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## Scientific Report

Reference number: COST-STSM-IC0801-10082

During my visit to Saint-Étienne I worked with Antoine Zimmerman and other researchers actively involved in semantic or agent technologies. The original purpose of the STSM was to examine the existing agent communication technologies and standards with focus on interplay between agent communication (message based) and ontologies / semantic reasoning used within agent systems.

When the STSM started however, together with the host we decided that it is more worthwhile to first tackle more basic problems that appear when considering the above issues. Taking a more practical approach we examined the ontologies used in the *Agents in Grid* (AiG) - an agent system in whose development I am involved.

Starting with the *Core Grid Ontology* (cgo) – a top level ontology (utilized in AiG) – we accurately discussed the practical and theoretical aspects of ontology engineering. We focused on best practices, common problems and mistakes that arise when designing an ontology.

We also conducted an in-depth analysis of cgo in the context of other Grid ontologies, AiG ontologies and the Semantic Web. We put the theoretical considerations into practice by creating an enhanced version of the cgo ontology. The resulting re-engineered cgo ontology is available at <http://purl.org/NET/cgo> and contains many improvements and fixes for the original cgo ontology.

The research conducted during the STSM improved my understanding of ontologies and their applications as well as purpose and common usage of semantic reasoning. I will use this knowledge in my research of both semantic and agent technologies. Specifically I will continue my research of semantic agent communication. I will also apply the knowledge to improve the quality of ontologies used in AiG.

Together with the host (Antoine Zimmermann) we co-author a publication entitled "*Rengineering the Core Grid Ontology*" submitted to AT2012 (1<sup>st</sup> International Conference on Agreement Technologies).

Date: 13/07/2012

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