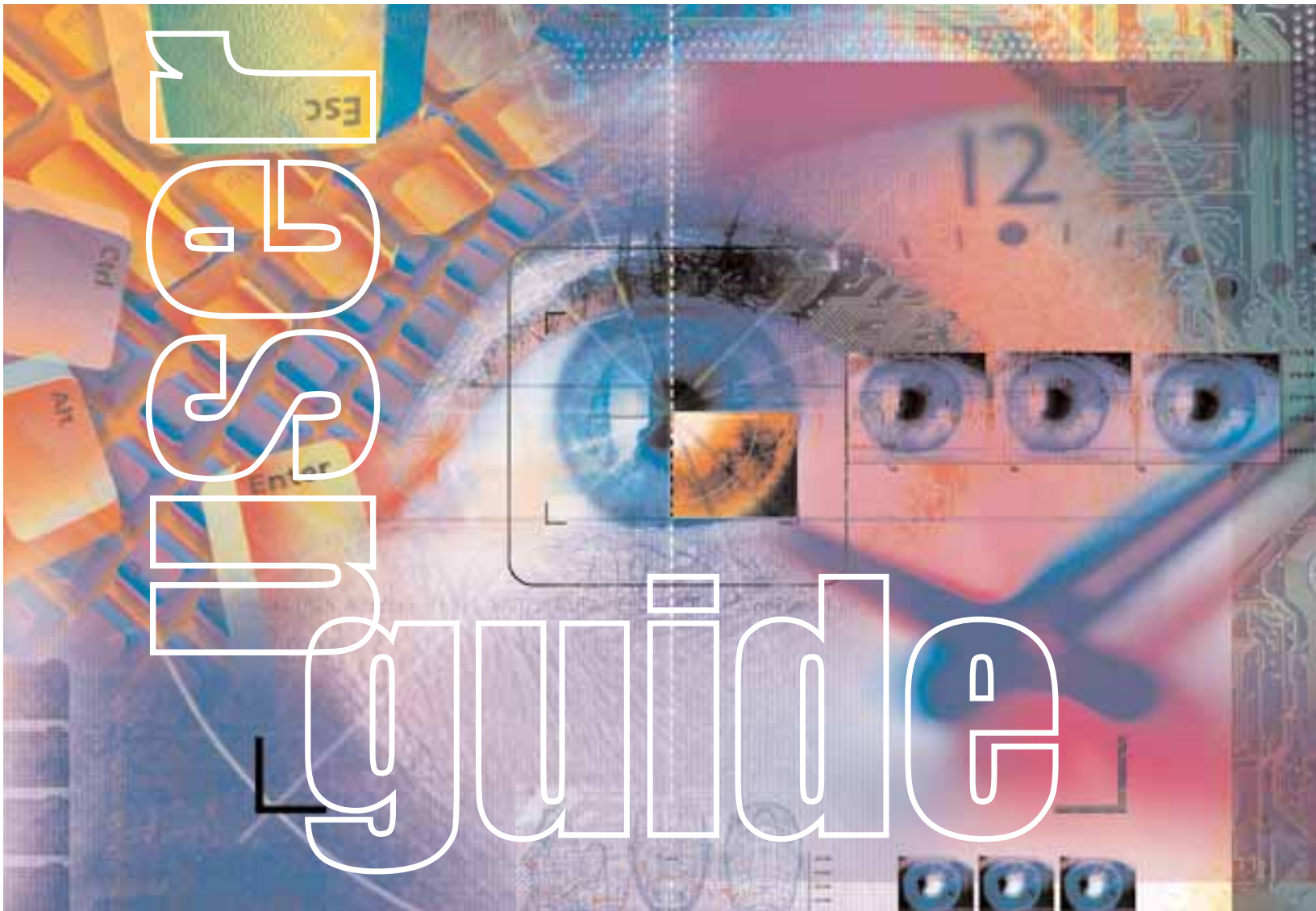


AIIM User Guide

Planning for an Enterprise Content Management System



ESG guide

Authored by Cynthia Hodgson

Planning for an Enterprise Content Management System

*An AIIM User Guide
By Cynthia Hodgson*

*This is one in a series of User Guides from AIIM International.
They are intended to educate and inform readers on a variety of
enterprise content management topics.*

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Planning for an Enterprise Content Management System

Enterprise Content Management (ECM) is defined by AIIM International as the technologies, tools, and methods used to capture, manage, store, preserve, and deliver content and documents related to organizational processes. As illustrated below, the scope of a total ECM solution can be quite complex.

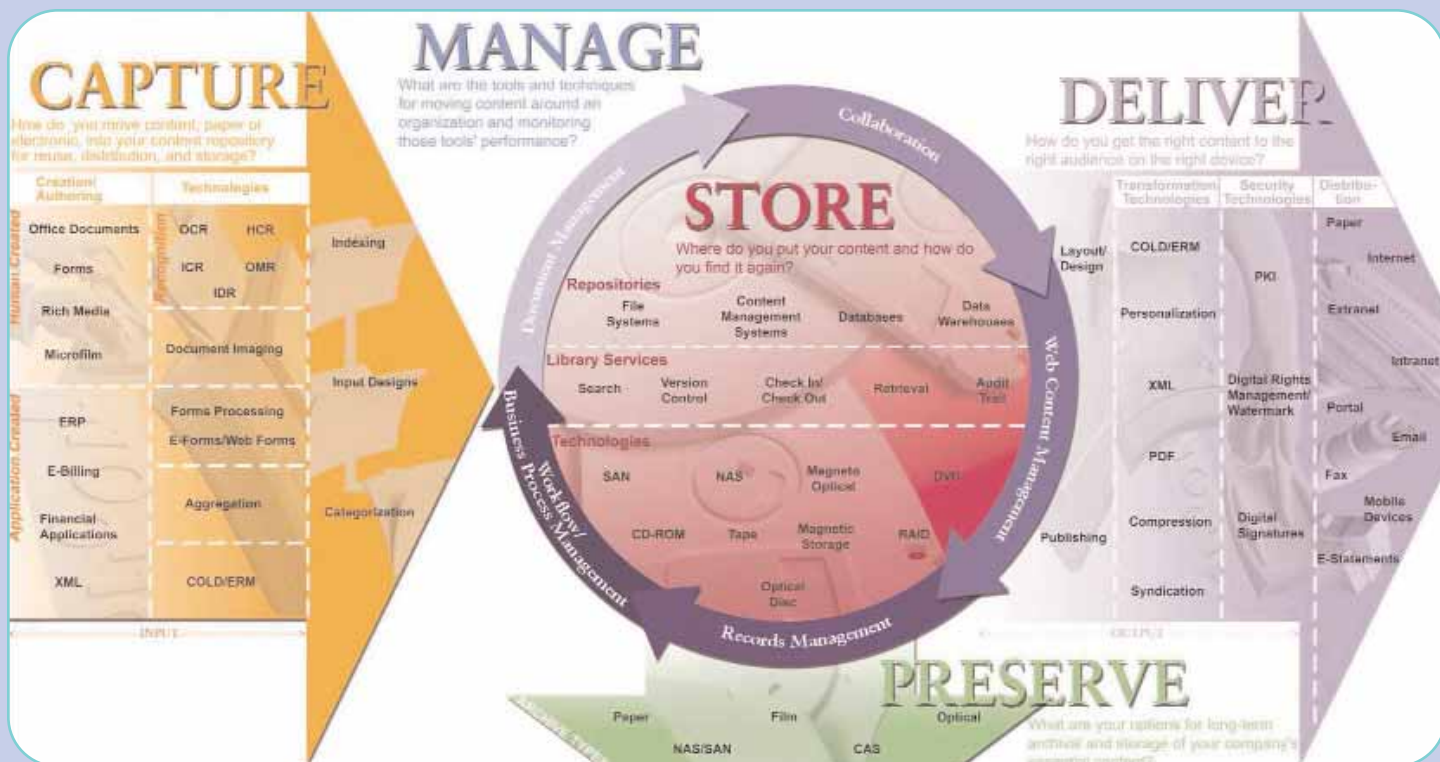


Figure 1: ECM 101 (Source: AIIM International and Doculabs)

Selecting and implementing the appropriate technologies and tools for ECM can be a daunting process. That process should start with the development of an effective strategy. This paper explores the need for an Enterprise Content Management (ECM) strategy and the issues to address in developing such a strategy.

The Need for an ECM Strategy

The huge amounts of information already in existence and the overwhelming increase of it every year have been widely reported in both industry and popular press. The volume of an organization's content alone could drive the creation of an ECM strategy, but there are additional forces making such a strategy even more critical.

Multimedia Content

Electronic documents are no longer a single entity; nor are databases made up of discrete records. Instead, a multitude of objects, including text, data, graphics, images, metadata, styles, formats, etc., are mixed and matched to create a collection of "documents." Improved technologies for streaming electronic sound and video have added to the complexity of object types to manage. Consider also that a single published "document" may have translations into multiple languages, multiple revisions, and versions regionalized with local information.

An organization must now find ways to manage all of these components of information as well as any combinations and versions of them that are created and "published" throughout the entire lifecycle of the information.

Wired (and Wireless) World

Employees, partners, customers, and suppliers have long expected to have electronic access to information. This expectation has grown to include remote access and increasingly wireless access. Wireless and thin client mobile devices often require information to be structured differently. Content may have to be specially packaged for wireless users and even “transformed on the fly” for mobile devices.

Online Content

Quality content is increasingly seen as an imperative for business success and even survival. Organizations that develop great-looking and features-rich websites find that without equally rich content, their customers don’t come back. Add the requirements that the content must be accurate, consistent, and timely, and organizations have quite a challenge, especially if they want to do it in a cost-effective way.

This content is not all created in-house. Customers, suppliers, and partners may be providing portions of the content on an ongoing basis. That requires an organization to manage content over which it has no control during the creation phase. It also means that these external entities may have to be involved or at least consulted in the development of the ECM strategy.

Need for Dynamic and Personalized Content

Prior to the days of the Internet and the World Wide Web, content mostly existed in the form of pre-formatted documents or database reports, mainly for internal use, and it changed on a regularly announced frequency, if at all. Now content needs to be made accessible beyond the walls of the organization, and users have come to expect content to match the capabilities of a Web browser type interface. Thus content must change dynamically, even instantaneously, at the initiation of the user and must often be personalized for each specific entity or individual user. Dynamic and personalized content can also be driven by the content-providing organization itself that needs to reduce its cost of providing customer service without reducing the services.

What Content Do You Manage?

In many organizations, content management is synonymous with “Web content management.” But even if you limit your content scope to what is accessible from a Web browser, that content is no longer isolated to separately created Web pages. The Web has become an access and fulfillment vehicle with the content derived from numerous back-office processes,

applications, and data stores. Enterprise Content Management processes and technologies become the connection between the front-end and back-office layers, as shown in the following illustration.

An ECM strategy must identify not only which content needs to be managed but also the priority in which ECM processes and technologies will be implemented with different content. Some organizations find it useful to do a formal content audit or inventory. Answering the following questions about the different categories of content should help set the priorities.

Who is the customer for the content?

Are the “customers” internal or external to the organization or both? How does the customer use this content? Are there ways to add value to the customer’s use of this content? Have the customers been asking for more, better, or different access to the content?

Which content has the most value?

The standard 80/20 rule is useful here—20% of the content drives 80% of the value. For a profit-making organization, value will most often be defined as that content which will contribute to increased revenue or reduced costs. For a non-profit organization, value is content that supports the mission or reduces costs. Organizations, profit or non-profit, that have a product or service orientation may give greater emphasis to the increased revenue and mission support aspects, while organizations with a process orientation would emphasize content management for its cost reductions.

Which content is most complex to manage?

Complexity may be derived from a number of content attributes, such as:

- The need to create the content from many different components of information
- The multimedia nature of the content components
- The large volume of existing information, possibly in legacy systems or formats
- The frequency of creation or acquisition of new information
- The frequency of update or revision
- The need to re-use the same content in many different processes
- The need to offer the same information in multiple languages
- The need for varied security controls to allow different user groups to access different portions of the content or different privileges of access, such as editing

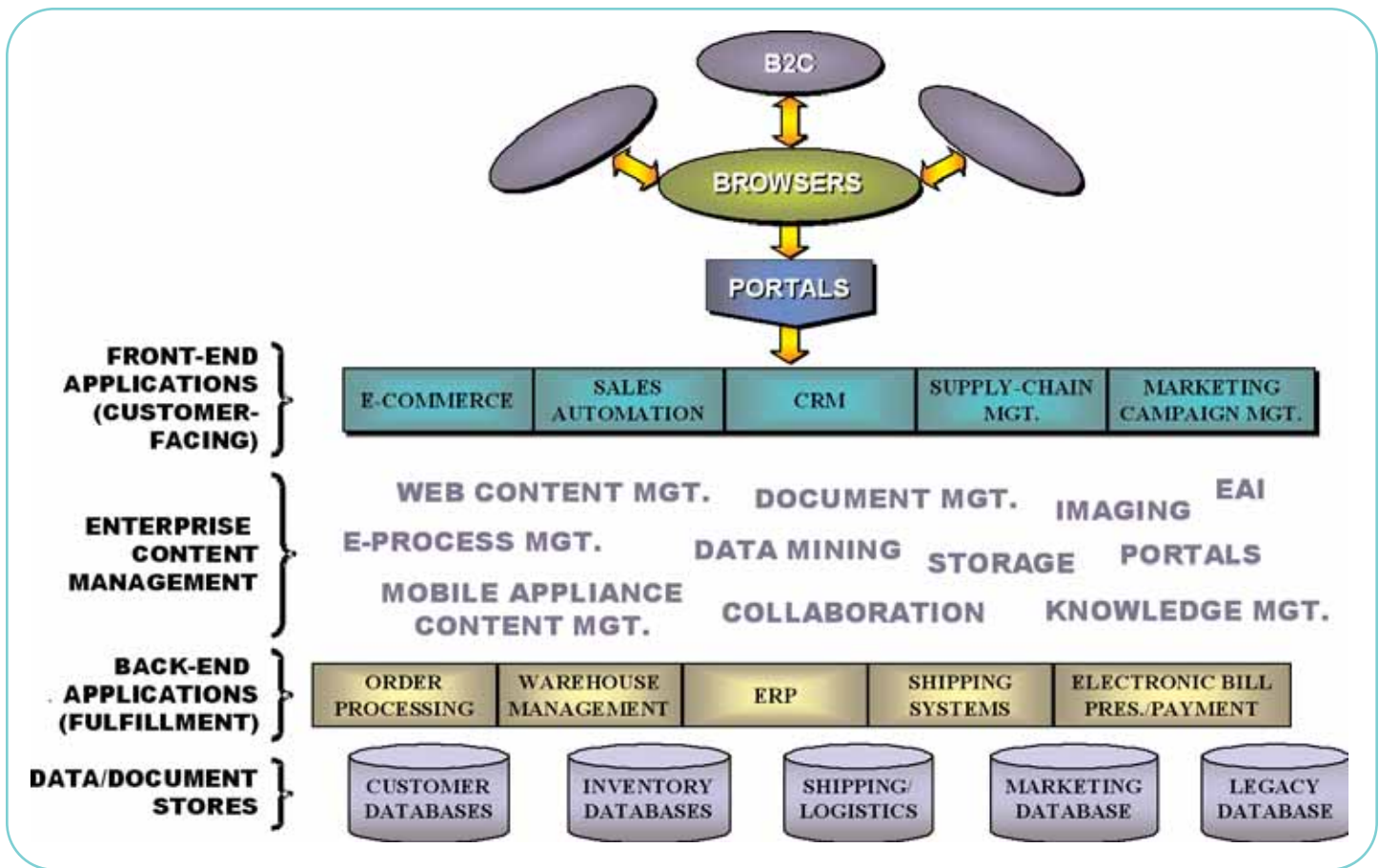


Figure 2: ECM provides the connection between back-end and front-end applications (Source: AIIM International!)

Which content has legal or regulatory requirements regarding its retention or audit trail?

Legal or regulatory requirements, which generally relate to retention, add the complexity of time to content management. The lifecycle of the information could be very long, potentially outlasting several different storage technologies, and making a migration strategy critical.

Which content is received from external customers, suppliers, and partners and needs to be re-purposed for internal use or external access?

Applications frequently combine content from multiple sources. Often, the content has to be edited, reformatted, or mapped to internal content prior to making it available. Automation and standards compliance is usually necessary to make the repurposing process cost effective.

Beyond Technology

ECM is not just about technology. There are many decisions and process issues that need to be addressed prior to the implementation of any content management technology solutions.

Culture for Information Sharing

Organizations need to recognize and understand their current culture regarding ownership and sharing of information. New content management processes and technology can run counter to the existing culture causing the failure of the ECM initiative. The human behavior “change management” aspects of planning for ECM cannot be overemphasized.

Enterprise-wide Deployment

AIIM’s *Worldwide Enterprise Applications* study² found that “the most common scope of deployment (40% of respondents) for content management systems is across multiple departments and applications. While these are not true enterprise-wide implementations, they do cover a significant portion of the organization in many cases. And approximately one quarter of respondents have deployed content management applications either across their entire U.S. operations and/or globally.” Large enterprise deployments, whether global or domestic, require planning and up-front decisions on a number of fronts:

- What aspects of content management will be centralized and which will take a distributed/regional approach?

- Will the same technology be implemented everywhere even if content is managed regionally? If a common technology approach is taken, are there existing regional technologies in place that will have to be migrated?
- How do content providers in different locations collaborate on the creation of content?
- How do you ensure that global content, such as product specifications, is consistent across regions while still allowing for localization of related content such as marketing, sales, and pricing information?
- How do you accommodate the language issue so that critical content can be provided in the user's language of choice across the globe?
- How do you address countries' different legal requirements regarding restricted access to some information on a website?

Content Lifecycle

Management of content needs to begin at the time of creation and continue through archiving and final disposition.

Process decisions need to be made about:

- Which content requires approval prior to delivery and who needs to approve it?
- Which content requires audit trails when changes are made and what should that audit trail identify (what was changed, who changed it, when was it changed, etc.)?
- What are the retention requirements for each content type or category and how will the content be kept (in a production system, archived but online, archived offline, in magnetic or optical or micrographics media)?
- What is the migration strategy for content that must be retained beyond the expected life of the technology and/or media?

Metadata

Effective content management is no longer possible without the use of metadata. Metadata, the "data about data," is what ensures that users can locate the content they need when they need it. Searching on words in the full text of documents has been shown to be insufficient to effectively locate information. And full-text searching doesn't address retrieval of non-text objects such as photographs or images. AIIM's *Worldwide Enterprise Applications* study² makes several recommendations about how to provide metadata:

- The most effective kind of metadata is gathered from content creators, managers, editors, and users—those who are most familiar with the content. Metadata might

include themes in the document, contexts in which it can be applied and related terms.

- Depending on the context, a controlled vocabulary for index terms might be supplied to the user to use either on a mandatory or voluntary basis.
- Usage metadata can automatically be added each time the document is accessed, revised, or updated.
- Using document templates is an effective way to gather metadata, which can then be used to place the new content in an overall organizational scheme.
- Establishing document hierarchies and indexing are the most increasingly important steps in implementing a content management system.

Intellectual Property Concerns

Protection of an organization's intellectual property should be a key consideration when developing ECM processes. For example:

- Corporate branding and image needs to be maintained globally, a particular issue when there is regional decentralized deployments of content.
- Too early or inadvertent "publishing" of information can affect patentability.
- Information made available to the public is also available to competitors.
- Electronic content is especially easy to copy. On the other hand, Internet access makes it easier to find the unauthorized copying and use of an organization's content by others.

Likewise, care must be taken that others' intellectual property protections are not violated. Copyright laws are not well understood, and many people mistakenly believe that anything without the official © symbol is in the public domain, free for anyone to use. Anyone with responsibility for the creation side of content needs to be educated about copyright laws to avoid the inadvertent violation of others' property.

Technology Solutions

The complexity of effective ECM makes technology indispensable to any solution. But ECM is not a single technology. Figure 3 illustrates the key capabilities that are needed in each of the major ECM areas.

Given this diversity of capabilities, it is not unusual for an organization to need three or more vendors' products. Often one vendor's product becomes the focal point for ECM and other products are integrated with it to provide additional capabilities. The content analysis that should have been done, as discussed above, can determine the best approach for choosing

Capture	Templates & Forms	Imaging & Recognition	Aggregation	Categorization & Indexing
Manage	Collaboration	Approvals & Digital Signatures	Workflow	Security & Access Controls
Store	Databases & Repositories	Search & Retrieval	Version Control	Check-in & Check-out
Preserve	Retention Schedules	Media Types	Offline Accessibility	Migration
Deliver	Component Assembly	Personalization & Notification	Reporting	Format Conversion

Figure 3: Critical ECM Component Capabilities

the focal technology. Although consolidation in the industry is creating overlap and erasing distinctions, vendors can generally be placed in one of the following categories.

- Companies with a **document management heritage** have taken their traditional document management or imaging systems, which were focused on documents and unstructured text, and expanded the functionality to address integration with structured data and the delivery arena, especially Web-based delivery. They tend to be especially strong in the storage repository functions, workflow, and version control.
- **Web content management** companies focus on Web content formatting and delivery development. Content that is not intended for Web-based delivery is not usually addressed. They tend to be strong in the design and template creation areas and the personalization and customization aspects of delivery. Some of these vendors are expanding into the ECM area by adding capabilities to support transactional activities.
- **Supply Chain** vendors focus on managing the entire transaction utilizing a Web-based interface. They tend to be strong in product catalog management, databases and data warehousing, and security. Many of them have partnered with or acquired content management companies to expand their capabilities into documents and unstructured content.
- **Niche providers** offer solutions to any one of the subsets of capabilities required for content management. They are most common in the imaging and forms processing areas of the capture segment, the workflow area of the management segment, the reporting area of delivery, and the media / migration areas of preservation. Often they will

partner with vendors in one of the other categories to simplify the integration process with their product. While their solutions would not be an organization's focal technology, their products often have to be added on to provide the full capabilities needed for ECM.

In addition to the functional capabilities associated with capture, manage, store, preserve, and deliver, the choice of a technology solution should take into account typical IT considerations such as:

- **Infrastructure and platform compatibility**
Organizations typically want to leverage the investment in existing IT infrastructure. Utilizing existing technology platforms can also reduce the learning curve of IT personnel who will be implementing and supporting the technology.
- **Scalability**
Few organizations will attempt a global implementation out of the starting gate. But once a successful initial deployment has been done, easy and quick scale-ups will be needed to expand the scope. Scalability is also an issue if a deployment becomes so successful with the end users that its volume of use increases beyond the capabilities of the initial deployment platform.
- **Performance**
Downtime and poor response rate are problematic enough when encountered by an organization's own personnel, but they can be devastating when customers are directly accessing your information system.
- **Time required for deployment**
The vendor's past experience in deployment time should be determined for an initial prototype, a full deployment, and subsequent enterprise expansion deployments.

- **Integration capabilities**

Integration potential and ease needs to be considered for linking in third party ECM products, legacy back-office applications, and for content-needy or content-creating applications, such as CRM (customer relationship management) and ERP (enterprise resource planning).

- **Training requirements**

The amount of training needed and the availability of training courses and materials should be identified for at least four different groups: the content creators, the content managers, the content users, and the system administrators.

- **Standards support**

Choosing a system with open standards support can make all the difference when integrating with other applications, migrating to a future system, and exchanging content with partners and suppliers. The appendix in this paper identifies some of the key ECM standards that AIIM and its members have developed or supported. AIIM's Recommended Practice, Implementation Guidelines and Standards Associated with Web-Based Document Management Technologies,³ discusses a variety of ECM standards and technologies in more detail.

Justification

Forrester Research's study⁴ of 53 enterprise-level CM deployments found that software license fees were typically \$100,000 to \$250,000. Professional services for implementation support and training added at least \$180,000, and some \$200,000 was needed for development of controlled vocabularies and content hierarchies. Average total deployment cost for the survey respondents was \$1.8 million.

That kind of cost requires a solid benefits analysis to justify the expenditure. The list below has examples of the tangible and non-tangible benefits that an organization can expect to see after implementing ECM.

Productivity Savings

Productivity savings, read: lower staffing costs, can come from many different aspects of the ECM implementation. Gartner Group predicted² that "if enterprises do not bring both internal and external content under control, the amount of time wasted by the average knowledge worker on document-related, non-value-added tasks will increase to between 30 percent and 40 percent of their time. After investing strategically in content management, enterprises usually can save at least half of the

time and money now spent on non-automated document [content] management."

These productivity savings can be accomplished through using ECM tools such as: templates and workflow—to streamline the process of content creation, review, and approval—or automated tagging to reduce errors and the time spent on doing manual mark-up. Substantial savings can be made in the time spent on searching for or waiting for the right information. Field personnel, for example, don't have to wait for documents to arrive from the central office. Content captured at the source reduces further handling time downstream, not to mention the reduction in paper and paper-related storage.

In many organizations, the IT staff is actively involved in the administration of content on their website in addition to the traditional IT systems administration. An effective content management system can remove IT personnel from having to manipulate and manage content and focus their skills on more value-added IT functions.

Reduced Customer Service Costs

Productivity savings can also come from customer service support. With real-time access to a customer's information, the customer service representative can reduce the duration of calls, eliminate the need for callbacks, and increase the call volume per person. Companies that have created online access to an individual's personal information, whether an employee's benefits, an investor's portfolio, or a consumer's credit card charges, can decrease the frequency of calls to the customer service center. And when the employee or customer is also given some transaction capability, such as bill payment or account transfers, the costs of processing these transactions is shifted away from the organization's staff.

Savings related to customer service can be more than just staff productivity. Phone and fax expenses can be reduced when customers are interacting more with the online support service and less with the call center. Information can be transmitted to the customer without the costs of printing and shipping.

Improved Customer Service

The impact on customer service goes beyond cost savings to actually improving the customer service experience. Customers can obtain many services online 24x7, accessing the services at their own convenience. Often, customers have access to valuable information that has never been available to them before. Personalization and notification services add to customer "delight" and can foster increased customer loyalty.

Increased Revenues

The customer loyalty created by improved services typically translates into increased revenues. Press stories abound of companies that have significantly increased their customer base and revenue from their Web presence. But this Web presence must contain quality, updated, and meaningful content to show such results. The increased business and use of the website can itself become the driver to implement more robust content management tools. With e-commerce, transaction purchases can be automated, so orders are automatically placed and products tagged for shipping based on an inventory level established by the customer.

Improved Quality of Content

While difficult to measure, quality of content should definitely improve, decreasing the amount of outdated, inaccurate information perpetuated throughout the organization, and ensuring consistency of content that is presented to the customer. The ability to break content into components not only improves the reusability of content but also allows content from multiple sources to be integrated in a way never possible before.

Feedback for Continuous Improvement

The ECM system can itself create valuable information by collecting data on which content is used, by whom, and how. Reports and statistical data gathered by the system can be used to identify process improvements and product/service enhancements.

Conclusion

The growth in the volumes and types of information, the emergence of wireless technology and the demand for more dynamic and personalized content are driving organizations to recognize the importance of developing a strategy for Enterprise Content Management.

The most critical success factor in implementing ECM is not implementation—it's planning. Developing the ECM strategic plan begins with understanding your current business processes, the existing content, and the customers of that content. Before jumping into technology solutions, non-technology issues around cultural behaviors, regionalization of content, metadata, retention requirements, and intellectual property have to be considered. The selection of a technology solution will be driven by the content analysis and the decisions made about non-technology issues. Organizations that have previously implemented ECM have identified tremendous benefits that can be used in justifying a new initiative.

Once you've planned big and globally, you want to start small and locally to achieve a quick success. Then you can expand both the functionality and the organizational scope of deployment. And remember to stay focused on your strategy and the goals you established in that strategy.

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- ³ AIIM Recommended Practice, *Implementation Guidelines and Standards Associated with Web-Based Document Management Technologies*, ARP1-2002.
- ⁴ John P. Dalton, *The Forrester Report: Managing Content Hypergrowth*, Forrester Research, January 2001.

Appendix

Standards Relevant to Enterprise Content Management

Capture Standards

ANSI/AIIM MS44-1988 (R1993), Recommended Practice for Quality Control of Image Scanners

Defines procedures for the ongoing control of quality within an electronic image management system.

ANSI/AIIM MS52-1991, Recommended Practice for the Requirements & Characteristics of Original Documents Intended for Optical Scanning

Describes the physical characteristics of original documents which will facilitate scanning of the documents.

ANSI/AIIM MS55-1994, Recommended Practice for the Identification and Indexing of Page Components (Zones) for Automated Processing in an EIM Environment

Identifies a media and application independent structure and indexing scheme of document pages and zones within a page.

ANSI/AIIM MS61-1996, Application Programming Interface (API) for Scanners in Document Imaging Systems

Provides a common programming interface between device dependent software and document image scanners.

ANSI/AIIM TR15-1997, Planning Considerations, Addressing Preparation of Documents for Image Capture

Provides planning information to organizations considering image capture as a means of converting an existing record collection.

ANSI/AIIM TR27-1996, Electronic Imaging Request for Proposal (RFP) Guidelines

Provides step-by-step procedures for analyzing system requirements, developing functional specifications, and evaluating configuration alternatives.

ANSI/AIIM TR32-1994, Paper Forms Design Optimization for Electronic Image Management (EIM)

Describes how to minimize the costs of EIM forms processing by choosing the appropriate scanning technology and form designs.

ANSI/AIIM TR40-1995, Suggested Index Fields for Documents in Electronic Image (EIM) Environments

Sample index fields are provided for processing and retrieving information captured for use with EIM systems.

Manage Standards

ANSI/AIIM TR35-1995, Human & Organizational Issues for Successful EIM System Implementation

Provides a fundamental framework for understanding the basic issues and concepts of organizational factors, human factors, and ergonomics for Electronic Image Management (EIM) systems

WfMC-TC-1003, v1.1 (Jan95), Workflow Reference Model

Describes the workflow system architecture.

WfMC-TC-1009, v2 (Jul98), Workflow Client API Specifications (WAPI)

Defines application programming interfaces for process, activity, worklist, and process definition workflow operations.

WfMC-TC-1012, v2 (Dec99), Workflow Interoperability—

Abstract Specification

Defines logical message sequences and contents for interoperating workflow with other systems.

Storage Standards

ANSI/AIIM MS53-1993, Recommended Practice; File Format for Storage & Exchange of Image; BiLevel Image File Format
Specifies a self-contained file format for bi-level image file transfer in environments other than facsimile.

AIIM Technical Report, Integration of Electronic Document Management Systems and Electronic Records Management Systems—Functional Requirements (in development)

Describes a framework and best practices for integrating EDM and ERM systems.

DMA 1.0 (1997), Document Management Alliance Specification

Defines an architecture and object model to enable interoperability between document management applications and systems.

ODMA 2.0 (1997), Open Document Management API

Specifies the application programming interface for desktop applications to use when integrating with document-management systems.

ANSI/AIIM TR21-1991, Recommendations for the Identifying Information to be Placed on Write-Once-Read-Many (WORM) and Rewritable Optical Disk (OD) Cartridge Label(S) and Optical Disk Cartridge Packaging (Shipping Containers)

Outlines recommended information that should be placed on optical disk cartridges and optical disk cartridge packaging (on a physical label or other printed surface) for the purpose of identifying the optical disks.

Preservation Standards

ANSI/AIIM TR25-1995, The Use of Optical Disks for Public Records

Provides guidelines for the planning, implementation, and operation of optical disk systems in applications involving long-term and permanent public records.

ANSI/AIIM TR31 (R1999), Performance Guideline for the Legal Acceptance of Records Produced by Information Technology Systems

Four part report describing legal acceptance criteria and providing a systematic approach for implementing compliant record-keeping practices.

ANSI/AIIM TR28-1991, The Expungement of Information Recorded on Optical Write-Once-Read-Many (WORM) Systems

Provides uniform practices for the removal of information recorded on WORM disk media in response to court orders.

ISO 15489, Information and documentation — Records management

Specifies international best practice in management of records in all formats and media. Accompanying technical report describes implementation methodology.

Document Management—Long-term electronic preservation—Use of PDF (PDF-A) (ISO standard in development)

A developing international standard that will define the use of the Portable Document Format (PDF) for archiving and preserving documents.

Delivery Standards

ANSI/AIIM TR33-1998, Selecting an Appropriate Image Compression Method to Match User Requirements

Provides practical methods for selecting an appropriate and optimal image compression scheme which matches user requirements.

See the World Wide Web Consortium website (www.w3c.org) for key Web-related standards such as XML.

About the Author

Cynthia Hodgson is an independent information consultant and writer with over 20 years of experience as a corporate librarian, library manager, and information technology manager at Westinghouse Electric Corp. and Alcoa, Inc. She has taught graduate level courses in the Schools of Library and Information Science at the University of Pittsburgh and the University of South Carolina and has held local and national offices in several library and information professional organizations. She has previously published articles in *Database*, *EContent*, *CD-ROM Professional*, *Library Management Quarterly* and numerous library / information newsletters. She is the author of the NISO publication, *The RFP Writer's Guide to Standards for Library Systems*. Cynthia Hodgson is currently located in Pittsburgh, PA and can be reached by email at cahodgson@earthlink.net.



AIIM International

1100 Wayne Avenue, Suite 1100
Silver Spring, MD 20910 USA
800-477-2446 / 301-587-8202
aiim@aiim.org
www.aiim.org

For over 60 years, AIIM has been the leading international organization focused on helping users understand the challenges associated with managing documents, content, and business processes. Today, AIIM is the leading international authority on Enterprise Content Management (ECM). ECM is the technologies used to capture, manage, store, preserve, and deliver content and documents related to organizational processes. ECM tools and technologies provide solutions to help users with the four C's of business: CONTINUITY, COLLABORATION, regulatory COMPLIANCE, and reduced COSTS.

AIIM provides:

- **Market Education**—AIIM provides unbiased information through *AIIM E-DOC Magazine* and *mID* (Managing Information and Documents), the leading industry magazines in, respectively, North America and the UK; its 20-city Content Management Solutions Seminar in the U.S. and Canada; the IM Expo event held throughout the UK, and InfoIreland.
- **Professional Development**—This industry education roadmap provides a variety of opportunities. IM University is a multi-faceted program offered in Europe. The Web-based Fundamentals of ECM Certificate Program familiarizes users with the core concepts and technologies related to ECM. The AIIM Webinars round out user education on key issues.
- **Peer Networking**—Through chapters, networking groups, programs, partnerships, and the Web, AIIM creates opportunities that allow, users, suppliers, consultants, and the channel to engage and connect with one another.
- **Industry Advocacy**—AIIM, as an ANSI (American National Standards Institute)-accredited standards development organization, acts as the voice of the ECM industry in key standards organizations, with the media, and with government decision-makers.

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This paper explores the need for an Enterprise Content Management (ECM) strategy and the issues to address in developing such a strategy.

Before jumping into technology solutions, non-technology issues around cultural behaviors, regionalization of content, metadata, retention requirements, and intellectual property have to be considered.



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AIIM International Headquarters

1100 Wayne Avenue, Suite 1100

Silver Spring, MD 20910 USA

301.587.8202 / 800.477.2446

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