XYLEME

Plugging Learning into Enterprise Content Management

Abstract

Today, most training organizations are forced to work in isolation with departmental learning content management systems that have little or no interoperability with wider enterprise content management initiatives. This prevents training professionals from effectively leveraging valuable content from other parts of the organization for training purposes. This results in:

- Duplication of development efforts and redundant versions of the same content.
- Manual processes for customization
- Inability to leverage content across global business units
- Increased translation and localization costs
- Lack of consistency with enterprise content

These limitations severely impact the role of the training organization within the enterprise by giving them little or no influence on defining the company's overall content strategy. But this is all about to change. Learning is benefitting from the next wave of ECM consolidation. Obstacles that currently make learning content management an island within the enterprise are being torn down and training is emerging as a critical service of the enterprise content management platform.

The Siloed State of Enterprise Content Management (ECM)

According to Forrester research, the worldwide ECM software market is expected to reach $3.9 billion in 2008. This demand for ECM as a must-have technology is due in large part to the efforts of knowledge management professionals who for many years have been preaching the importance of content applications to:

- Effectively manage enormous volumes of unstructured information
- Mitigate content-related risks
- Leverage content for use in business processes.[1]

There is no question that managing content more efficiently can lead to better decision making, improved regulatory compliance, and more effective customer experiences. However, the evolution of content management within the organization has put these benefits at risk. The reality is that although implementing a common content management infrastructure is ideal, most organizations, as Figure 1 illustrates, typically have several content management solutions in-use serving any number of departments, teams, divisions, etc. Gartner Research puts the average number of content management systems within an organization at eleven (11). The end result: numerous content silos dispersed throughout the organization that impede collaboration, user access to data, and content reuse across functions, brands, and products.

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[1] Forrester: *Topic Overview: Enterprise Content Management;* McNabb; Mar-08.

Figure 1: Content silos in the enterprise.

Learning is Just Another Silo — But Worse

So, what impact does the state of ECM have on the training function? A reasonable first reaction would be that learning is simply another content management silo experiencing the same collaboration, access, and reusability issues as other functions within the enterprise. Unfortunately, the reality is much harsher. The unique requirements of learning, many of which evolved from the early days of computer-based training, have resulted in a far more isolated set of systems and processes that have virtually no communication or interoperability with other content management systems within the organization.

Let's dig into this a little deeper. ECM development through the years has focused on strong workflow and collaboration functionality. Conversely, learning content management (LCM) has focused on how to migrate classroom-based training to e-learning, and delivering these on-line courses via standards unique to the training domain. ECM and LCM standards have evolved into two very different directions, making effective communication difficult or impossible. Two different content management systems can be connected through migration to a single content management system, off-the-shelf connectors, or federated repositories. We often see this type of connectivity taking place between marketing and support content management systems so that customer service reps can effectively leverage product assets to better serve customers. Unfortunately, the uniqueness of learning content (e.g. reusable learning objects), learning industry standards (e.g. SCORM), and other traditional LCMS functionality (assessments) make this type of connectivity significantly more difficult and hence the training organization more isolated.

This level of isolation can be detrimental to the training function; both in terms of their goals as an organization and their status within the enterprise. The problem lies in that training professionals have little or no influence on defining an organization's content strategy and therefore:

- Cannot effectively leverage content being used in other parts of the enterprise
- Are not contributors, but only consumers of shared content[2]

Figure 2: *How ECM silos can provide useful content to training.*

Figure 2 illustrates this point. Virtually every ECM silo within the organization contains content that is useful for training purposes. Unfortunately, the only way for training to "borrow" this content is to recreate another version of the content, resulting in duplication of development, increased maintenance costs, and content integrity issues that go along with maintaining multiple versions of the same content.

The question remains: **Is there a better way?**

Plugging into the Enterprise: Learning as an ECM Application

As Figure 3 illustrates, ECM has grown into a major software category through the consolidation of different point solutions including document management, Web content management, document imaging, records management, and digital asset management.[3] The good news is that learning is positioned to ride the next wave of ECM consolidation.

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[2] Chapman Alliance: *Reusability 2.0: At the Intersection of Learning and ECM;* Chapman; Apr-08.
[3] Forrester: *Topic Overview: Enterprise Content Management;* McNabb; Mar-08.

Figure 3: Learning as the next wave in ECM consolidation.

By integrating learning into this ECM environment, learning is no longer stored in separate and isolated infrastructure within the organization. In fact, it's not in its own infrastructure at all anymore. Rather, it's another application that sits atop the ECM platform and leverages the full breath of ECM functionality, thus breaking down the barriers that currently separate LCM from the enterprise. Specifically, a learning application that:

Eliminates learning content silos

Learning as an ECM application utilizes the content and media repositories of the ECM platform rather than the current practice of separate repositories for training content. This content integration goes a long way in achieving a major goal of training organizations which is to provide access to critical content at the point of performance. For example, tech support materials, used primarily by end customers, are now housed with training content and can therefore be easily leveraged as part of software application training. In this type of scenario, the training organization not only better meets their own objectives but they also begin to contribute to the overall goals of the enterprise by putting relevant content to use for business people and business processes. When LCM is an island, the latter is unachievable.

Leverages best-of-breed ECM functionality

The ECM market, at $3.9B, is a far more mature industry than LCM, which had its start in 1999 and whose market size is estimated at around $150M. Therefore, it can be effectively argued that when it comes to general content management functionality such as workflow and collaboration, ECM systems have stronger and more robust capabilities than LCM systems. But because LCM tools currently operate in isolation, vendors must continue to rely on their own development of content management functionality, essentially "recreating the wheel." Unfortunately, this is functionality that will never be utilized outside the training departmental level, thus inhibiting the ability for training professionals to be key contributors of shared enterprise content.

Learning as an ECM application understands that the enterprise content management market has a mature set of best-of-breed tools that can easily handle

a large portion of training's content management requirements. Therefore when learning is an application, training personnel leverage the same ECM application used by the rest of the enterprise. In this scenario, learning content management vendors now focus their limited research and development resources only on functionality that is unique and critical to the training industry, including:

- Support of key training standards such as SCORM, Common Cartridge, and QTI
- E-learning functionality such as assessments, adaptive sequencing, and interactivity
- Multiple delivery formats (print materials, web courses, mobile applications, etc.)
- LMS integration

This set of learning functionality is simply integrated with the existing ECM application rather than sitting on a separate platform. This provides a number of key benefits to key constituencies:

- **Training professionals:** Significantly lowers implementation and maintenance costs for learning content management.
- **LCM vendors:** Improves training functionality offered by eliminating the need for general content management development.
- **ECM vendors:** Extends their best-of-breed services offerings to include learning content management.

Can transform training via Web 2.0

The rate with which companies are adopting Web 2.0 technologies is growing at a rapid pace, with tools such as blogs, wikis, and podcasts becoming more common across the enterprise and integrated into broader business practices. As Figure 4 - from the second annual McKinsey Global Survey - illustrates, while organizations deploy Web 2.0 tools for a wide range of uses, the impact on learning has been substantial with Knowledge Management and Training reporting some of the highest usage rates at 83% and 71% respectively.

Figure 4: Use of Web 2.0 technologies

Source: McKinsey Global Survey Results, Building the Web 2.0 Enterprise

Given these statistics, it becomes clear why Web 2.0 is such a hot topic in the training industry today and why so many learning technology vendors are quickly throwing their hats into the Web 2.0 ring. Unfortunately, what is not broadcasted so enthusiastically is that satisfaction with these technologies is often lagging. McKinsey goes on to report that only 21 percent of enterprises utilizing Web 2.0 tools are satisfied with their use. Furthermore, there is a correlation between usage and satisfaction: for the companies that reported the highest level of satisfaction with their Web 2.0 deployments, more than half of all employees are using them. For all others, it's about one employee in four.[4]

Learning as an ECM application provides three critical success factors for Web 2.0 adoption that do not exist when learning operates in isolation:

- It allows Web 2.0 tools to be integrated into existing enterprise workflows, not just workflows for creating training materials.
- It allows training to launch Web 2.0 in conjunction with other company-wide strategic initiatives, not just learning initiatives.
- It allows senior managers from multiple functions – not just the training function – act as role models for adoption.

Today, the ultimate goal of Web 2.0 initiatives for many organizations is to transform the way their companies organize and manage themselves, their customers, and their partners – what the market is quickly referring to as *Enterprise 2.0*. This means that simply deploying Web 2.0 tools at departmental (e.g. training) level will most likely not have the desired impact in terms of adoption rates. Rather, statistics show us that Web 2.0 initiatives must be done, or eventually extended, at an enterprise level. When learning operates in isolation with their own set of Web 2.0 tools, adoption of these tools at an enterprise level is difficult, if not impossible to achieve. However, learning as an application simply utilizes the same Web 2.0 tools the rest of the enterprise is leveraging, making adoption seamless, painless, and most importantly, sensible for the rest of the organization.

It's clear that learning as an ECM application eliminates the need for the training organizations to work in isolation from the rest of the enterprise. But what impact does this have on the overall business of an organization?

Tech Docs and Learning Standards: Unlocking their Interoperability

When organizations examine their content development and management strategies, they more often than not come to the conclusion that adopting a technical content standard is a critical step towards reducing inefficiencies. However, as these organizations begin to examine the benefits of these content standards in relation to their critical business goals, they overwhelmingly discover the need to adopt more than one. While there are a multitude of standards, the two

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[4] McKinsey Global Survey Results: *Building the Web 2.0 Enterprise;* Jun08.

most prevalent today in the fields of training and technical documentation are SCORM and DITA. They are defined as follows:

SCORM (Sharable Content Object Reference Model): XML-based specifications for web-based e-learning used to define communications about learning objects so they can be easily shared among different learning management systems (LMS). SCORM 2004 introduces an important standard for sequencing, which is a set of rules that specify the order in which a learner may experience learning content.

DITA (Darwin Information Typing Architecture): XML-based specifications for authoring, producing, and delivering information. DITA divides content into small, self-contained topics that can be reused in different deliverables. The standard specifies three basic topic types:

- Task – a procedure that describes how to accomplish a task.
- Concept - objective information containing definitions, rules, and guidelines.
- Reference - reference material that usually contains detailed, factual material.

The information contained in an organization's technical documentation is critical to the training organization, especially as it relates to improving workforce readiness through just-in-time performance support tools. Unfortunately, keeping e-learning materials and technical documentation consistent and up-to-date has so far been an elusive goal of the training function.

This is because when learning operates in isolation from enterprise content management, training materials are created separately from technical documentation and stored in separate silos. This duplicates development efforts and creates multiple versions of content that are increasingly difficult to keep synchronized. Compounding these delays is the fact that content must constantly be reworked between the two standards. For example, when preparing engineering information for educational materials, an instructional designer must incorporate granular topic-based information into reusable learning objects, a process that can be both frustrating and costly.

Learning as an ECM application bridges the chasm between industry standards by allowing multiple content standards to be applied to a single source of trusted content. This type of solution fully integrates previously separate content development processes for learning and technical documentation to drastically improve content sharing and reusability.

Today's technical content standards are all XML-based frameworks. Therefore, to fully leverage their potential, learning as an ECM solution is taking on the following characteristics:

A Single, 100% XML-based Content Repository

To fully leverage the reuse, customization, and multi-channel publishing advantages of XML content, content must be stored in its native XML format. Large ECM vendors like Documentum understand that only native XML content repositories – rather than traditional relational databases – provide the flexibility necessary to

store content at the level of granularity required by complex content applications.[5]
As a result, Documentum has recently added a high performance XML Store to their product offerings. Other major ECM vendors are expected to follow suit.

Unfortunately, with the exception of a few vendors, providers of LCM solutions have never fully incorporated XML into their offerings. Content reuse requires XML, and until now the majority of LCM vendors have maintained their own proprietary content models and formats, rather than embrace this now ubiquitous standard. This goes a long way in explaining why the concept of reusable learning objects (RLO) is commonly met with a healthy dose of skepticism in the training industry. Conversely, we've seen technical documentation experience tremendous efficiency gains by reusing XML-based content topics across a wide range of publications.

Learning as an ECM application automatically eliminates this disparity by leveraging the native XML store of the ECM platform. This allows the same exact content to be used for topic-based technical documents and SCORM-based e-learning courses, as well as other prevalent industry standards.

Flexible Metadata Tagging

Content stored natively in a native XML format allows organizations to facilitate and improve upon these approaches because it allows a single source of XML content to be tagged in multiple ways. For example, instructions on how to safely reboot a server can be tagged as both a reference topic to be used in printed manuals and also as part of a SCORM-based e-learning course. This eliminates the need to create separate versions of the content for different audiences and outputs and gives the content developer total control over the content, regardless of the standard. Furthermore, now that content assembly and distribution is driven by the metadata assigned to the content rather than separate content versions, automatic synchronization across training products and technical documentation is guaranteed.

Tagging content for multiple standards takes an up-front investment to:

• Determine the level of granularity needed to create different products required
• Choosing a small and finite set of metadata that accurately represents content products
• Creating authoring templates for each product so that metadata tagging is automatic

While this type of planning inevitably involves a set of change management challenges, the efficiency, compliance, and competitive advantage gains far outweigh the cost of this up-front planning.

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[5] The explanation of native XML content repositories goes beyond the scope of this paper. Please refer to Xyleme whitepaper: *XML for Content Management: Exploiting the Full Value of Enterprise Information* for more information.

Enabling Content Globalization

The push towards multinational business has changed the way organizations must deal with their content assets. The sheer volume of content, data, and information required to run a business is already overwhelming and increases exponentially with global expansion. Unfortunately, while most companies recognize the need to address localization and translation in tandem with content creation and management, they are often overwhelmed with how to achieve this.6 In their study entitled *Multilingual Communications as a Business Imperative*, the Gilbane Group finds that one of the main obstacles to effective content globalization is the lack of integration and interoperability across authoring, content management, localization/translation, and publishing components. Instead, ad hoc, siloed approaches are the norm, where localization and translation are omitted as part of the core content lifecycle. As a result, organizations cannot keep up with prospect and customer demand for relevant content in multiple languages, significantly impacting sustained, competitive advantage.

Learning as an ECM application helps put localization and translation practices into the larger view of enterprise content management and strategy rather than siloed in a separate learning content management system. When content is created and stored as XML in a central enterprise content repository, it provides a single source of content that can be immediately delivered to and securely accessed by a globally dispersed audience. More importantly, it supports the concept of relevancy: content in the language of the intended receiver, content that's pertinent to the intended message, and content that's consistent with the global brand. It accomplishes this via:

- Workflows that integrate content management functionality with translation management solutions for localization at the authoring stage rather than after-the-fact.
- Flexible metadata tagging that enables content to be filtered based on the needs and profile of the end user.
- Publishing templates that allow the same piece of XML content to be automatically published through any desired channel to meet the varying capabilities of worldwide locations.
- Content reuse that ensures consistent and timely messaging to a global audience.

Conclusion

Training plays a critical role in organizations: it maximizes organizational performance by ensuring that critical employees have the information they require to effectively do their jobs. For the vast majority of companies, this training material comes from many sources throughout the enterprise, is constantly changing, and needs to serve a global audience. In this dynamic environment, an isolated set of learning technologies and processes can significantly hinder the training organization from effectively meeting their goals. Recognizing this, today more and more top enterprises are choosing to integrate their learning content management systems and processes into the wider ECM ecosystem. Doing so allows organizations to capture critical content in a way that makes it searchable, reusable, and able to be repackaged across multiple contexts and audiences, thus moving learning to the forefront of enterprise content management.

About Xyleme

Xyleme, Inc. is the leader in standards-based learning solutions that enable the personalized delivery of training content. Xyleme's suite of products is powered by Xyleme LCMS, a 100% XML-based single-source platform. It provides the industry's most efficient content development platform for the rapid reuse of content across all types of print, eLearning, tablet and mobile outputs.

The Xyleme™ product suite also includes Bravais™, Xyleme's cloud-based solution to deliver personalized learning to any device. Pastiche® is Xyleme's end-to-end solution for rapidly deploying interactive and privately branded iPad or Kindle Fire apps.

The adoption of the Agile Development framework enables the release of new Xyleme LCMS, Pastiche and Bravais versions every three months compared to the industry standard of 12 to 18 months.