Chapter V

From Ontology Phobia to Contextual Ontology Use in Enterprise Information Systems

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Abstract

Shared understanding in an enterprise is necessary to permit a unifying framework serving as the basis of communication between people, interoperability between systems, and other system engineering benefits such as reusability, reliability, and specification. Bringing systems to work together is increasingly becoming essential for leveraging the Enterprise Information Systems (EIS) and reaching common goals. Currently, enterprises develop their systems independently with low consideration for the collaboration that systems can play with other systems. Certainly, semantic sharing represents the daunting barrier for making these systems work together through common shared understanding. In the last decade,
Theoretical research such as ontologies and context were suggested separately as formal support for treating the semantics-sharing problem. In order to resolve this main problem, we intend to pair up the two notions of Context and Ontologies. Typically, contextualization can be seen at the ontology level in order to enable the multiple views and multi-representation requirements. Hence, the formal representation of contextual ontologies should preserve adequate reasoning mechanisms. A machine understandable semantics and interpretation should be also given for information in a context, according to a specific system's point of view. However, we perceived a growing ontology phobia in many enterprises. This fear is based on misunderstanding of ontologies' advantages and lack of practical applications for theoretical proposals. The aim of this chapter is twofold. On one hand, it concentrates on studying the application of tightening together context and ontologies which can serve as formal background for reaching a suitable EIS environment. It invests in resolving the semantics-sharing problem between these systems. It focuses on suggesting a formalism for contextual ontologies based on a combination of Description Logics and Modal Logics. On the other hand, it investigates issues and arguments helping to overcome the ontology phobia. It shows with examples the usefulness of these contextual ontologies for resolving the semantics-sharing problem between some EIS.

Introduction

The introduction of computers into business in the 1950s has had a strong impact on corporations. In today's conquest of market places, enterprises call on their systems to meet with the strategic requirements and competitive challenges. These systems become responsible for supplying employees with the needed tools to communicate, to cooperate, to answer their queries, and to support their decisions. In this perspective, Enterprise Information Systems cover a set of information systems used by organizations in order to fulfill their operational needs and to support their strategic goals. This includes the integration of systems within the organization and the linking of the internal processes electronically to those of other organizations. In essence, this raised area of research is concerned with the study of EIS as tools supporting the business processes and management of organizations.

For these EIS the emphasis is put on the properties of openness, scalability, and autonomy. Architecture of distributed components and their shared understanding are necessary to permit the reuse of these components in different contexts,