visits on a single weekend night, lost and misplaced records forced the hospital to write off about $40,000 per month, with no way to properly code and bill for the visits. To solve the problem, management looked at a number of products over several months.

"Laserfiche gave us what we needed and it was very user-friendly," says Medical Records Director Marsha Hunter. "And **we could develop the different templates and have a direct interface with the Keane Patient Management System®, which runs our patient accounting system.** We manage patient charts electronically instead of on paper. The interfaces were easily written using the HL7 protocol and we created index fields that allow authorized staff throughout the hospital to quickly search for any records."

The ER staff scans the records into Laserfiche, which reads the bar code and pulls relevant patient information and date of service from the Keane application. Staff no longer needs to manually input the data, so labor time is greatly reduced. Quick access to patient information from anywhere in the hospital is an added benefit.

"At the end of just two weeks we had scanned all the records from the previous month," notes Hunter. "We had a fully functional system and the coders were coding remotely. Getting this kind of technology solution in place normally takes months."

Switching to Laserfiche produced dramatic results in streamlining workflow and hospital processes. Previously, the records system had been 100 percent paper, with the average ER chart composed of about 15 pages. In addition, the ER reception clerk routinely made and distributed four copies, one for hospital billing, one for physician billing, one for the quality department and one for the nursing staff.

Now the ER staff scans in records after the patient leaves, and anyone who needs to can view them—even simultaneously. Today, the hospital uses Laserfiche in its rehabilitation center, cancer center, radiation therapy center, medical records department, quality department and in administration. As Iredell continues to explore electronic document management, Hunter looks forward to using Laserfiche as the cornerstone of an electronic medical records (EMR) system.

"I want to make Laserfiche the document management system for the entire hospital," she says.

Increase Productivity and Efficiency

Put the right tools—and the right information—in the hands of the right people. From an intelligent document search that helps customer service answer questions more quickly to workflow automation that maintains the pace of business processes and alerts managers to employee action and inaction, a document management system can help your organization increase productivity and efficiency.

Reduce misfiling, document retrieval time and photocopying costs with a single system that manages paper and electronic documents, physical records, multimedia files and e-mail. Using one platform to manage all your organizational information allows you to apply organizational records policies and procedures consistently, regardless of document format.

Laserfiche estimates a **20% time savings** based on filing and retrieval efficiencies, eliminating misfiling and workflow efficiencies. Increased efficiency, as well as greater staff productivity, can save up to 6,000 hours annually, or **2.4 full-time staff positions**.

Document management can help your organization increase productivity and efficiency with:

- Intelligent search methods that support searching with whatever criteria you have available.
- Streamlined document distribution and improved accountability with automated workflow routing and notification.
- Reduced labor and clerical mistakes with automated OCR and indexing.
- Management of your entire organizational archives from your desktop computer.
- Fast document distribution with Web and CD publishing.

Digital document management provides your staff with immediate access to the information that allows them to make better decisions about issues that impact your organization's bottom line. With digital document management, your employees will be able to support their work processes, work more efficiently, collaborate more effectively and make better-informed choices—dramatically increasing productivity while accelerating the pace of business and your clients satisfied.

Staff Efficiency as a Percentage of Revenues*

Business Size	**$500,000 in Annual Revenue**	**$1,000,000 in Annual Revenue**	**$4,000,000 in Annual Revenue**
Back-office staff costs as a percentage of annual revenue	24% ($120,000)	27% ($270,000)	23% ($920,000)
Efficiency Savings (annual)	4.8% ($24,000)	5.4% ($54,000)	4.6% ($184,000)

**Based on Laserfiche research. Download the full white paper, "ROI for RIAs," at www.laserfiche.com/ROI.*

Client Story:
The Compensation Advisory Organization of Michigan

Saving money, time and space,
all while dramatically increasing productivity

Imagine doing more work in 20 percent less space while requiring fewer personnel hours. And imagine doing that while not simply maintaining current levels of customer service, but actually enhancing client relations.

The Compensation Advisory Organization of Michigan (CAOM) achieved that when it used Laserfiche to convert its paper files into digital images. And, says Senior Vice President Jon Heikkinen, "We can't say how much we're pleased with it. It's just been excellent, in our opinion."

CAOM is a nonprofit service agency supported by the 200 insurance companies that supply a quarter-million Michigan employers with workers' compensation insurance. The organization receives and files copies of each company's workers' comp policy and distributes them to the state Labor and Insurance Departments. Finally, it creates an annual report of the entire insurance program. All these functions add up to quite a big job for a staff of 45 people, working in one vast office nearly a quarter-acre in size.

"We had massive numbers of paper files. Some of those files were 40 years old and still active. Anybody could request them, and we'd have to come up with them," Heikkinen adds. "When a file went missing, staff would have to go on a search for it. They could easily spend half an afternoon looking for a single file, which was usually sitting on someone's desk. That doesn't happen any more, because with Laserfiche, we were able to reorganize our office. **We got rid of 250,000 paper files by scanning them into the Laserfiche repository."**

Eliminating the paper files saved CAOM about 2,000 square feet of expensive storage space, Heikkinen notes. With the added space, the organization reorganized its collection of side-by-side desks into friendly clusters of private cubicles. Now, when staff members need a file, they can call it up instantly, without leaving their desks. Moreover, multiple staff members can now access the same document simultaneously.

The system was implemented by Terry Warns & Associates, a Laserfiche reseller serving the Detroit area. Heikkinen notes that Warns provided him with valuable advice early in the process. "I'd had quotations from other companies in the six-figure range, for software alone," he explains. "I wasn't going to go to my governing committee and say 'Give me a million dollars and I'll make the system work.' I didn't know whether it would work. Then Terry came along and said, 'Why don't we start small, with this system that we can make work, for an initial investment of $50,000, including hardware and software? If you like it, we can expand from there.' So we did that. We made that initial investment of $50,000. And we liked it so much that we made another investment of $50,000 right after it. And we're going to expand even more.

"Frankly, for the money we spent, I think we got a lot."

Increase Communication and Collaboration

As more and more organizations adopt document management systems and replace filing cabinets and microfilm with digitized images, they still face the problem of getting information to users who don't have access to the system.

Document management systems make it easy to share documents electronically with colleagues and clients over a network, whether that is network-attached storage (NAS) or a storage area network system (SAN), on CD or DVD, or securely over the Web. Sharing paper documents usually entails photocopying, and sharing microfilm requires conversion to paper, but with digital documents, you can view the same documents simultaneously.

A quality document management solution should:

- Create CDs with built-in viewers and search capabilities, so documents can be viewed and searched on any PC, regardless of whether document management software is installed.
- Allow you to distribute CDs royalty-free.
- Present a consistent face to customers and the public with a customizable interface that matches your Website.
- Balance access and security, assisting you in retaining strict control over which documents are available to staff and the general public.
- Work with documents on a wide variety of Internet browsers, operating systems and hardware.

Client Story: Halifax/Bank of Scotland

Delivering instant, secure access to 1 million customer records for authorized staff in European branch offices

Bank of Scotland International, which is part of the HBOS Group, shares nearly one million customer documents among remote offices on the Isle of Man and Jersey, separated by more than 500 miles. **With a few keystrokes, 225 employees on the islands can instantly access customer information, eliminating the old system of faxing queries between the islands.**

Customers on six continents rely on the Bank of Scotland International for a wide variety of financial services, including wealth protection, estate planning, international movement of funds and access to wide investment opportunities.

Given the level of customer inquiries received daily and the number of new accounts, the bank needed Laserfiche to help reduce workers' reliance on paper and handle customer service faster and more efficiently.

"As we explored various document imaging systems, we knew our choice had to be cost-effective," says Ranald Caldwell, Bank of Scotland International's Director and Head of Operations. "Laserfiche will reduce our processing costs, improve disaster recovery and clearly enhance customer service. **We forecast a full project payback within two years.**"

Enable Automation

Your staff searches for information, acts on it, moves it and archives it every day. This process, with its manual searching, faxing, photocopying and distribution, is costly and time-consuming. The inefficiencies of this process divert your staff from the crucial business of making productive use of the information.

Document management solutions with an automated workflow component deliver more efficient work processes. **A workflow solution reduces costly paper handling with intelligent document routing and saves time and money by reducing photocopying, hand delivery and repetitive dragging and dropping.** A quality workflow solution doesn't treat your staff as stations along an assembly line, but as responsible workers whose time is better spent on more productive tasks than making copies.

A workflow solution allows your organization to:

- Design rules-based routing systems to streamline document-handling procedures.
- Copy and move documents using routing services and your computer network.
- Automatically notify staff and supervisors when certain events take place.
- Monitor user activity, guaranteeing efficiency and project completion while enabling enhanced staff efficiency reporting.

Workflow solutions give you the power to recapture lost hours, reduce your overhead expenses and increase profitability, all while improving the level of service you provide to your customers.

Client Story: MBC Systems

Streamlining workflow and accelerating billing with electronic document routing

MBC Systems, a medical billing company based in Santa Ana, CA, **uses Laserfiche software and utilities to process 8,000 pages of billing records per day.** Employees electronically route documents between four different departments (Billing, Payment/Processing, Collection and Clerical), tremendously speeding up the billing process and serving clients faster. They use Laserfiche's capture tool, Quick Fields, to ensure accuracy as the Clerical department takes in thousands of bills per day.

The company also utilizes Laserfiche software as a management tool. **With Audit Trail™, managers can run field entry reports describing employee productivity and efficiency. They can also track the number of bills that complete the processing cycle on a daily basis.**

"Creating a digital workflow environment has revolutionized our medical collection efforts by empowering our staff with patient files that have total availability in disparate department desktops simultaneously," says MBC Chief Information Officer Mardi Morillo. **"The ability to send documents electronically allows us to work smarter while still applying healthcare processes and rules."**

Section Two

Document Management Basics

Your organization generates large numbers of paper and electronic documents. As your business grows, so do files, and so does the time and effort required to manage them.

Digital document management revolutionizes the management of information and provides the ability to rapidly find, retrieve and share all the documents in your repository. This section will provide you with more information on what digital document management is and how it works, essential components of an enterprise-level digital document management system and the technical issues you must consider.

About Digital Document Management

The process of digital document management begins with the conversion of paper or other documents into digitized images. These images can be easily organized and quickly retrieved, indexed and archived. When files are scanned or electronically converted, a high-resolution digital copy is stored on a hard drive or optical disc. Templates, or electronic index cards, can associate information, such as author, reference number, date created or key words, with a document. Files can still be viewed, printed, shared and stored. Which documents users can read and what actions they can perform on these documents depend on the level of security that the system administrator has assigned to them.

Digital document management represents a significant advance over storing information on paper. No longer just ink on a page, the document becomes active content after processing by **Optical Character Recognition (OCR)** technology. A document management system should offer effective search tools for document retrieval, including full-text search, template field searches and a visual filing scheme that permits users to browse for documents. The best systems will allow you to find documents using a combination of all three methods.

Document management maximizes the value of paper documents. Files can still be viewed, printed, shared and stored, but have the enormous advantage of having active content. You can easily search files with active content, and you can create workflow rules to automatically route files from one user to another.

Essential Components of a Quality Document Management System

Although all document management systems provide the basics of scanning, retrieval and display, when it comes to implementing a document management solution in the real world, system essentials extend far beyond the basics. Document management systems designed for multiple users, a high volume of documents or multiple office locations must meet more stringent requirements. The features listed below are important to look for when selecting a document management system for your organization.

Usability

One of the most important factors in how successful a document management system will be is how easy it is to use. Usability is critical in encouraging rapid staff acceptance. A system will only be widely used if it is simple to capture documents, organize and find them. The best systems are user-friendly and flexible enough to adapt to the way people already work within an organization, rather than forcing them to change their preferred way of working.

To guarantee that a document management system is readily accepted by users throughout an organization, it is important that the graphic interfaces for common operations, such as search and retrieval, are clear and easy-to-use.

User-friendly interfaces not only assure rapid adoption of the document management system by staff, but they also reduce training expenses associated with implementation.

Client Story: Eaton County, Michigan

Eliminating one hundred years of records with only one day of training

About 21 years after the Eaton County Courthouse was built, it had run out of storage space. The county's Manager of Information Services, Robert Sobie, decided it was the perfect time for the record-keeping revolution he'd been planning.

"Our paper records are the lifeline of what we do," Sobie says. "You cannot process a court case unless you have a case file. You can't construct a building unless you have a building permit. **We need all that information; we just have to store it differently today than we've been doing over the past 100 years.**"

Sobie implemented a Laserfiche system with support for ten users, operating over the county's Novell® network. A temporary employee is scanning in their paper documents. "She knew very little about computers and nothing about document imaging," Sobie says, "but **it took us only a day to teach her what to do. That's how user-friendly Laserfiche is.**"

The first records being scanned into the system are those of the Construction Codes Department—applications and building permits. Next to be scanned in are county court records and sheriff's department records.

Ultimately, the county plans to extend the system to the Registrar of Deeds office. "We've been supplying the title companies with microfilm copies of deeds and mortgages after they're filed," Sobie says. "We won't do that any more. We'll supply them with a week or a month of land-record images on searchable CD. The title companies are very excited about that—but what they're going to like even better is access to the county network. They're going to be able to sit in their offices and see those images on our system as quickly as we scan them in.

"I tell you, we're on the cusp of a records revolution."

Capture

For a document management system to enhance business operations, it must accommodate all the types of documents—paper, electronic, fax, audio and video, to name a few—that are part of an organization's processes and procedures. It should also enable batch processing of documents and forms for organizations that rely on high-volume processing as a part of business operations.

There are three ways to bring files into a digital document management system:

- Scanning or imaging (for paper files).
- Importing (for archiving electronic documents such as Microsoft® Office® files, spreadsheets, faxes, audio and video).
- Conversion (for creating unalterable images of electronic documents).

Scanning a document produces a raster (picture) image that can be stored on a computer. The physical document is scanned and converted into a digital image, which is then stored in the document management system.

Document **importing** is the process of bringing electronic files, such as Microsoft Office documents, graphics, audio clips or video files, into a document management system. Files can be dragged into a document management system and remain in their native formats. These files can then be viewed in their original format by either launching the originating application or by using an embedded file viewer from within the document management system.

Converting documents is the process of transforming electronic files, such as word processor or spreadsheet documents, into permanent, raster-image format for storage within a document management system. Windows® applications, such as Microsoft Word® or Excel® or Autodesk® AutoCAD™, can print existing files into an unalterable image of the document. These images are usually stored as archival-quality TIFF (Tagged Image File Format) files. For documents, the conversion process also pulls a clean stream of text directly from the document, eliminating the need for OCR. This text file can then be used for full-text indexing of the document to assist with later retrieval. Converting electronic documents bypasses scanning, saves paper and printer ink and produces a cleaner image than scanned paper files. The document management system should be integrated with Microsoft Office or other applications to permit users to convert documents with maximum ease. This method of imaging electronic documents is best suited for permanent archives.

Organizations that image a significant number of files a day will quickly realize the importance of batch processing. When large numbers of documents need to be brought into the document management system daily, it is inefficient to process each one individually. A full-featured document management system allows files and records to be brought into the system in one batch to speed processing.

Once all the pages have been captured, the system should let users easily group them into appropriate documents before assigning template fields and moving them to their appropriate folder location. The system should make it possible for pages to be rearranged, removed or added to a document to correct any mistakes that may have occurred in the organization of a file. Similarly, it should be simple to update or add template fields at a later time.

In high-volume scanning operations, automatically separating and indexing documents using **bar codes** saves time and money. Bar codes index documents by extracting fields from an external database, by filling in fields with preassigned values or by associating certain documents with a particular index template. Bar codes can act as markers to indicate the beginning of a new document, automating document separation. While bar codes require some preparation, their benefits can be enormous. For example, if 2,000 voter registrations, 500 inquiries and 2,500 pages of

legislative minutes were to be scanned, with bar code stickers placed on each document, the system would then automatically read the stickers, determine the start of each new document, assign the correct type of index template for each and fill in template information automatically.

Organizations that repeatedly process the same forms may want to use **Zone OCR** to reduce data entry time and demands on system memory. Zone OCR saves time through automated document indexing that reads certain regions (zones) of a document and then places information into the appropriate template fields. The amount of required storage space is also reduced because OCR and indexing are applied only to responses that have been entered.

To minimize errors, the system should allow the user to set a minimum percent accuracy level for OCR. If any portion of the form does not meet this standard, the system should notify the user so that a staff member can read the form and manually enter the correct field information.

For organizations with multiple offices, it is important to ensure that a document management system permit users at both central and branch offices to capture and access documents as necessary. Full-featured systems allow for documents to be scanned into the system and transferred into the database at different times to minimize traffic demands on the network during peak business hours.

Client Story: Sun Health Corporation

Providing better patient care with digital document management technology

Sun Health Corporation installed digital imaging software to handle billing, but they rapidly found other uses. With two hospitals, as well as clinics and long-term care centers, the nonprofit healthcare organization has a busy 80-employee patient account services department. More than 2,000 payment documents and insurance benefit forms are now scanned each day, and Courtney Nash, the department manager, was able to reassign four full-time clerks and eliminate a temp position.

Because of the success in the billing department, Laserfiche was incorporated into active care. The patient accounts department tracks patients from the time they are admitted. **Each patient gets a unique bar code, and once processed, all patient information is instantly categorized. The bar code is then added to every document pertaining to the patient's care.**

Advance directives used to be filed with patient charts upon admittance. This meant that if a nurse needed to refer to the directive during a critical moment, she would have to find the chart. To eliminate this problem, Sun Health began automatically adding advance directives to patients' digital folders. Now, nurses can log onto Sun Health's database and search for the patient's name, instantly bringing up the needed advance directive.

Thanks to Laserfiche, **patients now have electronic files with up-to-the-minute care data, accessible to hospital staff throughout their stay**. Not only can nurses access patient information from computers, but the full-time staffer is able to do something more productive than scan the charts of the recently-discharged. Now, when patients are discharged, their full file is already in the database.

Indexing and Retrieval

In a recent survey, **three-fourths of executives said that information is their organization's most important asset**. Ensuring that this information is readily available to the employees who need it is one of the major challenges for today's executives.

An enterprise-quality digital document management system is uniquely positioned to help you solve the problem of helping employees quickly search through thousands of documents in order to pinpoint the information they need. Many employees use search tools that are nearly identical to commercial search engines designed for use with the Internet. Although these search engines are efficient at helping *consumers* find information like Web pages of retailers selling a certain product, **they are not geared toward the specialized searches necessary in many business environments**.

Most commercial search engines only support basic keyword searches. The user types in a word or phrase, and the engine returns a group of matching documents. Typically, the engine ranks results according to its own logic; depending on the user's needs, this ranking system may or may not be helpful. Often, users must spend a significant amount of time sifting through the results in order to find the information they're looking for.

A full-featured document management system makes it easy to find what you want when you want it. Retrieval of relevant documents should be fast, easy and efficient, with multiple methods of indexing (categorizing) information.

Indexing allows users to quickly sort large volumes of data to find the right document. Whatever the combination of indexing methodologies, search methods need to be easily used and understood by the people who retrieve the documents, as well as those who file them.

There are three primary ways of indexing files in a document management system:

- Full-text indexing, or indexing every word in a document.
- Template fields, or indexing through keyword categories of documents.
- Folder/file structure, or indexing by associated document groups.

Retrieval is where the quality of the indexing system is most evident. Some document management systems let users search only by indexed keywords, which requires a person to know how the document was categorized and what template fields were assigned to it. A powerful indexing system will make it possible for users to find any document based on what they know, even if that amounts to no more than a word or phrase within the document.

The more a document management system adapts to an organization's existing procedures, the less upheaval and training are involved for users of the system and the greater the likelihood the system will be used on a regular basis.

Full-text indexing

Full-text indexing allows users to locate any word or phrase that appears in the document. By providing full-text indexing, document management systems can eliminate the need to read and manually index documents using keywords.

To enable full-text indexing, the software must have the capability to perform **Optical Character Recognition (OCR)**. The OCR process translates printed words into alphanumeric characters with near-perfect accuracy, enabling each occurrence of a word to be tracked by the application. OCR dramatically reduces the cost of manual indexing while providing improved search capabilities.

However, OCR cannot process handwriting or images. Moreover, when a computer performs OCR on a document, it typically uses English as the default alphabet. If multiple languages are required, the document management system should support OCR and full-text searches in these languages. To avoid creating extra work, a well-designed document management system should provide the ability to automate the OCR and full-text index processing of documents.

There are several helpful options to maximize the effectiveness of full-text searches:

- Near-Match Searches
- Wildcards
- Boolean Operators
- Proximity Searches

Most searches assume that the search words have been spelled correctly and perfectly indexed during the OCR process or during manual entry into template fields.

Unfortunately, people frequently misspell words and no OCR process is 100% accurate. **Near-match searches** compensate for these errors by searching for spelling variations. A document management system should allow the user to control the search by setting how many letters can be wrong or what percentage of a word can be wrong. For example, a near-match search for the word "goat" would also find "gout" and "coat."

Wildcards are characters, like the asterisk and the question mark, which can be used in searches to compensate for misspellings or unknown spellings. The asterisk stands for any character or characters, while the question mark stands for any single character. For example, searching for "c*t" would find the words "cat," "cot," "coat," "cut" and "chest," while searching for "c?t" would only find the words "cat," "cot" and "cut."

Whenever full-text searches are performed, there are usually several documents that meet the search criteria. **Boolean operators** (AND, OR and NOT) help fine-tune searches and reduce the number of unrelated documents on the results page. For example, to find documents relating to Gray Davis, the former governor of California, and not to the University of California at Davis, you could search for "Davis AND governor."

Proximity searches can also be used to narrow the search results. They are used to find words that occur within a certain number of words, sentences or paragraphs of each other. For example, to find documents relating to tobacco lawsuits, but not smoking ordinances or tobacco growing, users could search for "tobacco" within one sentence of the word "lawsuit."

Template field searches

Template field searches enable users to comb through millions of records in seconds to find necessary documents. The ability to use index field information to locate documents is important in cases where a topic search is more expedient than finding every occurrence of a particular word or where the repository contains images without printed text, such as photographs or maps.

A template field search is roughly equivalent to searching a library's collection using a card catalog subject. If you are in a library searching for information on the Pacific Ocean, you would pull the card for "Pacific Ocean" (or, now, you would enter "Pacific Ocean" in the computerized card catalog) and you would see a listing of all books that discuss the Pacific Ocean. A template field search works the same way.

If you are searching for information on a particular county, for instance, you would enter the county's name into the search field and the document management system would retrieve all documents, images, electronic files and audio or video recordings that are stored in the repository that contain the county's name in the template field.

Template fields are based on metadata, or simply, data about data. Metadata is used to facilitate the understanding, use and management of data. The metadata required for this will vary with the type of data and context of use. So, in the context of a library, where the data is the content of the titles stocked, metadata about a title might typically include a description of the content, the author, the publication date and the physical location. In the context of a digital document management system, where the data is the content of computer files, metadata might include the name of the file, the type of file (document, e-mail message, spreadsheet or image) and the name of the data administrator.

A document management system should allow users to customize templates, create multiple templates and support different types of field data within each template, such as data, number and alphanumeric characters. Template fields can be used to categorize documents, track creation or retention dates, or record subject matter, among other information. A document management system should enable pull-down boxes of common key words to speed field entry and have tools available to assist in automating the data entry process.

A enterprise-quality document management system should also have user-definable template fields. In situations where the person who selected the keywords is not the one searching for the files, this method has obvious limits.

More information about template fields and metadata can be found in Section Four, "Records Management Specifics."

Folder/file structure searches

Along with enabling full-text and template field searches, a document management system should enable users to locate documents by **browsing the folder/file structure.** A full-featured document management system lets an organization electronically recreate its existing filing system through a nested folder structure. A flexible folder structure eases the transition from paper filing to electronic filing, which makes the transition to digital document management smoother.

The way search results are displayed has a considerable impact on the usability of the document management system. Even the most specific full-text searches can produce several hits when large document databases are involved. In addition to providing users with a list of documents meeting their search criteria, some document management systems reveal **lines of context** that display each occurrence of the search word in each document. Lines of context help users pinpoint the appropriate document without having to view every document in the search results.

Once a document is identified, the search word needs to be located within the document. To help with this, some document management systems display the appropriate page of the document and highlight the search word in both the text and on the document image. This makes it easy for the user to immediately zoom in on the relevant section of the document instead of having to look through multiple pages. The importance of this becomes obvious when the needed word occurs on page 97 of a 200-page document.

Client Story: Redondo Beach Police Department, Redondo Beach, California

Eliminating outdated indexing and retrieval, enabling speed and success

The Redondo Beach Police Department in Redondo Beach, California, was busy investigating—just not a crime. They were searching for a solution to their rapidly increasing paper problems. "We had boxes stacked in the hallway: six big shelves with twenty feet of files that go from floor to ceiling," says Peggy Limpert, Police Department Administrative Coordinator. They found their solution across the street in the city clerk's office.

The Redondo Beach city clerk's office had set out on a similar quest to get rid of paper and save storage space when it became apparent that the old way was labor intensive and time consuming. According to Sue Brown, Records Management Coordinator for the city, there was a constant demand for documents that took up all her time in records research.

The city's old computerized indexing system was outdated and retrieval was limited to subject headings. The clerk's department also used microfilm to archive permanent records, building permits, planning department files, police reports and Workers' Comp documentation. Unfortunately, the city-owned microfilming equipment was no longer manufactured and maintenance contracts could not be obtained.

According to City Clerk Sandy Forrest, the city decided that Laserfiche was the system that would best meet its needs. She says that, after significant research, Laserfiche "had received excellent references in terms of service and customer response."

The city clerk's office had been using Laserfiche for more than six months and was happy with the **disaster recovery and document sharing capabilities** of Laserfiche Plus™ and WebLink™. The police department followed their lead by choosing Laserfiche "so we could go paperless, too," says Limpert.

Limpert was impressed with **the ease with which Laserfiche distributes information.** When one of the patrol sergeants was away from the office teaching a class, he requested a document from the department. "The copy I faxed wasn't too clear, but we scanned it into Laserfiche and e-mailed it to him, and it came out perfectly."

Future plans in the police department are to install Laserfiche Workflow™ to streamline document routing and report approvals. "We want Workflow to make sure documents go to the right people," says Limpert. They also plan to integrate Laserfiche with their existing CAD and RMS systems.

Limpert feels that Laserfiche will help keep all the department's documents organized and easy to retrieve. She is no longer concerned with the tediousness of finding documents. With Laserfiche, Limpert says, "I don't have to know what folder it's in now."

Annotations

Annotations permit users to append or remove information about a document without permanently changing the original image. **Highlighting, stamps, redactions** (blackouts or whiteouts) and **sticky notes** are among the most common annotations. A document management system's security should give the system administrator control over who can view annotations and see through redactions.

In order for the document to maintain its integrity, all annotations should be overlays that do not change the actual image. This way, a document can be printed with or without the annotations. Although the legal standing of imaged documents varies from state to state, for a document stored in the system to stand up as the best copy of a record, users must not be able to modify the original image.

Client Story: University of Southern California Department of Radiology

Using digital document software to ease the burden on staff

Paper storage was a heavy burden for University of Southern California (USC) Department of Radiology Billing Manager Liz Dubon—literally. With a volume of over half a million radiological exams a year, the storage space at the Alhambra, California, office—a department of USC's Keck School of Medicine—was as crammed as each storage box.

So the search for a solution began. "I really needed something that would be HIPAA compliant. That was my number-one priority," adds Dubon, whose staff is required to protect confidential information contained in billing and Explanation of Benefits (EOB) forms. After reviewing four options, Dubon chose Laserfiche because of its ease of use and superior security features.

Radiology needs to share patient data with other USC departments that also use Laserfiche, particularly demographic and insurance data, but they also need to protect sensitive information. That's why HIPAA compliance was so important to Dubon. And **Laserfiche security features enable her to control access to confidential data.**

"I could set the access controls so that only authorized people have access to sensitive information," says Dubon. While other departments use Laserfiche for many reasons—for example, USC also uses Laserfiche to manage clinical data—staff in those other departments may not have the proper clearance to view confidential information. "**When we send out files to other departments," she continues, "we frequently use redaction to block sensitive information, such as charges or the reason a patient came to see the doctor.**"

There's no doubt that Laserfiche has simplified operations at USC Radiology. Says Dubon, "**The system is never down, it doesn't have glitches and whenever something is not scanned properly, we're able to flag it right away**. I am very, very happy with it. It's probably the best thing that my boss ever allowed me to do."

Storage and Archiving

Once documents are brought into the document management system, they must be reliably stored. Document management storage systems must be able to accommodate changing technologies and an organization's future growth. A versatile document management system should be compatible with all storage devices currently available, as well as emerging systems, to provide long-term document storage and archiving.

Concerns about future readability of documents and records make many organizations hesitant to implement a document management system. With rapid changes in the technology sector, it is hard to predict what applications and hardware will be current five or ten years from now. However, the need for faster retrieval and improved records management means that most organizations cannot wait to implement solutions.

To address these concerns, document management systems should use **non-proprietary image and text formats.** Documents created and saved with obsolete versions of a program can be difficult or even impossible to read. Using proprietary formats for documents means that converting files from old versions can be a frustrating and expensive task. Storing document images or text files in a proprietary format may leave your organization dependent on the future success or failure of another company.

To ensure the future readability of documents, a document management system should store files in a non-proprietary format, such as TIFF or ASCII. ASCII has been a standard for text information since 1963 and is a basic building block for almost every text-based program. TIFF has been used as a standard non-proprietary graphics format since 1981. It is widely used to transmit document information by document management systems, fax machines and other software. Given the prevalence of ASCII and TIFF, it is reasonable to assume that no matter what format is developed in the future, the developers of the new format will have a vested interest in providing a conversion for these standards. With proprietary document formats, there is no such assurance.

Records management considerations

Requirements for computer systems used to store and manage electronic records have been produced by the Department of Defense (DoD). **DoD Standard 5015.2** has become the de facto standard across a wide spectrum of industries. While records management applications that have been certified as DoD 5015.2 compliant represent an objective, third-party evaluation, they do not guarantee regulatory compliance or records security.

For records managers concerned with archival storage, it is crucial to determine if you are considering a digital document management solution or a records management application, because there is a difference. While most records management applications include a document management component, not all document management systems are appropriate for records management.

Records management is a specialized branch of document management that deals with information serving as evidence of an organization's business activities. Records management includes a set of recognized practices related to the life cycle of that information, such as identifying, classifying, archiving, preserving and destroying records. Records management also includes archival issues—both assuring that permanent records are accessible and readable 100+ years into the future and protecting often fragile historical archives.

For complete information on records management, including specific issues pertinent to records managers, turn to Section Four, "Records Management Specifics."

Client Story: First Community Bank

Managing a mountain of paper with savvy storage and archiving

By almost any standard, the First Community Bank of Savage, MN, is a successful institution in a prospering community. But its successes in commercial lending generated a mountain of paper which was difficult to file and even harder to search for needed information.

The solution to the bank's problems came from one of its own customers, who told bank officials that by scanning its loan documents and managing them electronically with Laserfiche, files would be available on computer desktops and necessary information would be at managers' fingertips.

Bank president Tom Hanson decided to give Laserfiche a try and found out for himself how easy it was to use. Soon, Hanson's son Alex, 15, was scanning documents as part of his duties in the family-owned bank. Father and son were convinced and Laserfiche became an integral part of the commercial lending department's infrastructure.

"We are able to provide better customer service and manage our own business better with Laserfiche," says Greg Dennis, Vice President of Commercial Lending and Operations. "**We use Laserfiche templates with each document scanned to assist us in managing its content.**"

Dennis says the First Community Bank's challenge is to get all back files into Laserfiche, a job which will take a full-time employee. Currently, bank employees are scanning new documents as they are generated, but intend to use an intern to get older customer records scanned and indexed.

As a relatively small bank, with $75 million in assets and 13 employees working over a six-day week, First Community Bank recognizes Laserfiche technology will bring productivity improvements. With a reputation for customer service and a willingness to support Savage businesses, First Community Bank knows it can handle out-of-town competition by working smarter, rather than harder.

Next steps at the First Community Bank include creating CDs of bank financial statements and documents to eliminate creating paper reports for regulatory agencies. By creating the CDs with Laserfiche Plus, the bank expects to save time and money, while making record reviews easier for bank analysts.

Distribution

A document management system should assist you in putting the right information in the hands of the right people. **A quality system makes it possible for multiple users to access the same files at the same time** and aids in distributing documents to authorized individuals both inside and outside your organization over an intranet, by e-mail or through publication to the Web, CD or DVD. A full-featured document management system safeguards an unalterable copy of the original while allowing you to enhance collaboration and service by circulating copies in the format that best serves your business needs.

Printing, faxing and **e-mailing** are several ways of distributing documents. Document management systems should promote the rapid copying of files to a CD or DVD. To be most effective, the document management system should support royalty-free CD or DVD duplication and contain viewers enabling people without a document management system to search for and view documents directly from the disc.

Print, Fax and E-mail

To maximize their usefulness, document management systems should support the most common printer and fax drivers and be able to print images, text and annotations.

E-mail has become the default mode of communication in many organizations. Organizations obtain significant gains in efficiency and save considerable expense by transmitting documents via e-mail instead of using faxes, courier services or postal mail. Document management systems should have options that make it possible for images to be easily sent with any MAPI (Mail Application Program Interface)-compliant e-mail system and read by recipients without document management software.

Intranet and Internet

A document management system should provide a simple way to publish information to the Internet or an intranet. This allows organizations to share information with other departments, remote offices, clients or the public. **Web systems should be fully searchable and must support the same security protocols as network systems.** Ideally, a document management system will not require HTML or complex coding to post files to the Web.

When system administrators decide to deploy a document management system across their entire network through an intranet, or even to the public over the Internet, they should make it possible for users to search, retrieve and view documents with any Web browser. Browser-based document access removes the logistical problems associated with conflicts between computer platforms such as Windows, Macintosh® or Unix®.

Briefcases and Portable Volumes

Document management systems should enable users to carry important documents anywhere, enabling convenient viewing on other computers. When employees travel for business, they often need to bring key documents with them. Carrying paper documents is often impractical, and copying an entire repository to a laptop can be impossible. With a document management system that supports **briefcases** or **portable volumes,** documents can be detached or copied and moved to other repositories in other locations. Folders containing relevant documents can be transferred quickly and easily using searchable CDs that hold up to 650 MB of data—the equivalent of approximately 12,000 pages—or read-only DVDs, which have capacities ranging from 4.7 to 17.1 GB.

If a document management system does not provide this level of document portability, users will find it difficult to bring their documents on the road or to transfer files between different offices. Briefcases and portable volumes help users transfer their documents to other offices, laptops or clients quickly and easily. Optical discs also weigh much less than paper files.

A full-featured document management system allows users to simply drag and drop the appropriate folders into a briefcase and transfer the briefcase to a laptop computer or a computer in a remote office.

Portable volumes are high-volume briefcases that allow for constant updates to shared repositories in different locations. This ability is useful for organizations that use a scanning bureau on an ongoing basis, or for organizations with multiple offices. On many large-scale document management systems, the document files are stored on multiple drives or network volumes. Portable volumes allow entire volumes containing document images and text to be transferred in their entirety to another repository.

Client Story: Geneos Wealth Management

Distributing information to over 150 offices in 24 states

Rigorous auditing and regulatory mandates required a reliable, transparent solution for tracking and managing records. Geneos Wealth Management couldn't afford any obstacles to sharing critical information across more than 150 remote locations. Any solution would need to keep up with the influx of as many as 60,000 paper documents per week, making them accessible from the main office in Denver to the 61 OSJ branch offices in 24 states and 400 representative and affiliated investment advisors across the country.

It took only a summer for Geneos to develop its document management system, consolidating records from more than 60 locations into one central repository. "We made the decision to go in the middle of May," says Dean Rager, CIO. "By September our system was in place in over 50 offices. It was very quick."

As Geneos implemented straight-through processing, the firm eliminated faxing and greatly reduced printing and mailing costs and audit preparation time. Laserfiche is handling input from all three virtual print servers and all the firm's virtual faxing. In the year or so since installation, Laserfiche has captured close to a million pages—enough to stretch 150 miles if laid end-to-end.

Rager doesn't equivocate when discussing the installation of Laserfiche at Geneos: "This is the best damn thing we've ever done. Period."

Workflow

Workflow modules can increase the benefits of a document management system by automating the routing of documents to various people, eliminating bottlenecks and streamlining business processes. This added functionality is crucial for large offices, for organizations with central and branch offices and for organizations that plan to expand their system.

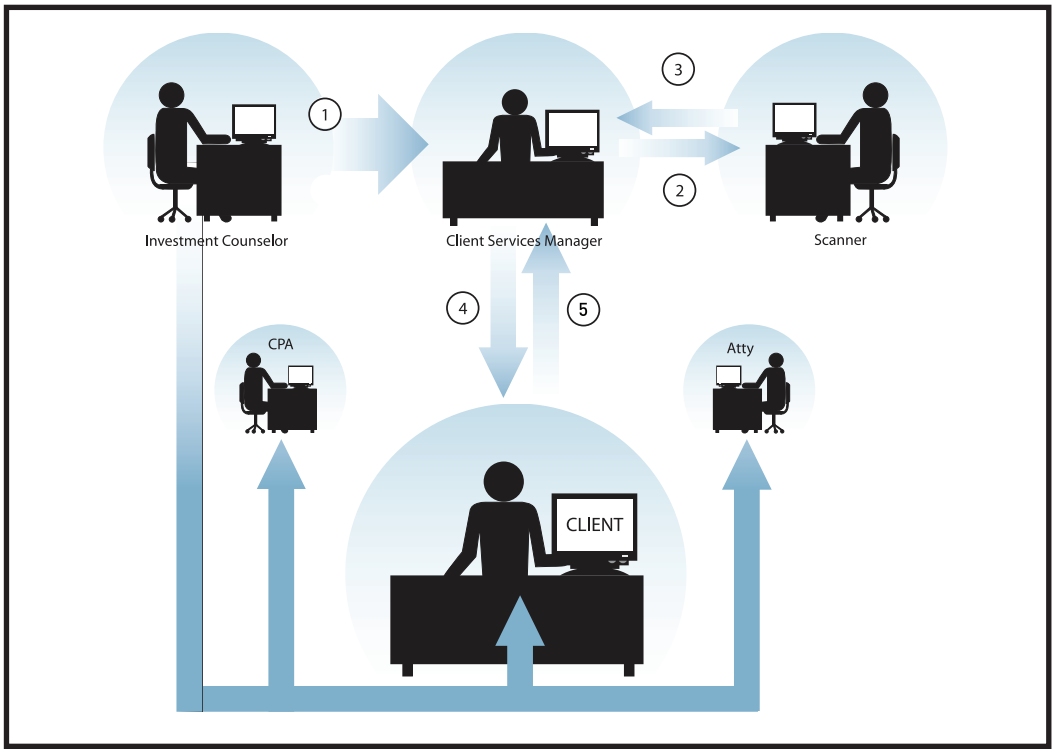
Workflow should automatically notify specific users of certain document-management-related system events, based on rules created by the system administrator. Workflow should generate return receipts and timed responses. If a recipient does not act within a specific time frame, the program should send either a reminder message or a second message to an alternate recipient.

An essential component in any procedural workflow system is document automation. The workflow module should be able to automatically move, copy or delete documents within the repository based on a predetermined set of rules.

The success of any workflow system is not its ability to follow the strict routing and reporting features of a fully-automated system, but its ability to handle exceptions to the rules as they arise. An effective workflow system provides the system administrator complete access to on-the-fly routing of documents and information through the system's folder structure and system security

Workflow systems should offer administrators drag-and-drop simplicity, an intuitive graphical interface and an easily-understood folder structure. Workflow applications should be **ODBC-compliant** to facilitate integration and customized application. As a final component, workflow must provide for comprehensive security reporting through an audit trail function.

Diagram of a Sample Workflow in a Financial Services Firm



Client Story: Halbert Hargrove Investment Counsel

Creating a fully-automated system to smooth document processing

JC Abusaid, Chief Operating Officer of Halbert Hargrove Investment Counsel in Long Beach, CA, had a vision of a completely automated and paperless back office. With over 700 clients, 9 Investment Counselors and $1.2 billion in assets under management, Halbert Hargrove (HH) is a complex operation. To continue to profitably grow their firm, HH needed to leverage technology to provide the highest level of client service and achieve scale and operational efficiencies. A flexible, user-friendly, easy-to-operate digital document management technology platform was critical. "We knew that we needed not only the document management aspects, but also the scale and ability to custom integrate into how we did business," says Abusaid.

"Everything we do begins and ends with client information that we enter, store and manage in GoldMine®," he continues. "**Therefore, we needed to use our document management system as not only a storage, search and retrieval system, but also as a document workflow system.**"

To achieve the vision of a paperless back office, HH developed **a custom publishing system,** integrated with their portfolio management system, Advent®, their customer relationship management (CRM) system, GoldMine, and their document management system, that was designed to meet their unique client service and portfolio management needs. Advent automatically generates daily reports with real-time market data, providing updated information on client positions and holdings for Investment Counselors (ICs) to use when making investment and planning decisions. These daily client reports allow ICs to be proactive with clients, along with other professionals such as CPAs and attorneys.

Client reports are automatically fed into the publishing system. **HH's digital document management system electronically stores these reports and other client documents, offering the additional benefits of intuitive search functions, secure retention and the ability to "move" documents to GoldMine via links on client information pages**.

Simultaneously, **the publishing system posts the reports to the HH client Website for online viewing via a password-protected site**. For those clients who choose electronic delivery of reports, an automatic e-mail from GoldMine alerts the client that there is information on their site, completing a fully-automated workflow cycle.

The publishing system also e-mails links to the custom quarterly reports to clients who have elected to receive electronic reporting. This helps reduce the total amount of paper generated and mailed, while for some clients, no paper is generated at all.

"By having this end-to-end integration, we can be extremely fast, efficient and flexible in responding to client service requests on the fly without having to hang up, search and retrieve the necessary documents, call the client back and end up in a lengthy phone tag back and forth," Abusaid notes. "Additionally, with one point of entry for client data, we are minimizing errors and our security settings, within our document management system, meets our compliance requirements. Throw in the added benefits of not having filing cabinets clogging up our operational space and the speed in which we can access critical client documents, and we've been extremely pleased with what we've built."

Security

System security is an absolute necessity for any document management system. A rigorous security system should permit every authorized person to perform required duties—whether from desktop, laptop, the office, a remote location or over the Web—without compromising the integrity of the database, system or network.

Comprehensive security is critical to the successful implementation and ongoing protection of a document management system. While security may not be the primary concern for a single department installation, it becomes more important as the system is expanded to allow different departments, and even the public, access to files. Although a document management system should provide multiple levels of security, including authentication, authorization, audit trails and disaster recovery planning, the system's security should parallel that of the network and be simple to administer.

A full-featured document management system gives the system administrator the tools to balance access and security through control over both access rights and feature rights. Access rights determine who can log on to the system and which folders or files individuals can open. Feature rights determine the actions that individuals can perform on documents they have access to. A comprehensive security system also allows high-level users to **redact** or black out confidential information within files.

Authentication is the level of security that requires users to present credentials, normally a user name and password, in order to access the system.

Authorization is the level of security that controls access to objects such as files and folders. Authorization encompasses two primary areas: **access rights**, which determine the objects users can open, and **feature rights**, which determine the actions that users can perform on the objects they have access to.

A document management system should let organizations assign access rights to specific folders, as well as specific documents, at both the group and individual level. The use of groups with inherited or predefined rights allows system administrators to quickly assign viewing privileges, while individual-level security allows specific users, such as managers, to view documents that the rest of the group cannot. For example, access rights would allow the system administrator to deny most employees access to HR files, while allowing human resources staff members to view the personnel files of everyone in the organization except other HR personnel and the HR director to view all personnel files.

A full-featured document management system will not allow users to see objects for which they do not have viewing privileges. This protective feature is especially important for organizations with systems containing confidential files and folders.

A document management system should also let system administrators limit the actions that users are entitled to perform on folders and documents at both the individual and group level. Feature rights determine a range of actions, including adding pages, annotating, copying or deleting records. For example, a system administrator could allow various departments to have viewing privileges to city council minutes, but allow only the City Clerk to have annotation rights to those files.

Redaction (blackout or whiteout) is a security feature applied within documents to make certain portions of the document inaccessible, except to authorized users. Blackout redactions are familiar to anyone who has seen a classified FBI file on the news, but whiteout redactions are somewhat different.

Instead of a visible thick black line through the redacted text, whiteout redactions function much like an eraser—in fact, using whiteout redaction, a viewer will not know

that information has even been redacted. A document management system should offer the ability to redact portions of a document's image and/or text. Users' ability to view redacted text would depend on their security rights. For example, a system administrator could make crime reports available to various city departments, but allow only the police department to see sensitive information such as the victim's name and address. Redaction allows you to extend security from folders and documents right down to the character level, enabling comprehensive security and maintaining the privacy of scanned images.

As an additional level of security, a document management system should offer the ability to generate **audit trails and reports** that detail system activity. A document management system should be able to log all users, documents viewed, actions performed and the time they were preformed. A full-featured document management system will log unsuccessful attempts to perform actions and can provide electronic watermarks to authenticate printed documents. Audit trail abilities are especially important when an organization has many different users and confidential documents. Audit trails also play a significant role in demonstrating regulatory compliance.

Digital archiving with a document management system simplifies **disaster recovery and business continuity planning** by allowing backups of entire document repositories to be stored on durable CDs, DVDs or other media. In the event of document loss or damage, archives can be reconstructed from digital backups. The solution should also provide built-in viewers on published CDs and DVDs. This allows immediate document access from any PC with a CD or DVD drive, even if the network remains offline for an extended period.

Client Story: Stuart Police Department, Stuart, Florida

Ensuring information security with digital document management technology

Within days of implementing their system, the Stuart, FL, Police Department was already relying on Laserfiche as an important new investigative tool. The key was a scanning campaign that had all annual incident and accident reports in the system by the end of the year.

"Our thinking in getting up to speed this quickly is that we have to use technology to keep up or we're going to get lost," says Vicki Gorny, the department's information systems coordinator.

A winner of the prestigious Webber Seavey Award for Community Policing in 2001, Stuart is one of the numerous police departments in North America currently using Laserfiche.

"We were especially impressed with Laserfiche because **we felt its security features were superior,**" Gorny says. "It also helped that Laserfiche was already being used successfully in other city departments and had a track record as a police application."

Upcoming technology enhancements for the 43-officer department include equipping cruisers with laptop computers. These "mobile data terminals" will provide officers with instant access to prior police reports in Laserfiche.

Integration

The introduction of new software and databases often creates logistical challenges for an organization's computer support staff. Document management programs should offer packaged integration tools for simple **image-enabling**, to minimize the burden on IT support staff. To minimize disruptions to business operations, it is essential that a document management system integrate smoothly with other software applications, such as enterprise resource planning systems (ERP), geographic information systems (GIS), student information systems (SIS), customer relationship management (CRM) software, portfolio management tools and electronic medical records (EMR) applications currently in use.

Back-end characteristics facilitating integration include a system designed with open architecture. A system with **open architecture** is designed for easy integration. Hardware and software tools with open architecture enable anyone to create add-on products to connect the hardware or software to other devices.

A quality digital document management solution should provide information to make integration easier. This information might include a complete set of documentation, tools and sample code to speed systems integrations and customizations addressing your organization's specific business needs, or it may include packaged integration solutions that deliver basic image enablement without a major investment of time or money. Packaged integrations can range from plug-ins for popular software programs, such as GIS, or additional modules supporting popular features, such as electronic signatures.

Back-End Integration

Because capturing and indexing documents is the most expensive component of implementing a document management solution, anything that can be done to eliminate or minimize these costs will provide a nearly immediate return on investment. Information that already exists in primary applications can be utilized to automatically index and file documents as they are captured. In most cases, this type of integration requires a very small investment and will eliminate most of the costs associated with indexing documents.

Front-End Integration

Front-end integration is especially important for organizations that utilize documents in a supporting role. These organizations want a document management solution that is as transparent as possible, given that staff members don't want to learn a new system just to gain access to supporting documentation. Because staff members already have a primary application they use to complete their daily tasks, the best way for them to access documents is through this familiar application. Image-enabling primary applications allows staff to quickly access the documents they need by simply clicking a button or pressing a function key.

The value of front-end integration is primarily realized in a reduction in training costs. Because staff members already know how to locate records in their primary application, they will not need to learn how to locate documents in the document management system. They will have to learn how to request the type of document they want and, if necessary, how to work with documents in an electronic format. However, this requires less time than teaching them how to utilize the complete system.

Client Story: Claremont Police Department, Claremont, California

Integrating Laserfiche and GIS to help officers solve more crimes, more quickly

For Claremont Police Officers, it used to be a hassle to get ahold of police records. There was always a long line of people at the counter in the records department, and it would take considerable time to pull and photocopy the original reports. "Getting your hands on a report was such a time-consuming ordeal," says Information Systems Manager Steve Senkle. "And then if you had to fax a 90 page document, it would take them an eternity to fax it. **Laserfiche gives us a better way to review and deliver police reports.**"

In 1998, the Claremont Police Department started scanning their crime reports, traffic accident reports and field interview cards into Laserfiche. They chose Laserfiche primarily because of its powerful search capabilities and because of how easy it is to get documents into the repository and organize them once they're there. Claremont also planned to integrate Laserfiche in tandem with their other software applications, including the police department's CAD-RMS.

WebLink plays a key role in the integration between Laserfiche and CAD-RMS. Once staff locates the relevant case file in the RMS, WebLink lets them easily view scanned documents, photographs and other items associated with that file.

Along with apprehending people who've committed crimes, police officers have a duty to prevent crime from happening, and Claremont saw an excellent opportunity to use Laserfiche as part of this effort. They installed a third-party crime analytics tool called CrimeView Web®, which uses GIS technology and the information in their RMS to generate maps of the city showing where burglaries, assaults, auto thefts and other crimes occur. To access more detailed information about these crimes, staff can pull up documents stored in Laserfiche by simply selecting a visual marker on the map or clicking a case number.

This instant access to information helps officers identify patterns, which in turn helps them to better use available resources—such as regular police patrols at certain times of the day—to cut the crime rate. It also means that they're better prepared, and therefore safer, when they hit the streets.

Technical considerations

The goal of digital document management is not solely to eliminate and organize paper, but to manage all organizational documents, both computer-generated and paper-based, and all files, including digital audio and video files. This is the most important reason to implement a digital document management system.

Documents—analog or digital—are organizational assets. Like your organization's data, information and physical assets, your organization must recognize the strategic importance of managing your document assets. You must manage your document assets well or risk not only increased liability but also information loss, which can significantly affect your business.

In the past, "document management" was synonymous with managing documents after they were scanned into a computer. **Today, the term encompasses a variety of technologies—paper documents that have been scanned to create a digital image, workflow technologies, multimedia technologies and formats, and computer-generated content.** There are many technical components to a digital document management system and a wide variety of options.

System Compatibility

Compatibility is the capacity of a document management system to work with existing hardware and software systems. To maximize compatibility with existing systems, a document management system should:

- Work with standard operating systems and support standard database plaforms.
- Communicate using popular network protocols such as IPX/SPX or TCP/IP.
- Have Web deployment capability.
- Use n-tier architecture with client-side image compression/decompression and server-side searching and indexing to minimize network traffic.
- Store text and image files in non-proprietary, industry-standard formats.

Networked Systems

In any office, documents are used to transmit information between people. For document management to be truly useful in an office environment, documents must be accessible to all authorized users. Storing documents on individual PCs impairs the flow of information between coworkers and wastes valuable time and resources, so it is important for document management systems to have a central repository of records accessible from any PC in the organization.

Scalability

The scalability of a system determines how easily it can grow with your organization. For full scalability, a system should:

- Support the entire group of organizational users concurrently.
- Store all documents for the entire organization.
- Accommodate a large number of users and documents.
- Store information across multiple drives or servers.
- Support multiple databases.
- Integrate with other applications.

Document management solutions, like any other network application, consume computer resources. Image files are large, and databases must track large numbers of records. Functions such as OCR, image display and search require extensive computing power. It is important to have an **n-tier architecture** when more than a few people need access to imaged documents. Even when an installation begins with a single-user pilot project, it is important that the document management system be able to accommodate future growth.

An n-tier system delivers maximum scalability in departmental solutions and across the organization with distinct client, business logic, data and document layers. Any network-connected storage media, including Storage Area Networks (SANs), can be used for physical storage, while multiple SQL servers handle the distributed database layer.

Tasks such as indexing, OCR and searching are distributed between the client (PC workstation) and the document management server for optimal performance. Some tasks are performed more efficiently on the client, while others are better handled by the central server. Where the specific tasks are performed may vary among different document management systems.

It is important to distinguish between this more robust design approach and simple file-sharing applications. In file-sharing applications, file integrity can be compromised when a workstation program is interrupted in the middle of a transaction. With computing functions distributed across multiple tiers, however, the client does not open data files directly. Therefore, client interruptions do not threaten data integrity.

An n-tier system can perform searches much faster, given that the server is typically more powerful than individual workstations. File-sharing systems send a copy of the entire database over the network to the workstation, which then performs the search. This method leads to increased network traffic and search response times that are dependent on the speed of the workstation. File-sharing systems may be easier to develop and therefore less expensive initially, but their design ultimately restricts flexibility and scalability, limiting their long-term usefulness.

A **thin client** is an infrastructure-friendly solution that minimizes the burden of application installation, maintenance and software upgrades. The benefits of thin clients extend beyond conserving IT resources to expediting the search and retrieval of information over the organization's intranet or the Web. A Web browser-based thin client must effectively deliver essential features to end users without compromising system security.

Hardware requirements

The digital document management solution your organization chooses should be as easy for users to operate as it is for IT staff to manage. A quality digital document management solution should adapt to your existing infrastructure and work well with existing resources while smoothly integrating into your organization's changing environment.

A digital document management system should fit the shape of your organization, supporting either **Microsoft SQL Server™** or **Oracle®** database platforms. It should also work well with existing hardware.

Server requirements

It is important that your IT administrator has a working knowledge of how to maintain and administer your document management server setup. A **database management system (DBMS)** is a software program that runs on a database server and allows the management of the data stored in the database. It also responds to queries from users. The DBMS is responsible for maintaining a database that contains the locations of all the scanned and electronic documents stored in the document management repository in their respective volumes.

The document management server must access the DBMS on behalf of the user to get the location of the scanned image or electronic document, which is required to view images, text and the electronic file associated with a document. The database also contains many other types of information regarding the various types of metadata, annotations and other components that help control the document management repository.

Your DBMS can be either a Microsoft SQL Server or an Oracle server; often, the document management server does not have to reside on the computer hosting Microsoft SQL Server or Oracle. It is recommended that you install the document management server and the DBMS on separate machines. This allows the DBMS to make more efficient use of all available memory on the server. Microsoft SQL and Oracle also recommend this type of setup, in order to achieve an environment with the highest level of stability.

For more information, please consult your Microsoft SQL Server or Oracle documentation. Information on Microsoft SQL Server is available on the Microsoft SQL Server home page (www.microsoft.com/sql), while information on the Oracle Server is available on the Oracle Website (www.oracle.com).

Generally, minimum requirements for a document management server are as follows:

- **CPU**: Pentium 4 1 GHz processor
- **Memory**: 512 MB RAM
- **Communications**: TCP/IP
- **Operating system**: Windows XP (Service Pack 2), Windows Server 2003 (Service Pack 1), Windows Server 2003 Release 2
- **Database engine**: Microsoft SQL Server 2000 (Service Pack 3), Microsoft SQL Server 2005 (Service Pack 1)

Recommended requirements are as follows:

- **CPU**: Pentium 4 2 GHz processor or faster
- **Memory**: 1 GB RAM
- **Operating system**: Windows Server 2003 Release 2
- **Database engine**: Microsoft SQL Server 2005 (Service Pack 2)

Your vendor should be able to review server requirements with you and should provide your IT personnel with administration training and guides.

Workstation requirements

Most business workstations should be able to handle the installation of document management software and should allow users to scan in, access and work with the document management repository.

Minimum requirements for a workstation that will be used with a scanner are as follows:

- **CPU**: Pentium III 700 MHz processor
- **Memory**: 128 MB RAM
- **Operating system**: Microsoft Windows 2000, XP or Windows Server 2003
- **Web browser**: Internet Explorer 6.0

Recommended requirements for a workstation used with a scanner are different, but still likely achievable:

- **CPU**: Pentium III 1 GHz processor (or faster)
- **Memory**: 256 MB RAM
- **Operating system**: Windows XP Professional
- **Web browser**: Internet Explorer 6.0

Installing a digital document management solution should not require that your organization purchase entirely new hardware.

Your vendor should provide you with clear, understandable information on hardware requirements and configuration. Your vendor should also provide your IT personnel with information to help the technical side of your installation run smoothly, including installation guides, administration guides, Webinars and technical consulting.

If your organization plans to enable employees to use your document management repository via secure Web connection, requirements will be different and should be discussed with your vendor.

Software requirements

Besides the question of hardware, there is the additional question of what software your organization will require to make your digital document management solution fit the way you work.

A quality digital document management solution should be scalable, meaning that it should easily grow as your organization does. If you begin with a single department roll-out, it should be simple to add additional users as you roll out the solution to other departments. You should not have to repurchase software or dramatically change the architecture of your solution.

Web deployment is often the key to quickly and efficiently rolling out document management software to a large number of users. A browser-based thin client solution can help your organization provide essential document management access to a large number of employees, whether they are located in different buildings, different states or even different countries.

Licensing requirements

Server licensing is an essential part of your document management installation. It determines the types of DBMS your document management server can communicate with; the number of repositories your document management server can support; the number of concurrent users that can access data stored in those repositories; and the set of features (e-mail, audit trail, records management, etc.) that will work with your document management software.

The number and type of simultaneous connections that can be established by your document management server is determined by your **server license**. A connection to the server is established whenever an application communicates with it, for example, by logging into a repository.

There are two types of licenses:

Floating user licenses, also known as concurrent user licenses, allows your system to be used by more than one user at the same time, but is limited by the number of licenses. For example, if your organization has thirty licenses, and thirty users are logged in, the thirty-first user must wait until one of the current users exits the system before they may log in. Floating licenses can be one of two types: **full-featured** (read/write; can both access and edit information) and **retrieval-only** (read-only; can only access information, not add to or change it).

Named user licenses are valid only for a single user and may be installed on a number of machines determined by the license.

To determine the number of licenses your organization will need, think about how many people will actually use the system. Ask yourself the following questions:

- How many departments will be using the system?
- How many users plan to use the system?
- Will there be a distinction between read/write and read-only users?
- How many named users will there be?
- How many users will do the bulk of the scanning?
- Does your organization have a records management department?
- Does your organization have a dedicated records manager who will oversee the management of scanning, retention and filing?

Answering these questions will also help you conduct your needs analysis. For more information on conducting a needs analysis, refer to Section Three, "Conducting a Needs Assessment and Developing an Implementation Plan," and Worksheet Two, "Needs Assessment."

Your vendor should work with you to determine the appropriate number of licenses for your organization and should work with your IT personnel to make sure they are allocated correctly. Your vendor should also provide you with more information on adding additional departments (if it is a trial roll-out in one department) or additional users (if you anticipate an increase in staff).

Web deployment

One way to deploy your document management software is by rolling it out to staff via the Web. Access via the Web is essentially a gateway between your repository and the Internet or an intranet. It serves as an intermediary between a HTTP (Web) server and your document management server. A quality Web solution should incorporate robust security measures and give your organization complete control over access permissions, distribution, and user logins.

There are several parts to a Web-based solution, all of which work together to produce a seamless bridge between your repository and a Web browser. A user will first follow a link to a page generated by an Active Server Page (ASP). The Web browser will then send a request to the IIS (Internet Information Server). The ASP will communicate with the Web server, which in turn connects to the document management server. When the document management server responds, the Web Server will translate that response into an easily processed format and return it to the IIS. IIS will use an ASP to convert that response into standard HTML and then send it back over to the Web browser.

As for use and appearance, a Web-based solution—a **thin client**—should be nearly identical to the **thick client** you would use at your desktop computer in your office. Web connections usually count against your server's total licenses just like any other connection, but with a quality solution, your IT administrator should be able to restrict the number of connections from the Web. If Web users have used up all available full-featured licenses, then the document management server will deny that new connection and a message will be sent to the Web browser saying that there are no connections available.

The success of a thin client is measured by how effectively it delivers features to end users while relieving IT of software maintenance burdens. Web deployment provides high-volume access to document archives from a centrally-administered server. IT can add new users without installing software on multiple workstations or adding to their support load, conserving resources for maintaining thick-client applications. Users manage documents through Web browsers already installed on their computers, allowing hundreds or even thousands of users to safely participate in business processes.

Web deployment usually requires an additional software purchase. To determine if Web deployment is appropriate for your organization, consult with your vendor.

Scanning requirements

When you choose a scanner, it is important to consider the size and volume of paper to be scanned, along with price and overall budget. The ability to support a wide range of scanners is one of the defining characteristics of a versatile document management system.

A scanner should have an **Automatic Document Feeder (ADF)**. The ADF speeds up the scanning process by allowing stacks of paper to be placed into a tray and automatically fed one page at a time into the scanner. Scanners without an ADF require each page to be manually placed in the scanner and are primarily used for imaging graphics.

Scanners can handle a variety of paper sizes, from business cards to engineering drawings. Most organizations only need to scan documents up to legal-size paper (8 inches x 14 inches). For organizations or municipalities

that use blueprints, building plans and architectural drawings, there are large-format scanners that support E-size documents (34 inches x 44 inches). In general, the larger the paper size the scanner can handle, the more expensive it is. Other options, such as color or grayscale, also increase the scanner's price.

The scanner's speed is another consideration. Document imaging scanners can handle between 10 and 200 pages per minute. They are available in both simplex mode and duplex mode. **Duplex scanners** allow both sides of a two-sided document to be scanned in a single pass. High-speed scanning and duplex scanning can increase the price of the scanner. In some instances, it is more economical to purchase two 20-page-per-minute scanners than one 40-page-per-minute scanner. However, the two-scanner option is only feasible with document management systems that support multiple scanning stations.

Your vendor should be able to recommend appropriate scanners for your digital document management solution.

Storage Options

There are five primary storage options for document management systems:

- Magnetic media (hard drives)
- Magneto-optical storage
- Compact discs
- DVDs
- WORM

Each storage system has advantages and drawbacks.

Magnetic Media (Hard Drives)

Increasingly fast response times to store and retrieve a document, along with dramatic reductions in storage prices, make magnetic media a popular choice. These systems include **Redundant Array of Independent Disks** (RAID), **Network Attached Storage** (NAS) and **Storage Area Networks** (SAN). These devices are relatively inexpensive, can be linked together to store large numbers of documents and provide rapid response times. The main drawback of magnetic media is that, while inexpensive, they still contain moving parts, which are subject to mechanical failure. Data files can also be completely erased. Computer personnel should perform regular backups of hard drives so that if data is erased or damaged, it can be restored.

Magneto-Optical Storage

In the past, the **magneto-optical (MO) diskette/disk drive** was a popular way to back up files on a personal computer. As the term implies, an MO device employs both magnetic and optical technologies to obtain ultra-high data density. A typical MO cartridge is slightly larger than a conventional 3.5-inch magnetic diskette and looks similar. While the older type of magnetic diskette can only store 1.44 MB of data, an MO diskette can store amounts ranging from 100 MB up to several gigabytes.

The chief assets of MO drives include convenience, modest cost, reliability and, for some models, widespread availability. MO disks can be placed in jukeboxes that hold hundreds of disks. The chief limitation of MO drives is that they are slower than hard disk drives and still subject to mechanical failure. Data files can also be completely erased. With a significant drop in the price of hard drives, the popularity of magneto-optical storage has faded.

Compact Discs

Compact discs (CDs) are small discs used to store digital information. Since nothing touches the encoded portion of the disc, the CD is not worn out by the playing process. Standard CD formats include **CD-ROM** (Compact Disc-Read Only Memory), a preprinted media format; **CD-R** (Compact Disc-Recordable), a single-use recordable disc; and **CD-RW** (Compact Disc-Rewritable), a multi-use recordable disc.

CDs offer a safe and reliable medium that can provide long-term storage for images. Moreover, CD-ROMs do not require specialized hardware or software to retrieve information. CDs use **ISO-9660** specifications; this means the data can be read on many computer platforms.

The primary drawback of this medium is its limited storage capacity, 650 MB. CD-ROMs can be accessed through CD-ROM drives, CD towers and jukeboxes of up to 500 discs, making it a convenient method of storing large numbers of imaged documents.

DVDs

Digital Video Disc or **Digital Versatile Disc (DVD)** is another form of optical disc storage technology. A DVD is essentially a faster CD that can hold more information, including video, audio and computer data.

Because the disc is read by a beam of laser light, there is no wear and tear, even if it keeps rereading the same data. The tough plastic surface is forgiving of fingerprints, dust and dirt, which means DVDs can be played thousands of times while continuing to represent the best, most reliable long-term storage option for document management.

WORM

WORM (Write Once, Read Many) is an optical disc technology that allows you to write data onto a disc just once. The data is permanent and can be read any number of times. This format is not readily available and requires specialized hardware and software to operate.

Unlike CD-ROM, there is no single standard for WORM disks, which means that they can only be read by the same type of drive that wrote them. This has hampered their acceptance, although they have enjoyed some niche popularity as an archival medium.

While this standard definition of WORM refers to a specific type of storage technology, WORM has taken on a broader meaning in other contexts, such as financial services, to include any optical disc that is a write-once-read-many medium. In this general sense, WORM includes more common storage media such as CDs and DVDs.

Client Story: Benton County, Oregon

Rising floods of water and paper lead to a new solution

It took a rising tide of paper records to convince Benton County that it was time to update their filing system. There were 22 shelves on the second floor of the Benton-Corvallis Law Enforcement Building, 115 boxes of older records in the basement, and 30 boxes stored at an off-site warehouse two miles away. Incident reports for everything from barking dogs to murders filled shelves, drawers, and boxes. There was even a county jail ledger from 1858.

"We knew we would eventually need an imaging system, so we started looking early," recalls Michael Dane, Director of Support Services in the Sheriff's Department. "We receive 6,500 reports each year, averaging 6 pages each. Right now the records clerk spends lots of time filing, retrieving reports, searching for lost files and making photocopies."

The department opted for Laserfiche and a high speed Ricoh scanner. Almost immediately after the purchase order was approved, the worst rains in decades sent the Willamette River surging over its banks. Raw sewage threatened to back up into the county's basement records room and the lowest two shelves were in danger of being inundated. Eight volunteer deputies worked frantically to box up records and carry them upstairs.

"Our offices were filled with boxes of paper," Dane says. "It was hampering our work."

Later, as the waters receded, the county donated the old jail records to a local museum and changed its rules on retention of all records.

"We used to keep everything forever," Dane says. "Now we follow the state requirements—2 years for misdemeanors, 7 years for felonies, and 'forever' only for homicides and unattended deaths." (According to Dane, Oregon law defines "forever" as 100 years.) They also decided to broaden their implementation of Laserfiche to include current documents and active cases. "Initially, it was just to be for archiving, a replacement for filing cabinets," Dane says. "**But as we saw the system demonstrated, we realized how much more we could do and our expectations changed. Imaging is not just a way to archive stuff, it's also a way to share it.**"

After scanning in the current records, the county plans to scan in all incident reports and then make the system available to the District Attorney, Juvenile Authority and Roads departments via the county's WAN (Wide-Area Network). **Eventually all 15 county departments will archive and share their records using Laserfiche**.

"We're even considering making the scanned documents available to the City of Corvallis, because they share our network," Dane says. "With Laserfiche, we'll be sharing files using faxing and our network instead of using photocopying and inter-office mail."

Section Three

Conducting a Needs Assessment and Developing an Implementation Plan

Conducting a Needs Assessment

The success of your implementation is directly related to the amount of effort and collaboration that goes into planning the project. To ensure that all departments actively participate in the planning process, you should assemble a project management team that includes each department head, as well as IT and records management personnel. You should also appoint a project manager, who will establish deadlines, assign roles and tasks, and monitor the project's overall progress.

Analysis

Performing some type of **needs analysis** is the next step in preparing for your implementation. A comprehensive needs analysis requires a great deal of work and is not something that can be entrusted to an outside consultant. During this process, the best thing a consultant can do is play the role of facilitator and help guide your analysis. An experienced consultant will teach you what you need to know and keep team members on task so that the analysis is completed in a timely manner.

Performing the bulk of the analysis internally is important because it gets team members personally invested in the success of the project. When you know exactly what needs you want to address and how you want to address them, you will be in a much better position to select the best possible solution. Getting people from multiple departments involved early in the process will set the tone for a successful implementation. Furthermore, learning how to work together in the early stages will pay dividends later on when it comes to design, configuration and training.

When you analyze your needs, there are a number of factors to keep in mind:

- **How many documents must the system store?** Consider both the number of existing documents and the number of documents added annually. This information determines how much storage space is needed, the hardware configration and the cost of the system.
- **How many users will be using the system concurrently?** This determines preliminary software costs, required licenses and server size.
- **What departments will be using the system and is it necessary to provide public access?** This determines the specific features and security levels needed.
- **What business problems need to be solved to reduce costs and improve productivity?** This determines which functions of a document management system will be requirements and which are optional. It also helps determine whether plug-ins or customizations are necessary.
- **Are there regulatory compliance issues governing your organization?** If so, the document management system should have functions supporting compliance.
- **Do you need to integrate your document management program with other software applications, such as human resources or GIS programs?** Because integration issues often increase the time required for implementation of document and records management systems, these concerns should be resolved before investing in a particular system.

- **Do you want a turnkey solution or a customized one?** This determines the amount of consulting, installation, training, configuration and support needed.
- **What type of network is currently used?** Will it stay in place, or will it be upgraded? This determines network constraints, system configuration and workstation upgrades.

Process Analysis

The most efficient way to complete a needs analysis is to perform what's commonly referred to as a **process analysis** in each department. The basic theory of process analysis is that you can break down your daily activities into a series of business processes. Business processes have a distinct starting point and lead to a definite outcome, based on the decisions made during the process. Process analysis is especially useful when preparing for your implementation because documents are an important component of many business processes.

A comprehensive process analysis involves the following steps:

1. **Map daily activities to business processes.** Examine the activities you regularly perform in your department. Determine how each one begins and what decisions must be made before you reach an outcome.

2. **Diagram and document the processes.** Most people find it easiest to understand a process diagram when it takes the form of a flowchart. Flowcharts are the most natural way to diagram processes because they clearly show the starting point, decision making and possible outcomes. Once you've developed a process diagram, you need to document what happens at each step in the process.

3. **Identify breakdowns in the processes.** The "analysis" component of process analysis comes into play when you try to identify breakdowns in the processes you've documented. Where do things often go wrong? What steps in the process take longer than they should? Is the process unnecessarily complicated? Do the processes have dead ends that hinder resolution? You must be able to pinpoint breakdowns in your processes before you can improve them. If you can't find any breakdowns, you'll have a hard time justifying your need for a document management system.

4. **Determine the role of documents in the processes.** If you're preparing for an implementation, you need to identify the role documents—and information about them—play in each process. This is necessary because you need to establish the connection between documents and the business processes within your department.

5. **Identify how documents are related to process breakdowns.** In order to show how a document management system will help improve services, you must demonstrate how documents—and the system currently used to manage them—are related to process breakdowns. Does it take longer to make decisions because people don't have information at hand? Does it take longer to respond to requests for information because you have to manually search for documents in a storage room? Does the inability to quickly locate information have a negative effect on your ability to serve constituents?

6. **Use breakdowns to identify solution requirements.** Once you know how working with documents affects your ability to complete business processes, you can quickly determine your solution requirements. Simply put, you want your document management system to address every process breakdown that's caused by the way you currently work with documents. Whether such a solution exists is another question, but assembling a list of requirements that are directly related to your business needs is the best way to find out.

7. **Quantify the benefits that will come from meeting your requirements.** If you implement a solution that meets all of the requirements you've documented, how will that affect your ability to provide services? What kind of effect will the solution have on your business processes, and how can you show that the solution is successful? Whenever possible, identify the quantifiable benefits that you expect from the solution. If you document the benefits before the solution is selected and implemented, everyone involved will know what's expected in order for the solution to be considered successful.

To help you assess your organizational needs, there is a worksheet included at the back of this book with the most important questions you will need to answer about what you need a document management system to do. Having a clear idea of your needs will make it much easier to evaluate possible solutions.

Client Story: Cerebral Palsy of Massachusetts, Inc.

Understanding their needs meant a solution that is a perfect fit

Cerebral Palsy of Massachusetts, Inc. (CPM) has a government contract to manage and pay home care providers for over 3,800 state residents diagnosed with cerebral palsy. Paying providers in a timely manner was difficult until Laserfiche helped CPM devise the right solution.

With upwards of 10,000 people to pay in a timely fashion, CPM must manage incoming timesheets and other materials from a variety of sources, with 95 percent of the timesheets coming in via fax server. **CPM uses Laserfiche to import all the faxes directly to their document repository, saving printing costs and giving employees instant updates to help answer questions.**

"The first phase of our work is always to listen, and only then propose a solution that meets the customers' needs," says Claude Schott, a Laserfiche reseller who helped CPM implement their document management system. "Only after we fully understand an organization's needs can we develop the right solution for them."

The diagnosis of CPM's unique needs:

Problem:

Too much paper—twenty-five file cabinets' worth—and not enough organization. Answering worker inquiries was time-consuming and frustrating.

Solution:

Laserfiche software that automatically stores digital copies of every time-sheet. Call center staff can now type in a worker's name and instantly retrieve up-to-the-minute information.

Results:

According to CFO Larry Spencer, "**We now have an inexpensive, easy way to track all our paper**. The answers to all the questions we receive are available on our computer screens. Going paperless made us much more efficient."

Developing an Implementation Plan

Careful planning is one of the most important elements of a successful implementation. Planning needs to begin before the first dollar is spent on the project. Projects have a much better chance of success if someone has documented, in detail, the project scope, system requirements, schedule, business case and technical environment before you begin. As obvious as it may sound, these first steps are frequently not accomplished until the project has already started.

The vendor you choose as your document management consultant should assist you in the creation of a document management implementation plan. If you try to do this in-house, without the assistance of trained professionals, you may miss important elements that would greatly affect the success and cost of your document management system implementation.

Creating an implementation plan

The first step of an installation should be a **site evaluation** by the software vendor to determine proper equipment placement and to identify any network connectivity problems. **Hardware installation** consists of connecting and setting up all of the components, including installation of the necessary operating systems and drivers. It requires the testing of equipment to ensure proper hardware functionality and network connectivity.

After tests of the hardware have been conducted, **software installation** is the next step. In this phase, the document management software is installed on the document management server and the necessary workstations. It must be tested to ensure operability.

Generally, the software vendor will perform these tasks with the collaboration of the organization's IT personnel.

At the back of this guide, there is a worksheet designed to help you develop an implementation plan. Designing a clear implementation plan will help your organization adjust smoothly to your new system. An implementation plan will also help you identify the roles of key staff members and how the system will be integrated with your daily operations.

Choosing what to outsource

Organizations sometimes find it faster or more cost-effective to have a service bureau perform their back-file document conversion or ongoing document scanning. Generally, in these cases, the document management system is maintained by the organization, while the service bureau is responsible for delivery of the scanned documents on CDs or other media. In addition to storing images and text information, these CDs must also carry data describing the document names, template fields and folders.

If the organization has been modifying existing documents and creating new ones during this time, overwriting the organization's database with the new one provided by the service bureau is not an option. The document management system must be able to merge new and existing data seamlessly. A portable volumes feature will handle this automatically.

Scaling from a pilot project to an organization-wide solution

When it comes time to put your document management system to work for you, **a pilot project** is one way to begin. Large organizations sometimes prefer to begin with a pilot project involving one or two departments before expanding their document management system to the entire organization.

Have your staff review the progress and make sure that the conversion from paper to paperless is working for your organization. If changes need to be made, it is much better for your organization and your staff when they are made in the beginning.

Whether or not an organization begins with a pilot project, a document management system should be scalable, meaning that it should allow an organization to easily expand the size of the system to accommodate organizational growth, at the level of either users or documents.

Training staff

Training programs should be tailored to the specific needs of users and their concerns.

User training

User training involves a focus on the basics of daily system use. This training should take place on-site. Each group should receive all instruction necessary to ensure comfort with the new document management system. The amount of training necessary will depend on the users' level of familiarity with Windows applications, the document management system's ease of use and the degree of change from existing procedures. Because of the need to bring new employees up to speed as quickly as possible, a well-designed document management system should be easy to use.

Given a user-friendly system and minimal change in procedures, most users will become proficient in a short time period. Effectiveness is improved when the class size is limited to no more than 10 people and participants are free from interruption. Training should include supervised, hands-on use of the document management system during actual operation. This allows users to ask questions that might not occur to them until they are using the system for business procedures.

System administrators

It is important to train select individuals on how to administer and maintain the system. **On-site training** is recommended because it increases familiarity with specific details of the document management system.

Implementation consulting

Implementation consulting assists those responsible for document and records management functions to develop strategies for translating the organization's current filing and indexing structures into electronic systems. Electronic filing is different from paper filing, and records managers face the challenge of these differences when setting up their system. Considerations regarding retention schedules, storage and filing methodologies need to be evaluated before the system is fully implemented. The length of the training depends on the complexity of the filing system and should take place on-site.

Vendor resources

Your vendor should also provide training resources to help your organization get up to speed with your new document management system. From best practices, white papers, discussion forums and newsletters to Webinars, onsite training and annual training conferences, **vendor resources provide an extra layer of training**. Training conducted by staff members who work with and support the document management software daily can be crucial to implementation success.

Support and maintenance

Document management systems, like any mechanical tool, require maintenance. Organizations should evaluate the software vendor's support structure. Vendors should offer various levels of support from software upgrades to regular, on-site maintenance visits.

Factors that affect the level of support that your organization needs are:

- Size of the system purchased
- Proposed level of system usage
- IT personnel's level of experience with document management
- Internet access

- Concurrent changes that have to be made to the organization's computer network or infrastructure
- Rate of personnel turnover

Support can entail any or all of the following:

- Software upgrades
- Telephone hotline support
- Online forums
- Remote access to your system
- Software patches available through an FTP site
- Regularly-published technical bulletins or newsletters
- On-site maintenance visits
- Additional and/or advanced training sessions
- Hardware support

When purchasing hardware, such as servers, storage devices and workstations, your organization should choose a vendor with a good reputation for service and support. While the initial cost may be higher, the benefits include less downtime and more consistent, reliable operation.

Client Story: City of Surrey, British Columbia

Implementing a pilot program and producing immediate results

The City of Surrey, BC, began their journey toward digital document management technology with a request for a large-format scanner from the Planning and Development Department. Recognizing the regulatory ramifications of scanning documents and placing them on the network without having a comprehensive records management plan, the city launched an initiative to implement an enterprise information management solution.

Prior to undertaking a city-wide installation, the city established a pilot program in the Planning and Development department. On average, this department issues 100 building permits per week, generating from 60 to 100 records related to each property. In addition to processing and filing these records, department staff members constantly receive requests for copies of archived building plans from inspectors, other city departments and members of the public.

Once the department's records were scanned into Laserfiche, users could quickly locate digital building plans by entering the property's address. Laserfiche's full-text search tools also enable users to pinpoint information within related documents. Because staff members no longer have to search through paper, microforms and microfiche to fulfill information requests, **the department has reduced search and retrieval costs by at least $30,000 per year**. Furthermore, in-house scanning saves applicants the cost of having to submit duplicate copies of building plans. And a **50 percent reduction in the amount of time necessary to review plans** means that applicants enjoy faster turnaround times for permit applications.

Compliance and legal issues

In an increasingly-demanding regulatory environment, a document management system can help limit exposure to civil and criminal liability stemming from non-compliance with regulatory statutes by ensuring the consistent application of policies organization-wide and by providing audit reports.

It is important to realize that **technology itself cannot guarantee compliance**. The essence of compliance lies in the application of systematic policies and procedures established by your organization to maintain, protect and provide access to business-essential records. To be truly valuable as a compliance tool, technology must be flexible and secure enough to support the complex record-keeping procedures required in a multi-regulatory environment.

While laws and auditing authorities vary by industry and state or region, most regulations share two common principles: **the information must be set in time**, meaning that the date and time of creation of the digital images must be recorded in an unalterable fashion, and **the storage media used by the system must be unalterable**. In some areas, such as financial planning, a copy of the records must be maintained by an independent third party and be readily available to auditors when requested.

In order to meet general compliance demands, a document management system must:

- Allow documents and records to be retrieved on demand.
- Store digital images on acceptable media.
- Maintain records in an unalterable format.
- Permit a complete and accurate transfer of records.
- Possess reasonable controls to ensure integrity, accuracy and reliability.
- Have reasonable controls to prevent and detect the unauthorized creation, alteration or deletion of records, as well as record deterioration.
- Contain an indexing system that facilitates document retrieval.
- Be able to print copies of records when required.
- Make cross-referencing with other record-keeping systems and software possible.
- Have documentation on how the software works and how it is set up.

Many government agencies now accept imaged documents as legal records, meaning that the paper originals can be destroyed, given certain conditions.

In general, for an imaged document to qualify as a legal record, the following must be true:

- Records must be stored on unalterable media, such as CD, DVD or WORM.
- The system must have controls to ensure integrity, accuracy and reliability.
- The system must provide some type of audit trail to prevent and detect unauthorized creation of, addition to, alteration of or deletion of records.
- A complete and accurate transfer of records must be possible.
- The system must have reasonable controls to prevent and detect deterioration of records.
- There must be an indexing system to assist with finding records.
- The system must have the ability to print copies of records.
- The system must be able to cross-reference other record-keeping systems and software.
- The system must have documentation on how the software works and how it has been set up.

The legality of imaged documents varies depending on the federal agency, state, county, municipality and department involved. Organizations should consult with an attorney on the specific statutes governing their area.

Industry-Specific Issues

Financial Services

The core of a quality financial services compliance program isn't technology, it's the policies, procedures and people you work with daily. A quality digital document management system will provide your firm with the tools you need to:

- Reduce the storage burden of complying with record-keeping regulations such as SEC Rules 17a-3 and 17a-4, FINRA rules 3010 and 3020, Sarbanes-Oxley and the USA PATRIOT Act.
- Publish time-dated records to unalterable media, a key element of SEC record-keeping rules.
- Constantly monitor document access and retrieval with audit trail features.
- Comply with SEC and FINRA document retention and destruction regulations.
- Ease compliance with business continuity directives.
- Expedite audits by easily and quickly producing records on demand.
- Safeguard client privacy and inspire customer confidence.

When your firm is evaluating document management systems, keep in mind that the solution's capacity to facilitate compliance is central to its success.

Your solution provider should work closely with your compliance officers to make sure your solution helps avoid the risks of non-compliance while streamlining auditing, third-party storage and other compliance-related record-keeping procedures.

Client Story: Feenan Financial Group

Saving time and aggravation with built-in compliance features

Tom Feenan, founder of the Feenan Financial Group in Quincy, MA, calculated early last year that **the firm was paying $13,000 per year to rent space for filing cabinets**. He vowed that he would rectify this situation and, after a few twists and turns, found Laserfiche and the solution to his problem.

"I thought to myself, 'There has to be a more efficient way to do this,'" Feenan says. He conducted an Internet search that included an investigation of SEC requirements regarding the conversion of paper into digital files. He then asked his broker/dealer, National Planning Corporation (NPC) of Santa Monica, CA, to support his plan to become a paperless office.

"They asked me to wait until they could take a look at the issue from a broader perspective," Feenan says. "Five months later, NPC issued a directive that urged all their member firms to look into document imaging and recommended Laserfiche, and we have been scanning and getting rid of our paper ever since. **The file cabinets in the space I measured last year are now gone and we have been able to put another office in their place.**"

Feenan says he is extremely impressed with Laserfiche's performance and believes that going paperless is a new foundation for the continuing success of his firm.

"**We saved a half day's worth of staff time when the compliance officer from NPC was here recently for an audit.** We're finding things faster and we're starting to look to Laserfiche more often to help us with our daily work. It is already a very worthwhile investment."

Healthcare

Protecting the integrity of patient records is crucial to the success of any medical organization, from medical practices and hospitals to medical billing organizations and insurance companies. Document management software can function as the records management cornerstone of HIPAA compliance initiatives, providing comprehensive security that protects records while reducing storage costs and allowing authorized personnel information on demand.

- Balance security with efficiency to minimize the risk of non-consensual release of protected health information (PHI).
- Use audit trail functionality to easily demonstrate adherence to established retention and access procedures.
- Assure proper destruction of expired patient records.

Document management can also ease the transition to electronic medical records (EMR), in compliance with the 2003 Medicare Modernization Act and the 2004 ten-year electronic health record (EHR) plan.

State and federal regulations have made the release of information (ROI) process extremely complex. Both providers managing requests themselves and outsourced ROI vendors must establish a records release management process that is both compliant and verifiable.

An advanced electronic document management solution offers both. A combination of workflow, mandatory review fields and audit functionality ensures that every required step in the process is performed. These steps include initial request logging, tracking of key dates, requestor authentication, electronically highlighting and/or redacting non-requested sensitive information and sequential review.

Client Story: SurgiCenter of Baltimore

Solving problems and ensuring HIPAA compliance with built-in security features

One of the nation's top free-standing surgical centers solved its medical records problems, improved its billing processes and assured critical federal HIPAA compliance across its 300 doctor and 57 staff member enterprise, thanks to Laserfiche.

The SurgiCenter of Baltimore stores all of its medical records electronically, **providing immediate access to patient information to doctors and nurses in operating rooms, recovery areas and consultation offices**, according to Jeffery R. Johnson, Systems Information Coordinator.

These technology advantages not only improve the operation of the Center, but they save money wherever they are deployed, Johnson says. For example, **the medical records department has reduced labor costs, and reimbursement from insurance companies is coming several days faster.** In addition, the Center is saving hours of work and improving employee morale by ending frustrating searches for files. Paper records are only kept in the office for three months, then sent to storage. Laserfiche copies are kept for six years and then are removed from Laserfiche, in keeping with Maryland law.

"When it comes to HIPAA compliance, the SurgiCenter of Baltimore has what it needs with Laserfiche, with its Audit Trail module to safeguard patient privacy," Johnson explains. "Our administrator, Ms. Jerry Henderson, serves on a national HIPAA compliance panel, and she frequently invites confused hospital administrators to see how we have solved the problem with our built-in security."

Public sector

The public sector, from municipalities and government agencies to law enforcement and educational institutions, operates in a stringent multi-regulatory records retention environment. Records retention guidelines come from the executive branch, legislatures, administrative agencies and courts, and can include orders, statutes, regulations and case law. As an example, federal record-keeping laws include COPPA, E-SIGN, FACTA, FCRA, FOIA, FRA, Gramm-Leach-Bliley, GEPA, HIPAA, OSHA, Sarbanes-Oxley and UETA.

Public records acts (PRA) guarantee constituents access to information. A public record is generally defined as any writing containing information relating to the conduct of government, regardless of physical form. In this case, "public records" can be either electronic or paper documents, maps, photographs, or even audio or video files. This definition is intentionally broad so it will cover every conceivable kind of record involved in the governmental process and help protect the public's right to be informed regarding the actions of their government.

State and local agencies, advisory boards, commissions and private, non-profit entities carrying out public functions using public funds must follow PRA guidelines.

Document management can assist in compliance with PRA requirements by:

- Allowing for prompt response to FOIA requests.
- Enabling citizens to search for information themselves using Web tools.
- Lowering the cost of compliance with citizen requests for copies.

Document management also assists with protecting fragile historical archives while still allowing researchers to access them.

Client Story: City of Westminster, Massachusetts, Fire Department

Preparing for disaster and safeguarding electronic records

The Westminster Fire Department began using digital data in 1985. Fire departments generally use records management systems designed specifically for firefighters, although according to Fire Chief Brenton Macaloney, there's no particular consistency when it comes to vendors and most departments keep paper records as well, creating a "mishmash" of paper and electronic data.

This combination of paper and electronic data proved fortunate for Westminster. "We had a catastrophic failure of our records management software," Macaloney remembers, "which caused us not to have any electronic data from the 1980s all the way through the year 2000."

Because Westminster had always kept paper copies of their records, the department could retrieve the paper copies. But resuming digital data storage was a challenge. Macaloney, who had only a massive number of paper records to work with, knew he needed a common way to look at and retrieve data.

"Before installing Laserfiche, I had no consistent way to retrieve information regarding any incident without someone telling me specifically the date and time that it happened," he says. "Laserfiche provided a mechanism to scan the data, retain it, retrieve it, sort it and search it—and not just the records from 1985 forward, but everything. **Now I can log into Laserfiche and pull up an incident in seconds.**"

Section Four

Records Management Specifics

Records management systems simplify the **life cycle management of business records**. A records management system supports the automatic enforcement of consistent, organization-wide records policies and reduces the cost of regulatory compliance. This section explains the specifics of records management, from defining what records are and what records management is to how to choose a quality records management application.

Since 2005, records management has become increasingly important for organizations due to new compliance regulations and statutes. While government, legal, financial and healthcare entities have a strong history of records management, general record-keeping of corporate records has been poorly standardized and implemented. Scandals at companies including Enron and Arthur Andersen, and, more recently, at Morgan Stanley, have renewed interest in corporate records compliance, litigation preparedness and other issues.

Privacy, data protection and identity theft have all become issues of concern for records managers. The need to ensure that certain information is not retained has brought greater focus to records retention schedules and records destruction.

Records management is often thought of as an unnecessary or low-priority administrative task, but, in fact, records management is the responsibility of all individuals within an organization.

What is a record?

Records consist of information created, received and maintained as evidence of business activities.

The International Council on Archives (ICA) defines a record as "recorded information produced or received in the initiation, conduct or completion of an institutional or individual activity and that comprises content, context and structure sufficient to provide evidence of the activity. While the definition of a record is often identified strongly with a document, a record can be either a tangible object or digital information which has value to an organization."

The Federal Records Act (44 USC 3301) indicates that records include "all books, papers, maps, photographs, machine readable materials, or other documentary materials, regardless of physical form or characteristics, made or received by an agency of the United States Government under Federal law or in connection with the transaction of public business and preserved or appropriate for preservation by that agency or its legitimate successor as evidence of the organization, functions, policies, decisions, procedures, operations or other activities of the Government or because of the informational value of data in them."

How To Identify a Record

If you answer "yes" to any of these questions, you may have a record:

- **Was it created in the course of business?**
  e.g. correspondence, agreements, studies
- **Was it received for action?**
  e.g. FOIA requests, controlled correspondence
- **Does it document organizational activities and actions?**
  e.g. calendars, meeting minutes, project reports
- **Is it mandated by statute or regulation?**
  e.g. administrative records, legal/financial records, dockets
- **Does it support financial obligations or legal claims?**
  e.g. contracts, grants, litigation case files
- **Does it communicate organizational requirements?**
  e.g. guidance documents, policies, procedures

If you answer "yes" to any of these questions, you may have a non-record:

- **Is it reference material?**
  e.g. vendor catalogs, phone books, technical journals
- **Is it a convenience copy?**
  e.g. duplicate copies of correspondence, memos or directives
- **Is it a stock copy?**
  e.g. organizational publications or forms
- **Is it a draft or working paper?**
  e.g. draft with no substantive comments, rough notes, calculations

Note: Some drafts are needed to support a decision trail or are required by a records schedule.

If you answer "yes" to this question, you may have a personal paper:

- **Is it only related to your own affairs?**
  e.g. soccer schedule, PTA roster

Note: Personal planners and calendars may actually be records if they document your organizational activities.

What records must be kept?

To identify which records your organization must keep, it is important to consider several issues.

What does your organization do that needs to be documented? What are your mission-critical records? What records document decisions or are part of your work process? What records are you required to keep by the regulatory bodies that have oversight over your organization? Examples might include permit files, project files, reports, publications, time cards, personnel files, contact files and so on.

Look at each type of record and decide why it is created and maintained. You may be required to create and maintain records for a number of valid reasons, including program administration, management reporting, federal or state statute, federal regulation, or organizational policy or procedures.

You may find that many of the series on the list for your organization are working files, files maintained for convenience or reference materials. Reference and personal convenience are valid reasons for keeping records. Frequently, the only justifications for maintaining files are personal ones, such as "I need the records for reference," "Somebody may ask for it" and "I don't trust anyone else to keep it."

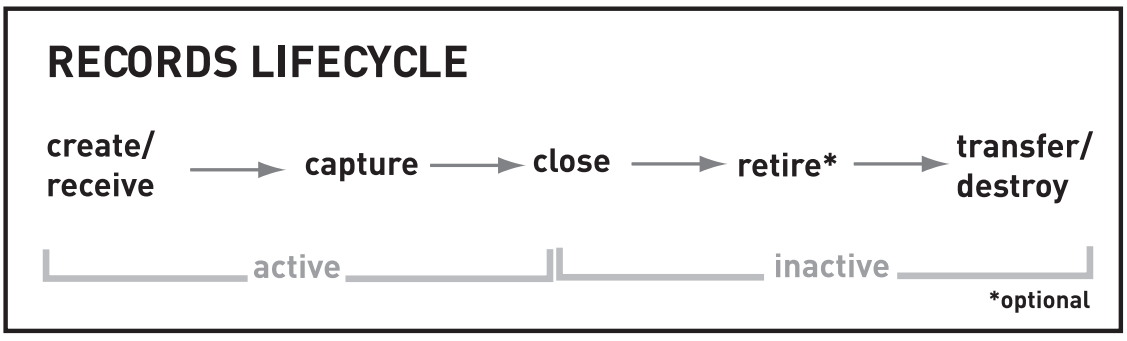
To determine which records must be kept, focus on the files that directly support your organization's mission, corporate history or administration. These are your corporate records, without which your organization could not function, and these are the ones you need to control.

Identifying the list of corporate or mission-critical records is the most important and the most difficult step in the records management process. It takes a little time, but the benefits are great and it will allow you to manage your information assets much more effectively and efficiently.

What is records management?

Records management is a specialized branch of document management that deals with information serving as evidence of an organization's business activities. It includes a set of recognized practices related to the life cycle of that information, such as **identifying, classifying, archiving, preserving and destroying records. The ISO 15489: 2001 standard** defines it as "the field of management responsible for the efficient and systematic control of the creation, receipt, maintenance, use and disposition of records, including processes for capturing and maintaining evidence of and information about business activities and transactions in the form of records."

The fundamental concept behind records management is the idea that each record has a life cycle. **"Life cycle"** refers to the stages that every official business record must go through. After a record is created, it must be filed according to a defined, logical scheme into a managed repository where it will be available for retrieval. When the information contained in records no longer has any immediate value, the record is removed from active accessibility. Depending on the nature of the record, it is either retained, transferred, archived or destroyed.



The practice of records management involves the following activities:

- Creating, approving and enforcing records policies, including a classification system and a records retention policy.
- Developing a records storage plan, includng the short- and long-term housing of physical records and digital information.
- Identifying existing and newly-created records, classifying them and then storing them according to standard operating procedures.
- Coordinating access to and circulation of records within and outside the organization.
- Executing a retention policy to archive and destroy records according to operational needs, operating procedures, statutes and regulations.

Tools for maintaining and using records include file plans, indexes, controlled vocabularies, taxonomies, data dictionaries, and access and security procedures. The main tool used to manage the disposition of records is the **records schedule**. A records schedule is the official policy for records and information retention and disposal. The schedule provides mandatory instructions for what to do with records, as well as non-record materials, that are no longer needed for current business.

Other benefits of using a records schedule are:

1. Ensures that the important records are organized and maintained in such a way as to be easily retrieved and identifiable as evidence of your activities (especially in the event of an audit, a FOIA request or litigation).
2. Conserves office space and equipment by using filing cabinets to house only active records.
3. Saves money by the regular transfer of inactive files to less costly storage areas for subsequent disposition.
4. Helps preserve those records that are valuable for historical or research purposes.
5. Stabilizes the growth of records in offices through systematic disposition of unneeded records.

A **records series** is the basic unit for organizing and controlling files. Series are file units or documents that are kept together because they relate to a particular subject or function, result from the same activity, document a specific type of transaction, take a particular physical form or have some other relationship arising out of their creation, receipt, maintenance or use.

The series concept is a flexible one, and your organization should be careful to create series by organizing documents in ways that facilitate management of the records throughout their life cycle.

Each record series should be located separately from all other records, and each record series must be covered by a records schedule.

What are the benefits of records management?

Records enable and support an organization's mission. Every organization must address well-defined objectives that add value, either by achieving the goals or by reducing costs. Because records contain such valuable information, it is essential to take a systematic approach to their management.

Records management:

- Enables more informed decision making, by making information readily available.
- Helps deliver services in a consistent and equitable manner.
- Facilitates effective performance of activities throughout an organization.
- Protects the rights of the organization, its employees, and its customers.

- Provides continuity in the event of a disaster.
- Protects records from inappropriate and unauthorized access.
- Meets statutory and regulatory requirements including archival, audit and oversight activities.
- Provides protection and support in litigation.
- Allows quicker retrieval of documents and information from files.
- Improves office efficiency and productivity.
- Provides better documentation more efficiently.
- Supports and documents historical and other research.
- Frees up office space for other purposes by moving inactive records to storage facilities.

Managing digital records

The general principals of records management apply to records in any format. Digital records, almost always referred to as **electronic records,** raise specific issues. It is more difficult to ensure that the content, context and structure of records is preserved and protected when the records do not have a physical existence.

Unlike physical records, electronic records cannot be managed without a computer. Functional requirements for computer systems used to manage electronic records have been produced by the Department of Defense (DoD). **DoD Standard 5015.2** has become the de facto standard for records management software across a wide spectrum of industries.

DoD 5015.2 outlines the baseline functionality required for records management applications used by the U.S. Department of Defense and has been endorsed by the National Archives and Records Administration (NARA) as an "adequate and appropriate basis for addressing the basic challenges of managing records in the automated environment that increasingly characterizes the creation and use of records." Records management applications that have been certified as DoD 5015.2 compliant provide the peace of mind that comes from objective, third-party evaluation.

While records management applications that have been certified as DoD 5015.2 compliant represent an objective, third-party evaluation, they do not guarantee regulatory compliance or records security.

Particular concerns exist about the ability to retain and still be able to access and read electronic records over time. Electronic records require appropriate combinations of software and operating systems to be accessed, and so are at risk because of the rate at which technological changes occur. A considerable amount of research is being undertaken to address this issue, under the heading of **digital preservation**.

How is records management different from document management?

While records management shares some features with document management, they are two different disciplines. Organizations need to have an integrated approach that addresses both document management and records management. Understanding how these terms differ will save you countless hours, money and the embarrassment of not coming close to your expectations—and it will also help you identify which of these expectations are unrealistic.

Generally, digital document management focuses on:

- Reducing lost and misfiled documents.
- Providing faster search and retrieval of documents.
- Reducing the amount of physical space used to store documents, such as file cabinets, boxes and shelving.

- Helping to better organize existing documents.
- Improving general work processes and organizational efficiency.

Records management includes the above, plus:

- Identification of what records exist by records inventory.
- Application of required retention periods to stored items.
- Identification of the owner of each records series.
- Determination that a chain of custody and a proper audit trail both exist.
- Assistance in e-discovery issues and applying legal holds to records when needed.
- Development and administration of defined records policy and procedures, regardless of whether the records are electronic or paper.
- Management of disposition (disposal of documents).
- Preservation of records throughout their life cycle.

Succinctly, all records management includes document management, but not all document management is records management. Records management also includes archival issues—both assuring that permanent records are accessible and readable 100+ years into the future and protecting often fragile historical archives.

Each of the following terms has a different meaning depending on whether IT personnel or records managers are using the term. How these two groups use these terms is so different that it can easily lead to misunderstanding and confusion.

Trying to reinforce the importance of records management with IT personnel is often different because they speak a different language than records managers. They, along with end users, may not have given much thought to records management in the past, so they may not see it as important or essential to business procedures. Using the chart on the next page, you should be able to address the concerns of both records managers and IT personnel to find an appropriate records management application.

Term	Viewpoint (what it means to each group)	
	Records Managers	IT Personnel
Archiving	To keep. Information must be readable, no matter what technological changes occur in the future.	To move. Data must be migrated to off-line or near-line storage such as tape, optical storage, or other low-cost storage.
Retention	Classify and store records according to a defined schedule, including potential disposal.	Store in an electronic format and back up to another medium, such as tape. A destruction period is not explicitly defined.
File	A manila folder that holds paper records. The act of properly placing a record into the appropriate container.	An electronic document.
Record	An official document of the organization. Not every document is a record.	A field in a database.
Preservation	How will this record be accessed and viewed several decades in the future? Will all the components to read the data still be available, including the media that stores the data, the device reading the media and the software that operates the device and reads the data? It is a record manager's job to think about preservation and migration, especially with records that must be permanently retained.	Usually not addressed, or a viewpoint of less than 10 years is taken due to the expected change in the systems used. Will it be possible to successfully migrate all the data to the new platform in the proper format?
Office of Record	The one functional area of an organization deemed the party of responsibility for an individual records series.	The person who created the data, who may or may not be the ultimate owner of the information.

What does a records management application do?

Records management applications simplify the life cycle management of records without interfering with your organization's line of business. A records management application supports the automatic enforcement of consistent, organization-wide policies and reduces the cost of regulatory compliance. Records management applications must protect records from loss and tampering, while allowing the records manager and other decision makers access to necessary information.

Often, a records management application can help with the capture, classification and ongoing management of records throughout their life cycle. A records management application can be paper-based, like paper medical charts, or it can be digital.

Records management software is a computer program used to track and store records. This is different from imaging or document management systems that specialize in paper capture and document management, respectively.

Records management applications commonly provide specialized security and auditing functionality tailored to the needs of records managers, including:

- Improved efficiency in the storage, retention and disposition of records and records series.
- Detailed reports of which records are eligible for transfer, accession or destruction.
- Audit trails to track all system activity and the entire life cycle of records.

Records management applications enable the application of systematic controls and policies concerning the life cycle of those records that detail an organization's business transactions. You can file records according to a determined scheme, to control the life cycle of records, to retrieve records based on partial information and to identify records that are due for final disposition.

Records series and metadata

A records management application must allow records to be refiled in different folders or series after their initial filing in order to meet DoD 5015.2 criteria. A records management application must also have a way to control the metadata fields associated with every record, record series and record folder. Metadata is used to locate and evaluate data, specifically through template fields used to categorize documents.

User-definable template fields speed filing and aid in the records management process. The records management application must limit the entering of metadata to the time of filing, yet allow authorized users to edit and correct filing errors.

The Dublin Core metadata element set is a standard for cross-domain information resource description. It provides a simple and standardized set of conventions for describing things online in ways that make them easier to find. Dublin Core is widely used to describe digital materials such as video, sound, image, text, and composite media like web pages.

The Dublin Core Metadata Initiative (DCMI) Metadata Terms provide an abbreviated reference version of the fifteen element descriptions that have been formally endorsed by both ISO Standard 15836: 2003 (February 2003) and NISO Standard Z39.85: 2007 (May 2007):

1. Title
2. Creator
3. Subject
4. Description
5. Publisher
6. Contributor
7. Date
8. Type
9. Format
10. Identifier
11. Source
12. Language
13. Relation
14. Coverage
15. Rights

The DCMI has established standard ways to refine elements and encourage the use of encoding and vocabulary schemes. There is no prescribed order in Dublin Core for presenting or using the elements.

For more information on DCMI, visit **www.dublincore.org.**

Linking

The records management application must allow users to indicate related records through **linking**, a form of metadata that defines and establishes relationships between documents. Examples include supporting documents, superseded/successor records, multiple renditions and incremented versioning.

A records management application should allow document links to be established by all users at the time of filing, but only authorized users should be able to create, modify or remove links post-filing.

Versioning

Versioning is a special document relationship used to indicate an auto-incremented sequence of revisions to a particular record. The records management application must allow users to establish record versioning. Versions must be retrievable as if they were independent documents and contain their own metadata. A records management application must clearly indicate if a record has multiple versions and which version is the most recent.

Security tags and audits

Security tags represent a metadata field intended to define and restrict access to records, as well as aid in their classification and retrieval. A records management application must allow the records manager to define security tags and allow users to assign tags to records upon filing. Only authorized users should be able to modify or remove security tags post-filing. The records management application must also support the audit of all filing, handling and disposition of records.

Vital records

Vital records—those records deemed essential in order for an organization to resume business operations immediately after a disaster—are subject to periodic review and update. A records management application must provide a way to assign a review cycle to vital records and detail when they were last reviewed. Examples of vital records include emergency operating records or legal and financial rights records. The records management application must also offer a way to retrieve all vital records, identify when they were last reviewed and indicate vital records due for review at any given moment.

Disposition and freezing

The records management application must handle two types of disposition action: **interim transfers** and **final disposition**. The available actions for final disposition are **accession** and **destruction**. The records management application must allow for the exportation of entire record folders and their metadata values for transfer and accession. Following the confirmation of successful transfer, the records management application should be able to maintain the records, maintain only the metadata or completely delete the records.

The records management application should also be able to freeze a folder. When a folder is frozen, no record can be removed from the folder, and no record in the folder can be modified.

Transparent records management

The fundamental concept behind records management is the idea that records have a definite life cycle that involves various stages. For example, when a record is created, it must be filed according to a well-defined file plan so that it will be easily accessible to authorized users. Similarly, once a record has been retained for a specified time period, it may need to be destroyed in order to comply with state and federal regulations.

With **transparent records management**, records management requirements do not interfere with your line of business. Transparent records management allows records managers to retain control over the way information is categorized and filed outside of the view of everyday users of the system. A full-featured records management application should offer a "check-in/check-out" feature, which is a collaboration feature

allowing multiple users to modify documents and track changes while still having the safety of keeping documents from being overwritten. More than a simple version control, this feature ensures the security of documents before they are saved permanently.

Records management staff in departments utilizing documents in a primary role generally understand your records management needs and will make sure the records management application will work for all departments, including those that use documents in a supporting role. In fact, one of the greatest strengths of a document management system lies in the way it enables records managers to create a file plan and manage retention schedules without interfering with any department's line of business.

A well-designed system will handle records management transparently, meaning that once it is set up, users will not have to actively participate in the process while records managers still have control over ultimate file indexing, archiving and disposition. Furthermore, the system will enable records managers to more easily apply consistent policies to records in a variety of media, from Web content to archived e-mail messages to audio and video files.

Legal considerations

Legally, records must be trustworthy, complete, accessible, admissible in court and durable for as long as the retention schedule requires. Records management applications are uniquely positioned to help records managers meet these requirements. Whereas paper files are vulnerable to fire, flood and theft, digitized files enjoy multiple layers of protection. Security features protect records from tampering or unauthorized release, while auditing functionality allows you to monitor the actions users take on a record. To assist in disaster recovery planning, records management software enables you to copy records to disc or other unalterable media for off-site storage. If an incident occurs, you can typically restore your archives in a matter of minutes, which allows you to access the critical information you need to respond effectively and to ensure organizational continuity.

Because Web content plays an increasingly large role in service delivery, effective management of Web records is also critical to mitigating risk. Using a records management application, you can take snapshots of your organizational Website at regular intervals and retain these files according to a specified retention schedule. These records will prove highly useful in the event of a legal challenge, or if the original Web content is compromised or lost.

Choosing a Records Management Application

Records management systems require special considerations above and beyond a document management system.

- The records management application should support custom searches based on record properties, retention or disposition properties, full-text content, template fields, folder location, sticky-note contents and more.
- It should be possible to save search results in a usable format, such as an Excel spreadsheet.
- The records management application should manage the full life cycle of the record, from document creation through declaration as a record to final disposition.
- The records management application should provide detailed reports of which records are eligible for transfer, accession or deletion.
- There should be audit trails to track all system activity.

The worksheets included at the back of the book will help you evaluate potential records management applications, assess your organization's needs and develop an implementation plan. Without a clear idea of the available features of records management applications, it is difficult to assess which will best meet your needs.

Client Story: City of Saint John, New Brunswick

Engineering a uniform records management system

Saint John, NB, is the city "where life is on your terms," unless you're in charge of the city's records, that is. Thanks to the Public Records Act and the Archives Act, records managers in the Canadian provinces don't have a lot of leeway when it comes to record-keeping procedures and retention schedules, and, for Saint John, it was becoming quite a challenge to keep both records and paper under control.

Installing Laserfiche Records Management Edition™ turned out to be a tremendous advantage for Corporate Records Manager David Burke. "Here in New Brunswick," notes Burke, "the Provincial Archivist mandates that municipalities manage their records across their life cycles according to specific schedules. The schedules are mated to a subject-based hierarchy known as the Municipal Records Authority for New Brunswick (MRA)."

With over 900 different records series linking to 72 unique retention schedules, the requirements can be quite complex. "I just knew there had to be some way to automate the process of getting information from the MRA into Laserfiche," Burke recalls.

Initially, Burke found a colleague in Alberta to share code from a custom program to link a spreadsheet with a Microsoft Access™ database. Burke then worked with the city's ISS department to set up a folder structure.

"About that time I found out that Laserfiche had developed a utility called the Record Series Setup™," says Burke. "With the help of our reseller, I integrated the MRA and RME and it works and looks good! **It sets up the whole system—pulls all the information we need from the spreadsheet we designed, creates the folder structure and then points to the appropriate retention schedules**. That would have been I-don't-know-how-many millions of key strokes and clicks to do manually. That tool was invaluable."

Saint John's integration of Laserfiche with MRA breaks new ground for New Brunswick. Says Burke, "We're the first municipality in the province and probably in Atlantic Canada to apply retention schedules to our electronic records. That's huge.

"We're sharing our work with other municipalities, letting them know about our integration of the MRA and RME, including the city of Moncton, another Laserfiche user," he continues. "We're looking forward to working together with other municipalities, so we can have a uniform, efficient records management system."

Conclusion

The greater availability and acceptance of document imaging technology, along with the rapidly-declining cost of computer systems, make a document management solution a prudent investment.

In an environment where increasing productivity, efficiency and profitability is crucial to long-term success, a document management solution is a business-essential aspect of day-to-day operations. It is a solution that cuts costs, reclaims storage space for revenue-generating activities, allows staff to redirect labor to more productive tasks and simplifies compliance with ever-changing regulations.

A document management system should be flexible enough to adapt to your organizational needs and address the needs of multiple departments. Scalable, open architecture allows you to start small and expand your solution as your needs change.

Document management solutions can work as effectively for a sole proprietor as for a company with a staff of thousands. The key is selecting the system that is the best fit for your organization.

Worksheet One

Document Management System Evaluation Checklist

These questions will help your organization evaluate competing document management systems in order to choose the system that best meets your needs.

	System #1	System #2	System #3
Capture			
Does the product work with a wide variety of scanners?			
Can you use hybrid and specialized capture devices such as copier-scanners and microfilm scanners?			
Does the system auto-name documents while scanning based on user, date or other values?			
Can you scan additional pages into existing documents?			
Can you perform image adjustments to remove noise, remove lines, crop, rotate and perform other image clean-up?			
Does the system automatically remove blank pages?			
Can you archive electronic documents, including images, text, spreadsheets, PDFs, movies, AutoCAD and sound files, in their native formats?			
Can you send documents to the system from Windows Explorer ?			
Can you archive documents from Microsoft applications?			
Can you automatically extract e-mail metadata?			
Does the system support mandatory metadata acquisition?			

	System #1	System #2	System #3
Capture			
Can you import electronic documents and directories by dragging and dropping?			
Can you export and import documents, folders and their metadata by using briefcases?			
Can you convert electronic documents to archival images without printing and scanning them?			
Can you extract text from electronic documents?			
Can you create new folders directly from the Import dialog?			
Is there Unicode support to handle documents in non-English languages?			
Is there form alignment and dropout for precise zone OCR?			
Can you extract template and identification data from images?			
Can you extract data by zone OCR, bar code recognition or Optical Mark Recognition (OMR)?			
Can you look up external metadata keyed by extracted data or data entered manually?			
Can you use extracted data for document or folder naming, indexing or as input to other processes?			
Does the system identify documents by recognizing forms or by matching extracted data?			
Does the system use identification for document separation or individualized processing?			

	System #1	System #2	System #3
Capture			
Can you imprint images with Bates numbers, lookup data or bitmaps?			
Can you schedule document uploading to the repository?			
Storage			
Is the location of document data fully configurable and storable on any network volume?			
Is there a separate document folder hierarchy from physical storage volumes?			
Can you configure volume size and set rollover limits?			
Is there full support for rewritable, read-only, removable or fixed volumes?			
Can you migrate documents to different physical volumes?			
Can you set document content files to read-only for magnetic WORM support?			
Can you transfer document storage volumes with metadata and folder organization intact?			
Can you attach large numbers of documents via portable volumes for additional synchronization?			
Does the system store documents in non-proprietary TIFF and ASCII formats?			
Indexing			
Does the system use templates to associate metadata with documents and folders?			
Can you create different templates for distinct document types?			

	System #1	System #2	System #3
Indexing			
Are there constraints forcing users to enter template information in specified formats?			
Is there color-coding to distinguish document types?			
Can you reassign or update templates or fields at any time?			
Are selection lists available to standardize template entries?			
Can you generate searchable text from PDFs and CAD files?			
Can you autopopulate template information to documents from parent folders?			
Does the program support simultaneous OCR from multiple workstations?			
How many languages are supported by the OCR?			
Search and Retrieval			
Are template field searches supported?			
Do full-text searches cover the entire database?			
Are fuzzy searches supported?			
Can you search by security tag, volume, creation or modification date, note text or other criteria?			
Can you save search criteria for repeated execution?			
Are proximity searches supported?			
Can you perform name searches by document or folder?			

	System #1	System #2	System #3
Search and Retrieval			
Can you combine search criteria to narrow results (Boolean searching)?			
Can you limit search results by folder?			
Are search terms highlighted to show their precise location within returned documents?			
Can you save search results in folders for quick reference and easy access?			
Is there a line of context display to show how the word or phrase is used without retrieving the entire document?			
Distribution			
Does the software offer a flexible print configuration?			
Is there accurate scaling of print output to match the original document?			
Can you e-mail archived documents as TIFF or PDF?			
Is cross-platform retrieval with standard Web browsers supported?			
Can you distribute and archive records on non-erasable media?			
Can you distribute documents on royalty-free CDs and DVDs?			
Do CDs provide built-in search engines for access on any PC?			
Are there Web browser-based document management capabilities (thin client)?			
Can you create published repositories based on search results?			
Can you drag and drop documents into e-mail?			

	System #1	System #2	System #3
Security			
Are there storage and security measures supporting regulatory compliance?			
Are there privilege rights controlling administrative functions?			
Are there feature rights controlling functions like scanning, printing, searching and importing?			
Are there access rights determining the level of access for users or groups?			
Are there volume access rights determining permission to import data volumes?			
Are there template field access controls limiting users' ability to see and edit template fields?			
Can you determine effective rights for any user?			
Are rights enforceable for both users and groups?			
Can you enforce password policies, including length, complexity and duration of passwords?			
Are you able to configure maximum idle time before users are automatically logged out?			
Can you allow or deny security rights explicitly through inheritance?			
Is inheritance controlled through flexible scoping options?			
Do security tags place special restrictions on documents and folders?			
Are you able to securely redact sensitive portions of documents?			

	System #1	System #2	System #3
Security			
Are there various levels of audit tracking for compliance and accountability?			
Can you control security permissions centrally or delegate to department heads?			
Is there native support for single sign on?			
Can you securely wipe digital records on destruction?			
Can you force printouts to include security watermarks for tracking origins?			
Can you require users to indicate the reason for document export?			
Workflow			
Are you able to model work process with an intuitive graphical interface?			
Can you automate document movement with rules-based routing?			
Can you maintain productivity with automated notifications?			
Is audit tracking available to improve accountability?			
Can you accommodate ad hoc participation in the workflow environment?			
Document Management			
Is there an intuitive folder view to make organization easy and flexible?			
Can you display document names, template fields and volume information in the folder browser?			
Can you customize metadata display and column view in folders?			

	System #1	System #2	System #3
Document Management			
Can you rename and reorganize document files?			
Can you track document versions and customize how you search for display versions?			
Are there check-in/check-out capabilities?			
Is there support for dockable windows, or flexible viewing of images, text, thumbnails and template fields?			
Can you establish document linking relationships?			
Can public and private folders be set up to allow document sharing, mail folders and ad hoc workflow?			
Can you highlight text and images?			
Can users place sticky notes on documents with searchable text and hyperlinks?			
Can you stamp images with customized or predefined graphics?			
Are annotations image overlays that do not modify the original document?			
Are there informational tags to alert users to special properties?			
Can you display black and white, color or grayscale images?			
Can you edit text files created by OCR?			
What is the maximum zoom magnification?			
Does the software support full panning, rotation and contrast?			

	System #1	System #2	System #3
Records Management			
Is the system DoD 5015.2 certified?			
Using the system, can you integrate records management, document management and imaging in one environment?			
Can you create records from documents already under management?			
Can you manage physical records alongside scanned images and electronic documents?			
Can you manage digital video, audio and other electronic files?			
Can you define records series from an intuitive interface?			
Can you describe locations of transfers for records series?			
Can you track current locations of transferred records?			
Can you screen records for eligibility for transfer, accession or destruction?			
Can you confirm destruction of eligible records?			
Can you find records according to status or location?			
Can you specify multiple events that are necessary before records can be cut off?			
Can you specify trigger events determining which retention schedules apply to records?			
Can you configure retention schedules so that superseded records are sent into final disposition?			

Worksheet Two

Needs Assessment

After you've evaluated competing document management systems, you'll need to assess your organization's unique needs to determine which is the best fit. This is also your opportunity to determine what you need your system to do—integrate with other software, aid in workflow processing or simply store and retrieve documents.

Step One: Clearly Identify Your Goals and Objectives

What do you expect a document management system to do for you?

_____

_____

What problems do you need to solve?

_____

_____

How do you plan on using the system?

_____

_____

Do you need the system to interface with current business-critical applications? Which ones?

_____

_____

Step Two: Determine Your Organization's Unique Needs

How many people will need access to the repository? How many named users?

_____

_____

How many people will be scanning paper documents?

_____

_____

Do you currently have a network in place?

_____

_____

Do you require new computers?

_____

_____

Do you require computer upgrades?

How many scanners will be required?

What capabilities will you need?

Where does the majority of your paper originate?

What is the weekly amount of new paper coming into your office?

What is the weekly number of new paper and electronic documents generated by your office?

Do you need audit trails or CD publishing?

What are the retention schedules for the documents you store?

What are your size requirements?

Determine your size requirements by counting the number of file cabinets and storage boxes you have now, as well as the number of new pieces of paper that come into your office on a daily, weekly and annual basis.

Step Three: Determine How Your Organization Distributes Documents

Do you need to fax or e-mail documents?

Do you have offices in various locations that require copies of your records?

Do you need to take your documents out of the office?

Step Four: Determine Your Ideal File Structure

How do you look up information?

What type of information will be stored in the system?

What type of cross-referenced information will you need?

How many different templates do you need?

Step Five: Consider Your Daily Procedures

Who will perform the scanning operations?

What types of information will be scanned?

What are the workflow procedures?

What should be done with paper after it is scanned?

Step Six: Determine Your Conversion Method

Conversion from microfiche or other management systems:

Who will do the conversion?

_____

_____

How long will it take?

_____

_____

How much will it cost?

_____

_____

Back-file conversion:

Will you convert all your archived records or only a portion of them?

_____

_____

What archived records need to be converted?

_____

_____

How many archived records do you need to convert?

_____

_____

Who will perform the conversion?

_____

_____

How long do you need to retain records?

_____

_____

Does your office refer to these records? How frequently?

_____

_____

How long will it take to complete the process?

_____

_____

Day-forward:

Will you only scan records from this day forward?

_____

_____

What if you need old documents in storage?

_____

_____

What types of information should be scanned?

_____

_____

Who will perform the scanning?

_____

_____

On-demand day-forward:

Will you scan back files only when required?

_____

_____

Do you want to decrease the number of paper back files over time?

_____

_____

Worksheet Three

Developing an Implementation Plan

In planning your implementation, you may find it useful to refer to the following project planning methodology. Although not all projects will require the formal planning, documentation and reporting described below, understanding the process will be helpful in designing your own project plan.

Requirements Analysis

Performing a thorough requirements analysis is a critical first step to successfully completing a project on time and within budget. The requirements analysis involves the inspection of the documents that will be captured, the processes that will be automated and the ways people will use and interact with the documents once they've been digitized. During the requirements analysis, you should examine and document important design factors such as security and retention requirements. Once the analysis is complete, you should prepare a summary report.

Confirm the Architecture

In most cases, the architecture of the proposed solution is developed using whatever information is available. Once the requirements analysis is completed, you should confirm the appropriateness of the proposed architecture. If modifications are required, you should document them, along with the reasons for making each change, in the summary report.

Confirm the Software

Using the information from the requirements analysis, you should confirm that the proposed software solution is appropriately configured and licensed. You should document any required addition (or removal) of applications or licenses in the summary report.

Confirm the Hardware

Information about document types, expected performance, user behavior patterns, retention schedules and expected capture volumes can greatly affect the design of the hardware solution. Once the requirements analysis has been completed, you should confirm that the appropriate hardware configuration has been proposed. If modifications are necessary, you should document them in the summary report.

Confirm Deployment Environments

The deployment environment can have a significant impact on the way you deploy your solution. You should examine network bandwidth, desktop hardware and legacy systems to confirm the solution can be deployed as planned. In the summary report, you should document any changes to the proposed solution based on environmental factors, as well as any required environmental changes.

Planning

The formal work plan will serve as the master schedule by which progress will be measured. You should use the work plan to track all project-related activities and generate scheduled and ad hoc progress reports. No work on the project should begin until you've developed the work plan.

Assemble the Project Teams

The work plan should identify the personnel required to complete the project. In most cases, you should include members from each department and from IT, as well as an overall project manager. You should assign roles for each team member and establish a general reporting structure.

Develop a Detailed Project Work Plan

You should logically separate the overall project into distinct milestones, and you should break the milestones into a series of tasks that must be performed in order to achieve each milestone. You should also assign tasks to the appropriate team members in order to clearly define responsibility.

Schedule Status and Milestones Meetings

Regular status meetings help the team to meet milestones and complete the project on time. Because achieving milestones requires team members to complete their assigned tasks, it's important to develop a realistic timeline for completing these tasks.

Develop a Support Plan

A written support plan helps you ensure that end users and system administrators have access to the proper support personnel when necessary. You should document response times to helpdesk inquiries, and define escalation procedures for more difficult issues. The support plan should also detail helpdesk ticketing procedures and personnel to be notified regarding the status of current issues.

Develop a Communications Plan

In addition to scheduled status and milestone meetings, regular communication between project members is necessary. Additionally, it's important to provide reports or documentation to management as the project progresses. It's also important to document the content of each meeting, as well as the decisions that are made, and distribute this information to team members who cannot attend.

Design

Design is usually the first milestone of the project plan and should always be documented in detail. You should develop system specifications that meet the needs outlined in the requirements analysis. These specifications should be submitted for approval before the build process begins.

Build

The system should be built according to the approved specifications. Any changes that need to be made should be added to the specifications document and agreed upon before they are implemented.

Test

Before the solution is rolled out, you should perform comprehensive testing. It's important to identify issues through testing so that productivity is not hindered once the system goes live.

Unit Testing

The proposed solution is made up of individual components that must be installed and tested within their environments. Implementation of a software or hardware component is not complete until it has been thoroughly tested.

System Testing

The overall system should be tested to verify that the individual components work together as planned.

Overall System Architecture Test

The system should be tested according to the way it will be utilized. You should test functions such as scanning, data extraction, exporting and document routing to verify that they're working as expected. You should also test hardware components to verify that image quality is acceptable and all devices can communicate with each other.

Load Testing

Once you've determined that the system works as designed, you should conduct load testing to ensure that it will provide expected performance once it's in production. You should also test network bandwidth and server I/O under loads to verify that things like scanning at peak capacity won't affect search and retrieval.

Revise

Based on test results, there may be functional or performance issues that require modifications to hardware or software components. System modifications should require the approval of an appended specification before they're made.

Revise the Program

You should make revisions according to the appended system specifications. You should test new hardware or software components individually to verify that they function as anticipated.

Regression Testing

You should conduct regression testing to ensure that modifications don't adversely affect system components that originally worked as anticipated.

Rollout

The system should be rolled out according to a well-defined plan. You should coordinate all rollout activities, such as pilot testing, change management activities and training, to ensure a smooth transition to the new system.

Pilot Group

Before the system is rolled out to the entire user community, you should conduct pilot testing using an appropriately diverse sample. During the pilot program, you should monitor usage patterns to verify that the system will be used as predicted and that system components will support the planned usage. You should also solicit usability feedback and determine training requirements.

Communication Plan

You should develop a plan that describes the way project-related activities will be communicated to users. It's also important to develop a way for users to communicate with the appropriate project team members.

Pre-Launch Notifications

If the system launch affects the way people will do their jobs (such as day-forward scanning or workflow requirements), it's critical to give proper notification of when the system will be launched and how users will be affected. Pre-launch notifications can also act as effective change-management activities, providing a forum for users to discuss any potential questions or worries.

Launch Notifications

Launch notifications serve as formal notice of system rollout and should explain what is expected of system users.

Post-Launch Notifications

Post-launch notifications keep the user community abreast of accomplishments, changes and any system-related issues that may affect them.

Training

Providing proper training is critical to the success of the implementation. In most cases, training should be provided onsite, in groups according to role/function and using a copy of the production system.

User Training

User training should be hands-on and conducted in groups, using a replica of the production system. Whenever possible, users should be grouped according to their role or function so that you can target the training as much as possible. You should also schedule follow-up training sessions to address questions that come up after initial system use.

System Administration Training and Procedures

You should encourage system administrators to participate in as much of the implementation process as possible, so they understand how the hardware and software components are configured and work together. System administrator training should cover the overall design of the solution, as well as the way individual components work. It should also cover security configuration, troubleshooting and maintenance. You should pay particular attention to regular maintenance procedures to verify that the system continues to perform as expected.

Define Internal Escalation Path

You should document the way problems are reported, addressed and escalated. Internal support personnel may be trained to address common issues, such as ensuring proper hardware connectivity, resetting passwords, etc. You should give internal support staff system documentation and access to an online knowledge base to assist them with these tasks.

Define Escalation Path to Software Vendor

You should establish lines of communication for escalating issues to your vendor for support. You should also document response times and resolution procedures.

Project Wrap-Up

Once all of the milestones on the work plan are achieved, the implementation is considered complete. Project wrap-up activities may include formal sign-off and a final status meeting.

Publish Project Audit

If included in the work plan, a project audit should be published outlining the project goals, issues faced and final outcome of the implementation.

Worksheet Four

Records Management and Risk Mitigation Toolkit and Self-Evaluation Guide

This worksheet will help your organization:

- Make a preliminary assessment of the status of records management programs.
- Identify major problems.
- Set priorities for program improvements.
- Develop your own comprehensive records management program.

The worksheet is divided into six sections. You may use the entire worksheet to conduct a comprehensive program review or select sections to focus on specific areas, such as records disposition or files maintenance. It consists of a series of questions to be answered either "yes" or "no." A "yes" answer indicates compliance with National Archives and Records Administration (NARA) records management regulations and recommended practices.

This worksheet is adapted from the "Records Management Self Evaluation Guide," located at www.epa.gov/records/tools/toolkits/evaluat/index.htm.

Section 1. Program Management

An effective records management program requires:

- A clear definition of program objectives, responsibilities, and authorities.
- Sufficient resources to administer the program,
- Continuing training for staff.
- Regular internal evaluations to monitor compliance and program effectiveness.

Program authorization and organization

❑ Yes ❑ No Has your organization formally designated a records manager, with responsibility for carrying out a records management program?

❑ Yes ❑ No Does a program directive define the roles and responsibilities of the records manager, the scope of the records management program and the authority of the records manager?

❑ Yes ❑ No Has your organization formally incorporated your records management program into your information resources management program?

❑ Yes ❑ No Are all employees informed of the identity and role of records management staff?

❑ Yes ❑ No Has your organization planned for a new records management application and modifications to existing systems to ensure incorporation of record-keeping requirements and records disposition procedures?

❑ Yes ❑ No Is your records manager involved in the development of micrographic applications?

❑ Yes ❑ No Is your records manager involved in the development of electronic record keeping system, including hardware selection?

❑ Yes ❑ No Is the records manager involved in developing and securing document imaging systems?

Guidance and training

❑ Yes ❑ No Has your records management staff been trained in industry-standard records management regulations, policies and procedures?

❑ Yes ❑ No Do your records management staff, including assistants and file clerks with regular records duties, receive training in records maintenance, filing procedures and records disposition?

❑ Yes ❑ No Is records management guidance tailored, when appropriate, to reflect your organization's specific procedures prior to organization-wide dissemination?

❑ Yes ❑ No Does your records manager regularly brief senior staff and administrators on the importance of records management and records-handling responsibilities?

Internal evaluations

❑ Yes ❑ No Does your records manager periodically evaluate records management practices?

❑ Yes ❑ No Do these evaluations include electronic records?

❑ Yes ❑ No Are written evaluation reports prepared?

❑ Yes ❑ No Are evaluated programs, departments or offices required to promptly respond to evaluation reports?

❑ Yes ❑ No Does the records manager follow up to determine if offices implement necessary corrective action or recommendations for improvements?

Section 2. Records Creation and Record-keeping Requirements

Ensuring adequacy of documentation in any information system depends on the clear articulation of record-keeping requirements. Recordkeeping requirements:

- Specify the creation and maintenance of specific records to document agency operations and activities.
- Permit continuity and consistency in administration.
- Make proper scrutiny by regulators and other authorized agencies possible.
- Document important meetings and the formulation and implementation of basic policy and decisions.

Creation of records and adequacy of documentation

❑ Yes ❑ No Has your records manager provided guidance for all employees on the definition of records and non-record materials, including those created using office automation, and how they should be managed?

❑ Yes ❑ No Do you have a policy on what records, including electronic records, are to be created and maintained?

❑ Yes ❑ No Do you have instructions for documenting policies and decisions, especially those arrived at orally?

❑ Yes ❑ No Do you have a records policy on the status of working papers and files or drafts?

❑ Yes ❑ No Do you have a records policy on personal papers?

❑ Yes ❑ No Does your records policy require creating "finding aids" such as captions and indexes to facilitate access to individual files or record items?

Contractor records

❑ Yes ❑ No Does your records management policy identify which contractor-created records are organizational records?

❑ Yes ❑ No Do you provide contractors with records management regulations and procedures?

❑ Yes ❑ No Particularly when electronic records are involved, do contracts specify the delivery of background data that may have value, in addition to the final product?

❑ Yes ❑ No Do contracts involving the development of electronic systems specify the delivery of system documentation along with the final product?

❑ Yes ❑ No Particularly when electronic records are involved, do contracts specify the delivery of final products and background data in a format that is compatible with program records maintenance and retention guidelines?

❑ Yes ❑ No Are deferred ordering and delivery of data clauses included in contracts when it is impractical to identify in advance all electronic data that should be delivered?

Section 3. Records Maintenance

Effective and proper management of records ensures that:

- Complete records are maintained.
- Records can be located when needed.
- Records, non-record materials, and personal papers are maintained separately:
- Identification and retention of permanent records are facilitated.

Proper records maintenance also contributes to economy of operations by facilitating records disposition. This section covers general records maintenance policies and practices, regardless of media, and several aspects of records maintenance that apply specifically to paper-based records. The next section specifies additional requirements for special records; i.e., records other than traditional paper text.

General

❑ Yes ❑ No Has your organization established standards and procedures for classifying, indexing, filing and retrieving records? Are they available to all employees?

❑ Yes ❑ No Is access to all records, regardless of media, limited to authorized personnel?

❑ Yes ❑ No Are file breaks/cutoffs clearly defined and implemented for each records series?

❑ Yes ❑ No Are permanent records series identified and maintained separately from temporary records?

❑ Yes ❑ No Has your organization established and implemented regulations for the storage of confidential business information (CBI), Privacy Act and other restricted records?

Paper-based records

❑ Yes ❑ No Do you have designated official filing locations or scanning stations?

❑ Yes ❑ No Is a file plan for each records series maintained in each location?

❑ Yes ❑ No Do you have procedures for filing, charging out and refiling records? What about indexing scanned images, if you are using records management software?

❑ Yes ❑ No Are file drawers and folders labeled correctly?

Section 4. Maintaining Special Records

Special records are those in formats other than traditional paper text files, such as electronic, audiovisual, cartographic and architectural records. The physical properties of the materials used to create microfilm and special records require additional standards for their maintenance.

Electronic records

❑ Yes ❑ No Are records in electronic information systems readily identifiable?

❑ Yes ❑ No Does your records management application provide indexing and text search capabilities?

❑ Yes ❑ No Does your records management application require user identification codes or passwords to control access and ensure document integrity?

❑ Yes ❑ No Does your records management application allow regular backups to safeguard against loss of information due to equipment malfunction or human error?

❑ Yes ❑ No Does your organization avoid the use of diskettes for exclusive long-term storage of permanent or unscheduled records?

❑ Yes ❑ No Does your records management application provide a standard interchange format to permit the exchange of electronic documents between organizations using different software/operating systems and the conversion or migration of documents from one system to another?

❑ Yes ❑ No Does your organization maintain complete and up-to-date technical information for your records management application?

❑ Yes ❑ No Are procedural controls in place for records management applications to protect the integrity of records and their legal admissibility under the rules of evidence?

❑ Yes ❑ No Have all employees received training in determining record status of documents they create with office automation applications (e-mail, electronic documents, spreadsheets and databases)?

❑ Yes ❑ No Has your organization implemented procedures for maintaining records created using personal computers in an official file or records management application?

❑ Yes ❑ No Are all staff who use computers trained in procedures to avoid the unintentional loss of records, including backup methods?

Audiovisual records

❑ Yes ❑ No Are the original and use copies of audiovisual records maintained separately?

❑ Yes ❑ No Are search aids such as indexes, captions, list of captions, data sheets, shot lists, continuities, review sheets and catalogs (published or unpublished) maintained for all audiovisual records?

❑ Yes ❑ No Are cross-references to closely-related text materials maintained?

❑ Yes ❑ No Has your organization created procedures to ensure that information on magnetic sound or video media is not erased or overwritten?

❑ Yes ❑ No Does your organization retain original photographic images created electronically (digital photography)?

❑ Yes ❑ No Does your organization maintain originals of permanent or unscheduled photographs scanned into computer programs?

❑ Yes ❑ No Does your organization store permanent audiovisual records, particularly color films and photographs, in environmentally-controlled space (72 degrees Fahrenheit or less with 30-40 percent relative humidity)?

Cartographic and architectural records

❑ Yes ❑ No Are maps and drawings stored flat in shallow-drawer map cases, rather than folded or rolled?

❑ Yes ❑ No Are permanent maps and drawings stored in acid-free folders?

❑ Yes ❑ No Are large, heavy atlases and other bound volumes of maps or drawings stored flat, preferably on roller shelves to facilitate moving them without damage?

❑ Yes ❑ No Do adequate search aids such as indexes exist for cartographic and architectural records?

❑ Yes ❑ No Are cross-references to closely related textual records maintained with cartographic and architectural records?

Micrographic records

❑ Yes ❑ No Are microform records arranged and indexed to permit ready retrieval of individual documents?

❑ Yes ❑ No Do microforms contain a title header or initial target page that identifies the records?

❑ Yes ❑ No Are microform boxes individually labeled with the records series title and date span of the records? Are they numbered sequentially?

❑ Yes ❑ No Are permanent and temporary records filed separately?

❑ Yes ❑ No Are silver and nonsilver microforms filed separately?

❑ Yes ❑ No While they are in storage, are silver master microforms of permanent and unscheduled records inspected biannually?

Section 5. Records Disposition

Records disposition is a critical element of records management. Only those active records needed for current business should be maintained in your office, and you should use records schedules to determine when to destroy records. The records disposition program contributes to economical and efficient agency operations. Clearly written, up-to-date, and properly implemented comprehensive records schedules form the basis for a sound records disposition program.

Records schedule development

❑ Yes ❑ No Are records schedules based on inventories of program records? Are inventories updated periodically to reflect new records series, changes in record-keeping practices or regulatory/legislative changes?

❑ Yes ❑ No Do program record schedules contain a clear and complete description of records series that reflect the content and arrangement of files?

❑ Yes ❑ No Do the disposition instructions include provisions for cutoffs/file breaks, retiring hard copy records to permanent preservation and specific retention periods before final disposition?

❑ Yes ❑ No Are electronic records transferred when they become inactive?

❑ Yes ❑ No Do senior staff review proposed records schedules relating to their office or function?

❑ Yes ❑ No Are reviews periodically conducted to identify new records series that should be schedules, as well as changes in record-keeping practices that require records schedule revision?

Records schedule implementation

❑ Yes ❑ No Do records management staff monitor records schedule implementations?

❑ Yes ❑ No Are records destroyed only in accordance with records schedules?

❑ Yes ❑ No Do file custodians take prompt action to cut off files, destroy records with expired retention periods and retire eligible records in accordance with records schedule provisions?

❑ Yes ❑ No Are permanent records transferred to archiving if indicated in the records schedule?

Section 6. Vital Records/Business Continuity Planning

A vital records program is intended to assist an organization in identifying and protecting records essential to continuing operations under other than normal business conditions. It is also known as business continuity planning.

Vital records

❑ Yes ❑ No Have you assessed potential risks to your vital records?

❑ Yes ❑ No Have you identified the responsibilities of specific individuals?

❑ Yes ❑ No Have you designated a point person to coordinate your vital records plan?

❑ Yes ❑ No Have you identified your vital records, i.e. emergency operating records and legal rights records?

❑ Yes ❑ No Do you periodically review your vital records plan and update it as necessary?

❑ Yes ❑ No If special media records, such as electronic or microform records, are designated as vital records, have provisions been made for access to equipment needed to use them?

Appendix One

Frequently Asked Questions

General

Q. What is a document?

A: A document consists of information stored on one or more pages. It can include images and/or text, plus annotations, and one template (index card).

Q. Does a document management system allow me to edit or alter images?

A. A document management system should not allow the original image to be altered or edited. Annotations should be overlays that do not alter the original document. It is important to protect the original image in order to maintain both the legal status of the document and the integrity of the system.

Q. Do document management systems support audit trails?

A. Yes. A document management system's audit trail should record username, date, time, document name and action for every instance in which a user accesses a repository or document. Various levels of audit trail logging detail and activity tracking should be available. The system should include a viewer to sort and filter these logs. Audit trails are especially important for regulatory compliance.

Q. What is the standard format used to store images?

A. Black and white images are most commonly stored as standard TIFF files using CCITT Group IV (two-dimensional) compression. Grayscale and color images are frequently stored as TIFF files with JPEG compression.

Q. What is the standard format used to store text?

A. ASCII, which stands for the American Standard Code for Information Interchange, has been the standard, non-proprietary text format since 1963.

Q. How much disk space does a document management system typically require?

A. A single page typically occupies around 50KB of disk space, if the image is stored in TIFF Group IV. Each gigabyte (GB) of storage space, which amounts to only a few dollars, holds approximately 20,000 pages. With the significant drop in prices for hard drives and optical media, it costs much less to store documents in a document management system than on paper.

Q. What if my repository is too big to fit in one data volume?

A. A document management system should allow data and images to be stored across multiple volumes, with each volume residing in a different directory or on a different drive, disk array, CD or MO disk.

Capture

Q. What are the most common hardware and software scanner interfaces?

A. Many scanners attach to an Adaptec® SCSI card or to a Kofax® image processing board. Most scanners use either TWAIN or ISIS drivers to communicate with the computer.

Q. How can I scan forms?

A. Forms processing components often use multiple OCR engines and elaborate data validation routines to extract hand-written or poor-quality print from forms that go into a repository. Because many forms that are scanned were never designed for imaging or OCR, it is essential to have good quality assurance mechanisms in place when scanning forms to correct errors that might occur.

Q. Can I capture information from multi-function peripherals (MFPs)?

A. A full-featured document management system allows you to capture documents from different network locations, including MFPs, which are devices that perform any combination of scanning, printing, faxing or copying.

Q. How can I scan large format documents?

A. Several manufacturers make scanners specifically designed for large format documents up to E-size (34 inches x 44 inches) and A-0 size (33 inches x 46.8 inches). If you do not have one of these, the document can be reduced in size using a photocopier and then scanned with a normal scanner, or sent to a service bureau that has large format scanners.

Q. What image resolution should I use?

A. Most imaging systems can support documents scanned at various resolutions, from 50 dpi to 600 dpi (or more), depending on your scanner. Depending on the purpose and the contents of the page, most documents are scanned in black and white at 300 dpi.

Q. What about color files or photographs?

A. Imaging systems should support black and white, grayscale and color images. Color files can be scanned with a color scanner or imported into a document management system. There are a wide range of color scanners on the market. Many document management scanners support both color and grayscale.

Q. How can I scan double-sided documents?

A. An imaging system should provide two different ways to do this. It should support duplex scanners, which simultaneously scan both sides of a page, as well as simplex scanners, which require the user to scan all the front sides, place the documents in upside down and then scan all the back sides, before the system collates all the pages in the correct order.

Q. Can I scan landscape and portrait pages together?

A. An imaging system should allow you to change the orientation of pages during or after scanning. A well-designed system will also include an option to automatically check and correct the orientation of pages.

Q. How are skewed images handled?

A. Skewed (crooked or tilted) images can adversely affect the accuracy of the OCR process, so an imaging system should include software that recognizes skewed images and compensates for them. This is particularly important when scanning press cuttings on a flat bed scanner or when scanning documents through a worn-out or poorly designed automatic document feeder (ADF).

Q. How can I scan checks?

A. Several manufacturers make scanners specifically designed for checks, which read the magnetically encoded MICR (Magnetic Ink Character Recognition) numbers at the bottom of the check. If you do not have one of these scanners, most checks can be scanned with regular document imaging scanners and OCR-processed as usual, though the MICR numbers will not be read. To integrate MICR information into the repository, the document management system must support check scanning hardware.

Q. What file formats can a versatile system import?

A. A versatile system should be able to import all the file types you encounter in your office. This includes word processing files, spreadsheets and presentations, as well as common image formats such as TIFF Group IV, TIFF Group III, TIFF Raw, TIFF LZW, PCX, BMP, CALS, JPEG, GIF, PICT, PNG and EPS preview images. To ensure that your image files will always be accessible, the document management system should use a non-proprietary format for scanned documents. For example, electronic document pages would be printed to the document management system, black and white graphical files would be converted to TIFF Group IV format and color/grayscale images would be converted to TIFF or JPEG.

Q. I have a forms-heavy environment. What is the best way to set up a "capture system"?

A. There are two main methods of capturing information into your document management system: centralized scanning and distributed capture. Centralized scanning is a static process where participants submit documents to a scanner operator. There are designated stations for scanning and indexing/validation. This system does not give you much flexibility in terms of workload, but with a well-trained scanner operator, there is a low error rate. Distributed capture, on the other hand, is a flexible process where users can scan documents from any internal or remote location. Processing is done at the server level, allowing for centralized administration and complete business automation. Distributed capture reduces labor costs and makes documents immediately accessible. The best method for your organization depends on what fits your current business processes and what will be easiest to use.

Indexing

Q. How do I index scanned documents?

A. There are three primary ways to index documents: folder structure, template fields and full-text indexing. Folder structure essentially functions as a visual indexing method that allows users to browse for documents by categories. Template fields categorize documents according to keywords, which can be either manually entered or automatically assigned by the document management program. Full-text indexing is the automated process of entering every word in a document into the index.

Q. What is metadata?

A. Metadata is descriptive information about an object or resource, whether it is physical or electronic. ISO 15489 describes metadata as "data describing context, content and structure of documents and records and their management through time." Metadata allows users to locate and evaluate data, without requiring each user to recreate it with each use.

One easy way to categorize metadata is to break it into three categories: Descriptive, Structural and Administrative.

- Descriptive: Information describing the content, used for search and retrieval.
- Structural: Information that ties one item with another, such as documents in a particular folder.
- Administrative: Information used to manage and control access to an item, such as security permissions.

Q. How can I use metadata to better index my documents?

A. The first question to ask yourself is, "With my current system, how do I find documents?" This question helps you determine what your descriptive metadata should be. Your goal is to find a balance between what information is necessary and what information is nice to have.

Q. What is OCR?

A. OCR stands for Optical Character Recognition and refers to the way a computer converts words from an unsearchable scanned image to searchable text. OCR is usually necessary in order to use full-text indexing and searches, so it should be included in an imaging and document management system. OCR engines can generally only recognize typed or laser-printed text, not handwriting.

Q. What is the difference between OCR and indexing?

A. OCR is the process of converting scanned images to text files. Full-text indexing is the process of adding each word from a text field to an index that specifies the location of every word on every document. Well-designed document management software can make this a fast and easy procedure, providing rapid access to any word in any document.

Q. What is the difference between template field searches and full-text searches?

A. Template field searches enable you to retrieve pre-established categories of documents, whereas full-text searches turn up every occurrence of designated words in the repository. When the repository contains a large number of documents, the difference between sorting documents by topic and listing every occurrence of a word in the repository—including passing references—is significant in terms of the time required to analyze the search results and locate the desired document(s).

Q. How accurate is OCR?

A. Accuracy on a freshly laser-printed page is typically better than 99.6%. Accuracy on faxed, dirty or degraded documents will be lower, so it is essential that an imaging system have image clean-up technology to improve OCR accuracy.

Q. Do I have to go through text to correct OCR mistakes manually?

A. Well-designed systems allow users to correct OCR errors from within the system. However, when hundreds or thousands of pages are scanned every day, it is usually not practical to clean up the text. Because the OCR process does not have perfect accuracy, it is important that the document management system support near-match searches. Near-match searches allow for misspelling and will find words even if the OCR engine makes occasional mistakes.

Q. How fast is the OCR process?

A. The performance of the OCR and indexing processes is entirely dependent on factors such as the speed and configuration of the host system, as well as the contents of the image.

Q. What is ICR (Intelligent Character Recognition)?

A. ICR is pattern-based character recognition and is also known as Hand-Print recognition. Handwritten text is more difficult for computers to recognize and results in higher error rates than printed text. ICR engines usually do best at recognizing constrained printing, which means block-printed letters with one letter in each box. Accurate recognition of unconstrained handwriting, especially cursive handwriting, typically requires that the ICR engine be trained to recognize each user's style of writing.

Q. What is OMR (Optical Mark Recognition)?

A. OMR, also called Mark-Sense Recognition, is the recognition of marks commonly used on forms, such as check marks, circled choices and filled-in bubbles. OMR can be an important part of a document management system for organizations that process many standard forms. Exam forms and customer survey cards are perhaps the best-known examples of OMR.

Q. Can OCR-processed text be exported and reused in a word processor?

A. Yes, you can usually cut and paste text between the document management system and another Windows application, or you can export complete text files (all text pages in a document) to a directory and open it with your preferred word processing program.

Viewing, printing and exporting

Q. Can I open and display more than one document at a time?

A. Some document management systems will allow you to display multiple documents, with the number of documents you can have open simultaneously limited only by the amount of memory available.

Q. How can I resequence pages of a document before printing or exporting?

A. If the pages are out of order and need to be sequenced, a well-designed document management system will allow you to drag thumbnail views of pages to the required position. In the same way, individual pages can be selected and deleted, subject to appropriate security access control and privileges.

Q. What is the advantage of a large monitor?

A. For people who use an imaging system frequently, screen size can be a critical factor. If users want to flip through digital pages with the ease of real paper, they must be able to view the whole page at once in a way that allows the text to be readable. If 8 1/2 inch x 11 inch pages are the dominant paper size, then a 21-inch monitor capable of displaying a resolution of 1600 x 1200 is optimal. Using a 15-inch VGA monitor will require scrolling and panning if the image is viewed at normal size.

Q. What other display considerations are important?

A. Screen resolution and the refresh rate of the monitor are also important. Generally, the larger a monitor is and the higher resolution it has, the harder it is to get the high refresh rate that is required for sustained viewing without screen flicker. The optimum threshold for minimum flicker is generally considered to be a horizontal refresh rate of 72 MHz on a 21-inch monitor. The maximum refresh rate is a function of the monitor and the graphics controller.

Q. Will I need a specialized printer for images or OCR-processed text?

A. Generally, no. Most imaging systems support a wide variety of Windows-compatible printers, but an optimal configuration includes a laser printer with at least 4MB of RAM. If you are using a networked system and are printing high volumes of pages to a network printer, you might consider installing a separate laser printer either locally or on its own network segment to minimize network traffic.

Q. In which formats can I export documents?

A. It depends on the document management system. Common graphical formats include TIFF Group III, TIFF Group IV, TIFF Raw, BMP, PCX, PNG and JPEG.

Q. What happens when a user without redaction viewing rights prints a document that has been redacted?

A. A document management system should protect the integrity of the document by printing with the redactions intact.

Records management

Q. Are all documents records?

A. No. Records management deals with information serving as evidence of an organization's business activities. In particular, it is a set of recognized practices related to the life cycle of that information. Often, records refer to documents, but they can include other forms of information, such as photographs, blueprints or even books.

Q. How is records management different from document management?

A. Briefly, records management includes document management, but not all forms of document management qualify as records management. Records management is a specialized branch of document management with a set of recognized practices related to the life cycle of that information, such as identifying, classifying, archiving, preserving and destroying records. Records management also includes archival issues—both assuring that permanent records are accessible and readable 100+ years in the future and protecting often fragile historical archives.

Q. What does records management software do?

A. Records management software supports the application of systematic controls to the creation, maintenance and destruction of an organization's records.

Q. Does DoD 5015.2 certification guarantee compliance with other regulations like HIPAA?

A. No. It is important to distinguish between regulatory compliance and the DoD 5015.2 standard. The DoD standard represents baseline functionality for records management applications (RMAs) used within the Department of Defense. It serves as the de facto standard for records management applications across government and industry. However, it is a records management standard and not a broad regulatory compliance standard. DoD 5015.2 certification facilitates compliance by supporting the application of systematic records policies; it cannot guarantee compliance. Compliance depends on the proper application of records policies.

Q. How do records management applications help enforce proper policies?

A. Records management applications can support the application of consistent policies and procedures through a series of mechanisms, including mandatory metadata acquisitions and automated extraction of e-mail metadata; support for time, event and time-event dispositions; automated notification for review of vital records; freezing of records and comprehensive audit trail reporting.

Appendix Two

Glossary of Terms

Access Rights

A security mechanism that lets the system administrator determine which objects (folders, documents, etc.) users can open. It should be possible to set access rights for both individuals and groups.

ADF

Automatic Document Feeder. This is the way pages are automatically fed into the scanner.

Annotations

The changes or additions made to a document using sticky notes, a highlighter or other electronic tools. Document images or text can be highlighted in different colors, redacted (blacked-out or whited-out) or stamped (e.g. FAXED or CONFIDENTIAL), or have electronic sticky notes attached. Annotations should be overlaid and not alter the original document.

ASCII

American Standard Code for Information Interchange. Used to define computer text that was built on a set of 128 alphanumeric and control characters. ASCII has been a standard, non-proprietary text format since 1963.

ASP

Active Server Pages. A technology that simplifies customization and integration of Web applications. ASPs reside on a Web server and contain a mixture of HTML code and server-side scripts. An example of ASP usage includes having a server accept a request from a client, perform a query on a database and then return the results of the query in HTML format for viewing in a Web browser.

Audit Trail

An electronic means of tracking all access to a system, document or record, including the modification, deletion and addition of documents and records.

Bar Code

A small pattern of lines read by a laser or an optical scanner that corresponds to a record in a database. An add-on component to document management software, bar-code recognition is designed to increase the speed with which documents can be stored or archived.

Batch Processing

The name of the technique used to input a large amount of information in a single step, as opposed to individual processes.

Bitmap/Bitmapped

See Raster/Rasterized.

BMP

The abbreviation for a native Windows file format that stores images called bitmaps.

Boolean Logic

The use of the terms AND, OR and NOT in conducting searches. Used to widen or narrow the scope of a search.

Briefcase

A method to simplify the transport of a group of documents from one computer to another.

Burn (CDs or DVDs)

To record or write data on a CD or DVD.

Caching (of images)

The temporary storage of image files on a hard disk for later migration to permanent storage, like an optical or CD jukebox.

CD or DVD Publishing

An alternative to photocopying large volumes of paper documents. This method involves coupling image and text documents with viewer software on CDs or DVDs. It is essential that search software be included on the CDs or DVDs to provide immediate retrieval abilities.

CD-R

CD-Recordable. A CD that can be written (or burned) only once. It can be copied as a means to distribute a large amount of data. CD-Rs can be read on any CD-ROM drive whether on a standalone computer or network system. This makes interchange between systems easier.

CD-ROM

Compact Disc-Read Only Memory. Written on a large scale and not on a standard computer CD burner (CD writer). An optical disc storage medium popular for storing computer files as well as digitally recorded music.

Client-Server Architecture vs. File-Sharing Architecture

Two common application software architectures found on computer networks. With file-sharing applications, all searches occur on the workstation while the document repository resides on the server. With client-server architecture, CPU-intensive processing (such as searching and indexing) is completed on the server, while image viewing occurs on the client. File-sharing applications are easier to develop, but they tend to generate tremendous network data traffic in document management applications. They also expose the repository to corruption through workstation interruptions. Client-server applications are more difficult to develop, but dramatically reduce network data traffic and insulate the repository from workstation interruptions. See also n-Tier Architecture.

COLD

Computer Output to Laser Disc. A process that outputs electronic records and printed reports to laser disc instead of a printer. Can be used to replace COM (Computer Output to Microfilm) or printed reports such as greenbar.

COM

Computer Output to Microfilm. A process that outputs electronic records and computer generated reports to microfilm.

Compression Ratio

The ratio of the file sizes of a compressed file to an uncompressed file. With a 20-to-1 compression ratio, an uncompressed file of 1MB is compressed to 50KB.

Deshading

Removing shaded area to render images more easily recognizable by OCR.

Deskewing

The process of straightening skewed (off-center) images. Documents can become skewed when they are scanned or faxed. Deskewing is one of the image enhancements that can improve OCR accuracy.

Despeckling

Removing isolated speckles from an image file. Speckles can develop when a document is scanned or faxed.

Disposition

Actions taken regarding records after they are no longer required to conduct current business. Possible actions include transfer, archiving and destruction.

Dithering

The process of converting grays to different densities of black dots, usually for the purposes of printing or storing color or grayscale images as black and white images.

Document Management

Software used to store, manage, retrieve and distribute digital and electronic documents, as well as scanned paper documents.

DoD 5015.2-STD

The Department of Defense (DoD) 5015.2 standard. Represents the standard for evaluating electronic records management applications (RMAs) used within the DoD. The standard has been endorsed by the National Archives and Records Administration (NARA).

Duplex Scanners vs. Double-Sided Scanning

Duplex scanners automatically scan both sides of a double-sided page, producing two images at once. Doubled-sided scanning uses a single-sided scanner to scan both pages, scanning one collated stack of paper, then flipping it over and scanning the other side.

DVD

Digital Video Disc or Digital Versatile Disc. A disc similar to a CD, on which data can be written and read. DVDs are faster, hold more information and support more data formats than CDs.

Feature Rights

A security mechanism that allows system administrators to determine the actions that users can perform on the objects to which they have access.

Flatbed Scanner

A flat-surface scanner that allows users to capture pages of bound books and other non-standard-format documents.

Folder Browser

A system of on-screen folders (usually represented as hierarchical, or stacked) used to organize documents. For example, the Windows Explorer program in Microsoft Windows is a type of folder browser that displays the directories on your hard drive.

Forms Processing

A specialized document management application designed for handling preprinted forms. Forms processing systems often use multiple OCR engines and elaborate data validation routines to extract hand-written or poor-quality print from forms to go into a database. With this type of application, it is essential to have good quality assurance mechanisms in place, since many of the forms that are commonly scanned were never designed for imaging or OCR.

Full-Text Indexing and Search

Enables the retrieval of documents by either word or phrase content. Every word in the document is indexed into a master word list with pointers to the documents and pages where each occurrence of the word appears.

Fuzzy Search

A full-text search procedure that looks for exact matches as well as similarities to the search criteria, in order to compensate for spelling or OCR errors.

GIF

Graphics Interchange Format. CompuServe®'s native file format for storing images.

Gigabyte (GB)

2^{30} (approximately one billion) bytes, or 1024 megabytes. In terms of image-storage capacity, one gigabyte equals approximately 17,000 8 1/2 inch x 11 inch pages scanned at 300 DPI, stored as TIFF Group IV images.

Grayscale

An option to display black-and-white image files in an enhanced mode, making it easier to view. A grayscale display uses gray shading to fill in gaps or jumps (known as aliasing) that occur when displaying an image file on a computer screen.

ICR

Intelligent Character Recognition. A software process that recognizes handwritten and printed text as alphanumeric characters.

Image Enabling

Allows for fast, straightforward manipulation of an imaging application through third-party software. For example, image enabling allows for launching the imaging client interface, displaying search results in the client and bringing up the scan dialogue box, all from within a third-party application.

Image Processing Card (IPC)

A board mounted in the computer, scanner or printer that facilitates the acquisition and display of images. The primary function of most IPCs is the rapid compression and decompression of image files.

Internet Publishing

Specialized document management software that allows large volumes of paper documents to be published on the Internet or intranet. These files can be made available to other departments, off-site colleagues or the public for searching, viewing and printing.

ISIS and TWAIN Scanner Drivers

Specialized applications used for communication between scanners and computers.

ISO 9660 CD Format

The International Standards Organization format for creating CD-ROMs that can be read worldwide.

JPEG/JPG

Joint Photographic Experts Group. An image-compression format used for storing color photographs and images.

Key Field

Database fields used for document searches and retrieval. Synonymous with Index Field.

MFP

Multifunction Printer or Multifunctional Peripheral. A device that performs any combination of scanning, printing, faxing or copying.

Multipage TIFF

See TIFF.

Near-Line

Documents stored on optical discs or compact discs that are housed in the jukebox or CD changer and can be retrieved without human intervention.

n-Tier Architecture

When applied to the physical or logical architecture of computing, refers to a method of distributed computing in which the processing of a specific application occurs over *n* number of machines across a network. Typical tiers include a data tier, business logic tier and a presentation tier, where a given machine will perform the individualized tasks of a tier. Scalability is among the advantages of n-tier architecture.

OCR

Optical Character Recognition. A software process that recognizes printed text as alphanumeric characters. OCR enables full-text searches of documents and records.

Off-Line

Archival documents stored on optical discs or compact discs that are not connected or installed in the computer, but instead require human intervention to be accessed.

Online

Documents stored on the hard drive or magnetic disk of a computer that are available immediately.

Open Architecture

This term is applied to hardware or software whose design allows for a system to be easily integrated with third-party devices and applications.

Optical Discs

Computer media similar to a compact disc that cannot be rewritten. An optical drive uses a laser to read the stored data.

Pixel

Picture Element. A single dot in an image. It can be black and white, grayscale or color.

Portable Volumes

A feature that facilitates the transfer of large numbers of documents without the need to copy multiple files. Portable volumes enable individual CDs to be easily regrouped, detached and reattached to different databases for broader information exchange.

Raster/Rasterized

Raster or Bitmap Drawing. A method of representing an image with a grid (or map) of dots or pixels. Typical raster file formats are GIF, JPEG, TIFF, PCX and BMP.

Record

Information, regardless of medium, that constitutes evidence of an organization's business transactions.

Record Series

A record series is a group of records subject to the same set of life cycle instructions.

Redaction

A type of document annotation that provides additional security by concealing specific portions of sensitive documents, such as particular words or phrases, from view. Like all annotations in a document management system, redactions should be image overlays that protect information but do not alter original document images.

Region (of an image)

An area of an image file that is selected for specialized processing. Also called a zone.

Retention Period

The length of time that a record must be kept before it can be destroyed. Records not authorized for destruction are designated for permanent retention.

Scale-to-Gray

See Grayscale.

Scalability

The capacity of a system to scale up, or expand, in terms of a document capacity or number of users without requiring major reconfiguration of re-entry of data. For a document management system to be scalable, it must be easy to configure multiple servers or add storage.

Scanner

An input device commonly used to convert paper documents into computer images. Scanner devices are also available to scan microfilm and microfiche.

Security Markings or Tags

Within records management applications, a security-based metadata field intended to define and restrict access, as well as facilitate classification and retrieval.

SCSI Scanner Interface

The device used to connect a scanner with a computer.

Single-Page TIFF

See TIFF.

SQL

Structured Query Language. The popular standard for running database searches (queries) and reports.

Template Fields

Database fields used to categorize and organize documents. Often user-defined, these fields can be used for searches.

Template

A user-defined set of fields that enables you to record information about a document.

Thumbnails

Small versions of an image used for quick overviews that give a general idea of what an image looks like.

TIFF

Tagged Image File Format. A non-proprietary raster image format, in wide use since 1981, which allows for several different types of compression. TIFFs may be either single or multipage files. A single-page TIFF is a single image of one page of a document. A multipage TIFF is a large, single file consisting of multiple document pages. Document management systems that store documents as single-page TIFFs offer significant benefits in network performance over multipage TIFF systems.

TIFF Group III (compression)

A one-dimensional compression format for storing black-and-white images utilized by most fax machines.

TIFF Group IV (compression)

A two-dimensional compression format for storing black-and-white images. Typically compresses at a 20-to-1 ratio for standard business documents.

Versioning

In document or records management applications, the ability to track new versions of documents after changes have been made.

Workflow, Ad Hoc

A simple manual process by which documents can be moved around a multi-user document management system on an as-needed basis.

Workflow, Rules-Based

A programmed series of automated steps that routes documents to various users on a multi-user document management system.

WORM

Write Once Read Many. A popular archival storage medium during the 1980s, WORM discs are acknowledged as the first optical discs. They are primarily used to store archives of data that cannot be altered. WORM discs are created by standalone PCs and cannot be used on the network, unlike CD-Rs. In some industries, such as financial services, the definition of WORM has broadened to include other media, such as CD-ROMs and DVDs, which provide accessible but unalterable document storage.

Zone OCR

An add-on feature of document management software that populates document templates by reading certain regions or zones of a document and then placing information into a document index field.

Laserfiche®

Institute™

The Laserfiche Institute teaches staff, resellers, and current and prospective clients how to use Document and Records Management software most effectively. As part of this mission, the Institute conducts more than 500 Webinars each year, covering a variety of topics. The Institute also hosts an annual conference where members of the Laserfiche community attend presentations and network with each other to share ideas and learn best practices. Additionally, the Institute conducts a number of regional training sessions and provides resellers with content for over 100 user conferences each year.

The Institute also develops and distributes educational material through the Laserfiche Support Site. On this Website, clients can access training videos, participate in online forums and download technical papers and presentations that help them become even savvier EDMS users.

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