Chapter IX

Ontology-Supported Web Content Management

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Abstract

This chapter introduces the ontology-supported Web content management. Since the Web was regarded as one of the most important tools for searching relevant information, many studies have been attempting to develop efficient and accurate management of Web content and resources. We have been focusing on how to exploit the ontology to support semantic conceptualization of information on the Web. Especially, the emergence of semantic Web emphasizes the importance of the ontological processes. In this chapter, we will mention content management systems on the semantic Web, and then, we will introduce two applications from viewpoints of personalized content and electronic commerce as case studies.

Introduction

With the emergence of the World Wide Web, it has become easier to access its information reservoir. However, each user has difficulties in managing the content material he or she has acquired from the WWW. People have to carefully consider their information space to be well organized. Not only personal problems on the client-side but
also the relationships between suppliers and customers on the business-side have changed. The US Department of Commerce estimates that online sales in the US for the year 2000 were around 1 percent of the overall sales figures. Even though this was only a small fraction of the overall business figures, the continued fast growth of online sales appears likely given the fact that the number of Internet users grew from 100 to 300 million between 1997 and 2000. Similar estimates are done for the business-to-business (B2B) area.

In order to handle these problems, much research has been introduced, such as the automatic content management system. Content management has evolved into one of the most important streams of management research, affecting organizations of all types at many different levels. The challenges of content management span everything from content identification and representation to the impact of content management systems on organizational culture and to the significant integration and cost issues being faced by human resources, MIS/IT, and production departments. Content management theories, models, systems, and applications abound — each dealing with some aspect of an increasingly complex field spanning organizational theory, strategic management, and information technology. These issues can be noted as follows:

- How to organize and structure contents
- How to analyze and conceptualize contents
- How to retrieve, reuse, and share contents

With an emerging semantic Web, meanwhile, ontology has become a major focal point. The concept of a semantic Web has excited researchers in areas ranging from distributed information systems to artificial intelligence. With the aspect of managing content on the Web, ontology can be regarded as one of the most effective methods to support the conceptualization of arbitrary contents.

In this chapter, we describe how to exploit ontology to manage Web contents and resources. We introduce two case studies that we have conducted on ontology-based resource management on the Web: personalization from user-specific content (Jung, 2002) and the comparison shopping mall system in electronic commerce (Lee, Ghose, Yu, & Jo, 2003).

**Ontological Approaches to Manage Web Content and Resources**

While ontology is philosophically defined as the study of what exists and what we must assume to exist in order to achieve a cogent description of reality, knowledge engineers have considered that ontology is a formal and explicit specification of a shared conceptualization (Gruber, 1993). This means that ontology plays a role in facilitating the construction of a domain model in knowledge engineering, by providing vocabulary...
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