

Component Content Management

White Paper
By Galaxy Consulting

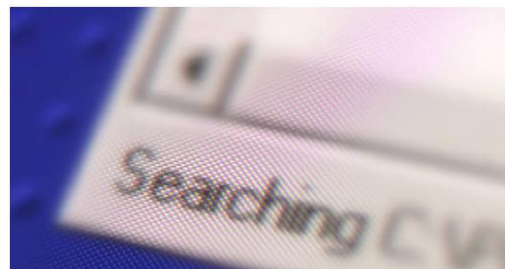


At Your Service...Today...Tomorrow
We Appreciate The Privilege Of Serving You!

September 2014

Abstract

As the market for content management technology continues to grow, so too do the ways in which organizations seek to use content management. Enterprise Content Management (ECM) describes a broad, enterprise-class platform of content management technology that can handle all kinds of content. This white paper introduces Component Content Management System (CCMS). A CCMS manages components at a fine granular level, in ways that allow the components to be easily used, reused, versioned, linked, assembled, and reassembled into different content products.



Component Content Management

There is the need for some organizations to manage large volumes of content. Along with the sheer volume of information, there are requirements for the content to be kept up to date over many years, for it to be published in many physical formats, and for the content to be of the highest technical quality and accuracy.

There is a significant opportunity for organizations to develop processes and systems whereby core components of content can be managed in a way that they can be reused in many content products. As much as half of product support content is redundant and could be reused in this way. For a large organization, a systematic program of reuse could yield significant savings, efficiencies, and quality improvements over time.

While many content management systems do enable content elements to be reused in various ways, the kind of reuse application mentioned here demands a specific kind of approach to content management.

Component content management systems (CCMS) manage components at a fine granular level, in ways that allow the components to be easily used, reused, versioned, linked, assembled, and reassembled into different content products.

Component content management systems provide truly flexible reuse, with components at any point in the content hierarchy easily created, updated, managed, combined, recombined, and linked. CCMS technology enables organizations to adopt reuse over time, because it provides the tools for ongoing refactoring and conversion of content.

What is Component Content?

Each component represents a single topic, concept or asset (e.g., image, table, product description). Components can be as large as a chapter or as small as a definition or even a word. Components in multiple content assemblies can be viewed as components or as traditional documents. Reuse allows the core component to be edited and maintained in one place, and then be assembled into thousands of documents where it is needed.

One complex business process involves technical documentation, catalogs, and other kinds of content used in product support, where reusable content “components” can be managed in a way where complex content products can be assembled, reassembled, and published. This kind of application is important in such industries as for example pharmaceutical, electronics, finance, aviation and other transportation.

Complex products often require content necessary for a user to operate and maintain the product after it is sold that can include user manuals, maintenance manuals, service updates and advisories, and the voluminous content that is often produced in marketing the product before it is sold.

In some industries, content-intensive processes are intrinsic to how the products are both developed and operated. Consider the pharmaceutical industry, where virtually every detail of a drug in development is documented and provided to the US Food and Drug Administration (FDA). Airlines provide detailed maintenance records to the Federal Aviation Administration, trucking companies to the US Department of Transportation, and power plant operators to the US Department of Energy. For reasons of operational efficiency, productivity, and regulation, many enterprises find themselves in the business of creating, maintaining, and archiving vast repositories of complex content.

Because many of these enterprises operate at a large scale, the content efforts themselves present opportunities for improved efficiency. Most large-scale documentation efforts rely heavily on electronic distribution of their content for cost-savings, but even where “single source” publishing has been implemented successfully, the long-term cost savings may be minimal. Much of this content still needs to be produced on paper, and the requirement for electronic distribution itself can have significant cost associated with them.

Many enterprises have the volume of content that offers re-purposing opportunities. The practice of producing multiple media formats—print, online, CD-ROM, HTML from a single-source is well-established, but enterprises face even greater volume of content across more and more versions, channels, markets, and languages. As the enterprise’s requirements for multi-channel publishing expands, the enterprise must invest in a platform architecture that can efficiently automate these processes.

The real savings may come in being able to actually reuse content, and not just repurpose it from one format to another. For example, in an automotive application, several different manuals may well include several of the same procedures. Why not create the content in such a way that the reusable procedures can be created once, edited once, and stored once in a format that allows it to be reused in many different manuals and other content products?

Enterprises that have solved the multi-channel distribution problem with single-source publishing also have often identified content reuse as a primary goal. Single-source publishing involves repurposing content into other formats, but when a content component is used in multiple content types, it is called reuse.

Examples of content reuse would include safety warnings common to many repair procedures, instructions for maintaining machinery that share particular parts or sub-systems, and step-by-step descriptions of processes in a software application as might be represented in the reference manual, online Help, user's manual, programming guide, and Web tutorial.

The key to the successful re-use of content is to manage it at a granular level. These grains of content, components, can be shared, reviewed, updated, or combined and compiled into different document aggregations and collections. Each component can be separately edited and re-used, and workflow processes enforced. Content components can have their own lifecycles and properties such as version, owner, and approval that support fine-grained reuse and the ability to track such usage.

Many CMSs manage content as components at some level, even though there are some simpler document management platforms, for example, that do not go beyond storing documents as images or as unitary files. Typically, Web CMSs manage content as articles, heads, links, and other "chunks" associated with metadata within a database that enables these content components to be presented within a browser in various combinations. But the content structures supported by such CMSs are usually for simple, short documents, not for long, complex documents, and certainly not for long complex documents that have complex internal relationships among the components.

Prepare for a Component CMS

Major component content management vendors are Interwoven TeamSite, EMC Documentum, SDL Tridion, Vasant, Astoria, and many others are coming on the market.

Component content management systems focus on managing content components in concert with managing the metadata associated with the components, where the metadata is used to efficiently retrieve the whole document or some component of the document.

Most often content resides in data formats that are not conducive to the kinds of information access and sharing that reuse dictates. For example, longer documents are often in proprietary and binary formats such as Microsoft Word and FrameMaker, while some of the technical data may reside in databases for applications such as enterprise resource planning (ERP).

In order to support component content management, content has to be in the eXtensible Markup Language (XML) format. Darwin Information Typing Architecture (DITA) format is widely used for this purpose.

XML encoding of the content also can support reuse by providing a ready mechanism for dividing the content into logical elements or components. For example, a repair manual for a transmission could be divided into the various tasks that can be performed; a parts catalog could be divided by part number, part description, and so on.

Analysts and consultants have used terms like "minimum reusable unit" or MRU to describe the level at which content is logically stored for maximum efficiency. This MRU will differ from enterprise to enterprise, but the decision is largely driven by practical considerations such as how the content is written, edited, updated, distributed, and shared with partners.

Most component content management systems try to solve the re-usability challenge by “shredding” or “chunking” documents into predefined components that are managed separately. For example, a hardware manufacturer might logically chunk its maintenance documents into components that handle a single task such as removing and replacing a part. A software manufacturer might chunk its user manual into components that handle a single function such as printing or deleting a file.

In practice, this reliance on chunking content into MRUs has both advantages and disadvantages. Done well, the organization can end up with a high-performance system for creating, updating, managing, and publishing its content.

However, the requirement to determine an MRU upfront results in some trade-offs: what is the best unit at which to edit the content? Are there applications where a different chunking level would be advantageous? Probably. Will new requirements emerge that would be better served by chunking the content in different pre-defined components? Almost certainly.

Breaking up documents, shredding can make document components available as fine granules, but once the level is set and applied, changing the granularity of the content is difficult. In many of the systems that require this upfront MRU analysis and decision, the setup of the MRU level and the associated tools cannot be readily changed. In some cases, changing the shredding level requires the developer to export the content out of the database, redesign the schema of the database, and then re-import the data, and perhaps only after transforming or conditioning the data to match the new database schema.

Content Refactoring and Migration

Reuse presents a significant opportunity for organizations to create content more efficiently and with a better eye to detail, consistency, and quality control. Yet the reality of many organizations, especially the larger ones who could most benefit from reuse, is that there are large volumes of heterogeneous content that need to be digitized, converted, and normalized.

With technologies dependent on managing MRUs, organizations have to make decisions about how the content is going to be digitized, converted, and normalized prior to use. Organizations have traditionally invested a great deal of time and money in an up-front analysis at this point in the process and designing the data structures that they believe will support their content creation, management, and publishing needs.

As organizations begin to work with the converted content, they begin to see requirements to transform the content, sometimes subtly and sometimes more radically to make it usable and reusable.

However, if this content has been introduced to a system that requires an MRU design decision upfront, the process for converting this content can be cumbersome, expensive, and time-consuming. In many cases, the content needs to be extracted from the system and converted, and then the content repository has to be reconfigured and in some cases redesigned to accommodate a different MRU structure. Depending on the technology, underlying tools that support the content are sometimes designed around the existing MRU structure. These too may need to be redesigned. Then the content needs to be imported back into the repository for continued processing. Painfully, this process of exporting, converting, and redesigning the content data structures, and underlying repository and tools, will likely need to be repeated over the lifetime of the system.

A better approach would be to have flexible component content management technology that does not require the MRU decision up front that allows for the content to be stored flexibly, with access to any node in the repository. Ideally, the CCMS would also provide tools for refactoring and converting the content in place. This way, the organization can incrementally convert and normalize content for inclusion in the CCMS, test it, work with it, and enhance it over time. Such an approach is much more manageable, and much more in tune with how organizations work with content.

Component Content Management in Action

How can XML and component content management address an organization's content management needs? A central repository of content facilitates repurposing the content into different formats, reuse of the content components, and electronic review of the documents. At many airlines, documents are often reviewed and approved through paper reviews or even face to face meetings.

Significantly, the hierarchical structuring of content that can be done with XML, and the management of the XML components, lends itself to the of information flow.

Knowledge of required changes to a manual flows from the kind of outside information listed above, but currently many airlines have no formal linkage in the electronic documents; the linkages are maintained manually. Component management of reusable content modules would enable airlines to establish and maintain these links electronically, resulting in greater quality and accuracy.

Many of these update scenarios could leverage the intelligence of the repository to support the updates. For example, a change in one document could flag a need to change other documents; the inclusion of a new, related document could flag a need to review and possibly change existing related documents, and so on.

With the content managed at a component level, and with the ability to express rich links and triggers between the content components, a CCMS becomes a valuable platform for ongoing content management. Implemented correctly, a CCMS enables an organization such as an airline to have intelligent, actionable content that can support the broad variety of update tasks and processes that a complex maintenance organization faces.

Conclusion

There is a clear need for technology that best supports the unique challenges some companies face in creating, maintaining, and distributing the voluminous content that supports complex products in the field. Organizations with this challenge should look beyond single-source publishing to a more rigorous program of reusing their content across many content products they produce. To enable this kind of reuse, organizations should look at encoding their content in XML and at adopting component content management systems that will most effectively leverage the XML-encoded content for reuse.

Is your organization in a position to benefit from component content management? Yes, if:

- You create voluminous product support content that needs to be repurposed into many different formats such as print, HTML, and Help.
- You create the kind of content that reuses components of content in many different content products.
- You create content that must be translated into multiple languages.

- You create content that supports conditional publishing, where variables within the content can be readily used to create variants of the published products.

One final significant point is the ability of component content management technology to enable organizations to adopt reuse over time. By allowing flexible access to all content without requiring the up-front MRU analysis and decision making and by providing tools for ongoing refactoring and conversion of content, component content management technology enables organizations to adopt and increase reuse over time. This is a more manageable process for organizations and should result in more success, more efficiency, and more return on investment over time.

About Galaxy Consulting



Galaxy Consulting provides services in business analysis and usability, content and knowledge management, records management, information architecture, enterprise search, taxonomy development and management, document control, and information governance.

Galaxy Consulting was founded with the mission and vision of helping organizations to manage their valuable information assets. Many of our clients, both large and small, have dramatically improved efficiency and reduced unnecessary labor hours through efficient methods, processes, and solutions we created.

Galaxy Consulting believes in partnerships with our clients. We are committed to working with you and to helping you transform your business. We will increase efficiency and productivity, maintain regulatory and legal compliance, improve collaboration, enhance innovation, and reduce costs through effective information management!

Call us TODAY to schedule a free, no obligation consultation!

Contact Us

Office: 650-474-0955

Mobile: 650-716-3609

Info@galaxyconsulting.net

www.galaxyconsulting.net