

Content Management in Organizations

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INTRODUCTION

Content management may be characterized as “*a variety of tools and methods that are used together to collect, process, and deliver content of diverse types*” (McIntosh, 2000, p. 1). At least three differing approaches on content management may be identified: 1) Web content management, 2) Document management, and 3) Utilization of structured documents.

The Web has become a widely used, yet more complex platform for disseminating a portion of organizational content. Hence new means for creating, publishing and managing content on the Web have been sought (Grossniklaus & Norrie, 2002). A great deal of current research efforts (e.g., Boiko, 2002; Grossniklaus & Norrie, 2002; McIntosh, 2000; Weitzman et al., 2002) are targeted specifically for Web content management. The underlying approaches and conceptual base used can be traced to electronic publishing (e.g., Boiko, 2002), and to database-oriented approaches (e.g. McIntosh, 2000). Continuous adoption of new technologies and system versions (Balasuramanian & Bashan, 1998), and technology-driven development (Weitzman et al., 2002) are also characteristic to the Web content management approach.

Documents as identifiable units of content, flexibly structured for human comprehension (Murphy, 1998; Salminen, 2000), have traditionally been considered as containers for organizational content. Research on document management in organizations has included a multitude of focuses, from document standardization (Salminen, 2000), document metadata (Murphy, 1998), and requirements elicitation (Lyytikäinen, 2003), to document and information retrieval (Blair, 2002). Approaches and methods, such as the Stair Step method (Koulopoulos & Frappaolo, 1995) and the RASKE methodology (e.g., Salminen, 2000) have been developed. The wide selection of document management systems available (Doculabs, 1998) includes systems that are evolving towards content management (Medina, Meyers, Bragg, & Klima, 2002). The essential features of document management systems cover:

- library services and version management,
- management of user roles and access rights,
- support for document life-cycle and related workflows,
- management of *metadata*, as information about documents, and
- multichannel publishing for a multitude of devices and print.

In *structured documents*, such as documents defined by Extensible Markup Language (XML; Bray, Paoli, Sperberg-McQueen, Maler, & Yergeau, 2004), the content itself, the logical structure, and the visual layout for the content are separated from each other and made visible both for humans and computer software by using markup delimiters. The logical content is described as a hierarchy of named elements and associated attributes. A *Document Type Definition* (DTD) or an *XML schema* (Fallside, 2001) may be used to define the markup vocabulary and the structure for a class of XML documents. The research on structured documents has principally focused on document grammars and transformations (Lindén, 1997), assembly (Heikkinen, 2000), and schema design (Maler & El Andaloussi, 1996). XML standardization in organizations (Salminen, 2000), and Enterprise Application Integration (Linthicum, 2000) have also been studied. For content management, the structured documents provide means to access logical content units that are portions of contents within documents, and to separate the content from its layout properties.

BACKGROUND

Challenges on content management in organizations include finding the right focus, breadth and width for content management development with the limited resources available. A content management development project may cover the bulk of content used in an organization (e.g., Karjalainen, Päivärinta, Tyrväinen, & Rajala, 2000; Munkvold, Päivärinta, Hodne, & Stangeland, 2003),

it may be focused only to a specific set of documents and related content (e.g., Honkaranta & Lyytikäinen, 2003; Honkaranta, Salminen & Peltola, 2005), or to a certain process, such as multichannel publishing (Boiko, 2002). In practice, a number of variations of content management focuses exist. An organization may need to combine research findings and technologies, and overcome the deficiencies of the diverse approaches developed for content management. The limitations of the approaches are discussed on the remainder of this section.

The Web content management approach focuses on the multichannel and Web content publishing. This approach suffers from immature systems and fast technical evolution, which make the approach laborious to adopt for organizations. The complexity on systems and technologies may consume a great deal of resources, causing that social aspects of content management may be overlooked. The conceptual base for the approach is inconsistent and immature (Grossniklaus & Norrie, 2002). Differing terms, such as object, component, content item, and content unit, may all be used to refer to the content. The phases of a content life-cycle may be overloaded with a myriad of concepts which are new to the people in an organization. For example, according to McIntosh (2000, p. 1), a content life cycle consists of three main phases; 1) content assembly, 2) content production, and 3) content delivery, whereas Boiko (2002) utilizes concepts such as content acquisition, aggregation and metatorial processing. The lack of a concise conceptual base may hinder requirements elicitation and cause communicational breakdowns between system analysts and the people in an organization.

Applicability of document management approach and systems for content management have been limited by orientation towards managing content as document units only. For example, long documents are difficult to browse thorough, portions of document content may need to be reused in other documents, and long documents are inconvenient for Web delivery (e.g., Honkaranta, Salminen & Peltola, 2005). These factors have resulted in a trend towards use of smaller units of content than that of a document. Contemporary document management systems include limited capability to customize workflows for complex life-cycles of organizational content and for incorporating enhanced or multiple metadata standards. Document management software may have a limited functionality for design and management of a Web site of an organization. Despite the aforementioned deficiencies, document management approach and systems developed may provide a consistent base for content management development.

The benefits of the use of structured documents and related technologies have lately been recognized and adopted by both document management and Web con-

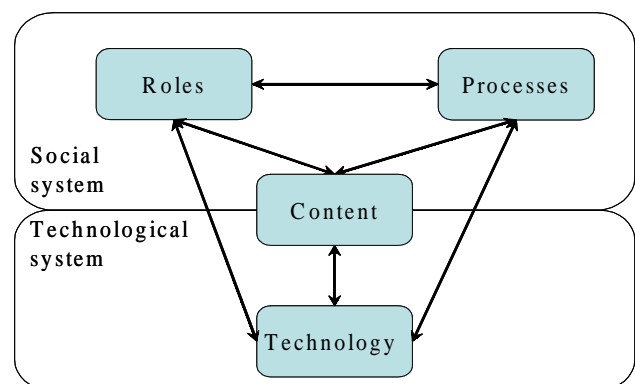
tent management approaches. Yet the use of XML poses multiple challenges. Even though there are systems and tools for managing XML documents as files or within databases (e.g., Bertino & Catia, 2001; Chaudhri, Rashid, & Zicari, 2003; Salminen & Tompa, 2001), the level of support for XML in document and content management systems is varying, and mostly missing from commonly used office software. In addition, developers lack knowledge about research findings and practical experience on adaptations and implementations of XML and related technologies in real-life organizations (e.g. Fahrenholz-Mann, 1999; Karjalainen & Tyrväinen, 2001; Salminen, 2000, Weitzman et al., 2002) since these are yet rarely reported.

ASPECTS AND CONCEPTS FOR DEVELOPING CONTENT MANAGEMENT IN ORGANIZATIONS

Content management in organizations is deeply intertwined with organizational work. Therefore development of content management should include the aspects of organizational work on which content is used and produced. We propose a framework for content management that includes both the technological and social system of an organization, allowing content management to be analyzed and evaluated from both aspects. The framework originates from the Leavitt's (1965) seminal framework for analyzing organizational change, and from contemporary research and empirical work. Figure 1 illustrates the framework while the rest of the chapter discusses the components of the framework and related concepts for content management development.

In the figure, the *social system* consists of processes and roles of people on the organization. Content is posi-

Figure 1. Framework for analyzing organizational content management



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