Chapter 30

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ABSTRACT
An e-Business standard is a technical specification that provides a shared understanding and agreement on the shared information and data among trading partners. Standards are usually developed in a standards development organisation, where a guideline for the process of developing standards is provided. However, these guidelines are mainly concerned with the administrative aspect of the standardisation process, and there is a lack of practical technological support for developing the content of a standard specification. This chapter reviews the characteristics of e-Business standards and their development process and presents OntoStanD, a novel, comprehensive, ontology-based collaborative standards development methodology. OntoStanD is then applied on ebXML business process specification schema to demonstrate the application of OntoStanD.

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INTRODUCTION

In today’s global business environment business values and competitive advantage lie beyond the boundaries of any one enterprise. In such an environment companies’ business processes need to be understood and aligned across organisational boundaries. E-Business standards are considered as an important facilitators for B2B interoperability and provide a shared understanding and agreement on what information to share, when and how among trading partners. Standard development organisations usually provide a guideline for the process of developing standards. These guidelines are however more concerned with administrative aspect of the process and there is a lack of practical technological supports for developing the content of a standard specification.

Semantic interoperability on the other hand is considered to be an essential factor for effective interoperation. This implies that the meaning of terms, their relationships and also the restrictions and rules in the standards should be clearly defined in the early stages of standard development and act as a basis for the latter stages. Furthermore, XML based standards can only cover syntax and not the semantics of transactions. Therefore there is a need for a semantic approach for capturing and the semantics of e-Business standards. Firat, Madnick & Manola (2005) state that applying ontologies in practical semantic interoperability problems has proven to reduce the amount of work needed to agree on a shared model based on the assumptions made by different parties. Ontologies are therefore considered as an appropriate means for capturing the definitions and interrelationships of concepts in a domain, resulting in a robust shared understanding of the domain, which is indeed the ultimate goal of e-Business standards.

This chapter proposes utilisation of ontologies in the process of standards development and presents OntoStanD, a comprehensive ontology-based standards development methodology, which takes into account the collaborative nature of standard development and is developed and refined in collaboration with standards developers and stakeholders. Using ontologies as a basis for standards also facilitates transparent flow of semantically enriched information and knowledge in order to enhance B2B collaborations (Rebstock, Fengel & Paulheim, 2008). This chapter also provides a summative view on standards and their creation process.

The remainder of this chapter is organised as follows: Second section provides a background on standards, their structure and creation methods. Third section discusses ontologies and their importance and relevance for standards development. Fourth section introduces OntoStanD, an ontology based standards development methodology, the constructed methodology, followed by applying OntoStanD to the ebXML Business Process Specification Schema (ebBP). The sixth section discusses future research directions and the final section concludes the chapter.

BACKGROUND

Standards are important facilitators for achieving B2B interoperability. A Standard is a technical specification approved by a recognised standardisation body, which is designed to be used consistently, as a rule, a guideline, or a definition across particular communities of interest (ETSI, 2010). The aim of standards is to provide unambiguous specifications for error-free exchange of documents and information to achieve mutual benefit.

Different Types of Standards

Although there are a significant number of standardisation bodies in the e-Business and information systems domain, relevant standards can be grouped in a number of categories. The most important of these are:
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