

# Design of ontology used for knowledge sharing

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**Abstract.** The paper deals with a problem of ontology design for knowledge intensive applications. Ontology presents an important background of each experience and knowledge management system. It defines structure and relationships among experience and knowledge entities. The ontology is the main mechanism used for the representation of information and knowledge, definition of the meaning of the terms used in the content language and the relation among these terms. Components of the system communicate using ontology structure, store and retrieve data organized and described by ontology to/from the system memory. The ontology model is modelled using the Protégé. The output of the Protégé is a portable RDF/OWL file, which is further mapped into Organizational Memory (OM) through OM interface at the first running (initial) time as ontology class definition with initial instances and property values. Ontology-based information and data in OM are also further capitalized to invent new knowledge (also ontology-based) that will be stored in OM for the future reuse.

The research in this area has been initially developed and evaluated in the project Pellucid and it is further improved in the Slovak national NAZOU (SPVV 1025/2004), RAPORT (APVT-51-024604), VEGA No. 2/6103/6, as well as towards the Grid environment in the K-Wf Grid project (EU RTD FP6-511385).

## 1 Introduction

Ontology has become a very important aspect in many applications to provide a semantic framework for knowledge management. Ontology is a set of definitions of content-specific knowledge representation primitives (classes, relations, functions and constants). The advantages of using ontology are modularity and reusability. For that reason, standardized languages with rich description and terminological logics are needed. Agent-based software integration involves designing ontology for a specific domain and integration of different tools to allow agents communication using that ontology. Ontology presents a shared understanding about a certain specific domain. Comparing to database, ontology allows handling not only numerical transactional data but also it is suited to model unstructured and informal knowledge. However the advent of object oriented databases, improved logics and faster inference is making the distinction between DBs and ontologies fuzzier. There is also (multiple) inheritance, strong encapsulation, fuzzy set algorithms, meta-data standards, neural networks to