

White Paper

Component Content Management

How True CCM
Technology Drives the
Most Compelling Content
Initiatives

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Sponsored by

 XyEnterprise



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Table of Contents

Executive Summary	ii
Introduction	3
True Component Content Management	4
What is CCM?	4
CCM and XML	4
Can Other Systems Support CCM?	5
CCM in Action	6
Enterprise Computing Hardware Company	6
Commercial Aircraft Company	7
Government Agency	8
Putting CCM to Work for You	9
Call to Action	9
Sponsor's Perspective	10
Sponsor Contact Information	11

Executive Summary

Component Content Management, or CCM, is a term often used to define the class of technologies that can effectively manage small components of content, notably those encoded with XML. The common thread among both early and more recent adopters of CCM technology is the need to manage large content sets that can benefit from single sourcing, reuse, and translation and localization. While early adopters were mainly tied to large government projects, CCM technology is now increasingly used at a wide variety of hardware, software and large platform manufacturers.

CCM technologies typically share several characteristics—a repository for storage of XML-encoded content objects; mechanisms to check-in, check-out, and version the content; workflow to support editorial and publishing operations; and interfaces to connect the CCM technology to editing, content transformation, and publishing tools. More recently, CCM technology has been bolstered by the widespread adoption of XML schemas such as DITA (Darwin Information Typing Architecture) and S1000D.

XML's technical characteristics, the widespread availability of tools, and the prescriptive nature of schemas like DITA and S1000D have combined to complement CCM technology, accelerate its adoption, and potentially lower the overall cost of implementing CCM.

While core benefits of CCM are clearly tied to lower costs and greater automation, CCM technology also provides a number of less immediately obvious and perhaps less tangible benefits. Notably, a common base of XML-encoded product content has great potential for a wide range of customer facing applications and processes. The most obvious of these are in customer support (help desk, self-diagnostics, others), but the benefits can also extend to areas like sales, where detailed product information can help fuel up-sell and cross-sell opportunities, and marketing, where component content can speed product localization

Finally, product companies are also recognizing the benefit of CCM in supporting brand through the consistent use of well managed and consistently formatted content. Indeed, as CCM technologies become a pervasive part of the enterprise, more useful applications will be found for the content and data being managed.

Introduction

In what sometimes seems like a blizzard of news and analysis about content management, *component content management* has taken hold as an increasingly useful and specific term. At Gilbane, we've used the term since 2004 to define the class of technologies that can effectively manage small components of content, notably those encoded with XML. More recently, *CMS Watch* published an extensive report on the technologies, helping to frame the market and the supporting technologies.

But while the term might be relatively new, the problem set is an old one, dating back to the development and adoption of the Standard Generalized Markup Language (SGML) in the 1980s and early initiatives to standardize delivery of content to government agencies such as the U.S. Department of Defense and the Food and Drug Administration. Yet it took XML to move CCM into the mainstream, with wider adoption beyond selected niche industries.

The common thread among both early and more recent adopters of CCM technology, though, is the need to support certain key applications of structured content:

1. **Single sourcing.** These organizations have found ways to take a common set of generically tagged content and generate different formats from the common base (print, HTML, help, others).
2. **Reuse.** A logical extension of single-source publishing is to then take the common set of content and chunk it into logical units of content that can then be used among different content products.
3. **Translation and localization.** Chunked content lends itself to more efficient translation. Instead of sending whole document sets out for translation, the translation team can focus their efforts on just those sections of content that have changed.

Indeed, these three characteristics represent something of a typical adoption curve for the use of CCM technology—the organization that has mastered single sourcing is typically ready to move on to reuse, and once reuse is established, efficient translation operations can be established. As organizations move up this adoption curve, they are increasingly ready—and likely—to profitably invest in CCM technology. Taken together, these three CCM practices bring significant savings and competitive advantages to successful adopters.

Along with the advent of XML, a second important contributing factor to the maturity of CCM and its accelerating adoption is the availability of public, well-supported XML schemas that are useful to a wide group of potential adopters. The Darwin Information Typing Architecture (DITA) is the best example of this, but there are others—S1000D and the National Library of Medicine (NLM) schema for scientific publishing, to name two more. These schemas have been successfully adopted by organizations in each of these industries, and the result is a significant increase in XML-based component

content management, enterprise publishing, and automated translation and localization.

This paper looks at the recent advancements in CCM, and how they have been fueled in part by standards like DITA and S1000D. It also explains how CCM technology is used in some typical industries. Finally, the paper discusses how these organizations have benefitted from CCM technology and briefly describes steps your organization can take toward reaping some of these same benefits.

True Component Content Management

What is CCM?

As discussed, Gilbane has traditionally described CCM as the class of technologies that can effectively manage small components of content, notably those encoded with XML. Taken broadly, such a definition would include tools, such as XML editors, when in fact a more useful and targeted description would be those repositories and content management platforms that include at a minimum:

- A repository for storage of XML-encoded content objects.
- Mechanisms to check-in, check-out, and version the content.
- Workflow to support editorial and publishing operations.
- Interfaces to connect the CCM technology to editing, collaboration, content transformation, and publishing tools.

While early CCM technologies were relatively closed, proprietary systems, most contemporary CCM platforms are open systems, built on standard operating systems, databases, and interface mechanisms. This is increasingly important, as CCM technologies are moving beyond departmental implementations to include support for enterprise applications.

CCM and XML

Even with the increasing capabilities of CCM systems, the key feature remains the fine-grained management of XML content objects. This feature goes right to the fundamental value proposition of these systems—enabling organizations to efficiently manage content that helps them build, market, sell, and support complex products.

While other data formats can be used to manage component content, major industries like aerospace, automotive, and high technology have developed XML schemas for their content. XML has a number of characteristics that make it the natural choice for encoding textual content:

- The ability to break out document content into logical units.
- The ability to manage content encoded in multiple languages.

Component Content Management

- The ability to link a wide variety of other content types, including graphical and multimedia content.

In addition, there is a long list of excellent XML tools that complement and support CCM systems—editors, transformation tools, publishing tools, and more. DITA, notably, has a comprehensive open source collection of publishing tools known as the DITA Open Toolkit. The toolkit runs on Windows, Linux, and Mac OS, and has out-of-the-box tools for transforming DITA content into deliverable formats such as print, Help, and HTML.

Moreover, standards like DITA have been designed for high levels of automation and usability. Both DITA and S1000D, for example, have simple but powerful mechanisms for organizing content modules for publishing—topic maps for DITA and the Data Module Requirements List (DRML) for S1000D. DITA also provides a built-in customization capability—specialization—that organizations are already using to extend DITA's use beyond technical documentation to uses like online learning.

Because XML is central to CCM's effectiveness, it's important to consider exactly how CCM technologies support XML.

- Does the CCM technology flexibly support any XML schema, or does it require the use of a single or small number of schemas?
- Does the CCM technology support multiple DTDs or schemas at the same time, thereby allowing organizations to support legacy data and multiple content models?
- Does the CCM repository support XML storage directly, or does it require the XML to be transformed on import and export?
- Does the CCM repository rely on a standard repository technology, or does it require a specialized repository technology that your organization would not otherwise use?
- Does the CCM technology allow you to use any XML editing tool, or is it limited to a single editorial tool that might also be proprietary?

Any one of these limitations might not represent a serious problem, but several of them together can significantly reduce the system's flexibility and its ability to be integrated with other enterprise technology.

Can Other Systems Support CCM?

One result of the rapid growth in XML adoption has been the attempt by organizations to use other technologies for XML management instead of fully developed CCM systems. The tendency is understandable—high technology companies, especially software companies, are typically adept at a range of technological solutions, including databases and source code control systems.

Component Content Management

Source code control systems were seen as a logical alternative to CCM systems, especially early on. Technical writers often had ready access to them, and were already trained in using them to review code and sometimes to store elements of their delivered content, notably in context Help files. However, source code control systems fail to provide some of the core capabilities that CCM systems do, such as built-in connections to XML editing (and other) tools and a true ability to “difference” XML for versioning. Both of these are critical requirements, and versioning especially would require significant engineering expertise on the part of an organization that likely has better ways to expend their time and resources.

With the introduction of DITA, the decision to look instead at commercial CCM systems became a practical matter. Several DITA-based CCM systems offer a preconfigured, out of the box solution. It’s much easier for an organization to justify the value in buying a ready-made solution with so much built-in functionality rather than building a system on one’s own.

CCM in Action

Many organizations benefit from CCM technology today. These range from publishing companies to government agencies to companies that produce hardware, aircraft and other heavy equipment, and software. The common thread among these organizations is the need to produce high volumes of content, typically in many formats, from a repository of common content objects that can be securely used and reused. As organizations saw the cost and complexity of content development increase, they looked to CCM technology to lower costs, increase operational efficiency, and give them greater flexibility in content development.

The following three snapshots encapsulate the experience of companies in three different businesses delivering three different kinds of content to diverse users. Each has benefited from CCM in their own way.

Enterprise Computing Hardware Company

The Challenge as Seen by the Client

Our first snapshot is of an organization that provides expensive hardware platforms for major enterprise customers. That hardware is long-lived, complex, and supports multiple operating systems. Documentation and Help files are delivered for multiple operating systems.

Course of Action

- Conducted an analysis of their content, editing, and publishing needs.
- Decided to encode their content according to the DocBook DTD.

Component Content Management

- Adopted a commercial CCM system with integrated editing and publishing tools.
- Developed customizations to the CCM system for high-performance processing and automated link management.

In Practice Today

- A library of 10,000 XML-encoded content objects replaced content stored and managed in a variety of proprietary formats.
- Content automatically published to print, PDF, HTML, and Help.
- System up and running in three months and supporting product development in its fourth month.
- Writers now accustomed to writing in media-neutral, topic-oriented fashion, leading to more efficient content development.

Commercial Aircraft Company

The Challenge as Seen by the Client

The company designs and manufactures business jets, and provides aviation services. Annual operations require the production of a half-million pages of documentation. Each aircraft is supported by a long and complex list of documentation, ranging from maintenance manuals to wiring diagrams to illustrated parts catalogs. As the product line expanded and became more complex, the manuals became longer and more complex. As the complexity of the content delivery increased, on-time delivery of the aircraft depended more and more on improving the efficiency of content development. The company needed to roll out a generation of technology to comply with a new IT initiative to have more enterprise-standard platforms.

Course of Action

- Looked to improve on an existing SGML-based content management system that was straining to keep up with increased volume production and the need to support additional delivery formats.
- Examined existing content to see if it was modular enough to support the level of reuse the growing product line required.
- Upgraded the CMS to technology that would support XML-encoded content, while publishing to newer delivery channels.

In Practice Today

- Content now provided in the new delivery formats requested by customers, including printed books and pocket guides, Web delivery, task cards, and interactive manuals.

Component Content Management

- Fully two-thirds of the base content modules now shared among all of the delivered documents.
- Reusable content modules ensure data consistency across aircraft modules.
- Processing time greatly decreased on new hardware and enterprise-standard operating system and database — more content is published fast

Government Agency

The Challenge as Seen by the Client

This branch of the U.S. armed forces supports an enormous volume of technical data and documentation supporting mission-critical systems and operations. Its existing legacy system managed over 1.5 million files, created using disparate systems and tools, scattered over multiple systems and servers. Its organizational mission required them to support nearly 100 different XML schemas and DTDs. They had tried, unsuccessfully, to have other systems manage the data but performance was poor, hampering ongoing production

Course of Action

- Implemented a CCM system integrated directly with high-performance publishing tools.
- Analyzed existing heterogeneous content for both format and currency, and imported all content into the new system.
- Broke out content components at a consistent level to optimize training time, system integration, and tool development.

In Practice Today

- They support more than 140 end users working on nearly a terabyte of technical content.
- New end users can be trained in as little as a half-day to begin using the system to produce structured content.
- They support nearly 100 DTDs on a single system.
- They regularly produce print and web output for each document type, on documents ranging from 2 to more than 4,000 finished pages.

Putting CCM to Work for You

As the customer snapshots show, organizations that have adopted CCM technology have enjoyed a number of benefits:

- Ability to deliver a growing number of content formats from a common base of content.
- Ability to reuse content modules across content products, leading to greater consistency, and improved quality.
- Ability to lower cost of editorial and production operations even as content development requirements grow in volume and complexity.
- Ability to build a base of well-organized and tightly managed content that lends itself to efficient translation and localization operations.

These benefits clearly go to the bottom line—through greater operational efficiency and lower editorial, production, and translation costs. Indeed, our discussions with current users of CCM technology point mainly to ROI in these areas. However, organizations with mature CCM implementations are beginning to leverage these technologies in other business domains. These areas included customer support, where CCM-managed content is beginning to support help desk, training, and maintenance and trouble-shooting applications. CCM is also emerging in sales, where detailed product information is used to create tailored marketing materials for custom products. Indeed, as CCM technologies infiltrate the enterprise, more useful applications will be found for the content and data being managed.

Call to Action

If you are looking at XML content management in general and CCM technology in particular, you could benefit from undertaking some of the same analyses as the companies mentioned here. The process begins with asking yourself some important initial questions.

- How can your organization most efficiently create and manage content going forward? Would single sourcing and content reuse help you provide more efficient operations?
- How can your improved ability to manage content more fully support the overall goals of the organization? If future plans call for your company to develop more products, how could content operations best support that goal? Similarly, what of a goal to provide content in more languages and locales?
- Is your organization looking to develop new customer-facing applications in areas like customer support, marketing, and sales? Would CCM technology provide important underpinnings to such applications?

Component Content Management

As shown here, the successful adoption of CCM technology is clearly a path to greater operational efficiencies, improved product quality, and better customer support. For organizations that have made CCM a part of their IT infrastructure, with such efficiencies met, the next step is to begin leveraging CCM for top-line growth through faster product development and improved time to market.

Sponsor's Perspective

Gilbane Group appreciates XyEnterprise's contribution of content for this section.

With more than 20 years experience in publishing and structured content management, XyEnterprise has implemented solutions for some of the most demanding environments in a wide variety of industries including aerospace and defense, legal publishing, and hardware and software technology companies. From this vantage point Xy has evangelized for XML, promoted component management versus document management and demonstrated the cost savings of highly automated publishing. The company is encouraged by the significant increase in the number of companies that are adopting and embracing the best practices they have long promoted.

The compelling business challenges in today's global market demand that companies rethink their content development and delivery strategies to remain competitive. Moving away from the traditional document-based publishing processes, embracing XML, leveraging component-based authoring and deploying automated CMS and publishing technologies can substantially reduce costs and improve accuracy and turnaround time. If you are considering such a move, the time has never been better and the tools and environments available have never been richer.

Looking forward, new technologies and delivery platforms will create new opportunities for forward thinking companies to interact with their customers.

XyEnterprise Software Solution Suite includes:

Contenta: Contenta is a complete XML content management solution enabling dynamic content creation, collaborative review and approval, ready reuse, and rapid assembly of multilingual content components for automated publishing to multiple media. It manages document components at the appropriate level of granularity and scales to handle large collections of data. Contenta also provides an out-of-the-box DITA and S1000D solution.

XPP: XML Professional Publisher (XPP) is best-in-class software for high-end production publishing that demands quality formatting and rapid turnaround. An automated XML publishing engine, XPP can be used standalone, or integrated with Contenta or other content management systems for an end-to-end publishing solution.

ContentaView: ContentaView is a rich media delivery platform for publishing and delivering interactive, multimedia content via the Web or CD-ROM. Its powerful XML database brings XQuery and XSL techniques to bear to filter, search, and make the content accessible in many formats and configurations. A flexible web front-end helps

Component Content Management

users find what they are looking for, and works with the interactive content, even while recording and reporting back to the publishing house on *how* the content is being used.

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