Integrative Document and Content Management Systems’ Architecture

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**INTRODUCTION**

**Purpose**

This paper discusses the benefits of managing digital content (business documents and Web content) within the context of an integrative information systems architecture. This architecture incorporates database management, document and Web content management, integrated scanning/imaging, workflow, and data warehousing technologies.

**Business Context**

The ubiquitous use of digital content (such as office documents, e-mail, and Web content) for business decision-making makes it imperative that adequate systems are in place to implement management controls over digital content repositories. The traditional approach to managing digital content has been for enterprises to store it in folder structures on file or Web servers. The content files stored within folders are relatively unmanaged, as there are often inadequate classification and indexing structures (taxonomies and metadata), no adequate version control capabilities, and no mechanisms for managing the complex relationships between digital content. These types of relationships include embedded or linked content, content renditions, or control over authored digital documents and published Web content.

In some cases enterprises have achieved a form of management control over hard-copy documents that are records of business transactions by using database applications to register, track, and manage the disposal of physical files and documents. These types of file or document “registers” do not provide adequate controls over the capture, retrieval, and accessibility to digital content.

This deficiency has led to many organizations seeking solutions, such as document management systems, to manage digital business content. Document management systems have generally been implemented to meet regulatory compliance within the context of document record-keeping requirements or management of digital archive collections. Otherwise, they have been implemented as solutions for managing specific types of content objects, such as ISO9001 quality management system documentation, engineering drawings, safety documents, and similar.

More recently, organizations have sought to acquire Web content management systems with the view to providing controls over digital content that is published to Web sites. The imperative for such a solution may be a commercial one, motivated by product-to-market visibility, customer service, and profitability. There may also be a response to compliance needs, motivated by managing Web content in the context of “record keeping” to satisfy regulatory or governance requirements.

The methodology of implementing document or Web content management systems has often been based on a silo approach, with more emphasis on tactical business imperatives than support for strategic enterprise information architecture initiatives. For example, organizations may attempt a Web content management solution without taking into full account digital documents that may be used to create content outside the constraints of Web-compatible formats such as XML-defined, but which are subsequently required for publication. Thus, document and Web content management may be viewed as discrete solutions, and business applications may be implemented without an integrative approach using workflow and systems for managing both business documentation and Web content.

Another example of a silo approach is the deployment of database solutions without cognizance of document or Web content management requirements. For example, organizations may deploy a solution for man-
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Managing contracts, including database application capabilities for establishing the contract, recording payments and variations, and managing contract closure. However, the management of contract documents may not be viewed as an integral part of the application design, or the workflow review and approval, or managing the published contract materials on Web sites. The result is that users often miss vital information rather than manually relate data retrieved through a number of separate applications.

There are compelling reasons for organizations, as they address the constructs of enterprise information architecture, to consider the management of digital content within the context of an integrative approach to managing business documents and Web content. The strategic rationale for such an approach encompasses the following types of business imperatives:

- Customer satisfaction is a key commercial driver for both business and government: in the case of the commercial sector, the need to attract and retain customers, and in the public sector, the need to support government initiatives directed at taxpayer benefits. Organizations are adopting strategic approaches such as single view of customer and one-source solution for customer information, invoking the use of information knowledge management tools.

- Speed and quality of product to market is another major business driver. The rapid adaptation of the WWW and e-commerce systems to support online business transactions opens markets to global competition. Commercial enterprises are not only required to deliver product to market rapidly, but also within quality management constraints, to attract and retain customers.

- Regulatory imperatives, such as Sarbanes-Oxley in the United States (U.S. Congress, 2002) have introduced new measures for creating greater transparency within organizations, which impact corporate governance and require disclosure with real-time reporting requirements.

The enterprise information architecture would include information policy, standards and governance for the management of information within an organization, and provide supporting tools in the form of an integrative information systems architecture as the platform for managing information. An integrative systems architecture would provide a platform that enables businesses to meet the challenges of both commercial and regulatory imperatives, benefit from reusable information, and provide a coherent view of relevant information enterprise-wide to authorized users.

In respect to document and Web content management, an integrative document and content management (IDCM) model (Asprey & Middleton, 2003) offers a framework for unification of these components into an enterprise information architecture. The model features the management of both documents and Web content within an integrative business and technology framework that manages designated documents and their content throughout the document/content continuum and supports record-keeping requirements.

**SCOPE**

The core IDCM elements that address document and Web content management requirements (capturing content, reviewing/authorizing content, publishing content, and archival/disposal) comprise:

- Integrated document and Web publishing/content management capabilities.
- Integration of document-imaging capabilities.
- Recognition technologies, such as bar codes, to assist with capturing document information or conversion of image data to text as a by-product of scanning/imaging.
- Enterprise data management capabilities.
- Workflow.

However, when determining requirements within the context of process improvement initiatives that help to address business imperatives (such as customer satisfaction, product to market, and regulatory compliance), these capabilities might be supported by other technologies. This technology support may help businesses to achieve an integrative systems architecture for deployment of innovative and integrated solutions.

- Universal access/portal, which allows users to invoke functions and view information (including digital content) via a Web-based interface.
- Integration with business systems, such as enterprise resource planning (ERP) systems, human resource systems, financial systems, and vertical line of business systems.

These types of capabilities, when combined, augment an integrative systems architecture to support the development of solutions that take advantage of digital content in managed repositories. Users that access business information then have the confidence that they are accessing, retrieving, and printing the most current
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