Abstract
This entry presents an overview of the fundamental aspects of different kinds of document and record management systems and technologies, starting off with a discussion of legislation concerning records and information. The entry then discusses fundamental components of systems, as well as presenting and explaining commonly used acronyms.

LEGISLATIVE ISSUES
Whenever any organization of any size retains information, especially when this relates to individuals, there are certain legal requirements that need to be followed regarding the recording of documents and records.

It is beyond the scope of this entry to cover all the legalities of storing information relating to individuals using electronic methods. Some important legislation need to be referred to within the United States, such as the Privacy Act 1974 and the Freedom of Information Act. In the United Kingdom, the Data Protection Act 1998 as well as the Freedom of Information Act 2000 needs to be adhered to.

The Freedom of Information Act is particularly important. Broadly speaking, under this legislation, citizens have a right to request almost any type of information from any organization within a specific time period. Needless to say, it greatly helps an organization to have an adequate document and record-keeping system in place to comply with freedom of information requests. Freedom of information laws exist in both the United States and United Kingdom.

The Privacy Act 1974 is a U. S. Act concerned with how information relating to citizens is stored and what rights they have regarding access to the information stored about themselves.

The Data Protection Act 1998 is, broadly speaking, the UK equivalent of the Privacy Act 1974 in the United States. It is concerned with how personal information relating to individuals is processed and handled.

DIFFERENCE BETWEEN DOCUMENTS AND RECORDS
The Oxford English Dictionary defines the word document as “a piece of written, printed, or electronic matter that provides information or evidence.” The word record is defined as “a piece of evidence or information constituting an account of something that has occurred, been said, etc.” In electronic document and records management systems (EDRMS), a record can be defined as an electronic folder consisting of one or more documents.

From the preceding definitions, where documents, that is, “written, printed, or electronic matter that provides information or evidence,” are contained in a folder, all of which relate to a specific matter, or give the account over time of a specific matter, this would effectively create a record, which is “a piece of evidence or information constituting an account of something that has occurred, been said, etc.”

Consider, for example, a planning or building application made to a council or municipality office. A person or organization submits a set of documents, which may include an application form, and the architect’s drawings and reports. These documents would then be placed in a new folder, that is, a record, either electronic or manual, would be created to contain these documents. As the application progresses through various stages, the record concerning that particular planning application would have other documents placed in it. Thus, we have on file (electronic or otherwise) all documents that make up the record of what has happened with that particular planning application.

Another crucial difference between documents and records is that documents can change, whereas records do not and must not, change. A record is a document or set of documents, all relating to a specific matter that has occurred earlier. So, it is a record of history. As
with the planning application, whenever documents are placed in the file, they become records if those documents are not subject to change. For example, the documents that make up the planning application would become a record of the planning application procedure.

A document, on the other hand, is something that could be a work in progress, which is subject to change and therefore not a record. Documents can and do become records once they are set in stone, so to speak, and do not undergo changes, that is, once those documents describe an event that has happened earlier, whether 2 minutes or 20 years ago.

ACRONYMS

The computer software that enables a computer system to store documents and records in an electronic format is referred to by many different names and acronyms. A list of commonly used acronyms is provided in Table 1.

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Actual Words</th>
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<tbody>
<tr>
<td>EDRMS</td>
<td>Electronic Document and Records Management System</td>
</tr>
<tr>
<td>EDMS</td>
<td>Electronic Document Management System</td>
</tr>
<tr>
<td>EDM</td>
<td>Electronic Document Management</td>
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<tr>
<td>ERM</td>
<td>Electronic Records Management</td>
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<tr>
<td>ERMS</td>
<td>Electronic Records Management System</td>
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<tr>
<td>DMS</td>
<td>Document Management System</td>
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<tr>
<td>DIP</td>
<td>Digital Image Processing</td>
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<tr>
<td>ECM</td>
<td>Enterprise Content Management</td>
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<td>RM</td>
<td>Records Management</td>
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<tr>
<td>DM</td>
<td>Document Management</td>
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</tbody>
</table>

Electronic Document Management

This is the same as EDMS but without the word system, similar to EDRM mentioned previously. The same holds true for EDMS and EDM.

Electronic Records Management Systems

Electronic Records Management System (ERMS) refers to systems that are designed for electronic record keeping, archiving, and storage. Many of these systems also have integrated document management capabilities.

Electronic Records Management

This acronym is the same as ERMS but without the word system. As previously mentioned under EDRM, both “ERMS” and “ERM system” are the same in this text, and the acronyms are used as appropriate, for better sentence construction.

Document Management Systems

Document Management Systems (DMS) refers to systems that have been designed to manage documents. The absence of the word “electronic” would indicate that DMS is a system that is capable of managing both electronic and manual documents. However, 99 times out of 100, DMS would nowadays refer to an electronic system.

Enterprise Content Management

Enterprise Content Management (ECM) commonly refers to suites of applications, normally from one particular vendor, that are designed for content management, document management, records management, collaboration services, and workflow and Web content management as their main primary activities. An ECM system is one that has been developed and designed to manage all content, whether it be documents.
or records, or whatever else that constitutes content within an organization.

DM and RM

Other commonly used terms are DM for document management and RM for record management. Some vendors use these terms to describe their products, for example, ACME DM or ACME RM. In other cases, these terms will simply be used as abbreviations, as already mentioned.

BASIC COMPONENTS OF EDMS

The basic components of an EDMS are listed in Table 2. With almost all commercially available EDM systems there will be functionality that will cross over into the areas of workflow, collaboration, record management, and archiving and imaging. This happens because software vendors tend to target their products at particular target audiences and will often incorporate other functionality that is needed alongside core EDMS functionality.

Document Repository

All EDM systems need to have a document repository. This is where the system stores documents that are under its management. Most commonly, the document repository will be on the hard disk of a networked server. The document repository could be in just one location on one particular server or could be distributed across many different servers. Hence, the repository should be a central store for all the documents in the organization, allowing users to retrieve them from the repository via the search and retrieval or browsing functionality.

The core idea of having a document repository could fail if users in the organization do not place documents in the repository when they are created. However, a properly implemented EDM system would ensure that documents are placed in the repository on creation. This could be achieved if users are allowed to save documents to the repository only and, possibly, not permitted to save documents to their local hard drives or other network locations, these features being disabled at the desktop application level. For example, the Save functionality in a word processor, spreadsheet, or any other desktop application software could be configured to allow saving to the EDMS document repository only, which leads to another area of functionality known as Integration with Desktop Applications.

Besides an EDM system having a document repository, the system would also use a database of some kind to store information about the documents. This is often referred to as metadata, and will be covered in greater depth later in this section.

Folder Structures

The EDM system should allow a system administrator to set up and maintain an organized folder structure allowing for documents and files to be placed within folders according to their classification. The folder structure could be set up to follow the organizational structure, or it could be project based, representing projects within the organization, or business function based or property based. The folder structure could also be set up in a combination of the organizational structure and project-based structure, or it could be a combination of business function and property-based structure. Whichever is decided upon, the EDM system should allow a system administrator to set up and maintain a folder structure.

Integration with Desktop Applications

An EDM system needs to integrate with desktop applications, thereby allowing users to save documents straight from the application the document was created in, as mentioned in the preceding section on the document repository. The vast majority of EDM systems integrate with many popular desktop application suites such as Microsoft Office.

Check-In and Check-Out

Check-in and Check-out is a feature of EDM systems that controls who is editing a document and when it is being edited, and also ensures that not more than one person edits a document at any one time. For example, if a user needs to edit a document, it is checked out to that particular user who is thereby allowed to edit the document; other users in the organization would only be able view that document but not edit it, that is, the document is in read-only mode to everybody else except the person who has checked out the document and is editing it. When the user who has checked out the
document has finished editing it, he or she can then check in the document, thereby saving the updated copy to the document repository, allowing other users to access the updated document. After a document has been updated, the system needs to keep track of the changes. This is accomplished by versioning and auditing.

Version Control

After a document has been updated, there needs to be a mechanism by which the system can keep track of the changes made to that document. This is achieved by assigning the document a version number. For example, when a document is created and first saved into the document repository, it will be assigned a version number of 1.0. After it has been updated, the document could be assigned a version number of 1.1. The next time it is updated, it may be assigned the version number 1.2, and so on. With major revisions of the document, the version number can increase by one whole increment; for example, the document version could go from 1.2 to 2.0. Besides keeping track of version numbers, the system should allow authorized users access to previous versions of the document.

Auditing

Auditing, along with version control, keeps a check on which users made changes to a document and when. The auditing feature would allow authorized users to find out the changes that have been made to the document since it was first created. For example, if a document is now in version 1.3, then the auditing feature would allow authorized users to run a report to enable them to find out when the document was first created, the date it was updated and by which user, and what were the exact changes that were made to the document when it was updated.

To sum up, auditing allows you to discover the changes that were made, when they were made, and who made them.

Security

Security is an extremely important component in a properly implemented system. Security should be tightly integrated with the system, allowing for security access permissions to be applied at different levels within the system. For example, the system should allow an administrator to apply specific security settings to an individual document, thereby specifying that certain users or a certain group of users can both read and make changes to a certain document, whereas other users may only be able to read that document but not make any changes; still other users may not even be able to see that particular document.

An administrator of a system or a certain section of the system should also be able to set up and maintain security settings on individual files, folders, or groups of folders within the system, again allowing for read, write, or no access security permissions to be set up, as necessary.

Classification and Indexing

All documents should be classified and indexed using metadata, thereby allowing them to be easily retrieved at a later date using a search mechanism. The metadata should contain information about the document, such as the author, the document title, the date it was created, the subject of the document, and the department where the document originates, among other information. If a document is properly classified and indexed, then it can be easily found using search and retrieval mechanisms by users within the organization.

Search and Retrieval

Searching and retrieving documents is the other half of classifying and indexing documents. When documents are classified and indexed, they are placed into the EDMS document repository in a systematically organized fashion. The more intuitive the classification and indexing of documents is, the easier it will be to locate them using the search and retrieval mechanism.

A good system should offer users multiple ways in which to locate (search and retrieve) documents using a few different mechanisms, such as browsing the folder structure, a basic search, and an advanced search.

A basic search should simply allow the user to type in keywords and then retrieve all documents in which the keywords match either the metadata or the document’s content. An advanced search should allow the user to search individual metadata fields, allowing them to combine the metadata fields into the search criteria, so that either all metadata field values match (known as an AND statement) or one of the metadata fields match (known as an OR statement). The advanced search should also allow the user to combine metadata search criteria as well as search for words or phrases within the document content. For example, consider the document described in Table 2. Using an advanced search, the user may want to locate all documents written by the author “Azad Adam” that contain the phrase “night sky” in the document content. The user would specify “Azad Adam” in the author search field and also the phrase “night sky” in the document content search field. The search would then return this document and all
other documents that match the search criteria in the search results.

The EDM system should also offer users the ability to browse for documents by manually going through the folder structure, just as they would browse for documents using Windows Explorer.

Optical Character Recognition

Optional character recognition (OCR) is a method used to index the typed content of documents, which then allows the typed content to be searched upon. For example, again let us consider the following short document as illustrated in Table 3. If the document’s content has not been indexed using OCR, then users searching for this document would only be able to search for it based on the Title, Author or Subject fields, meaning they would have to know either some or all of the document’s title or the document’s subject, or the name of the author of the document in order to locate it.

If the document content has been indexed using OCR, then the content of the document would also be searchable, meaning that a user could locate the document simply by typing in the words “lazy dog” or “London” or “cat.”

Indexing the document’s content is a very powerful feature because users may know that they want to locate a document about a “lazy dog,” for instance, but may not know the document’s title, subject, or the author’s name.

BASIC COMPONENTS OF RECORD MANAGEMENT SYSTEMS

The vast majority of ERMS is either used in conjunction with EDMS or contain document management functionality even though there may not be a mention of the word document in the product description. An ERMS will share some common functionality with an EDMS.

Repository

As with EDM systems, all ERM systems will need to have a repository where the records are archived. Physically, the repository will be located on one or more networked database servers but will appear to users of the system as one central repository. Users of the ERM system should have the ability to browse the repository if their user access rights allow them to do so.

Folder Structure

The folder structure of an ERM system will exist within the repository and allows the system administrators to systematically categorize where records are archived within the system. Using a hierarchical folder structure will allow the administrator to set it up to either represent the organizational structure, business function-based structure, project-based structure, or property-based structure, or represent a combination of all four structures to facilitate the archival of records.

Classification, Indexing, and Metadata

All records in the system need to be categorized and indexed within the folder structure, using metadata to archive records in a systematic manner, and to help users to find their documents using the search and retrieval mechanisms.

Capturing and Declaring Records

An ERM system needs a method for automatically capturing and declaring records. For example, take an organization that processes forms and sends out acknowledgment letters to clients. Once they receive and process the client’s form, it will become a record of the interaction with the client. The subsequent acknowledgment letter they send out will be another document that also becomes a part of the record of the interaction with that particular client.

Hence, if the system did not automatically capture and declare these documents as records, they would either not get declared as records, or it would be left to a user in the organization to manually declare those documents as records, in which case human error can and will creep into the process, resulting in their not being properly archived as records.
Retention and Disposal of Records

ERM systems need to be able to retain records for a specific length of time, depending on the nature of the records, and also dispose of them when that time limit is up. Consider a banking institution that offers members of the general public bank accounts. When customers close their accounts with the bank, the bank will be obliged to keep details of their accounts on record for a set period of time. Let us say the period for keeping accounts on record after they are closed is 7 years. Then, from the date of account closure, the system should automatically keep all the details relating to the customers and their accounts on record until 7 years later. Once the time has expired, 7 years in this case, the system should dispose of the records, either completely deleting them securely from the system or moving them to off-line storage, depending on organizational rules.

Record Security

ERM systems need to employ stringent security around the archiving of records, both for the organization’s own security and to comply with legislation such as the Data Protection Act and the Privacy Act. Electronic records should be secured in such a way that only authorized users within the organization have access to them. Administrators of the ERM system should be able to easily set up and maintain record security within the system.

Managing Physical Records

An ERM should be capable of managing not only electronic records but also physical records existing in physical locations such as filing rooms and filing cabinets.

The system should be able to provide authorized users with details of where they can locate physical records and should also provide functionality for users to note on the system if they have removed records from their physical location—essentially, a type of check-out procedure for physical records stored on the system.

Search and Retrieval

As mentioned previously in the section on search and retrieval functionality regarding EDM systems, an ERM system needs to have the same search and retrieval functionality of a basic and advanced search, as well as the ability for users to browse the repository. In addition, the search mechanism needs to be able to search across electronic records and physical records, if any, managed by the system.

A combined EDRM system should allow the use of one search mechanism, either basic or advanced, to search both documents and records and, when performing searches, should not distinguish between documents in progress or archived records. This is particularly important because if a user has a need to find information on a certain client, then there may be a number of documents that represent work in progress and a number of them that have become historic records. All of this information will be of importance to the user who will probably not know the differences between documents and records. Hence, the mechanism needs to be able to search across both documents and records, and this fact should be transparent to the user.

Auditing and Reporting

Auditing and reporting is an important feature of both records management and document management, and the system should provide functionality to allow authorized users and administrators facilities to produce audit trails concerning records and documents in terms of access and changes, dates created, dates modified, etc. Reporting facilities should be flexible enough to allow users to create bespoke reports regarding documents or records.

Compliance with Standards

Legislation such as the Freedom of Information Act, the Privacy Act, and the Data Protection Act, as well as standards such as DoD 5015.2, TNA 2002, ISO 15489, and MOREQ, are key drivers of the development of EDRM systems. Therefore, for systems to be compliant and legally accountable, both document and record management systems need to follow the relative legislation and standards that apply to both the organization and the country in which they are being implemented. Most systems from major electronic documents and records software vendors comply with one or more of these standards.

Scanning and Imaging

Facilities to scan and image paper-based documents need to be part of an ERM system because one of the main business drivers for organizations implementing these systems is the need to provide staff with instant access to centrally held information and free up space used for filing rooms.

Some ERM and EDRM systems have integrated scanning and imaging modules, allowing the organization to scan documents in batches and index them,
whereas other software vendors provide scanning and imaging functionality as an optional module.

**Collaboration**

Collaborative services allow people and teams within the organization to communicate and share information, for example, to work on documents together. Although collaborative services are not a mandatory requirement of an EDRM system, it is certainly a very useful feature to have integrated with the system. Hence, if an EDRM system’s task is to manage documents and records, then it makes sense to include functionality to encourage staff in the organization to share information and work together when necessary on relevant documents and records.

**Workflow**

Workflow, also referred to as business process management, is used to manage the flow of information around an organization. For example, take an invoicing system; an invoice is received through the post, gets scanned on to the system, then gets routed to accounts, may then have to go to a particular person within the accounts department for authorization, and then goes into a queue to be paid via a check run. The steps involved in the invoice being electronically routed around an organization from one person to the next are called Workflow.

As with collaboration mentioned previously, workflow is not strictly within the ambit of EDRM systems, but it is an extremely useful feature that, when properly implemented, can speed up processes, making them more efficient, eliminating the paper trail while providing accountability for each task assigned to an individual.

**THE COMPLETE EDRMS**

The exact functionality required of an EDRM system will differ from organization to organization, depending on their specific needs and objectives. There is, however, a core set of functionality that an EDRM system should provide. This is document management, records management, scanning and imaging, as well as some collaboration and workflow functionality.

Some vendors offer a modular approach to EDRMS, offering separate document management, records management, scanning and imaging, workflow, and collaboration software products, allowing a system to be built up as needs and requirements change and also allowing an organization to purchase just the modules relevant to their needs.

Other vendors offer products that may include both document management and collaboration as one product and then offer document and records management functionality in another product. The vast majority of vendors will have optional modules, allowing a system to be tailored to an organization’s unique needs and requirements.

Whichever type of system is decided upon, it would make sense to implement one that has the capability to be scaled up in terms of both size and functionality. For example, an organization may want to implement just document management and collaboration to start with, and then, the following year, implement record management and workflow.