IDEA GROUP PUBLISHING
701 E. Chocolate Avenue, Suite 200, Hershey PA 17033-1240, USA
Tel: 717/533-8845; Fax 717/533-8661; URL-http://www.idea-group.com

ITB11173

This chapter appears in the book, *Business Systems Analysis with Ontologies,* edited by Peter Green and Michael Rosemann.

Chapter IX

Applying the ONTOMETRIC Method to Measure the Suitability of Ontologies

Asunción Gómez-Pérez, Politécnica University of Madrid, Spain

Adolfo Lozano-Tello, Extremadura University, Spain

Abstract

In the last years, the development of ontology-based applications has increased considerably, mainly related to the Semantic Web. Users currently looking for ontologies in order to incorporate them into their systems, just use their experience and intuition. This makes it difficult for them to justify their choices. Mainly, this is due to the lack of methods that help the user to determine which are the most appropriate ontologies for the new system. To solve this deficiency, the present chapter proposes a method, ONTOMETRIC*, which allows the users to measure the suitability of existing ontologies, regarding the requirements of their systems.* ONTOMETRIC*, based in the analytic hierarchy process, can be used to select the most*

appropriate ontology among various alternatives. This chapter describes the main techniques and activities to apply the method.

Introduction: The Problem of Selecting Ontologies

In 1991, the ARPA Knowledge Sharing Effort (Neches, 1991) revolutionized the way in which intelligent systems were built in artificial intelligence when proposing the construction of knowledge-based systems by means of the "assembling" of reusable components. Reusable components become the base (or skeleton) of the new system, to which are added specialized knowledge and specific reasoning methods, depending on the task that the system attempts to solve. This vision allows the building of bigger and more potent systems. The ontologies, used to represent the "static" knowledge of a domain, and the problem solving methods, used to carry out reasoning, become the key pieces that allow the reuse of knowledge and problem-solving methods (Gómez-Pérez, 1999a). The saving in costs and time that is obtained in the software reuse (Bollinger, 1990; Poulin, 1997) is achieved in more scope in the reuse of this knowledge (ontologies and problem-solving methods), due to the enormous effort in the processes of knowledge acquisition of a domain, conceptual model's construction, formalization, and implementation of such knowledge.

At the moment, the ontologies are implemented in a great variety of languages. At the beginning of the 90s, a group of languages was designed and used for the implementation of ontologies. The most representative languages are Ontolingua (Gruber, 1993), LOOM (McGregor, 1991), OCML (Motta, 1999), FLogic (Kifer, 1995), and so forth. These languages receive the name of "classic languages" (Corcho, 2000), they follow a syntax based on LISP (to exception of FLogic), and they are in a phase of stable development. Recently, XML has been adopted as a standard language to exchange information on the Web. In the field of the ontologies, several languages have been created based on XML to implement ontologies. For example RDF (Lassila, 1999), RDF Schema (Brickley, 1999), XOL (Karp, 1999), SHOE (Luke, 2000), OIL (Horrocks, 2000), DAML+OIL (Horrocks, 2001) and OWL (Dean, 2003). These languages, called "Web-based languages", are still in development phase and in continuous evolution.

Equally, methodologies for building ontologies have been numerous. Already in 1990, Lenat and Guha (1990) published some methodological considerations related with the development of the CYC ontology. Some years later, in 1995, Uschold and King (1995) published the main steps in the development of the Enterprise ontology. In the same year, Grüninger and Fox (1995) showed the

Related Content