

Editorial Preface

Special Theme Issue

Data Management for E-Business

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Over the last few years, there has been tremendous business growth in the area of e-business. We are pleased to present a special issue of the *Journal of Database Management* on the theme "Data Management for e-business". While the issue of data management in business is relatively mature, e-business imposes special demands, mainly because extensive amounts of data need to be made available across organizational boundaries to suppliers, customers and other external parties. This creates several issues at the managerial level, such as: a) how will the heterogeneity between data schemas across organizational boundaries be resolved, b) how will data quality be controlled, c) who in the organization will determine access rights to data, d) what are the security implications of exposing organizational data to the outside world, and e) how can intellectual property be protected when information is digitized?

The growth of the World Wide Web (WWW) and new standards allow us to provide novel answers to these questions,

at lower cost. One example is the hypertext markup language (HTML) standard which allows a universal point-and-click graphical user interface to users of data, thereby greatly simplifying the mechanism for providing access to the data and reducing the cost of system development. A second example is the extensible markup language (XML) standard that provides a low-cost method of allowing data exchange between heterogeneous systems, regardless of their underlying storage and access mechanisms. The formation of several XML-based data model definitions within domains as varied as science, engineering, business, and medicine represents an important trend in allowing data to be shared across the boundaries of organizations within these domains. Thus, while e-business presents several unique problems, emerging technologies can provide potential solutions to these problems as well. In this special issue, we present four high-quality research articles that utilize emerging technologies to

address some of the problems highlighted above.

The first paper, entitled “Data Protection Using Watermarking in E-Business” by Pons and Aljifri addresses the issue of the protection and authentication of digital data as it is distributed electronically. This paper proposes a novel approach that combines the reactive rule-based scheme of an active database management system (ADBMS) with the technology of digital watermarking to automatically protect digital data. The ADMBS technology facilitates the establishment of rules that define the actions to be triggered by events under certain conditions. These actions consist of the generation of unique watermarks and the tagging of digital data with unique signatures. Watermarking is a technology that embeds, within the digital data’s context, information identifying its owner and/or creator. The integration of these two technologies offers a mechanism to protect digital data in a consistent and formal manner with applications in e-business to establish and authenticate the ownership of images, and audio, video and other digital materials.

The second paper, entitled “Managing Data Quality in Dynamic Decision Environments: An Information Product Approach” by Shankar, Ziad and Wang addresses the issue of efficient data quality management. This paper presents a framework for managing data quality using the information product approach. It includes a modeling technique to explicitly represent the manufacture of an information product, quality dimensions and methods to

compute data quality of the product at any stage in the manufacture, and a set of capabilities to comprehensively manage data quality and implement total data quality management. The paper also posits the notion of a virtual business environment to support dynamic decision making and describes the role of the data quality framework in this environment.

The third paper, entitled “XML Integration and Toolkit for B2B Applications” by Nicolle, Yé tongnon and Simon describes a method to create business to business applications. It presents a web based data integration methodology and tool framework, called X-TIME. X-TIME provides a data model translator toolkit based on an extensible metamodel and XML. It allows the creation of adaptable semantics-oriented metamodels to facilitate the design of wrappers or reconciliators (mediators) by taking into account several characteristics of interoperable information systems such as extensibility and composability. X-TIME defines a set of meta-types for representing meta-level semantic descriptors of data models found in the Web.

The fourth paper, entitled “IAIS: A Methodology to Enable Inter-Agency Information Sharing In eGovernment” by Bajaj and Ram, addresses the issue of data sharing between government agencies. The work proposes a comprehensive methodology that uses XML to facilitate the *definition* of information that needs to be shared, the *storage* of such information, the *access* to this information and finally the *maintenance* of shared information. The

authors compare IAIS with two alternate methodologies to share information among agencies, and analyze the pros and cons of each. They show how IAIS leverages the XML (extensible markup language) standard to allow for inclusion of various groups' viewpoints when determining what information should be shared and how it should be structured.

Overall, we received a large number of very high-quality submissions for this special issue. Each submitted manuscript was sent out to three reviewers. The

acceptance of only four articles indicates the selectiveness of the special issue. It should also be noted that the authors went through at least one round of comprehensive revision after the acceptance. We thank the authors and the reviewers of all the manuscripts, without whom this special issue would have not have been possible. We hope the included articles make not only instructive reading, but also serve as starting points for future research in this very important area.