

Electronic Document Management: The Basics

Introduction to Document Management

Document management can mean many things to many people, and can serve a variety of purposes. The intention of this article is to list the components involved in document management and to briefly describe each one. At the conclusion, there are also some important factors to help in selecting a document management system.

If you've never used a document management system, then it is entirely possible that you aren't aware of how valuable these products can be. Companies and individuals who manage a diverse array of documents have found that document management systems serve to simplify their lives and make both storing documents and later obtaining those documents much easier.

Many companies are forced to go the way of electronic documents because of The Sarbanes Oxley Act of 2002, industry compliance (HIPPA), or because it is required by their customers or vendors. The simplest form of electronic document management is storing files in an organized directory and categorizing files by the folder in which they are located. If your company manages more than a few documents, this method can quickly become very inflexible. Incorrect filing can cause a document to disappear into a virtual black hole, never to be seen again.

The entire process of document management can be broken down into four categories: file capture, file processing, file management and file storage. A company may require one, two or all four of these processes.

File Capture

File capture may consist of scanning paper documents, capturing existing electronic files (ex: .doc, .pdf, .tif and scanned documents), and capturing documents from applications with print drivers.

Scanning – if you have a large quantity of paper documents that need to be scanned and introduced to a DMS (Document Management System), then you must consider: 1. How you want the information to be retrieved and stored; and 2. How you want indexed information to be introduced to the DMS.

The manner with which you plan to access the documents later will determine which file format type the files will be saved under. The most common types for scanning output are .tif and .pdf. The advantage of .tif file types is that they are the smallest file types and therefore take up the least amount of storage space. The advantage to .pdf file types is that they provide better options for content text searching (searching every word of a document), are easier to edit, and are overall more flexible. If you will be using content text search, you might lean toward .pdf output but if you will be retrieving files from indexed information only, you might prefer .tif's.

505 W. Sam Houston Pkwy
Suite 545
Houston, TX 77060

phone: 866-997-3100

fax: 832-201-9947

email info@practicalprograms.net

www.totaldocument.com

The method of introducing indexed information (any field used to search and categorize documents) can range from fully automated to fully manual to somewhere in between. The more automated the process, the more file processing will be required. File processing will be covered later in this article. Extensive automation will make your project more complex and costly, but if you handle a large volume of documents, the automation will quickly pay off in the form of reduced manpower.

The actual physical scanning of the documents can also be fairly automated with batch scanning, bar codes, and database validation. Batch scanning reduces the labor in introducing the documents to the scanner. Instead of the scanner operator separating every document, scanning it separately, and then saving the file into a directory, the operator simply places all of the documents into a feeder by the bulk. The scanner then detects a document change by a blank sheet, bar code, or some other indicator. Bar codes can also be used to represent a group of information or a client or project to populate multiple indexed fields. If you have an existing client database in your current ERP system or even QuickBooks, this data can also be used to populate or validate indexed fields.

The most common misconception about scanners and scanner software is that they need to be compatible with your DMS. Most scanner software will output the scanned files into a directory where they can be handled by any DMS.

Capturing electronic files – Existing electronic files - such as .doc, .xls, .dwg, and .dgn, - are easier to capture into a DMS. These files contain hidden properties called metadata, which can be mapped to a field in the DMS. This information might include created date, author, title, title block, and other useful information. Once this data is mapped, these fields will be automatically populated when the electronic files are introduced. These files may be saved to a directory into which the DMS imports them, files may be dragged into the system, or a mass import may be used to bring in legacy documents. During the import process, other index fields may be populated from the hierarchy of the directory structure of the files. Unorganized documents are more difficult to manage this way. Index fields which are not “intuitively” populated in some manner may require processing or some manual input.

Electronic files may also be captured through print drivers. If you commonly print reports from an application or save them to a directory, you may use a print driver to introduce them to the DMS, which will ultimately save time. Faxes may also be saved to a directory from which the DMS can pick them up for distribution before they ever go to paper.

File capture is relatively easy, but a simple digital file without any additional processing isn't much use. You may take the file and name it and file it in Windows Explorer, but when you are cataloging hundreds or thousands of files, this is not a feasible system. Human error, if nothing else, will prevent every single file from being named correctly and stored in the proper location. Even one misplaced file can wreak havoc for a business.

File Processing

File processing can help make files more manageable. Examples of processing tasks include: separating and merging, OCR; zonal OCR; forms recognition; conversion; routing; and database (DMS) population. Some of the processing tasks can be completed with scanning software and/or your DMS. Files can be processed years after they are scanned or during the scanning process.

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OCR (optical character recognition) allows scanned documents to undergo content text searching once the document is added into your system. Word, Excel, and other digital files do not have to undergo the OCR process to be content-searchable. Indexing the documents makes the content search very fast, even if you are searching through thousands of files.

Recent improvements in OCR make the process very accurate (up to 99%), however the accuracy of the OCR is dependant on the quality of the document and to some extent the hardware used to scan the documents. Most companies are happy to enjoy the benefits of OCR and content text search even with its imperfections.

Zonal OCR (OCR of a specific zone on a page) Scanned documents can also be processed to find certain information on the document and input it into fields in your document management system. For example, an invoice number may be required to organize and store the document so that the invoice number location is predetermined in a template and then that number is read and input into the document management system. This process is called “forms recognition,” and may include many fields of information from a single document. Depending on the type of documents and the quantity of fields to be populated, this process can be both complex and expensive, so it is important to weigh the cost with the benefits.

File Management

There are many different types of applications available on the market with which to manage files. Choosing the one that is right for you can be complicated, and sometimes requires a consultant. Companies that choose to create their own systems are recreating the wheel and will be forced to replace that system at some point in the future. Some critical issues to consider when choosing the system that is right for you are:

1. Types of documents you are managing (working vs. final)
2. Internal and External Requirements
3. Browser or Desktop Interface
4. Cost of Ownership

Final vs. Working Documents

A **final document**, such as a contract or an invoice, may not need to be edited at a later date. It is saved for reference and/or retrieval purposes, and will not necessarily be needed again. These are called “final documents”. Managing final documents is much cheaper and easier than storing documents that require editing capabilities. If you simply want to scan final documents and store them for later retrieval, you may only require a simple and inexpensive DMS.

A **working document**, on the other hand, will need to be revised on one or more occasions. These types of files might include manuals, sales literature, or CAD files. The author or other colleagues may need to edit them, or they may need distribution for specific purposes. A more advanced and versatile document management system will be needed so that the user can track changes, implement markups and revise text.

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Houston, TX 77060

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Internal and External Requirements

It is always helpful to compile a list of requirements for your proposed system, even if it is very brief. The list should include requirements from users, industry requirements, your internal IT requirements, and customer/vendor requirements if they will have access to the system. A system that does everything you require is worthless if your IT department decides it does not comply with company policies. Involving your IT department from the beginning is usually a good idea.

Some industries have compliance rules of which you will need to be aware. The health industry is subject to HIPPA compliance, which requires a secure database, audit trails, and passwords for any e-mail from the DMS. All companies are subject to requirements of the Sarbanes-Oxley Act of 2002, which was passed to prevent companies from shredding documents and claiming stupidity as an excuse for breaking the law. Internal IT requirements may prevent you from using a specific type of database or prevent you from providing external browser access to your system through a portal.

Web VS. Desktop

Something else to consider in your research should be whether or not you need a “web” or “browser version” of document management. You may have seen “**web-based**” document management systems, but that is not what we are discussing here. Web-based document management systems would host your documents at an “offsite” location and allow your users to access their system. Most companies are not keen on this idea because they lack control of what happens to these documents. However, outsourcing the hosting of your documents may be advantageous if you do not possess an IT infrastructure.

Most document management systems offer both a desktop version and a browser version. You may use both as opposed to having to decide between one or the other. Most companies only offer a very limited version of the Browser version; many are limited to search, view, and print capabilities only.

Browser Interfaces can be very beneficial because they eliminate the need to install the application on every desktop. Instead, they can be used to access documents from anywhere in the world, and they provide a significant increase in security depending on your method of storage (see security section later in this article). Browser applications access the documents through “services”, and as a result, the directories can be locked down to prevent “back-door” access while still allowing storage in the native file format.

If your DMS contains an internal viewer in a Browser interface, you may give users the ability to view documents without ever possessing the documents and without having the native application on their desktop.

Using the combination of desktop and browser versions is the ideal situation because some users may prefer the desktop, like administrators and data entry users, while standard users, customers, contractors, and vendors will be better suited to the browser version.

If you need to share or distribute documents with external parties, then a browser version could save you an enormous amount of time and money in a relatively short period of time.

505 W. Sam Houston Pkwy
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File Storage and Security

Application (User Profile) Security – polices the names of those who have access to specific files or projects as well as the people who have permission to print, edit, or otherwise alter files.

Directory Security – polices access to the documents via Windows Explorer or other directory tools.

Most document management systems have limited levels of Application Security within the application. Usually included are an administrative level, a user level, and a “view only” level. Some systems will allow you to dictate how many levels you want and exactly which functions are allowed for each specific level.

There are three main forms of document security. Depending on your specific goals, one of them may be more beneficial for you than the others. Below is a brief discussion of each form of document security

Database Blob. This is the most “secure” method of securing documents, but this security does not come without a price. The files are not stored in their native file format; rather, they are converted into another form in the database.

Blobs also become very large. A file may become 5-10 times larger when converted into a database blob. Files with associated reference files, like in CAD files, will lose their association because of name changing. Add-on products are available to address this issue, but they can be expensive and slow down your system. Blobs will also prevent you from accessing your documents from an alternative method if your document management system becomes unavailable.

Encrypting Files. Encrypting documents changes the names of the files so that they cannot be accessed or opened from the directory. A user may browse the location in Windows Explorer, but that individual won't be able to identify a file or document by its filename. They also would not be able to open the application because it is encrypted and must be opened through the document management system.

One of the disadvantages is that a user can delete the files if he can find them (you cannot “lock” the directory because the document management application, or desktop, needs access to the directory). You can overcome this problem with regular backups of the system. The files have similar naming problems as blobs, reference links are lost, and you may be held hostage by the DMS if it goes down.

Native File Format Storage. This is the process of storing files in a directory in their original format. This is the most flexible method because the files are not altered. The administrator also maintains control of the access to the documents regardless of what happens with the DMS application.

The disadvantage is that the directory must remain unlocked (as with encryption) for a desktop application to access the documents. If you need to restrict access to these documents outside of procedural regulations, then you can store the documents on a hidden directory so that the users do not know how to navigate the document repository. This method is very effective, but not 100% secure like the blob method.

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The most ideal security solution would be to store the files in their native format, but only allow the users to access the system through a browser interface. The browser accesses the files through services, so the directory may be locked down to prevent accessing documents through the “back door”. The browser option gives you the best of both worlds: 100% file security with flexibility and optimal storage capacity.

Benefits of Document Management

Most companies are pleasantly surprised by the added benefits of document management that they never before have considered. Document management saves time, money and anxiety over the storage and transmission of important documents. These are a few of the most common benefits that companies enjoy after implementing a document management system.

1) Time & Resource Management. The managed distribution (transmittals) of documents is a time-consuming, monotonous process for many companies. One or more employees may spend hours trying to find specific documents; distributing them to customers, clients and vendors; and then logging the transactions into an Excel spreadsheet.

If you are using versions in this process, the logging becomes even more time consuming. Natural byproducts of a DMS include fully automated tracking and distribution. The tasks that once took hours are now reduced to a matter of seconds. Billable hours for employees who manage documents and files are cut back significantly, and the audit trails are assured to be accurate.

2) Workflow. Imagine a real estate company with several agents who each have fifty clients. Hundreds of documents are required for every real estate transaction, and it is difficult to keep up with the placement of these files. Document management allows them to keep track of which documents need to be completed and when, while providing a snapshot of the placement of each document, all at once.

With an effective DMS this real estate company can organize all of the documents by client and track the status of all the documents. When an agent needs to know the status of a client’s paperwork or wants to make sure all of the paperwork is complete, they can quickly pull up a snapshot of all of the documents without leaving the desk.

3) Shipping Costs. The examples given above don’t even touch on how much a business can save on shipping costs. How much time do you spend tracking down documents, packaging them and shipping out FedEx because someone at another location needs a copy? A good DMS will allow you to quickly find documents, distribute them, and keep a record of what you sent to whom automatically.

Cost of Ownership

Cost of ownership considerations include system complexity, hardware requirements, licensing methodology, and module add-ons.

If you choose a complex DMS you may have to assign a fulltime administrator to manage the system. Not very feasible for most companies that want to manage documents for a small group of users.

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Configurable systems that allow a “part-time” administrator to perform simple tasks will save you a lot of money in the long run.

Some systems require multiple servers and additional software to operate. Be careful that you do not forget to budget the “additional requirements” just to make the DMS work.

“Named seat” licensing can make a DMS very expensive. Try to find an application with “concurrent” or “floating” licenses. “Named seat” licensing will require you to purchase a license for every single user that needs to access the DMS for any reason. The total quantity of licenses could be 3-4 times greater for a DMS with “named seat” licensing.

Add-on modules can quickly send your company into bankruptcy. Some DMS developers offer their systems in modules and sell you an individual module according to the functionality you desire. You might like this at first if you only need small portions of the system, but over the long run you will pay far more than if this functionality is included in the system.

DMS Pricing

The cost of your system is directly related to your requirements. If your requirements are simple and you can use “off-the-shelf” software without forms recognition, you can probably acquire a system for under \$5,000. More complex systems that require onsite implementation can range from \$20,000 on into the millions of dollars. The larger DMS companies that have been around for many years are exponentially more expensive than the newer players. The largest DMS companies will rarely install a system for fewer than ten users or a price range of about \$100,000. Newer players in the market may have more modern code, better functionality and they are more eager to install even the smaller systems.

Don't forget to also consider the costs for importing legacy documents and set up document processing procedures if they are required. The DMS vendor you choose should provide a utility for importing your legacy documents and most of the metadata. The manual process can cost you thousands depending on your quantity of documents. Setting up document processing procedures and particularly forms recognition can be very expensive depending on the complexity. The needs analysis of document scanning and data capture is separate from that of DMS.

In **summary**, choosing a DMS can take some time and effort, but selecting the wrong system can waste valuable time and money. If your needs are simple, you can choose a system within a few days. If you require a more complex system, and you do not have internal resources experienced in document management, then save yourself time and resources by hiring a consultant. An experienced consultant can help you narrow your selection in a fraction of the time it would take you otherwise. Once you have two or three choices that are a good fit, select the one with which you are the most comfortable.

Consulting Services
Practical Programs, Inc.
www.totaldocument.com
(866) 997-3100

505 W. Sam Houston Pkwy
Suite 545
Houston, TX 77060

phone: 866-997-3100
fax: 832-201-9947
email info@practicalprograms.net
www.totaldocument.com