

Web Content Management (WCM): Overview and Specifications

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Abstract — One of the hottest topics that emerged these days on the field of e-Business is the Web Content Management (WCM). WCM technology holds the promise of facilitating the everyday operation of many enterprises and organizations. As a result, many organizations are focusing on this area trying to find how they can maximize their benefits by having such a system. In this paper, an overview definition on what is Web Content Management (WCM) and benefits on having a WCM within an organization are given. Also, content services of WCM is addressed, and elaborate on criteria's and specifications of selecting WCM solution.

Index Terms — Web Content Management (WCM), e-Government, ICT, Workflow.

I. INTRODUCTION

Businesses are faced with an ever-increasing demand to improve how their Web properties service their customers, partners and employees, and how the Web becomes a competitive advantage – especially the online experience. It was only 10 years ago that Yahoo founder Jerry Yang posted Jerry's Guide – a static listing of 500 sites that made up the World Wide Web. Since then, customer adoption and the underlying technology have evolved at lightning speed. From the browser wars of 95, to the introduction of the portal server in 1998, and finally e-Commerce crossing past the \$100B mark in 2004 for North America. Since then the incorporation of web-enabling capabilities into applications where WCM technology could be used as it promises the facilitating of web properties services. [6] This paper is organized as follows: the first section introduces briefly an overview about Web Content Management (WCM). Then, light will be shed on benefits of having WCM within an organization. Also, content services of WCM is described and discussed. Finally, criteria's of selecting WCM solution are given.

II. WEB CONTENT MANAGEMENT (WCM)

Web content management (WCM) systems are used to create, manage, store and deploy the content of Web pages through the use of specific tools. Web Content Management (WCM) could be defined as the software

that enables the collection, assembly, staging, maintenance and delivery of textual and graphic content for the primary purpose of disseminating information via the web [3]. The standard definition of WCM includes

both a staging and delivery component. Here are the basic WCM features and capabilities [8]. [10].

- 1- **Authoring.** Web content may be created from scratch or reused from another document. One goal of a WCM system is to keep the role of content creation, which is purely an editorial function, separate from the design or format of how it will appear on the Web site. This enables content owners in the relevant business units to create content freely without knowing HTML or any Web technologies.
- 2- **Workflow.** Workflow moves components through a pre-defined cycle of creation, revision, approval and deployment. A workflow process can be initiated by a human, an event or by other triggers, such as the passage of time. Each step in the workflow can be done by a person or an automated process. Content itself can be produced by an automated application and then moved to the next station in the workflow.
- 3- **Metadata.** Metadata is comments about the content. It may be added to the content programmatically or by an author or editor. It can appear as a style sheet linked to the content object or as tags embedded within it, or a combination of the two.
- 4- **Templates.** A design template lets users put text or graphics onto a blank form, or may reformat content ingested from an office document. The template then automatically "marks up" the content with HTML instructions according to pre-defined rules. This gives a common look and feel to the site and enables the separation of form and content — a key concept for enabling easy content reuse. When a design change for the site needs to be

implemented, a template change can alter the look and feel of the entire site without the need to revisit each Web page manually and change static HTML.

- 5- **Change Management.** Change management controls not only content but code changes on the site as well. This is critical as business logic can be as important as unstructured content in the success of the Web site. Change management requires identifying issues, such as the content to be updated, the preset schedule and other update processes. A key function of the WCM is to provide maximum flexibility for updates.
- 6- **Deployment and Replication.** Replication transfers content from the WCM system to the Web servers; replication transfers content between servers and enables site mirroring. The most basic way of moving content from testing or staging systems to production servers is to FTP them; however, this is an unmanaged transfer. A basic deployment server can schedule and track transfers to balance workloads and ensure consistent content across multiple sites or servers.
- 7- **Dynamic Content.** Dynamic content means that content can be delivered to pages programmatically without human intervention. For example, time-to-live counters can be set to move content off of a home page and place it in another section of the Web site. Content can also be aggregated from live data feeds and continuously updated on a page. More-sophisticated systems may assemble or aggregate content at runtime to specific visitors on request, or based on their characteristics or behavior.

III. BENEFITS TO AN ORGANIZATION

Clearly the Web has long proven itself as an extremely effective tool to service organizations, partners and employees. So the renewed issue is more around operational excellence of the developed Web sites and portals. Organizations are looking at how they can transform their Web initiatives from operating expenses to performing assets. Interestingly, organizations are just beginning to transform their web properties from "brouchure-ware" to an extension of their business objective. Recently, Verisign surveys that 94% of the organizations (the global is 2000) who register their domain names with Verisign still have static Web content. The remaining 6% are demanding their Web Properties will help delivery on their key objectives. [1], [3], [5], [7]

1. *Self-Service.* The Web has become an extremely effective tool to cut service costs and improve overall

customer loyalty. In a recent Gartner report, the average service request handled over the Web is less than \$1, while a telephone (customer service reps) costs over \$32. It is not only does self-service reduces costs but also drives customer satisfaction.

2. *Top-line growth.* With the rebounding of the economy, organizations are now again focusing on growth and revenue. E-Commerce for instance has hit a tipping point this year in the US, crossing over the \$100B mark. The Web as an alternative revenue channel is real, and that's why we see a large investment by organizations who transact business over the Web. IDC predicts that IT spends on the Web for Retail and CPG organizations to increase by more than 10% in 2004. Alternatively, IT budgets in general are predicted to increase by less than 2%.

3. *Operational excellence.* Along with the maturing of the Web, maturing of Web Content Management systems, in fact most global 2000 have at least one WCM packaged software. According to Gartner, over 70% of the Global 2000 have adopted WCM system. However, less than 20% are using it strategically. Today's focus is on operational excellence for the Web and the right WCM tools to drive their business objectives. The right WCM system is proven and they deliver results: improving productivity, both for IT and knowledge workers, reducing IT infrastructure costs, improving customer/employee communications and so forth. Secondly, organizations are demanding greater brand control. More than ever organizations are trying to ensure their overall brand experience is reflected by their Web proprieties. Organizations are incorporating much greater rich media, globalization, self-service and personalization to drive customer experience.

IV. CONTENT SERVICES OF WCM

The first step in WCM is to collect the relevant content and add it to the corporate content repository. Content comes from a variety of sources, both internal and external to an organization [6]. Then, content files will be stored natively in all known formats, including rich media or compound formats. Each item in the repository is protected by powerful and flexible security called Access Control Lists (ACL). It controls who can access the content and the level of access each party has where content can be encrypted in the repository or when it is delivered to a user. WCM is responsible for managing links between related content and treats content in multiple formats as part of a single document, called a compound document or virtual document. Finally, assembly and publishing services can be integrated with popular commercial word processors

TABLE I
COMPREHENSIVE AND UNIFIED CONTENT SERVICES

Create\Capture	Manage	Content Services	
		Deliver	Archive
<ul style="list-style-type: none"> • Authoring • Importing • Aggregation • Imaging • Ingestion 	<ul style="list-style-type: none"> • Content Intelligence • Transformation • Process Automation • Library Services • Virtual Repository Services 	<ul style="list-style-type: none"> • Publishing • Web Delivery • Portal Delivery • Content Distribution • Streaming • Dynamic Personalization of content 	<ul style="list-style-type: none"> • Records Management • E-Mail Archiving • Final Form Storage

and publishing tools. Table 1 summarizes content services. [11]

V. EXISTING WCM TOOLS

In the beginning of this year, 2007, many changes have been introduced in WCM tools [2]. WCM vendors put new business drivers and directions for WCM objectives. They have reduced their focus on the "back end" of the WCM workflow: the authoring tools, repository management and library services are largely commoditized, with the exception of metadata, which is becoming more significant. They are increasing their focus on the delivery of content, using metadata and analytics to do so in a targeted way. They are also focusing less on the content itself and more on how people use it. User definition in the WCM context is changed. Traditionally, "user" meant a logged-in user of the WCM system itself; that is, a content contributor. Increasingly, however, "user" means the Web-site visitor, the content's ultimate audience. And with that user now a participant as well as a reader, business units are looking to their WCM systems to enable high-level external processes such as marketing. Today, WCM leadership requires capabilities that take full advantage of the Web as a medium. A product may be perfectly good for creating and deploying static HTML pages, but unsuitable for a very interactive site that requires personalization or other dynamic functions. The following are some of the existing tools in the market been evaluated:

1- EMC:

EMC Documentum Web Content Management Edition provides an enterprise approach to effectively deliver the content that supports relationships with customers, partners, and employees. It provides solution for organizations that are struggling with content creation, management, and publishing challenges across a myriad of disparate systems, including traditional document management repositories, legacy systems, digital asset management systems, XML repositories, internal and

external websites, and other knowledge management systems. One advantage of a full-spectrum ECM product is that it brings full life cycle management to Web content without transporting it to another application; for example, most WCM products would require a third-party product to automate the archiving of site content in a fully compliant records archive. Gartner Inc. doesn't recommend Documentum for stand-alone WCM applications in the absence of a broader ECM requirement [2]. It is most likely to recommend Documentum WCM for current Documentum users who want to add WCM [2].

2- Open Text:

Open Text acquired Hummingbird, and with it the leading Windows WCM vendor, RedDot, now a solid enterprise player with cross-platform technology. To move into the Open Text base, RedDot needs to rationalize the technology of its core CMS module with Open Text's signature Livelink suite, as it had previously done with Hummingbird. The combination of these two companies creates an industry leader at the high end of the Positive category, despite market-wide factors that have pushed all the vendors into a narrower band of ratings [2].

3- Microsoft:

Microsoft Office SharePoint Server (MOSS) 2007 WCM technologies are built on Windows SharePoint Services 3.0. It includes a horizontal workflow engine and XML as a foundation data type. It was only released to the market last year, 2006, and have been evaluated with no field reports about its performance under production conditions. Gartner Inc. is impressed with Microsoft's vision for this product and the architecture in which it is positioned, and they project that SharePoint technologies will be used by many enterprises globally during the next 18 months [2].

VI. CRITERIA'S OF SELECTING WCM SOLUTION

The maturation of the WCM market makes productive comparisons among vendors challenging. Features have become commoditized which points out that all vendors are closely grouped in this area. Where WCM solutions differ is in the depth of feature capability and vendor's long-term viability and ability to innovate. Yet even this type of evaluation can be frustrating. Therefore, this section highlights the criteria's need to be considered in selecting WCM solution. These criteria's offer a broad feature set, supporting a wide variety of corporate functions. At a minimum, these include: Authentication of users (authors, editors and reviewers) and assignment of permissions. The following criteria might help in selecting the right WCM solution:

1- The Vendor:

In the IT world the technology is evolving so fast that it is hard to keep up with it so the most important piece when choosing a WCM solution is the vendor because it can mean life or death to your WCM product. It is important the vendor send clear and effective message to the market about their product, predict or follow market dynamics and user trends, vertical or functional solution strategy, capabilities in all pre-sales activities and the structure that supports them, Deal management, pricing and negotiation, pre-sales support and the overall effectiveness of the sales channel. The vendor should anticipate price trends. Eliminate vendors with a one-size-fits-all approach. Keep in mind that service heavy vendors may face more competitors, have lower margins and be more vulnerable to staffing pressures. Also, the vendor must well handle client relationships to help make customers successful with their products. Also, the vendor's ability to effectively implement known technology, direct resources, skills and offerings to geographies outside the "home" or native location.

2- Product/Service:

The product should evolve to meet customer needs. Because their lots of product out their, one of the key item in a WCM products is integrating with other products. The product inventory must granular enough to meet a broad range of customers need. A full-spectrum evaluation of the product functional performance, installation, interface, adherence standards, development capabilities, modularity extensibility and platform compatibility should be done.

3- Customer Experience

Learning for the vendor's customer also important because we can know the effeteness of the vendor handling client relationships to help make

customers successful with their products Technical or sales support repetition and helping the customers in resolving their problems.

4- Overall Viability (Business Unit, Financial, Strategy, Organization).

An assessment of the vendor's financial health, the success of the product's business unit, and the likelihood of continued investment and support for the product. Includes financial stability; staffing levels; management quality and turnover; revenue and profitability; installed base; brand value; growth rate; market performance, for public companies; partnerships; long-term plans and strategies.

5- Innovation

The new ideas have been introduced and percentage of revenue is devoted to R&D. Addressing new standards and technologies. Successful innovation is in part a response to effective market understanding, implemented in a market-driven product strategy. Leaders need to make room for innovation with all of above factors in their business models and overall corporate governance.

VII. CONCLUSION

WCM specifically supports the creation, storage and delivery of content to be published on a Web site. It includes an authoring tool, which is generally browser-based, for creating content without regard to its HTML format; workflow sufficient for a few people to review, edit and approve the author's work; a library of templates that add the necessary HTML formatting to the empty content; and a mechanism for delivering the finished, formatted content to the Web site. Users can check out and edit the content, using standard library services to provide file security and version control. Last section of the paper listed a number of WCM evaluation criteria's. Finally, if the reader of this paper get involved on selecting a WCM for his organization, make sure that at least all mentioned criteria's and specifications are exist. Compare mentioned criteria's with what you have. Not only this, make sure that once you select something you will find enough support from different places and not limited to the system vendors only.

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