Comparative Methodologies for Evaluation of Ontology Design

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Abstract. In general, it is advisable to evaluate ontology designed quality before developing an Information System based on Ontologies. Principles of ontology design, focus on ontologies design that can be reusable, easy-to-use, maintain and update over time. In this work a model for quality verification of the ontology design is proposed, it is based on ontology design principles of [4, 20, 22]. Methodology starts with an analysis of design principles, then principles are grouped into verification or evaluation collections and following verification techniques was established: 1) minimalist; 2) consistency; 3) flexibility; 4) standardization; 5) redundancy; and 6) efficiency. The main contribution of this work is a qualitative and quantitative model for the verification of an ontology applying design principles. As an application case, quality evaluation of ontological model for OntoPAA is performed, results show that ontology evaluated complies with design techniques that guarantee an adequate level of quality.

Keywords: Ontology design principles · Ontology verification techniques · Ontology evaluation · Ontology quality

1 Introduction

Ontology engineering is a branch of knowledge engineering that focuses on ontologies construction. It contemplates the study of ontology develop process, its life cycle, methods and methodologies to design ontologies, as well as the tools and languages for its construction. Before developing an Information System based on Ontologies, it is advisable to evaluate quality of an ontology design. The OntoPAA ontology [15] is used as an application case. The method is integrated by a set of techniques that group in six categories: minimalist, coherence, flexibility, standardization, redundancy and efficiency. The method is based on the design principles proposed by Gruber [20], Barry Smith [4], and Morbach, Wisner and Marquardt [22].

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