Content Management Framework

Our Revised Criteria for Evaluating and Comparing Enterprise Content Management Systems

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NETTING IT OUT

Organizations need to deliver a consistent set of experiences across multiple customer touchpoints. They need to manage, in a systematic manner, the different kinds of information they publish and ensure that their customers receive current content just in time. Thus an enterprise content management system (ECMS) combines the capabilities of a Web content management system (WCMS), an electronic document management system (EDMS), and a digital asset management system (DAMS). To embed the necessary structure and intelligence into the content, organizations are also relying on XML publishing capabilities.

We use the following six criteria to assess an ECMS:

• **Content Management Lifecycle.** To evaluate the content management lifecycle, we examine how content is created, how it is organized and staged, how it is produced and delivered, as well as how it is aged and archived.

• **Content Granularity.** To evaluate content granularity, we describe the content components—ranging from entire documents to discrete chunks—that a product manages.

• **Metadata Management.** To evaluate metadata management, we examine how a product categorizes content components into discrete categories.

• **Application Integration.** To evaluate application integration, we identify the tools and techniques for integrating content management capabilities with ebusiness portals, CRM systems, and other enterprise applications.

• **Administration.** To evaluate administration, we determine whether a product provides a single point of administration and an easy-to-use administration environment.

• **Globalization.** To evaluate globalization, we examine a product’s support for translation and localization when managing content for worldwide distribution.

The line-of-business staff within an organization should be able to manage the content for the day-to-day operations on their own, without involving the technical staff. An ECMS provides the environment for organizing, storing, and publishing the content that fuels a total customer experience.

THE CASE FOR ENTERPRISE CONTENT MANAGEMENT

Converging Technologies to Support Key Business Processes

Organizations, we believe, are facing a crisis of content as they build interactive environments to sustain relationships with customers and business partners. Firms can no longer tolerate stovepiped business processes in which the content they produce for their Web sites, channel partner sites, e-marketplaces, and ebusiness portals is separate and distinct from the content produced for print distribution. Companies and government agencies alike
need to deliver a consistent set of experiences across multiple customer touchpoints. They need to manage, in a consistent manner, the different kinds of information they publish and ensure that their customers receive current content just in time.

Thus we are witnessing the convergence of four separate approaches to creating an enterprise content management system: Web content management, electronic document management, digital asset management, and XML publishing. (See Illustration 1.)

WEB CONTENT MANAGEMENT. A Web content management system (WCMS) delivers a comprehensive framework for creating and editing information for various Web sites. It provides a template-driven environment that separates the instances of individual content elements (such as text, graphics, images, and sounds) from their form and appearance within a Web browser. Most importantly, a WCMS overcomes the “Webmaster bottleneck” for content delivery. A WCMS provides the processes that the line-of-business staff within an organization (those who are responsible for creating content and keeping it up-to-date) can use to publish content on the Web on their own, without requiring the ongoing support from Web-savvy technologists.

ELECTRONIC DOCUMENT MANAGEMENT. An electronic document management system (EDMS) manages the various stages of a document lifecycle. It includes a structured document repository together with extensive workflow capabilities. With an EDMS, organizations can set in place standard operating procedures to determine how staff members create new documents, edit and review them in a systematic fashion, and secure approval for their
publication. The output of an EDMS is essentially electronic renditions of physical documents (such as Microsoft Office application files, .PDF files, and Web pages) with static images and graphics.

**DIGITAL ASSET MANAGEMENT.** Organizations that already work extensively with multimedia content (such as images, sounds, animation, and full-motion video) have often implemented digital asset management systems (DAMSs). Beyond simply ingesting, digesting, and distributing alternative multimedia file types (and, in so doing, managing very large repositories as well as multiple media-editing tools), a DAMS provides the capabilities for searching through a multimedia collection, finding individual assets, maintaining copyright protections, and delivering them to output devices.

**XML PUBLISHING.** Organizations are also facing an additional challenge: the need to embed structure into their content management environments by using XML-tagged documents. XML allows companies to decompose their content into globally identifiable semi-structured “chunks,” or content components. These components, in turn, can be dynamically assembled for multiple purposes, such as tailored collections based on predetermined profiles or context-specific criteria. In addition, organizations can organize collections of XML tag sets into metadata schemas, from which end users and applications can infer relationships among multiple entities. As a result, companies can begin to link ad hoc content components to specific business processes and to transactional systems.

Companies that produce product catalogs—both online and in print—are currently migrating toward XML publishing. So, too, are manufacturers who supply technical documentation, product descriptions, and customer decision-making parameters to the distributors and retailers who sell the supplier’s products. This widespread migration to XML publishing on the part of virtually every company that produces or sells products is one of the key drivers for the investments being made in content management solutions today.

**AN EVALUATION FRAMEWORK**

**Six Key Criteria**

An enterprise content management system blends the critical capabilities of a WCMS, EDMS, and DAMS; organizes them into an integrated platform; and exploits the embedded capabilities of XML tag sets and related metadata schemas. In order to best understand the strengths and weaknesses of individual vendors’ product offerings, we have developed an enterprise content management (ECM) framework. As shown in Illustration 2, this framework focuses on the following six key criteria:

- **Content Management Lifecycle.** The content management lifecycle describes the flow of content through four distinct stages: create, compose/stage, produce/deliver, and age/archive.

- **Granularity.** Granularity specifies the content components—ranging from entire documents to discrete chunks—that a content management system manages.

- **Metadata Management.** Metadata management determines the ways in which a content management system categorizes content according to predefined attributes and/or taxonomies.

- **Application Integration.** Application integration identifies the tools and techniques for integrating content management capabilities with related enterprise applications.

- **Administration.** Administration defines the system management capabilities for managing the content management server, particularly within the context of an overall enterprise environment.

- **Globalization.** Globalization identifies how an enterprise content management system adapts to different cultural and social situations. Globalization ensures that organizations operating in multilingual/multicultural environments have the resources for managing content in several natural languages and can distribute content according to culturally specific criteria.
Illustration 2. Our enterprise content management framework focuses on six evaluation criteria, all of which include several specific factors.

CONTENT MANAGEMENT LIFECYCLE

Capturing the Flow

The content management lifecycle describes the flow of content through the following four steps:

- Create
- Compose/stage
- Produce/deliver
- Age/archive

Illustration 3 shows the capabilities and services required from an enterprise content management system at each step in the lifecycle.

Key to this lifecycle are the following three design concepts:

- **Isolation of Content.** The content itself should be separated from formatting templates and application logic.
- **Storage of Content.** The content, the templates, and the associated application logic should be stored in a central repository. (Note that this can be a virtual repository, composed of multiple physical and logical repositories—such as disparate document stores and file systems.)
- **Workflows for Content.** Flexible, non-intrusive workflows should help content creators, editors, and approvers to focus on the task of developing useful content. These workflows should become the paths of least resistance for content workers and make it easy for them to tag items appropriately and submit them into the next steps in the workflow.

Different kinds of people have different roles in the content management lifecycle, depending upon their responsibilities for supporting individual stages.
Illustration 3. There are four steps to the content management lifecycle: create, compose/stage, produce/deliver, and age. During the create stage, people either originate content or acquire it (via syndication arrangements) from third-party sources. The content then passes through editorial and approval workflows before going to the next step. During the compose/stage step, content is organized and stored for subsequent distribution. During the produce/deliver step, content is distributed to multiple venues such as Web page views, ebusiness portals, printed documents, wireless displays, and the like. Finally, during the last step, content is aged; it is either archived or destroyed.

Key Steps

As stated above, the four steps of the content management lifecycle are:

- Create
- Compose/stage
- Produce/deliver
- Age/archive

THE CREATE STEP. Some people (such as authors, photographers, or speakers) within an enterprise originate various digitized assets—including text, images, graphics, and sounds. Others are involved in the editing, review, and approval (reviewers/approvers) of the specific kinds of content. A third group (typically, graphic artists or Web designers) is involved in creating the visual presentation, such as developing the individual templates or designing documents for publication. A fourth group (application designers or Web designers) develops the logic (and programs) that defines the interactive experiences—what end users view, hear, and experience when they click specific links or make particular selections.

For the create step, the important features to consider are factors that affect authoring, editorial workflow, and template development.

Authoring. A content management system provides the necessary features and functions for ingesting new content and storing it within a repository. Con-
tent originators check content into the repository, which in turn manages their access rights and permissions. They should be able to work within the context of their familiar desktop tools if they so choose, and they should not have to exit from one application and launch another in order to add the content to the repository. Editors, reviewers, and approvers, in turn, can access content within the context of an editorial workflow process.

Underlying these features and functions are the following two industry standards:

- Web-based distributed authoring and versioning (WebDAV)
- Open document management API (ODMA)

WebDAV is an IETF initiative to define the HTTP extensions necessary to enable distributed Web authoring tools to broadly interoperate while supporting user needs. It ensures drag-and-drop capabilities between a local file system and a Web-based server. ODMA is a related initiative, sponsored by AIIM (an industry trade group), to ensure file-level operations (such as open, save, and save as) function between a desktop application and a repository.

When creating content for Web-page displays that feature granular content components, a content management system should also provide a WYSIWYG authoring and editing environment that is integrated with the underlying repository. Content originators, editors, reviewers, and approvers can view Web-page displays that merge the content with the presentation templates.

**Editorial Workflow.** A content management system coordinates the roles and responsibilities when creating content, storing new items in a shared repository, and launching editorial workflows. These workflows, in turn, ensure that editors, reviewers, and approvers can access and view the newly created content, make changes if permitted, and indicate approvals when required.

A content management system provides an editorial workflow environment to support and to track editorial review and approval processes. These processes range from simple (linear) workflows, in which new content is first reviewed by an editor and then approved, to complex workflows, in which tasks proceed in parallel and in which the content can be routed to external parties as required. An editorial workflow environment should include a graphical tool that allows non-technical users to define the routing, roles, and rules.

**Template Development.** A content management system collects and manages a library of reusable templates. These templates format the content and determine its presentation on various kinds of display devices. For instance, one set of templates can present content as Web pages on large-screen, browser-based desktop devices. Another set of templates can present the same content on Web browsers designed for small-screen PDAs. A content management system should allow template designers to use their preferred design tools to create the look-and-feel for Web pages.

**THE COMPOSE/STAGE STEP.** Managing content is part of a production process. During the create step, people create, edit, review, and approve content for distribution. Sometimes an organization acquires content from an external source and incorporates it into its own content management lifecycle. At some point, however, the revisions and approvals are complete and the content is staged for delivery to end users, enterprise applications, and network-centric syndication services. The compose/stage step provides the underlying services for managing the content as it is being created and before it is delivered.

People in two kinds of roles are involved with managing the composition and staging activities. These roles are:

- **System Administrator.** One or more system administrators manage access rights and permissions. They determine who can add and/or modify content as items are submitted to the repository. System administrators also administer the workflows that direct the flow of content components through the review and approval cycles, as well as make the content available for delivery.

- **Information Architect.** An information architect is responsible for identifying, maintaining, and managing the words, phrases, and concepts used to categorize content components within the repository. Depending on the purpose of the
content management environment and the structure of the underlying repository, the architect may manage either an ad hoc set of terms or a formal taxonomy or information schema encapsulated in a controlled vocabulary. The information architect is responsible for relating the categorization criteria to the business purposes of the content being managed.

For the compose/stage step, important features to consider are factors that affect library services, process automation services, content categorization services, and content collaboration services.

**Library Services.** The core capabilities for composing/staging content within a content management system revolve around the following library services:

- **Versioning.** Versioning helps track multiple versions of content components.

- **Locking (Check-In/Check-Out).** Locking ensures that when one person or process has checked out a content component, other people and processes cannot overwrite the item without prior notification and authorization.

- **Editioning/Rollback.** Editioning/rollback provides the ability to revert to a prior version of a content component.

- **Rendition Management.** Rendition management provides the ability to transform and manage content components into different renditions—such as separate file types or natural language versions—based on system-derived attributes or other kinds of metadata.

- **XML Component Management.** XML component management provides the ability to recognize the XML-tagged content components within XML documents as discrete entities.

- **Virtual Content Management.** Virtual content management provides the capabilities to access external content repositories and manage the metadata that describe this external content within the context of the central repository.

**Process Automation Services.** Process automation is an end-to-end workflow capability that spans the four steps of our content management lifecycle as an integrated business process. Process automation services should provide the ability to automatically aggregate content from external information sources and incorporate it into a repository, as well as the ability to syndicate content to remote applications and repositories in which it is used.

**Content Categorization Services.** As content components are composed and staged for distribution, they need to be categorized by various criteria. Sometimes the categories are automatically provided by the underlying content management system—such as the date last modified, or whether the content component is approved for distribution. Sometimes the categories are related to specific topics, such as keywords associated with the key concepts contained within particular paragraphs of a text document. Often times, the terms used to categorize content are related to a controlled vocabulary list of pre-defined terms, which can be further defined in a thesaurus or schema.

A content management system should provide both automatic and semi-automatic content categorization capabilities. The system should be able to automatically parse the words and phrases contained within a content component and identify relevant concepts without human intervention. As an option, the system should also prompt a content contributor and recommend relevant keywords within a dynamically derived list of terms.

**Content Collaboration Services.** When content is staged for delivery, it can also be shared within a workgroup or task team prior to publication. A content management system can include a set of content collaboration services, in which designated people and workgroups have special access rights. Certain people can edit and revise the content while others can only access and view the specific items. The content collaboration services manage access rights and permissions within a workgroup on the basis of individual identity, group membership, or role. Access rights and permissions pertain to individual content components (such as documents) as well as to collections of content components (such as sets of documents within a predefined folder).
THE PRODUCE/DELIVER STEP. Once content has been composed and staged for delivery within a repository, the produce/deliver step of our content management lifecycle comes into play. Through a publishing process, content can appear in different formats on large-screen desktop computers, small-screen PDAs, or printed pages. Though a publishing process, we can electronically deliver content to multiple locations and display devices.

This stage is, in many ways, the most important—it is certainly the most visible—because this is when you actually “publish” the content and when customers, employees, partners, and other stakeholders access it. The previous steps in the lifecycle all lead to this point, and the next step, age/archive, ensures the integrity of the published content.

Most important for the produce/deliver step is a set of tools to ensure that content can be delivered to designated venues without requiring technical assistance. System administrators maintain and manage the publishing environments, often relying on automated steps for selecting content components from a repository, producing them for one or more output devices, and/or distributing them to external application environments.

There are two factors to consider when assessing how well a content management system fulfills the produce/deliver step: how the content management system renders and publishes content through a server to multiple output environments (including Web-page displays and hard-copy outputs), and how the content management system deploys and distributes content to external application environments.

Render and Publish. A content management system should be able to combine content components with predefined templates to render sets of electronic page displays. A content management system maintains and manages the content delivery environment, including the browsing capabilities of a Web server and the integrated information retrieval capabilities of a search engine. End users can view Web pages and find relevant items by querying the repository of published content. They can access electronic documents and print them as desired; content management systems should be able to combine content components to produce hard-copy documents. A content management system should also be able to render rich-media digital assets—sounds, images, and video—on appropriate output devices.

Deploy and Distribute. A content management system also needs to be able to deploy and distribute content to external applications. It should include connectors to portals and other enterprise applications (such as CRM or ERP systems), as well as a management environment for tracking the flow of content from the content management system to the external applications.

THE AGE/ARCHIVE STEP. Finally, content is aged—either formally, according to explicit business policies, or implicitly according to ad hoc operating procedures. One or more people have roles in this process. Organizations may have information specialists who direct formally defined, officially mandated records management policies and procedures. Alternatively, organizations may rely on system administrators who make ad hoc “delete versus buy” decisions—they either delete old content as they need space on physical storage media or buy new disk drives.

Formal methods, policies, and procedures for aging and archiving enterprise content are becoming increasingly important. In particular, over the past few years, with the advent of new Federal regulations (based on Sarbanes-Oxley, Gramm-Leach-Bliley, and HIPAA) and a number of high-profile court cases, we have seen that informal and ad hoc procedures for aging and archiving enterprise content are no longer sufficient.

Records Management. Companies need to be able to define (both implicitly and explicitly) when certain kinds of content constitute “official” records and then provide the infrastructure for managing them in a systematic manner. At any time, organizations need to be able to recreate a snapshot of a specific “published” document, Web page, email, fax, or other from its component pieces. Electronic records management systems have as their foundations the document-centric frameworks of physical records management systems. At a minimum, a content management system needs to be able to archive (and move to long-term storage) defined sets of content according to predefined business policies.

Policy-Driven Archiving. To ensure compliance with government regulations, a content management
system needs to be able to maintain, track, and enforce a predefined set of operational policies and procedures for aging, archiving, purging, and shredding enterprise content. Content management systems need to be able to link content with business processes. Organizations need to be able to define, in rigorous detail, the business processes for archiving and removing content from their content management systems and the business processes for then preserving that content for a predetermined period of time. Finally, organizations need to maintain audit trails about the business processes and be able to document when each process runs, what people within the organization are involved, and what the outcome of the process has been.

**GRANULARITY**

**Content Components**

Digital content ranges in its degree of granularity. We are used to defining content in terms of pages and documents. Text-centric documents have a fixed organizational structure and a linear information flow. We might store them in an electronic repository and look for individual items based on document names or other indexing attributes.

But when we want to do something, such as order a printer from an online catalog, we expect to focus on the specific content components—the short, pithy sections that tell us exactly what we need to know and that are linked to our specific business contexts. Rather than just browsing through pages of online printer descriptions, we expect to find quickly the particular items that meet our needs.

Non-text media pose a related set of challenges for content granularity. We may be looking at a picture in an album, listening to a recorded segment of a radio program stored for online distribution, or watching a Macromedia Flash file designed to create an experience. All of these content components need to be managed in a consistent manner alongside ordinary text.

Content granularity is thus a means to an end. We believe that fine-grained content components are going to become increasingly important for delivering a total customer experience—either online or through hard-copy documents.

What is the state of the art for managing content granularity? Today, content management systems on the market focus primarily on a text-based environment. They rely on templates to separate the actual text elements from their underlying presentation on various display devices. All of these systems will manage static page displays and include capabilities to produce printed documents (in Adobe Acrobat format). Most no longer rely on flat-file repositories. Rather, they include capabilities to store text-based content in structured databases and to query the repository based on bibliographic criteria. Merging and managing non-text-based elements (visuals and sounds in various formats) is at best awkward and varies by business context.

Most enterprise content management systems either explicitly manage XML-tagged documents or have announced their intention to do so by their next major product release. Many offer capabilities for reusing and repurposing content: Individuals maintain a single (canonical) version of a content component; it is then repurposed and distributed to different environments based on predetermined criteria such as specific attributes or index criteria.

**Key Factors**

There are three factors to consider when assessing how well a content management system manages granular content components. These factors are:

- The content components being managed
- XML component support
- Granular content security

**THE CONTENT COMPONENTS BEING MANAGED.** Content management systems vary by their capabilities to manage content components as granular chunks or content-centric business objects. We are looking for solutions and environments in which we can rapidly assemble granular content components on-the-fly, based on individual and/or group-level selection criteria, and then link particular Web-page displays to specific steps within customer-focused business processes. We are looking for solutions and environments in which we can reuse content components in different media (e.g., print documents, online and offline catalogs, Web pages, and email text) and in different business contexts.
XML COMPONENT SUPPORT. Most content management systems either explicitly manage XML-tagged documents or have announced their intention to do so by their next major product release. Many offer capabilities for reusing and repurposing content. These systems seek to maintain a single (canonical) version of a content component, which is then repurposed and distributed to different environments based on predetermined criteria such as specific attributes or index criteria. In the future, we will see additional emphasis on multipurposing and reusing XML-tagged content.

GRANULAR CONTENT SECURITY. Granular content security is going to become increasingly important in an era of digital commerce. A content management system needs to manage secured and encrypted content components—including copyrighted music, licensed images, published documents, and other digital assets containing intellectual property. The system needs to encrypt the content components so that they can be securely distributed and managed within a network environment.

There is more to digital rights management beyond encrypting granular content components. In addition, there needs to be a clearinghouse for managing business transactions. A content management system should be able to reference the services of one or more network-accessible clearinghouses that, in turn, provide the business services for digital rights management.

METADATA MANAGEMENT

Categorization Criteria

How content is organized and who is responsible for creating the underlying cataloging criteria are important factors in their own right. Managing these categories—in effect, managing the descriptors (or metadata) that describe the content (or data)—is a critical capability for a content management system.

Catalogers, librarians, or records management specialists have often been in charge of organizing and maintaining the formal indexing terms (or controlled vocabulary) that a company uses. Their expertise now needs to be incorporated into a content management system.

With the advent of XML as the lingua franca for tagging electronic content, organizations can readily associate sets of content-related descriptors (or metadata) with the underlying content (or data) in order to achieve new levels of functionality and insight. With the additional support for various HTML-based and XML-based style sheets, organizations can produce content for many different venues (such as PDAs, tailored Web sites, or specific print publications) from a single collection of content components stored in a common repository. By applying personalization technology to an enterprise content management system, companies can dynamically adapt the content delivery to match individual users’ profiles.

A content management system manages both the data and the metadata—the content itself as well as its descriptors—in a systematic manner. The system includes capabilities for maintaining the interrelationships among related terms (or information taxonomies), as well as categorizing the content elements by the appropriate words and phrases. Finally, it includes facilities that enable authors and editors to classify new content automatically while doing their work.

Key Factors

We have identified three factors—three sets of features and functions—to consider when assessing how well a content management system manages metadata. These factors are:

• The kinds of metadata being managed
• Taxonomy and schema management capabilities
• Automatic categorization capabilities

THE KINDS OF METADATA BEING MANAGED.
All content management systems manage some kinds of metadata. But some systems manage richer and more extensive kinds of metadata than others. We can define metadata in terms of kinds of relationships, as follows:

• Some metadata are based on discrete and unrelated attributes, such as system-defined properties as well as ad hoc lists of user-defined keywords and key-phrases. This kind of metadata includes “title,” “author,” and “subject” (attributes that can automatically be inserted into a
document by Microsoft Word), as well as “date modified,” “type,” and “size” (attributes provided by an underlying filing system).

- Some metadata are based on an information taxonomy that encompasses a conceptual hierarchy or thesaurus. As a result, some terms may be synonyms of other terms—“HP” and “Hewlett-Packard” describe the same company. Some terms may be more specific or more general descriptions of other terms—“Ford Taurus,” for example, is a particular kind of “automobile.”

- Some metadata encompass an underlying information schema in which the terms are related based on predefined rules. For instance, “California” and “Wisconsin” are part of a schema that identifies the fifty states in the United States.

TAXONOMY AND SCHEMA MANAGEMENT CAPABILITIES. A content management system should include capabilities for managing the underlying taxonomies and schemas. It should include features and functions so that catalogers, librarians, and other information architects can manage the structured lists of terms that constitute a taxonomy or schema.

AUTOMATIC CATEGORIZATION CAPABILITIES. A content management system should offer automated or semi-automated tagging and content categorization capabilities, based on analyzing words and phrases. It should either enable authors and editors to select from a dynamically generated list of relevant terms or automatically make the selection for them.

APPLICATION INTEGRATION

An Enterprise Perspective

Managing content throughout an enterprise is becoming a core competency for the organization as a whole. As companies launch their CRM initiatives, benefit from their ERP installations, plan their ecommerce strategies, and design other enterprise applications, they need to create and distribute relevant content.

As companies deploy content management systems, they need to be able to integrate the content they are managing with their enterprise applications. Application integration capabilities provide the connections and interfaces for incorporating the capabilities of a content management system with those of other enterprise systems.

Key Factors

The three kinds of application integration capabilities to consider are:

- APIs and toolkits
- Application-level frameworks
- Packaged integration connectors

APIs AND TOOLKITS. APIs and toolkits provide the programming-level interfaces that system-level programmers use to connect content management systems with enterprise applications. APIs and toolkits provide tight integration between two systems but require low-level and complex application design and development activities.

APPLICATION-LEVEL FRAMEWORKS. Application-level frameworks describe the prebuilt business objects that are used by application developers to connect the actions of one system with those of another. These frameworks provide higher-level structures and tools, including collections of prebuilt components, and thus accelerate integration.

PACKAGED INTEGRATION CONNECTORS. Packaged integration connectors provide prebuilt capabilities to integrate with portals and other third-party enterprise applications. These connectors accelerate application integration by defining the information flows between a content management system and external applications.

ADMINISTRATION

Centralized Systems Management

A content management system should be an integral part of an enterprise-wide systems management framework; the administration of the content management system should fit into that management framework.
Key Factors

The three administrative areas to consider are:

- Administrative tasks
- User authentication
- Analysis and performance tracking

ADMINISTRATIVE TASKS. There should be a single point of access for administering all content-related repositories, servers, users, and groups, regardless of their location within an enterprise. This should be a non-technical, graphical environment. A content management system should be able to automate routine administrative tasks by defining the items and activities once.

USER AUTHENTICATION. A content management system should use the existing security infrastructure of an enterprise. The system should be able to protect content through a combination of user-specific and role-based security. The system should use an existing directory service and be able to support digital certificates and electronic signatures, as well as other industry-specific user authentication requirements.

ANALYSIS AND PERFORMANCE TRACKING. A content management system should include capabilities for logging and tracking the flow of content through the system. System administrators should be able to determine who is creating and modifying content components, how they are being organized and staged for delivery, when they are being deployed and distributed to other enterprise applications, and how they are being aged and archived. Administrators need to have access to action-oriented, visually informative reports—in which they can determine the exception conditions and drill down through a series of links to analyze problems.

GLOBALIZATION

Supporting Worldwide Operations

Organizations that operate in multiple countries and cultures around the world are concerned about globalization. In fact, they must come to grips with it in order to compete in international and multinational markets.

Key Factors

Global organizations focus on the following three aspects of globalization:

- Internationalization
- Translation
- Localization

INTERNATIONALIZATION. On a technical level, a content management system must be a fully internationalized environment. It should support double byte (full 16-bit) character sets (required for Chinese, Japanese, and Korean content), alternative text directions, and multilingual page displays.

TRANSLATION. On an operational level, a content management system must include the explicit business processes for translating content into various natural languages. Moreover, content authoring and editing capabilities should support global, multilingual collaboration. Business rules determine how content from one language is sent to translators, translated into other natural languages, and then incorporated into the underlying content repository.

LOCALIZATION. On a business level, a content management system needs to manage the culturally sensitive content that appeals to different groups of users. It must be able to organize and store the relevant content that is appropriate for groups of people in specific local geographies.

WHO OFFERS CONTENT MANAGEMENT APPLICATIONS?

Today’s crop of enterprise content management systems comes from vendors from the different approaches mentioned earlier: WCMS, EDMS, and DAMS. And most of these show their heritage. Although almost any content management vendor will claim to support enterprise applications, some are really tuned just for departmental use, for Web content, for print catalogs, and so forth.

The most important thing, when evaluating products and vendors, is to understand your content needs as they exist today and as they are evolving for tomorrow. Make sure the solution matches your requirements—don’t modify your needs to fit a vendor’s vision.