

**PROJECT CONSULT White Paper on ECM Enterprise Content Management**

# **Trends in Record, Document and Enterprise Content Management**

by  
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**P R O J E C T   C O N S U L T**  
Unternehmensberatung Dr. Ulrich Kampffmeyer GmbH

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# **Trends in Record, Document and Enterprise Content Management**



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## **Keynote S.E.R. Sales Forum Dr. Ulrich Kampffmeyer Visegrád, September 28/09/2004**

### **White Paper Trends in Record, Document and Enterprise Content Management**

### **Handout including the presentation slides**



## Trends in Record, Document and Enterprise Content Management

A PROJECT CONSULT White Paper

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### Table of Contents

1. Introduction.....	4
2. ECM – Enterprise Content Management .....	5
3. Characteristics of Enterprise Content Management .....	6
4. Components of Enterprise Content Management .....	7
5. Outlook .....	20
Presentation .....	21



## 1. Introduction

Enterprise Content Management itself is just one of the many terms used in the context of Content Management. Enterprise Content Management, at least in theory, includes Web Content Management. The general term Content Management itself has a great many facets, and also includes Web Content Management, Content Syndication, Digital or Media Asset Management, and naturally Enterprise Content Management as well. This “virtuous circle“of terminology merely points up the lack of clarity in manufacturers’ marketing language.

The important thing is whether the term ECM or Enterprise Content Management means more functionality and benefit for the user. This applies to subsets of ECM as well as to its overall claim of managing enterprise content. With all the comprehensive claims and all the countless components of Enterprise Content Management, at the end of the day ECM is a vision, a strategy, or even a new industry, but it is not a closed system solution or a distinct product. Therefore, along with DRT (Document Related Technologies) oder DLM (Document Lifecycle Management), ECM can be considered as just one possible catch-all term for a wide range of technologies and vendors.



## 2. ECM – Enterprise Content Management

At first glance, Enterprise Content Management is just a transformation of existing technologies or even just marketing claims along the lines of “The archive server becomes a document server becomes a content server becomes a portal server becomes an XYZ server becomes ...”

The acronym ECM has been reinterpreted and redefined many times during the last two years, replacing words like “Create” or “Customize” that were originally part of it. Since 2003, the AIIM has defined ECM as follows:

“The technologies used to capture, manage, store, deliver, and preserve information to support business processes.”

Traditional Archive, Document Management, and Workflow functionalities from the Document Related Technologies field have been converted into or used to generate new product suites that combine web-based components with the conventional products. In this context, Content Management generally becomes Enterprise Content Management. This nomenclature is intended to demonstrate that it is not just about a company’s web-oriented face to the outside world, but about all of the structured and unstructured information in the company. Most solutions therefore still focus on intranets, or as they are often called, B2E (“business to employee”) systems. But from this approach come new components that make useful additions to Content Management - automatic classification, profiling, web transactions archiving, and more.

Thus, the term Enterprise Content Management refers to solutions that use Internet technologies, but concentrate on in-house information provision. The solutions tend to be enterprise portals for B2B as extranet and B2E as intranet. This category includes most of the former Document Management, Groupware, and Workflow vendors who have not yet fully converted their architecture, but simply put a web server in front of their applications. Enterprise Content Management follows a multilayered component approach, that provides the necessary infrastructure for any application.



## 3. Characteristics of Enterprise Content Management

A comparison of the definitions of the different application fields of ECM and WCM makes it clear that the existing system category distinctions cannot last long, whether for products and technical platforms or for usage models. Solutions that are used as pure in-house solutions today will be made accessible to partners or customers tomorrow. The content and structure of today's outward-directed web portal will be the platform for tomorrow's internal information system. The claimed benefit of an Enterprise Content Management System is reduced to three key ideas that distinguish such solutions from Web Content Management:

- Enterprise Content Management as integrative middleware

ECM is used to overcome the restrictions of former vertical applications and island architectures. The user is basically unaware of using an ECM solution. ECM offers the requisite infrastructure for the new world of web-based IT, which is establishing itself as a kind of third platform alongside conventional host and client/server systems. Therefore, EAI – Enterprise Application Integration – will play an important role in the implementation and use of ECM.

- Enterprise Content Management components as independent services

ECM is used to manage Information without regard to the source or the required use. The functionality is provided as a service that can be used from all kinds of applications. The advantage of a service concept is that for any given functionality only one general service is available, thus avoiding redundant, expensive and difficult to maintain parallel functions.

- Enterprise Content Management as a uniform repository for all types of information

ECM is used as a content warehouse (both data warehouse and document warehouse) that combines company information in a repository with a uniform structure. Expensive redundancies and associated problems with information consistency are eliminated. All applications deliver their content to a single repository, which in turn provides needed information to all applications.

Enterprise Content Management is working properly when it is effectively invisible to users. ECM technologies are infrastructures that support specialized applications as subordinate services.

ECM thus is a collection of infrastructure components that fit into a multi-layer model and include all Document Related Technologies (DRT) for handling, delivering, and managing poorly structured data. As such, Enterprise Content Management is one of the necessary basic components of the overarching E-Business application area. ECM also sets out to manage all the information of a WCM and cover archiving needs as a universal repository.



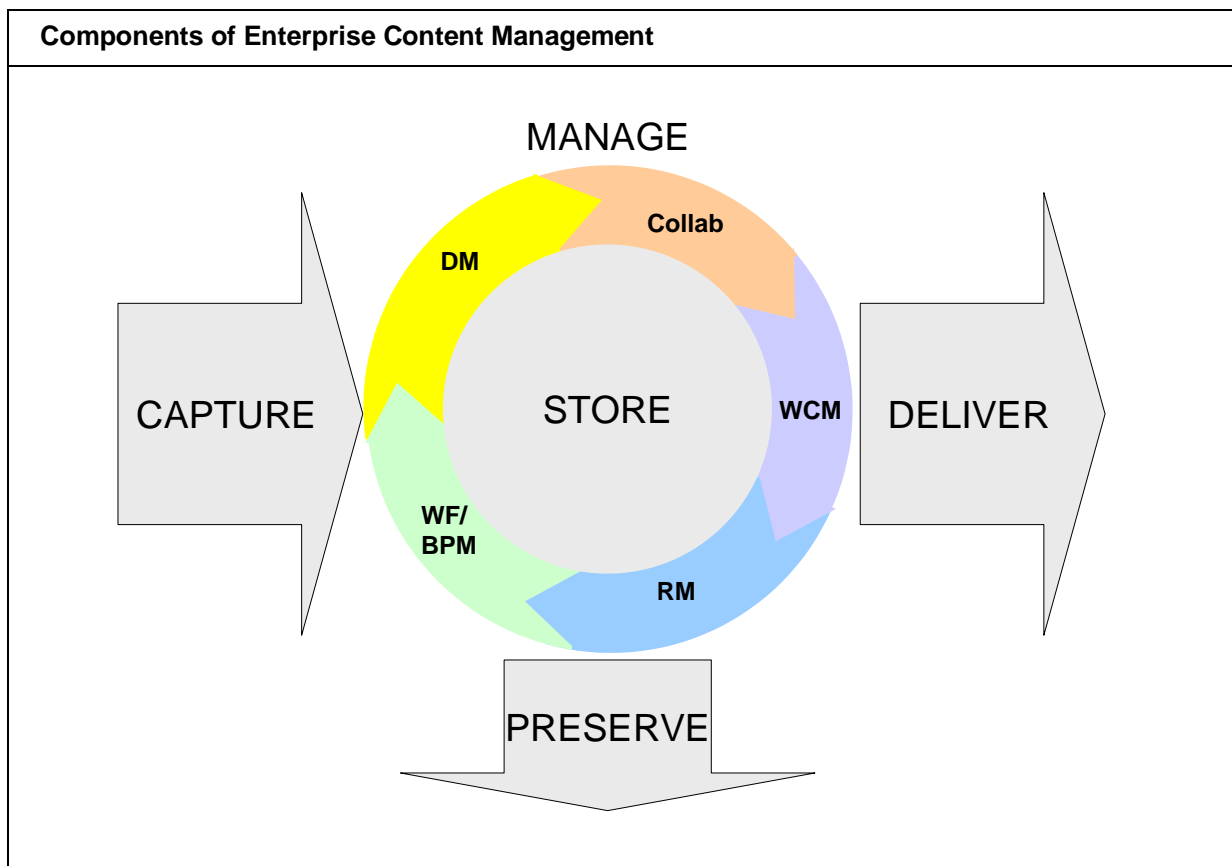
## 4. Components of Enterprise Content Management

Enterprise Content Management solutions combine a wide variety of technologies and components, some of which can also be used as stand-alone solutions without necessarily being incorporated into an enterprise-wide system.

These ECM components and technologies can be categorized as:

- Capture,
- Manage,
- Store,
- Deliver, and long-term
- Preserve.

This model is based on the five lead categories of AIIM International.



The traditional application areas

- DM or Document Management,
- Collaboration (of supporting systems, groupware),
- WCM or Web Content Management (including portals),



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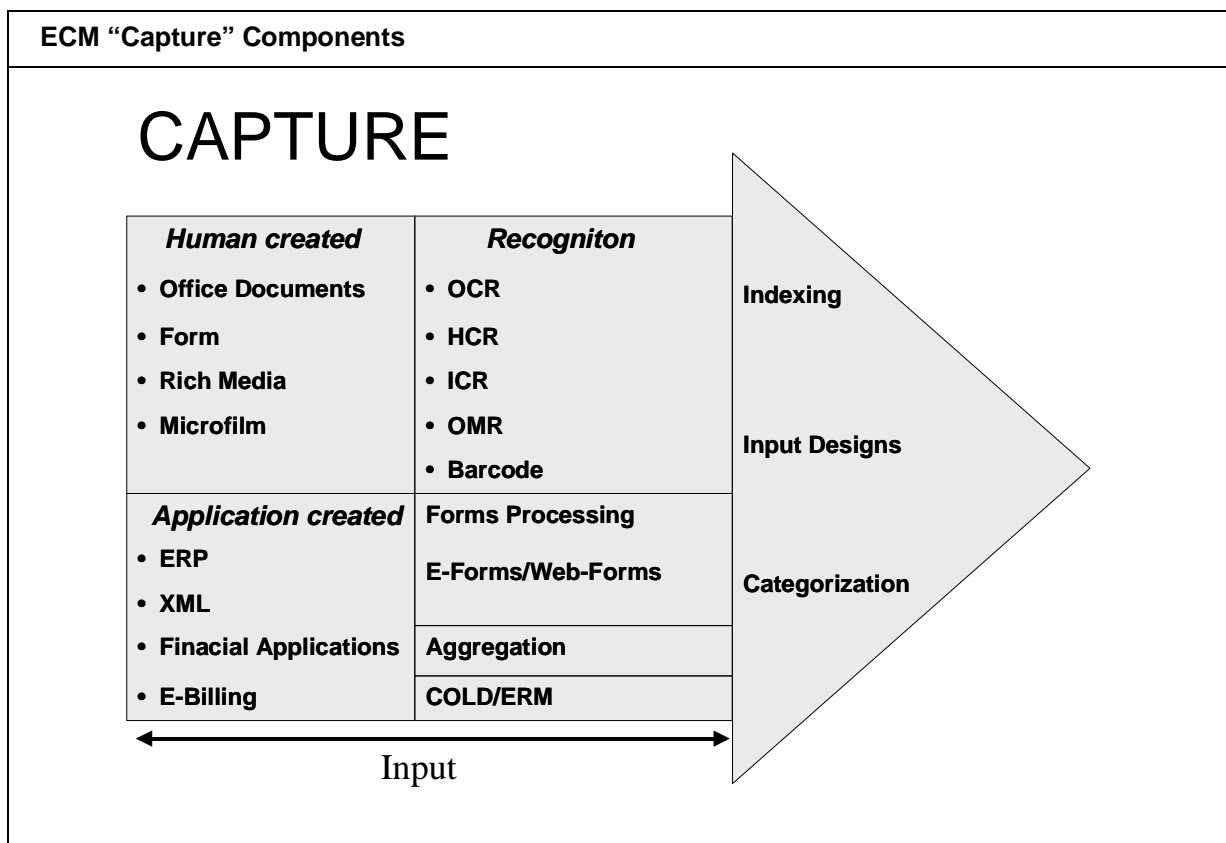
- RM or Records Management (archive and filing management systems on long-term storage media) and
- Workflow / BPM or Business Process Management

form the “manage” components that connect Capture, Store, Deliver and Preserve and can be used in combination or as alternatives. While Document Management, Web Content Management, Collaboration, Workflow and Business Process Management are more for the dynamic part of the life cycle of information, Records Management takes care of information which will no longer be changed. The utilization of the information is paramount throughout, whether through independent clients of the ECM system components, or by enabling existing applications that access the functionality of ECM services and the stored information. The integration of existing technologies makes it clear that ECM is not a new product category, but an integrative force.

The individual categories and their components will be examined in the following.

## 4.1 Capture

The “Capture” category contains functionalities and components for generating, capturing, preparing and processing analog and electronic information. There are several levels and technologies, from simple information capture to complex information preparation using automatic classification. Capture components are often also called “Input” components.







## Manually generated and captured information

Manual capture can involve all forms of information, from paper documents to electronic office documents, e-mails, forms, multimedia objects, digitized speech and video, and microfilm.

Automatic or semi-automatic capture can use EDI or XML documents, business and ERP applications or existing specialist application systems as sources.

## Technologies for processing captured information

Various recognition technologies are used to process scanned faxes, among them:

- **OCR (Optical Character Recognition)**  
This converts image information into machine-readable characters. OCR is used for type.
- **HCR (Handprint Character Recognition)**  
This refinement of OCR converts handwriting or lettering into machine characters, but does not yet give satisfactory results for running text. However, for defined field content it has become very reliable.
- **ICR (Intelligent Character Recognition)**  
ICR is a further development of OCR and HCR, that uses comparison, logical connections, and checks against reference lists and existing master data to improve results.
- **OMR (Optical Mark Recognition)**  
OMR, as used for barcodes for example, reads special markings in predefined fields with very high accuracy. It has proven its value in questionnaires and other forms.
- **Barcode**  
Barcodes on mailed forms allow for the automatic recognition and filing of returns.

Document imaging processing techniques are used to show scanned images, and also allow legibility enhancement for capture. Functions like “despeckling,” which removes isolated pixels, or “adjustment,” which straightens images from sheets that feed in at an angle, improve the results of recognition technologies. Document imaging functions are used in capture quality control.

In forms capture, there are two groups of technologies, although the information content and character of the documents may be identical.

- **Forms Processing**  
Forms Processing means the capture of industrially or individually printed forms via scanning. Recognition technologies are often used here, since well-designed forms enable largely automatic processing.
- **E-Forms / Web-Forms**  
Automatic processing can be used to capture electronic forms as long as the layout, structure, logic and contents are known to the capture system.

COLD/ERM are technologies for the automatic processing of structured entry data. COLD stands for Computer Output on Laser Disk and is still in use although laser disks have not been on the market for years. The acronym ERM stands for Enterprise Report Management. In both, supplied output data is processed based on existing structure information in such a way that it can be indexed independently of the origination system, and transferred to a storage component that can be dynamic (Store) or an archive (Preserve).



“Aggregation” is a process of combining data entries from different creation, capture, and delivery applications. The goal is to combine and unify data from different sources, in order to pass them on to storage and processing systems with a uniform structure and format.

## Components for subject indexing of captured information

Systems incorporate further components for subject indexing and getting captured digital information to the appropriate recipients. These include:

- Indexing (manual)  
In English parlance, indexing refers to the manual assignment of index attributes used in the database of a “manage” component for administration and access.
- Input Designs (profiles)  
Both automatic and manual attributing can be made easier and better with preset profiles. These can describe document classes that limit the number of possible index values, or automatically assign certain criteria. Input designs also include entry masks and their logic in manual indexing.
- Categorization (automatic classification or categorizing)  
Based on the information contained in electronic information objects, whether OCR-converted faxes, office files or output files, automatic classification programs can extract index, category, and transfer data autonomously. These systems can evaluate information based on predefined criteria or in a self-learning process.

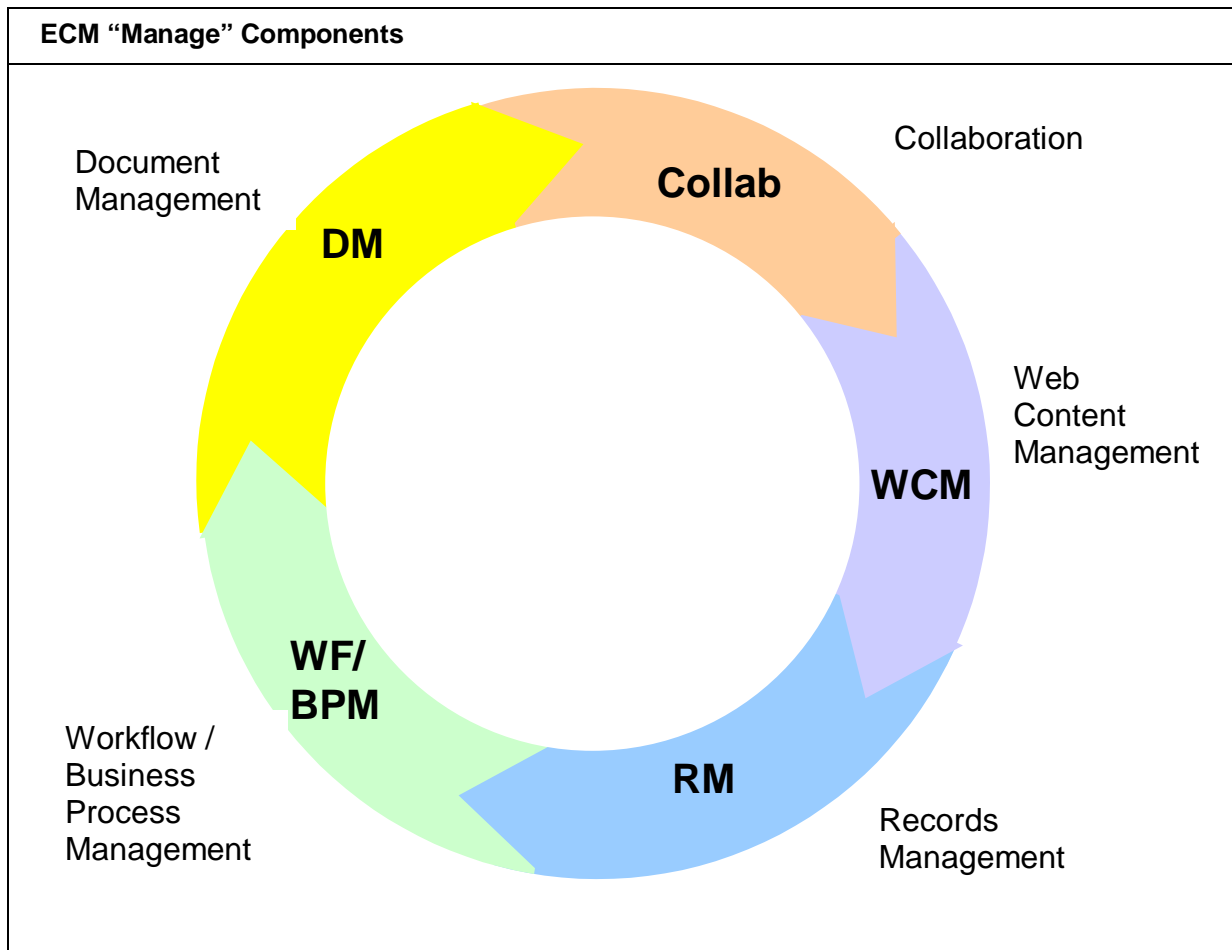
The objective of all “Capture” components is the provision of information to the “Manage” components for further processing or archiving.

## 4.2 Manage

The Manage components are for the management, processing, and use of information. They incorporate:

- Databases for administration and retrieval, and
- Access authorization systems

The goal of a closed ECM system is to provide these two components just once as services for all “Manage” solutions such as Document Management, Collaboration, Web Content Management, Records Management and Workflow / Business Process Management. To link the various “Manage” components, they should have standardized interfaces and secure transaction processes for inter-component communication.



## DM – Document Management

“Document management” in this context does not refer to the industry known in Germany as DMS, but to document management systems in the narrower “classical” sense. These systems control documents from their creation through to long-term archiving. Document management includes functions like:

- Check in/Check out  
For checking stored information for consistency
- Version management  
To keep track of different versions of the same information with their revisions and renditions (same information in a different format)
- Search and navigation  
For finding information and its associated contexts
- Visualizing  
For showing information in structures like virtual files, folders, and overviews



However, the functions of Document Management increasingly overlap with those of the other "Manage" components, the ever-expanding functionalities of office applications like Outlook/Exchange or Notes/Domino, and the characteristics of "Library Services" for administering information storage.

## **Collaboration (collaborative systems, groupware)**

Collaboration actually simply means "working together". However, these solutions, which developed from conventional groupware, now go much further and include elements of Knowledge Management. Collaboration includes the following functions:

- Jointly usable information databases
- Joint, simultaneous, controlled information processing
- Knowledge based on skills, resources and background data for joint information processing
- Administration components such as whiteboards for brainstorming, appointment scheduling, project management etc.
- Communication application such as video conferencing
- Integration of information from other applications in the context of joint information processing

## **WCM – Web Content Management**

Enterprise Content Management claims to integrate Web Content Management. However, information presented on the Internet and Extranet or on a portal should only be data that is already present in the company, whose delivery is controlled by access authorization and storage. Web Content Management includes the following functions, among others:

- Creation of new or editing of existing information in a controlled generation and publishing process
- Delivery and administration of information for the web presentation
- Automatic conversion for various display formats, personalized display and versions
- Secure separation of access to public and non-public information
- Visualization for Internet presentation (browser, HTML, XML etc.)

## **RM Records Management (file and archive management)**

Unlike with traditional electronic archive systems, Records Management (RM; Electronic Records Management or ERM) refers to the pure administration of records, important information and data that companies are required to archive. Records Management is independent of storage media, and can also manage information stored otherwise than in electronic systems. Among the functions of Web Records Management are:

- Imaging of file plans and other structured indexes for the orderly storage of information
- Unambiguous indexing of information, supported by thesauri or controlled wordlists
- Management of record retention schedules and deletion schedules



- Protection of information in accordance with its characteristics, sometimes down to individual content components in documents
- Use of international, industry-specific or at least company-wide standardized meta-data for the unambiguous identification and description of stored information

## **Wf Workflow / BPM Business Process Management**

Workflow and Business Process Management differ substantially.

There are different types of Workflow, for example:

- “Production Workflow” which uses predefined sequences to guide and control processes
- “Ad-Hoc Workflow” in which the user determines the process sequence on the fly.

Workflow solutions can be implemented as:

- “Workflow solutions” with autonomous clients which users mostly work with, or as
- “Workflow Engines” which act as a background service controlling the information and data flow, without requiring an own client for this.

Workflow Management includes the following functions, among others:

- Imaging of process and organization structures
- Capture, administration, visualization, and delivery of grouped information with its associated documents or data
- Incorporation of data processing tools (such as specific applications) and documents (such as office products)
- Parallel and sequential processing of procedures including simultaneous saving
- Reminders, deadlines, delegation and other administration functionalities
- Monitoring and documentation of process status, routing, and outcomes
- Tools for designing and displaying process

The objective is to largely automate processes by incorporating all necessary resources.

BPM or Business Process Management goes a step further than Workflow, aiming at the complete integration of all affected applications within an enterprise, with monitoring of processes and assembling of all required information. Among BPM's functions are:

- Complete workflow functionality
- Process and data monitoring at the server level
- EAI or Enterprise Application Integration, to link different applications
- BI or Business Intelligence, with rule structures, integration of information warehouses, and utilities that assist users in their work.

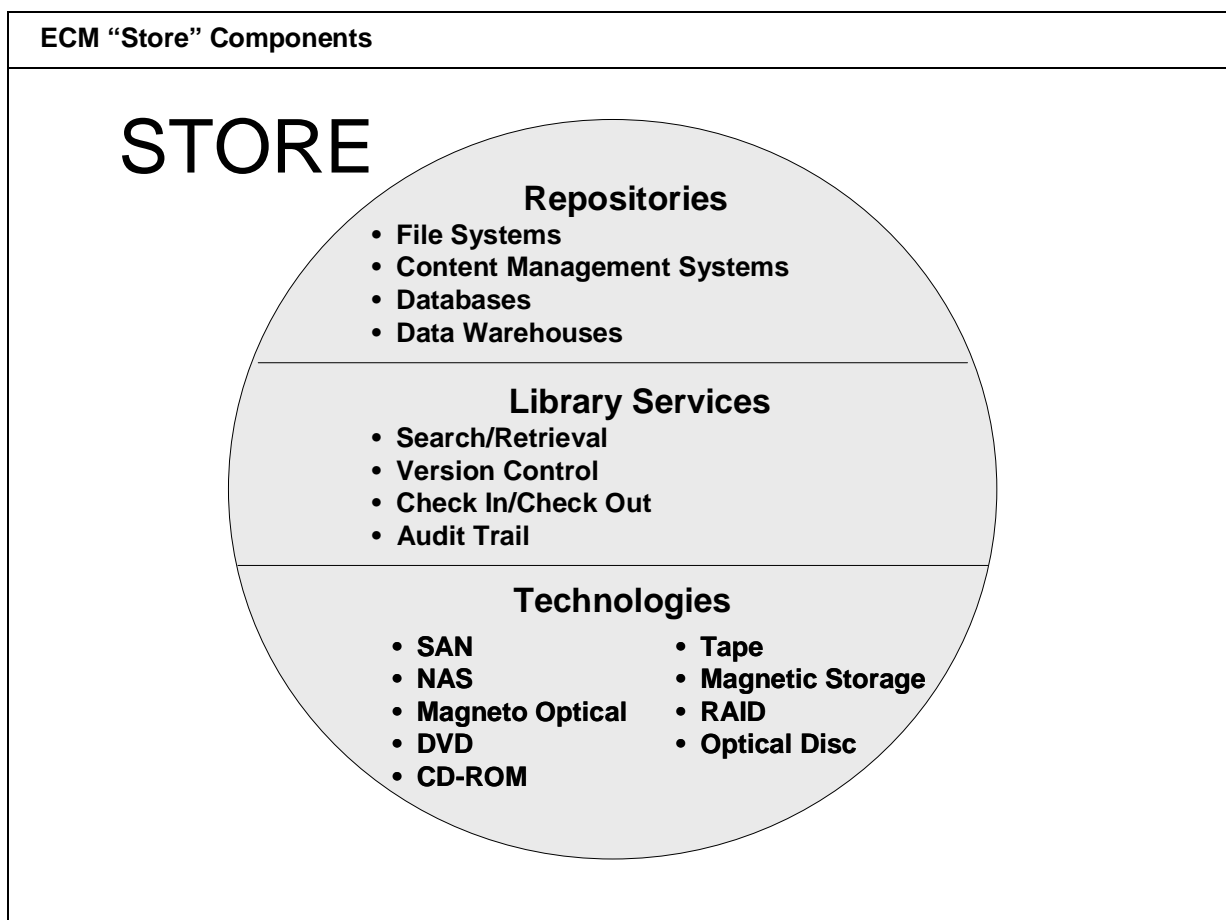
Today, “Manage” components are offered individually or integrated as suites. In many cases they already include the “Store” components.



## 4.3 Store

“Store” components are used for the temporary storage of information which it is not required or desired to archive. Even if it uses media that are suitable for long-term archiving, “Store” is still separate from “Preserve.”

The “Store” components listed by AIIM can be divided into three categories: “Repositories” as storage locations, “Library Services” as administration components for repositories, and storage “Technologies.” These infrastructure components are sometimes held at the operating system level like the file system, and also include security technologies which will be discussed farther below in the “Deliver” section. However, security technologies including access control are superordinated components of an ECM solution.



### Repositories

Different kind of ECM repositories can be used in combination. Among the possible kinds are:

- File System  
 File systems are used primarily for temporary storage, as input and output caches. The goal of ECM is to reduce the data burden on the file system and make the information generally available through “Manage”, “Store” and “Preserve” technologies.



- **Content Management System**  
This is the actual storage system for content, which can be a database or a specialized storage system.
- **Databases**  
Databases administer access information, but can also be used for the direct storage of documents, content, or media assets.
- **Data Warehouses**  
These are complex storage systems based on databases, which reference or provide information from all kinds of sources. They can also be designed with more global functions as Document or Information Warehouses.

## Library Services

Library Services have to do with libraries only in a metaphorical way. They are the administrative components close to the system that handle access to information. The Library Service is responsible for taking in and storing information from the Capture and Manage components. It also manages the storage locations in dynamic storage, the actual "Store", and in the long-term "Preserve" archive. The storage location is determined only by the characteristics and classification of the information. The Library Service works in concert with the database of the "Manage" components. This serves the necessary functions of

- Search, and
- Retrieval

While the database does not "know" the physical location of a stored object, the Library Service manages the

- Online storage (direct access to data and documents)
- Nearline storage (data and documents on a medium that the drive can access, but for which robotics or something similar must first be set up)
- Offline storage (data and documents on a medium that is removed from system access).

If there is not a superordinated document management system to provide the functionality, the Library Service must have

- Version management to control the status of information
- Check-in/Check-out, for controlled information provision

An important Library Service function is the generation of logs and journals on information usage and edits, called an "audit trail."

## Storage Technologies

A wide variety of technologies can be used to store information, depending on the application and system environment:

- **Read and Write Magnetic Online Media**  
This includes hard drives as RAID (Redundant Array of Independent Disks) server drive subsystems, SAN (Storage Area Networks) as storage infrastructures and NAS (Network Attached Storage) as directly accessible network storage areas.

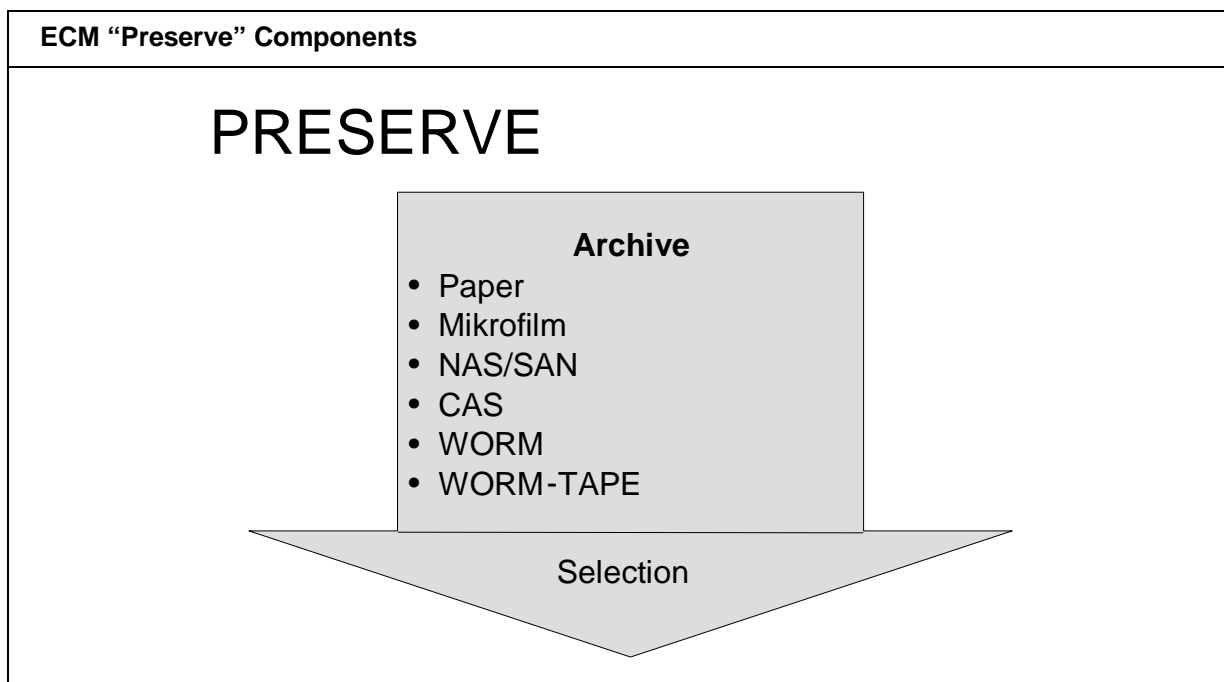


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- **Magnetic Tape**  
In automated storage units like “Libraries” or “Silos” with robotics for access, used like DAT in smaller environments for backup but not online access.
- **Digital Optical Media**  
CD (CD-R for write-once, read-only Compact Disk, CD/RW for read-and-write Compact Disk), DVD (Digital Versatile Disk), MO (Magneto Optical), and other formats can be used for storage and distribution, or in jukeboxes for online storage.

## 4.4 Preserve

The “Preserve” components of ECM handle the long-term, safe storage and backup of static, unchanging information, as well as temporary storage of information that it is not desired or required to archive. This is sometimes called “electronic archiving,” but that has substantially broader functionality than that of “Preserve.” Electronic archiving systems today generally consist of a combination of administration software like Records Management, Imaging or Document Management, Library Services (IRS - Information Retrieval Systeme) and storage subsystems.



But it is not just electronic media that are suitable for long-term archiving. For purely securing information microfilm is still viable, and is now offered in hybrid systems with electronic media and database-supported access. The decisive factor for all long-term storage systems is the timely planning and regular performance of migrations, in order to keep information available in the changing technical landscape. This ongoing process is called Continuous Migration. Among the “Preserve” components are:

- **WORM (Write Once Read Many)** rotating digital optical storage media, which include the classic 5 ¼” or 3 ½” WORM disc in protective sleeve, as well as CD-R and DVD-R. Recording methods vary for these media, which are held in jukeboxes for online and automated nearline access.





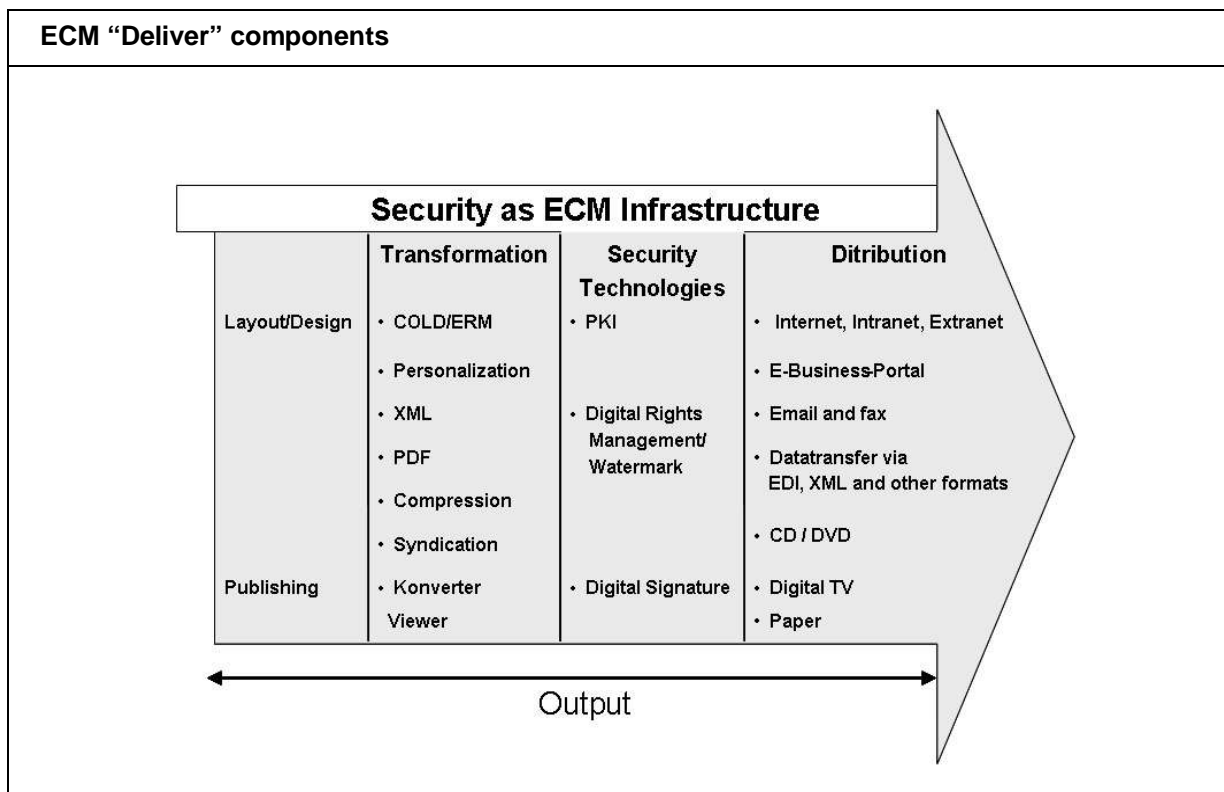
- WORM-Tape (magnetic tape with WORM characteristics)  
Used in special drives, that can be as secure as a traditional WORM medium if used properly with specially secured tapes.
- CAS (Content Adressed Storage) magnetic hard drive storage  
With special software protection against overwriting, erasure, and editing, like a WORM medium.
- NAS/SAN (Network Attached Storage / Storage Area Networks)  
Can also be used if they meet the requirements of edit-proof auditing acceptability with unchangeable storage, protection against manipulation and erasure, etc.
- Microfilm  
Can be used to backup information that is no longer in use and does not require machine processing.
- Paper  
Still has applications as a long-term storage medium, since it does not require migration, and can be read without any technical aids. However, like microfilm it is used only to secure originally electronic information.

## 4.5 Deliver

The “Deliver” components of ECM are used to present information from the “Manage”, “Store”, and “Preserve” components. They also contain functions used to enter information in systems (such as information transfer to media or generation of formatted output files) or for readying (for example converting or compressing) information for the “Store” and “Preserve” components. Since the AIIIM component model is function-based and not to be regarded as an architecture, we can assign these and other components here. The functionality in the “Deliver” category is also known as “output” and summarized under the term “Output Management.”

The “Deliver” components comprise three groups of functions and media: Transformation Technologies, Security Technologies, and Distribution. Transformation and Security as services belong on the middleware level and should be available to all ECM components equally. For Output two functions are of primary importance:

- Layout/Design  
With tools for layouting and formatting output, and
- Publishing  
Applications for presenting Information for distribution and publication.



## Transformation technologies

Transformations should always be controlled and trackable. This is done by background services which the end user generally does not see. Among the transformation technologies are:

- **COLD / ERM**  
 As distinct from “Capture” components, it prepares output data for distribution and transfer to the archive. Typical applications are lists and formatted output, for example individualized customer letters. These technologies also include journals and logs generated by the ECM components.
- **Personalization**  
 This is no longer just a function of web-based portals, but applies to all ECM components. Personalization gives the user just those functions and information that he or she needs.
- **XML (eXtended Markup Language)**  
 A description language that allows description of interfaces, structures, metadata, and documents. XML is becoming the universal technology for describing information.
- **PDF (Printable Document Format)**  
 An intelligent print and distribution format that enables the platform-independent presentation of information. Unlike pure image formats like TIFFs, PDFs permit content searches, the addition of metadata, and the embedding of electronic signatures.



- **Converters and Viewers**  
Serve to reformat information to generate uniform formats, and also to display and output information from different formats.
- **Compression**  
Used to reduce the storage space needed for pictorial information. The ITU process (CCITT) is used for b/w for TIFFs, and JPEG2000 for color images. ZIP softwares allow the compression of any kind of data for transfer.
- **Syndication**  
Used for presenting content in different formats, selections and forms in the context of Content Management. Syndication allows the same content to be used multiple times in different forms for different purposes.

## Security Technologies

Security technologies are cross-section functions that are available to all ECM components. For example, electronic signatures are used not only when documents are sent, but also in data capture via scanning, in order to document the completeness of the capture. PKI (Private Key Infrastructure) is a basic technology for electronic signatures. It manages keys and certificates, and checks the authenticity of signatures. Other electronic signatures demonstrate the identity of the sender and the integrity of the sent data, i.e. that it is complete and unchanged. In Europe there are three forms of electronic signatures, of different quality and security: simple, advanced, and qualified. In Germany the qualified electronic signature is legally admissible in legal documents and contracts. Finally, there is Digital Rights Management/Watermarking. This is used in Content Syndication and in MAM (Media Asset Management) for managing and securing intellectual property rights and copyrights. It works with techniques like electronic watermarks that are integrated directly into the file, and seeks to protect usage rights and protect content that is published on the Internet.

## Distribution

All of the above technologies basically serve to provide the various contents of an ECM to target users by various routes, in a controlled and user-oriented manner. These can be active components such as e-mail, data media, memos, and passive publication on websites and portals where users can get the information themselves. Possible output and distribution media are:

- Internet, extranet and intranet
- E-business portals
- E-mail and fax
- Data transfer by EDI, XML or other formats
- Mobile devices like mobile phones, communicators and others
- Data media like CDs and DVDs
- Digital TV and other multimedia services
- Paper

The job of the various "Deliver" components is to provide information to users in the best way for the given application, while controlling its use as far as possible.



## 5. Outlook

Document technologies like Enterprise Content Management make traditional data processing complete. They bring together structured, weakly structured, and unstructured information. Every company, every government agency, and every organization must confront the subject. Even if there are no immediate plans to implement such a system, it sneaks into the organization of its own accord – with the next server licence update, with the next office software suite, with the next database or ERP upgrade. In many companies with heterogeneous IT landscapes, the question of which redundant functionalities of existing products are unused is already more important than whether to invest in a new software system. The most important job is to keep in-house information under control. The questions add up: where to put the thousands and thousands of e-mails, what to do with the electronically signed business correspondence, where to put tax-relevant data, how to transfer information from the disorganized file system, how to consolidate information in a repository that everybody can use, how to get a single login for all the systems, how to create a uniform in-basket for all incoming information, how to make sure that no information is lost or ignored, etc. etc. Document technologies play an important role in all these questions. ECM solutions are necessary basic components for many applications.

Every potential user will naturally consider his own individual needs before deciding on a system. However, putting off decisions does not make them less necessary. Every year something supposedly better and easier to use will come along, but waiting will just mean never installing anything. Every time the decision is put off, the mountain of uncontrolled and unused information gets bigger, and known problems get larger. A sensible long-term migration strategy removes the fear of fast technology change. The basic functions of document technology are mature, and most products are reliable, stable, secure, and increasingly affordable. In many industries, the use of document technology makes the difference in staying competitive. ECM - Enterprise Content Management – should be a part of every modern IT infrastructure.



## Presentation




# Trends in Record, Document and Enterprise Content Management

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## Topics

- Introduction
- Changing Markets (Developments, New Acronyms and Marketing Slogans)
- CM - Content Management
- Characteristics of ECM - Enterprise Content Management
- Components of ECM - Enterprise Content Management
- Challenge: ECM and the Information Society

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## Introduction

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## A Babel of Acronyms

- The wide variety of terms confuses customers and tends to discourage purchase decisions.
- It makes sense to introduce a new term, such as ECM or Enterprise Content Management, only if it is associated with a new quality.
- Clear definitions are needed.

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## An Ancient Issue

- Knowledge management has been practiced for 100,000's of years. At first it was based on oral transmission.
- The invention of writing 5000 years ago made it possible to pass along written information and agreements. The document was born.
- Document management likewise started 5000 years ago in early cultures.

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## From Data to Content

(1)

- Data are held as binary values in electronic systems:
  - As unstructured binary objects such as pixels, or
  - As character sets with syntactically defined forms, such as letters

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## From Data to Content

(2)

- Information is data in a context. Information can be structured, weakly structured, or unstructured:
  - A data set is structured, and can be automatically interpreted.
  - A text file is often only weakly structured.
  - An image is unstructured and cannot be interpreted easily.

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## From Data to Content

(3)

- Electronic documents are generally weakly structured or unstructured. They constitute information that is cohesive, complete and authentic at a given point in time. They exist in electronic systems as files, elements of files, or digital objects.

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## From Data to Content

(4)

- With electronic content, the document is divided into descriptive and structuring data plus a content component, whose form is described by the separate structure. Individual components can be managed independently of one another, and structured in different ways.

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## Challenges, Markets & Trends

Electronic Archives  
are the Memory  
of the Information Society

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## Consolidation

- The vendor market is undergoing a consolidation phase
- The shakeout has already hit document management and electronic archival; web content management and portals will be next
- Smaller companies cannot afford to deliver the latest technologies AND support the availability of solutions for decades

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## Reasons for Investment in ECM

Most important reason for investments in ECM technologies (in %)						
(Source: AIIM 2003)	USA	IRE	BRA	GER	UK	CAN
Efficiency improvement	5	6	6	5	10	6
Risk Management	4	3	3	3	4	13
Faster response to inquiries	9	6	8	5	4	13
Improved customer services	14	14	24	7	17	4
Compliance	17	9	3	2	13	21
Cost reduction	18	19	10	31	15	10
Improvement of competitive positioning	6	4	10	3	6	2
Higher revenues, better performance	27	36	33	40	31	31

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## Solution focus

Focus of planned projects (in %)						
(Source: AIIM 2003)	USA	IRE	BRA	D	UK	CAN
Process automation	22	27	45	16	26	23
Technical Document Management	22	21	42	29		33
eMail-Management	22	28	30	20	30	33
Web-Publishing	24	31	31	14	33	38
Knowledge Management	25	29	41	14	36	33
Information Capture	27	30	33	18	38	35
Document Control	34	40	57	22	50	44
Archiving / Storage / Records Management	44	34	53	14	46	48
Compliance	20					
Forms Processing	18			18	26	25
Business Continuity		23				
Customer Service		29	34		33	23
Human Resource Management			28			
Accounting				14		
eGovernment					28	

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## Planned Investments

Planned Investments 2004 / 2005 (US \$)						
<i>(Source: AIIM 2003)</i>	USA	IRE	BRA	GER	UK	CAN
<\$100.000	41	35	51	37	40	59
\$100.000 - \$200.000	17	15	21	20	14	6
\$200.000 - \$500.000	19	15	11	16	15	12
\$500.000 - \$1.000.000	12	9	3	8	10	0
>\$1.000.000	11	26	14	18	21	24

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## The need for standards

  - Without standards and pre-defined structures, meta-data, and interchange formats, there will be no long-term availability
  - Constant migration issues add to existing problems of capture, indexing and protection

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## CM – Content Management

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## Definition: Content (1)

- Content is information in structured, weakly structured, and unstructured forms held for use in an electronic system
- Content is not simply another word for document. Information objects comprise content, layout, and meta-data.

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## Definition: Content

(2)

- **Structured content** is data delivered in a standardized layout from database-supported systems (e.g. formatted data sets from a database)
- **Weakly structured content** is information and documents that may include layout and metadata, but are not standardized (e.g. word processor files)
- **Unstructured content** is any kind of information objects whose contents cannot be directly referenced and which lack separation of content, layout, and metadata (images, GIF's, video, language, faxes etc.)

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## Definition: Content Management

- CM in the narrow sense of the word refers only to the software-supported management of contents (databases, archives, etc.)
- CM is more than the continuation of documentation with Internet technology
- Vendors use the terms Content Management and CMS interchangeably:  
unfortunately CM is used synonym to WCM

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## Definition: Content Management System

- Content management systemes (CMS) in the wider sense support:
  - Content creation (directly or through connected applications)
  - Content management (CM in the narrow sense)
  - Content presentation and distribution
  - Content control (rights, versions)
  - Content individualization (personalization, viewing)

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## Definition: Web Content Management (1)

- Web Content Management (WCM) is the management of content on Internet-based websites and portals
- Web CMS focuses on presenting content for open user communities on the Internet

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## Definition: Web Content Management (2)

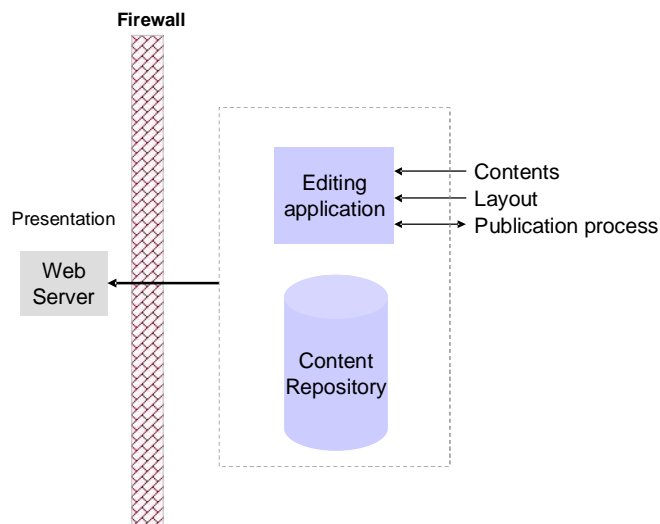
- Web Content Management Systeme (WCMS, WebCMS) can be grouped by functions:
  - Editing systems for creation, administration, and content provision of websites (web editors, web eProcess etc.)
  - Website operating systems, that provide content in realtime. These systems are increasingly database-driven (replacing HTML hierarchical directories)
  - Web design tools for creating and programming website functionalities
  - Web publishing solutions with active information distribution

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## Content Management as Editing System Only




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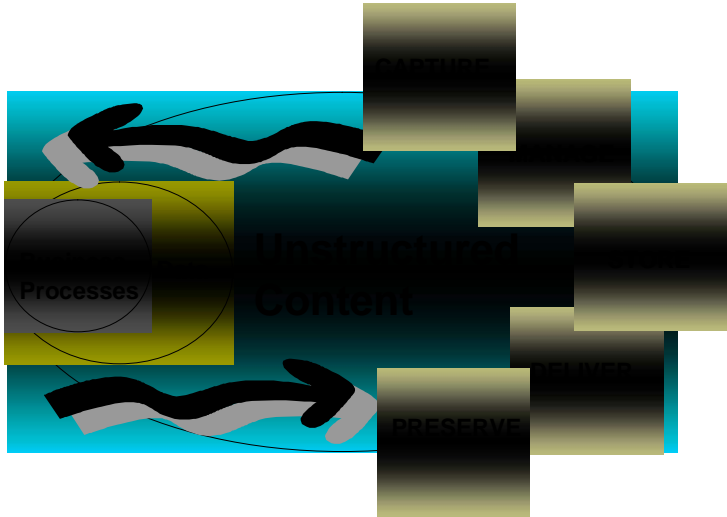
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## Definition: ECM Enterprise Content Management



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## Definition: Enterprise Content Management

The technologies used to capture, manage, store, deliver, and preserve information to support business processes.

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## Definition: Enterprise Content Management (1)

- Enterprise Content Management (ECM) assumes that all company information is held on a uniform platform for use internally, by partners, and externally (“Unified Global Repository” approach, Data/Document/Content Warehouse)
- ECM comprises conventional document technologies such as document management, knowledge management, workflow, archiving etc., and integrates the host and client/server world with portal and other Internet technologies

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## Definition: Enterprise Content Management (2)

- The goal of ECM is to prevent data and information redundancies (each item of information exists only once), control access in a uniform manner, deliver any kind of information independent of the source and use, and provide all applications in a unified form as a service
- ECM is a basic eBusiness technology for providing information and controlling processing

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## Characteristics of ECM Enterprise Content Management

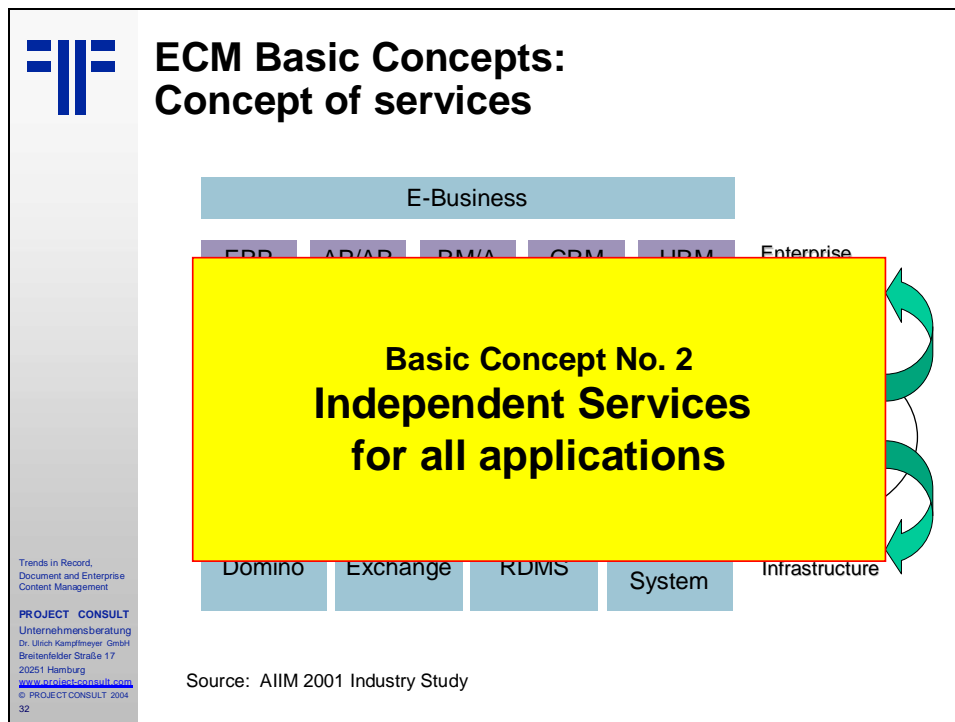
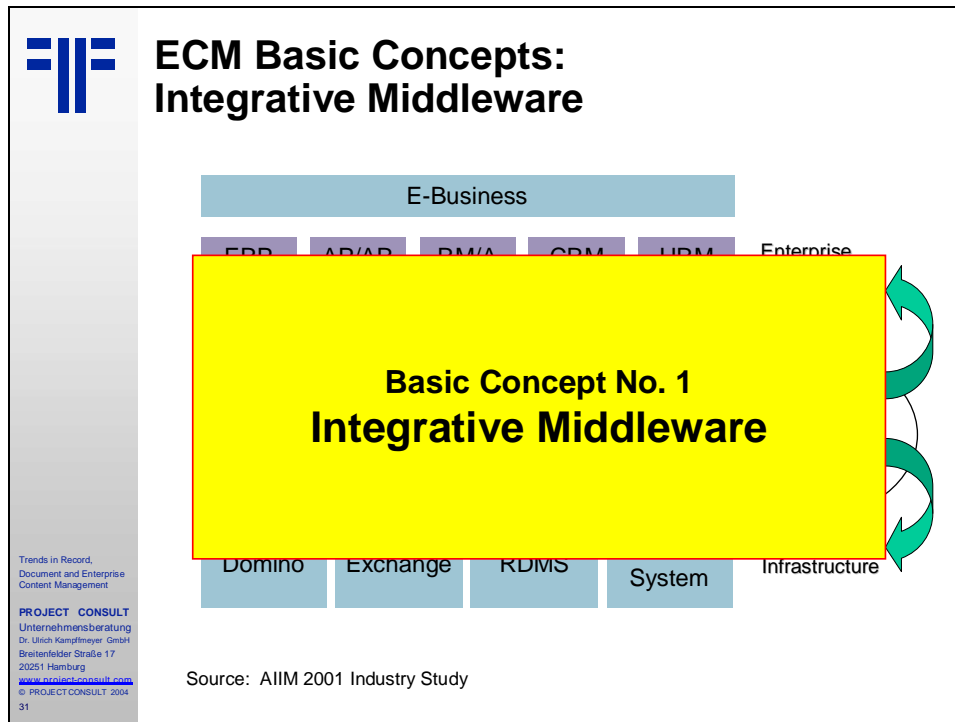
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## ECM as Infrastructure

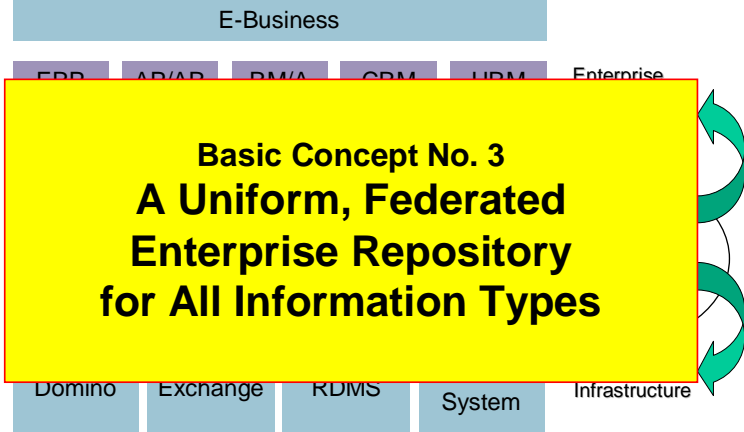
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Source: AIIM 2001 Industry Study






 **ECM Basic Concepts:  
Uniform Repository**



**Basic Concept No. 3  
A Uniform, Federated  
Enterprise Repository  
for All Information Types**

Source: AIIM 2001 Industry Study

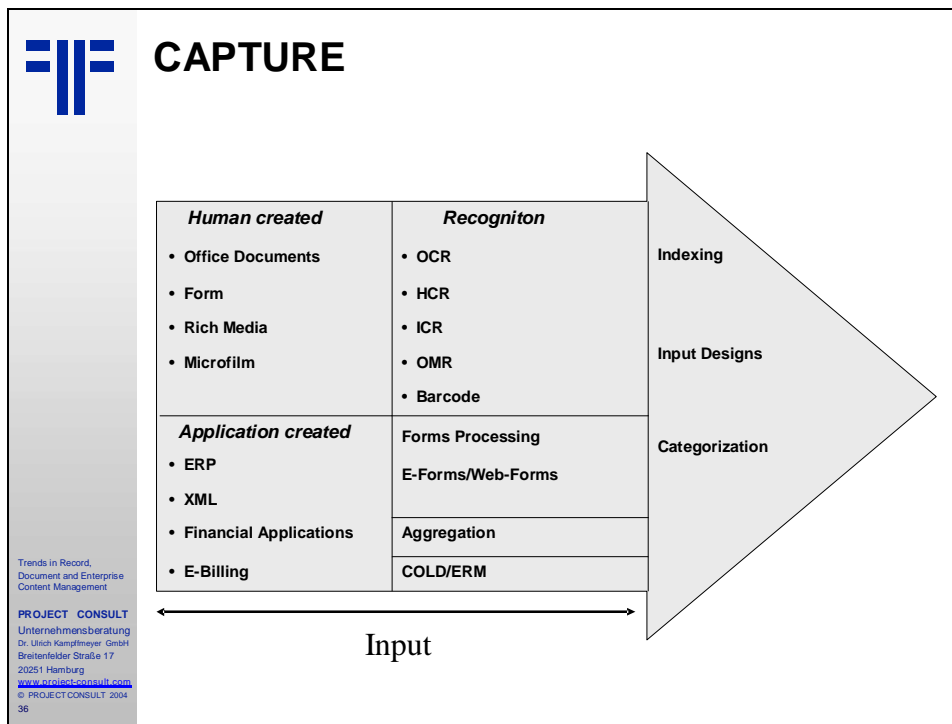
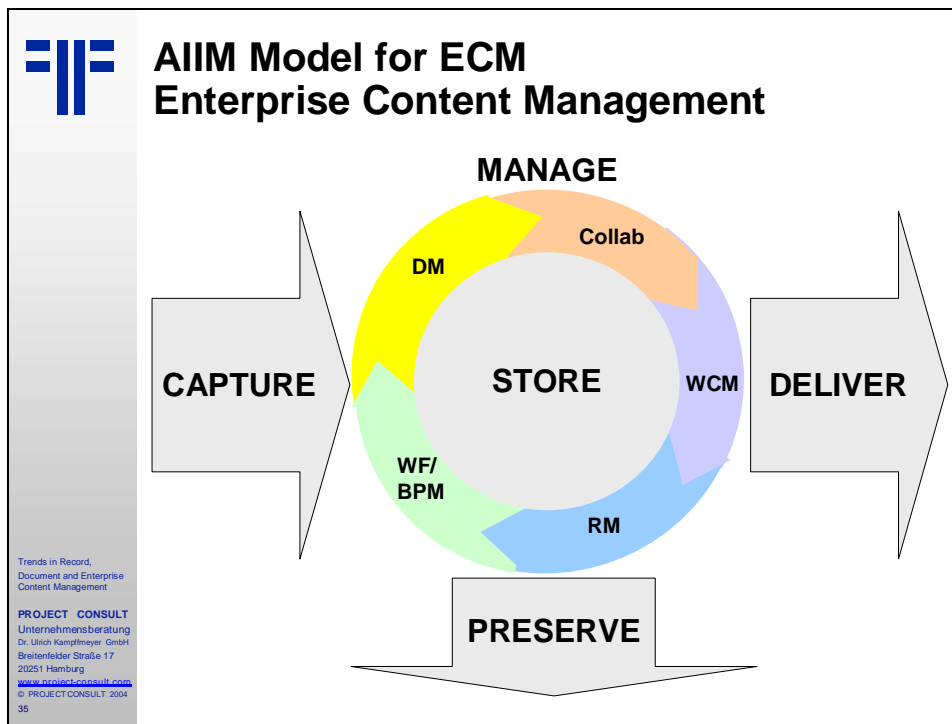
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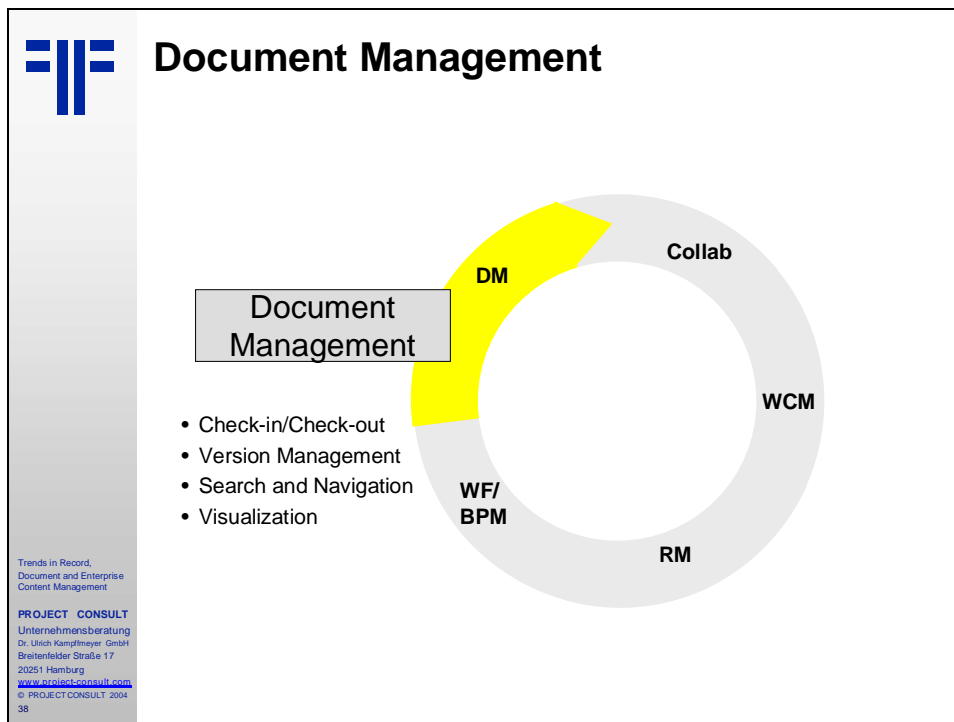
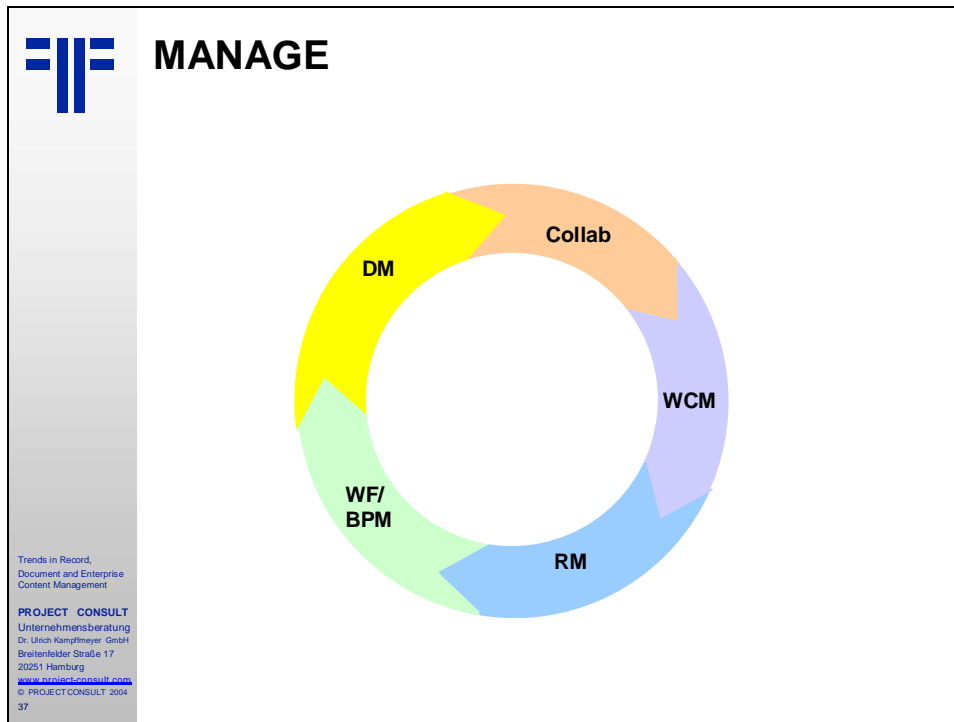
 **Components of ECM  
Enterprise Content Management**

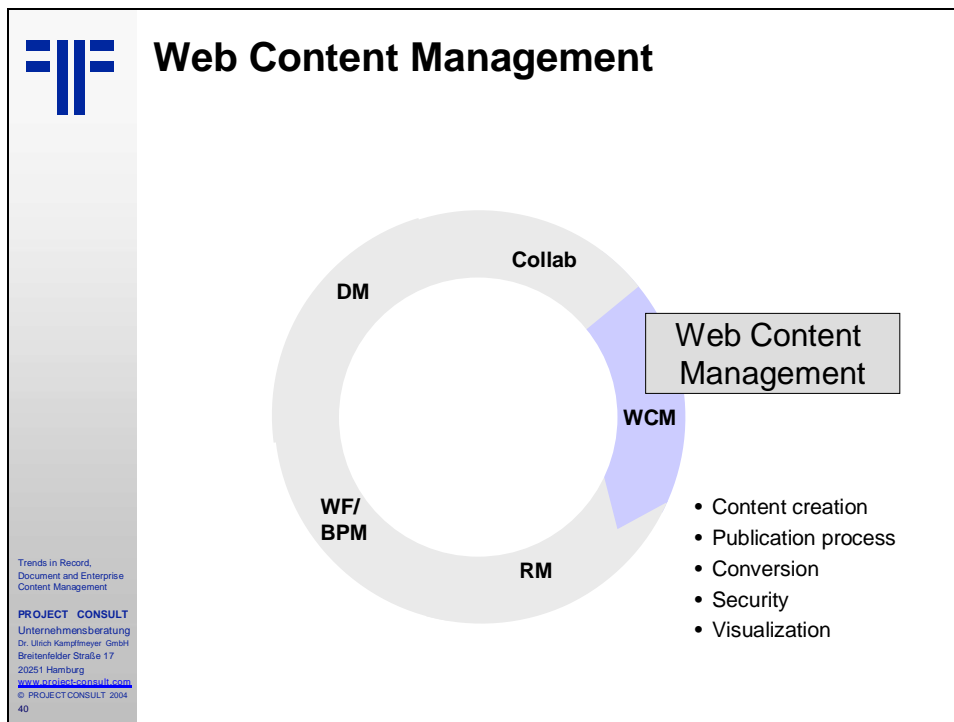
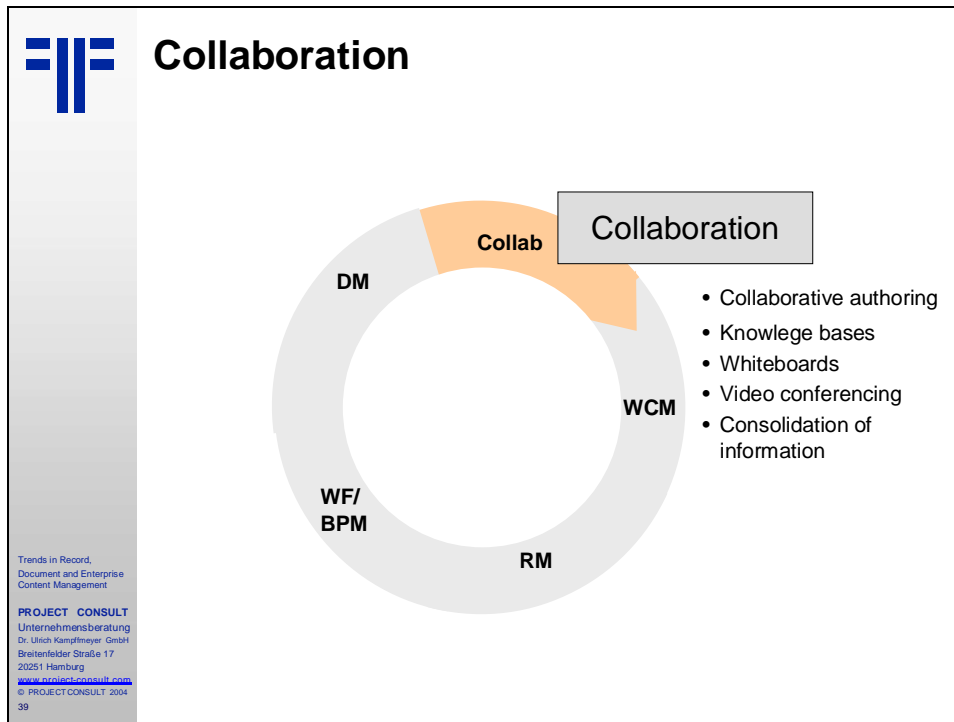
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## Records Management

- Filing systematics
- Indexing and thesaurus
- Retention periods
- Metadata
- Archive management

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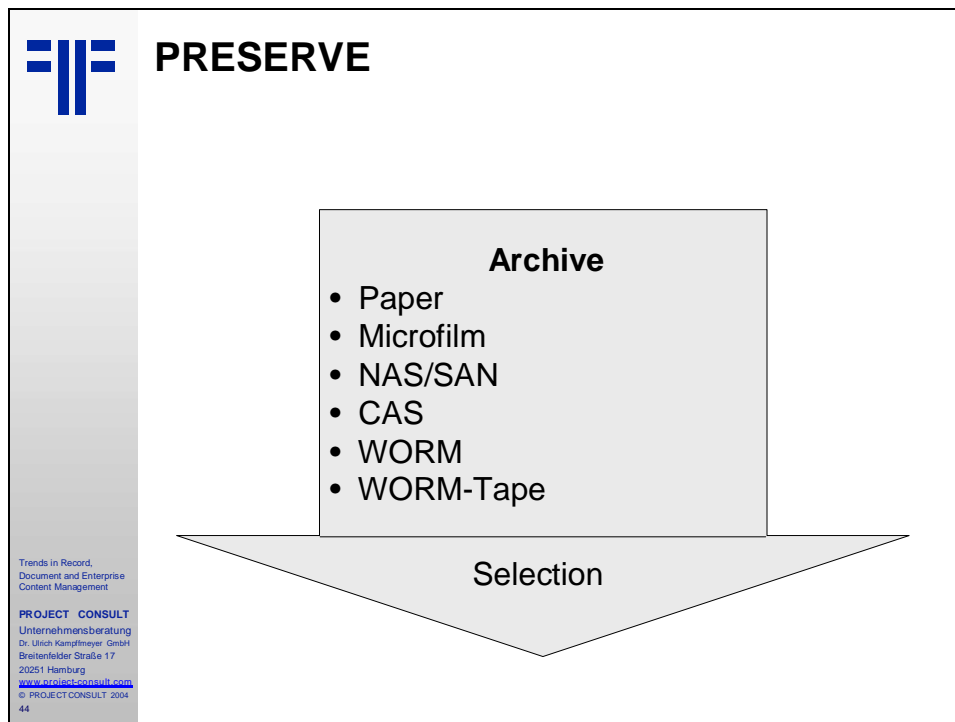
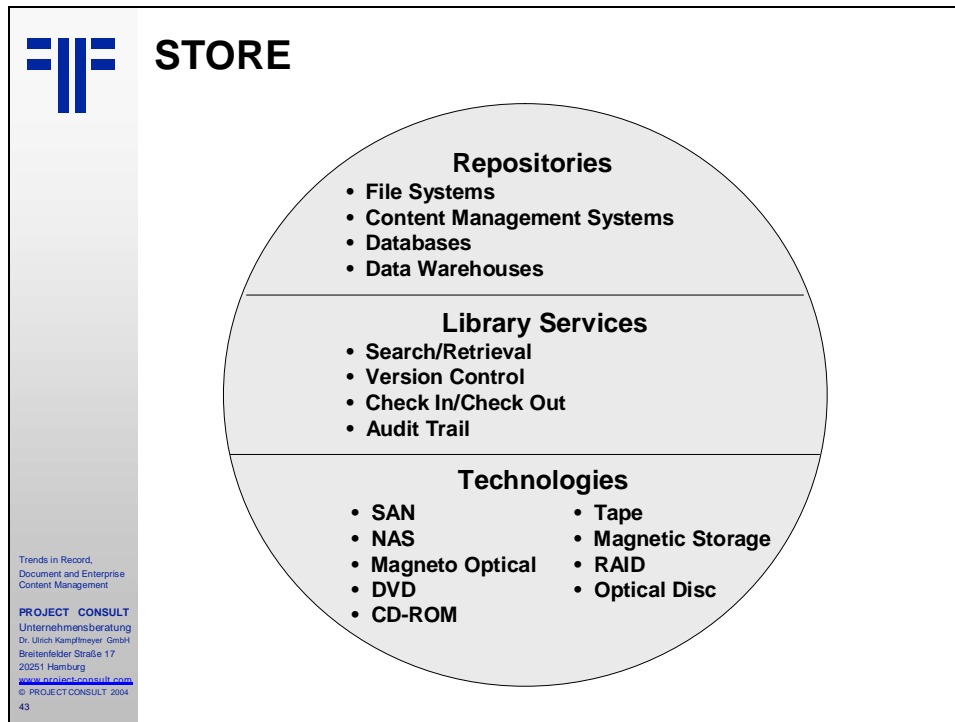
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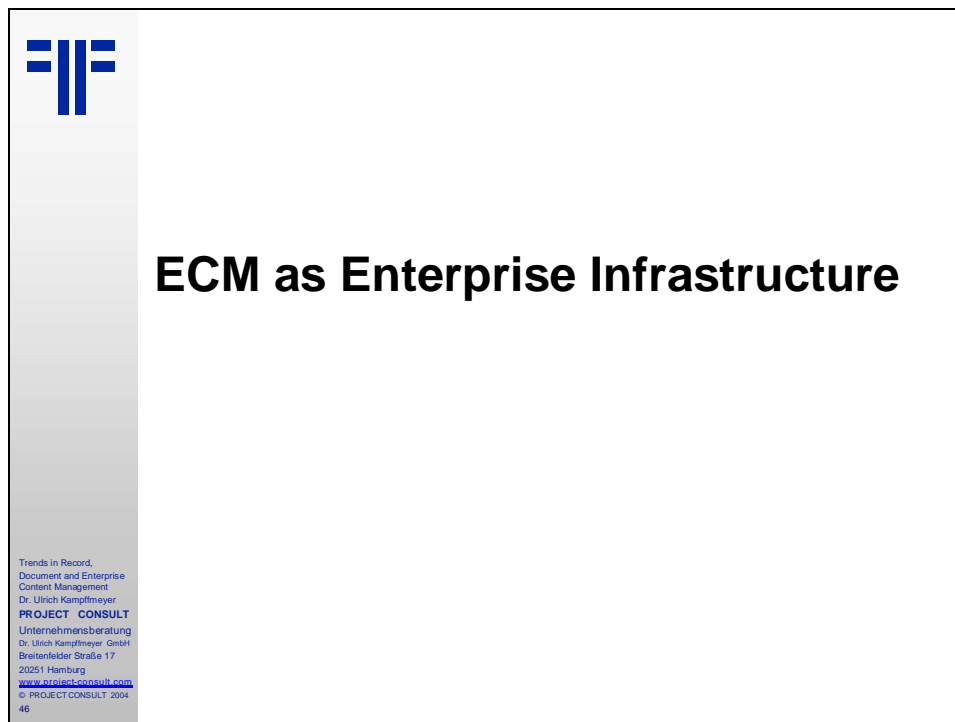
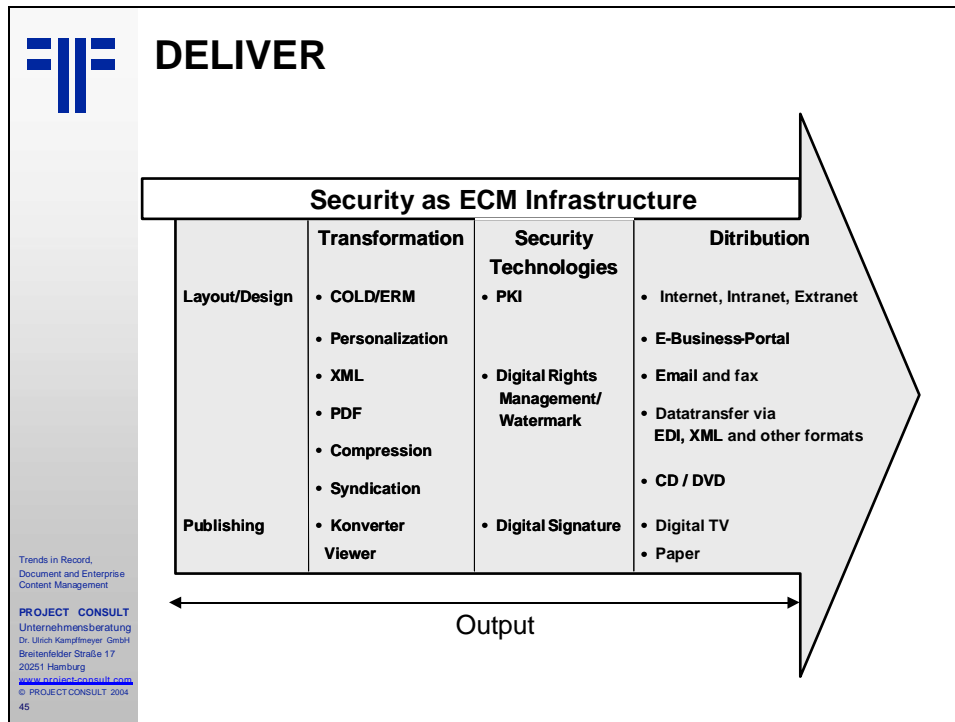
## Workflow / Business Process Management

- Process and structure organization
- Process design
- Imaging of Process
- Routing
- Monitoring
- Parallel and sequential processing
- Reminders, deadlines
- Checking
- Logging

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## ECM as Enterprise Infrastructure: Requirements

- Store all types of information
- Store both dynamic and unchanging information
- Services concept
- Big and small solutions
- Own client or inclusion in existing applications
- Central and distributed databases
- Consistent long-term storage
- Modular expandability
- Distributed repositories
- Integration in existing systems

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## ECM as Enterprise Infrastructure: Topical Issues

- Linking of technologies with applications –  
e-Business automation
- Effective web content management –  
Internet, Intranet and Extranet content use
- Legal situation, long-term availability and migration  
of data
- Acceleration of “time to market” –  
ASP solutions under consideration
- Implementation questions

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## ECM as Enterprise Infrastructure: Implementation questions

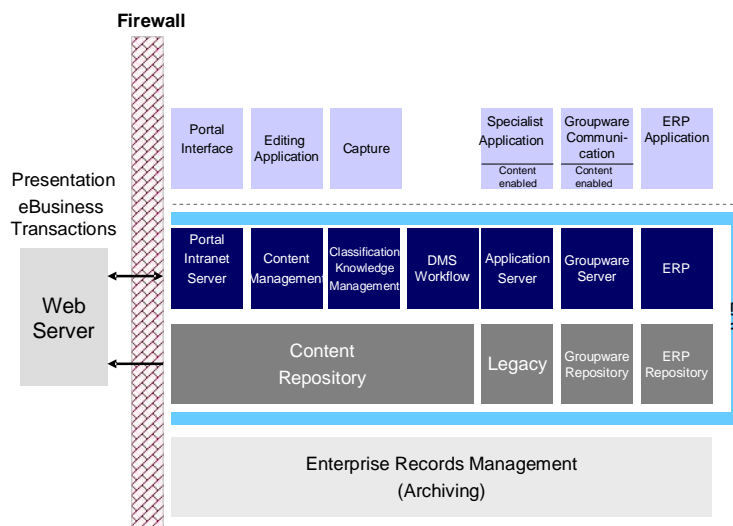
- Definition of metadata, guidelines, procedures
- Import, conversion, migration
- Platforms, databases, browsers, clients
- Desktop integration, application integration, back office integration
- Process and workflow modelling
- Cultural differences in online versus offline work
- How to network components? (EAI - Enterprise Application Integration)

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## Integrated ECM System with Integration of WCM and Applicationen



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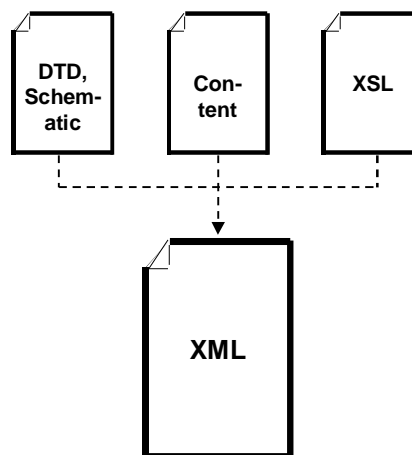


## ECM and XML – The Ideal Couple?

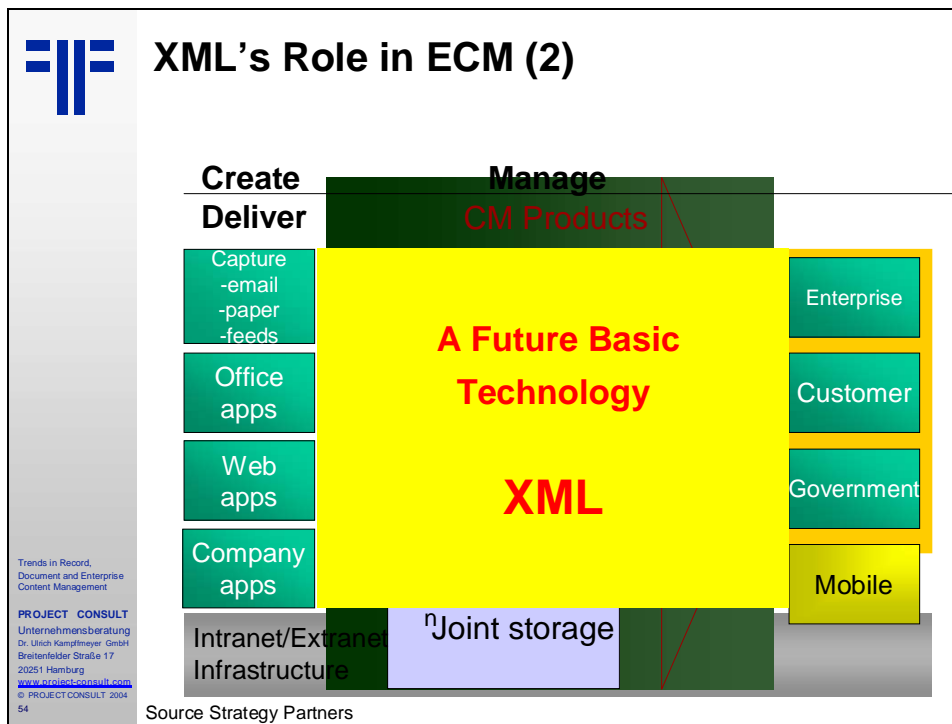
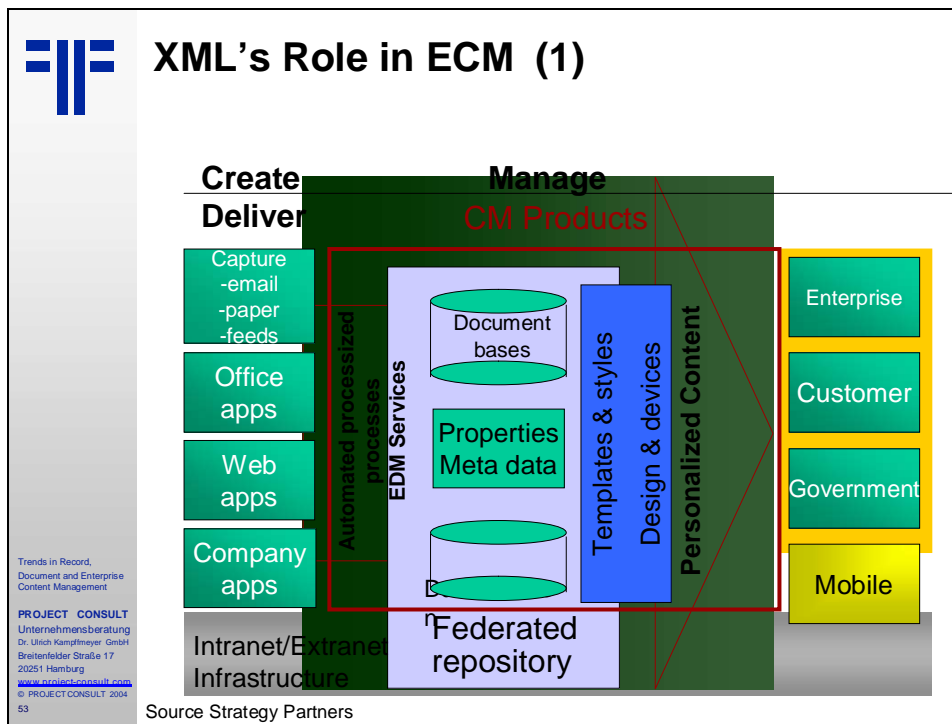
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## XML - eXtensible Markup Language Principles



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## Outlook: 11 Theses

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## Thesis 1: Is ECM Just a Vision?

- ECM with its comprehensive goal is not a product, but rather a vision, a strategy, and at best a solution portfolio.

The claim of having a solution for every application from a single source is simply not realistic.

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## Thesis 2: Convergence

- WCM, ECM, portals and other document technologies are blending together.

Only a few vendor portfolios come up to ECM's claims.

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## Thesis 3: Consolidation

- The market is swamped with products for individual CM components.

Like the other software and IT market segments, the CM market will consolidate.

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## Thesis 4: The Value of Information

- Information is only of inherent value when it is made useful as knowledge in processes.

The value of information must be considered in planning and operations alike.

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## Thesis 5: Our Dependence on Information

- Dependence on the availability and correctness of electronic information is constantly growing.

Companies, government and society have grown completely dependent on the availability of information.

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## Thesis 6: Information Overflow

- We suffer from information overflow. Picking out the valuable, important information is a tedious process.

Systematic sifting through exponentially growing information volumes is more and more important.

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## Thesis 7: Information Gap

- The first gaps in electronic information preservation have occurred. Electronic knowledge has already been irretrievably lost.

The orderly and usable storage of valuable information is growing in importance.

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## Thesis 8: Information Divide

- Information is not equally available to all.

The divide is between continents, classes of society, and individual employees in business and government.

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## Thesis 9: Utility of ECM

- The real utility of ECM solutions is not being adequately communicated.

The weak market is partly home-grown, since the potential efficiencies and the necessity of ECM have not been emphasized enough.

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## Thesis 10: Importance of ECM

- **“We’re drowning in information, and thirsting for knowledge.”**

John Naisbitt, Megatrends 2000

ECM solutions play an important part in solving this problem!

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## Thesis 11: Waiting Won't Help

- Don't wait around – start.

Ignoring the problems won't make them go away!

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**Thank you very much for your attention !**

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## Profile

Dr. Ulrich Kampffmeyer, born in 1952, is founder and president of PROJECT CONSULT Unternehmensberatung Dr. Ulrich Kampff-meyer GmbH, one of the leading independent management consultancies for ECM Enterprise Content Management, BPM Business Process Management, Knowledge Management, and other DRT Document Related Technologies. He is founder and managing partner of PROJECT CONSULT International Business Services Ltd., London.

As a consultant he has supported a large number of vendors, distributors, and users of well-known companies of all industries in Europe in planning, organization, and implementation of such systems. German industry magazines elected him as one of the 25 most important people of the DRT industry - the only consultant within this group - , and as one of 100 of the most important IT managers in Germany.



Dr. Kampffmeyer is an internationally well-known keynote speaker, presenter, and panelist on the subject of archiving, records management, document management, workflow, groupware, content management, code of practices, knowledge management, project management, business reengineering, and organizational change management.

Within the Association of Information and Image Management (AIIM), the most important association for document management worldwide, Dr. Kampffmeyer was one of the directors and member of the executive committee of AIIM International in Europe. For the major part he has played in the introduction of document related technologies and their applications in Germany, he has received the "Award of Excellence" in 1992, the "Fellow of IMC" in 1994, the Award "Fellow of Merit" in 1997, the Award "Fellow of AIIM" 1999, and in 2000 the award "Master of Information Technology".

As Chairman of the Board of the VOI "Verband Optische Informationssysteme e. V." (the trade association of German EDM manufacturers, distributors, and integrators) from 1991 to 1998, Dr. Kampffmeyer gained detailed market knowledge in the segments of document management, workflow, groupware, electronic archiving, and digital optical storage media. He is regarded as mentor of the DRT field in Germany.

He is publisher of several DLM/AIIM Industry White Papers for electronic document, records management, and content management for the Public Sector in Europe. Leading industry magazines regularly publish his articles and opinions in several languages.

He is author of the book "Document Management – Principles and Future" as well as the German Codes of Practice "Fundamental Principles of Electronic Archiving", and "Principles of the documentation of audit-proof records management". He is also co-author of other European Codes of Best Practice.

Dr. Kampffmeyer takes part in standardizing groups such as the AIIM Association for Information and Image Management International, and several ISO/DIN groups. He is also a member of the DLM Monitoring Committee of the European Commission, was Head of the DLM Scientific Committee of the DLM Forum Conference 2002 in Barcelona, and works in the Steering Committee of the DLM Network of Excellence.

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