Distributed Knowledge Management based on Software Agents and Ontology*

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Abstract. In this paper we present the use of ontology for knowledge representation and handling in Software Agent Systems. Motivation has come from Pellucid IST project where we need to capture and capitalize employee's knowledge in organization. This knowledge is then presented to other employees as they work on particular tasks. The Protg ontology editor and JADE multi-agent system is used for implementation. Ontology is usually used in intra-agent communication for agents to understand each other; we used ontology also as knowledge data model to store knowledge as instances of ontological terms into object database, thus agents can access and manipulate knowledge data directly and still stay lightweight.

1 Introduction

Motivation for this article has come from Pellucid project. Pellucid (Platform for Organizationally Mobile Public Employees) is European Project IST-2001-34519. The Pellucid System is particularly aimed to capture, record and capitalize the knowledge of current employees about their work in an organization [1].

Pellucid uses the socalled Intelligent Software Agents based on FIPA standards [2],[3] for different activities as capitalizing and data mining of knowledge, personalizing of knowledge, indexing and analyzing organizational document repositories or for integration of existing systems in organization. The ability to use ontology makes Pellucid easy to customize for different problem domains by simply changing domain ontology.

Human knowledge is based not only on facts which are true or false but also on uncertain knowledge which is true or false partially. Several methods can be used to represent such knowledge, e.g. probability measures, fuzzy logic

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