ODESGS, an Environment for the Annotation and Design of Grid Environments.

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ODESGS is an ongoing work carried out in the Ontogrid Project[1] (FP6-511513). It is the extension of the ODESWS Environment [1] developed in the context of the Esperonto Project[2] (IST-2001-34372) and is an implementation of the ODESGS Framework [2]. This framework is being developed for the markup of Grid Services (GS) and creation of new complex Semantic Grid Services (SGS) from these annotated GS, to enable their discovery and (semi)automatic composition. It also formalizes Virtual Organizations (VO) with it, defined, since the appearance of OGSA, as a set of the services that are operated and shared. Therefore, VO description is closely attached to the descriptions made to each GS individually, plus additional information about the relationships and policies between these services. Note that what we mean as markup of VO and SGS is the association of these elements with an instance of the ODESGS Ontology.

ODESGS Ontology is a stack of ontologies, which complement each other to annotate the features of a SGS and a VO. The stack is composed of the following ontologies: (1) one for the description of VO (*VO Ontology*); (2) an ontology describing the concepts that define the features of a SGS (*SGS Ontology*); (3) another ontology to describe problem-solving methods, the functional features of a service are described as tasks, the internal structure of the services is modelled as the methods that solve their associated tasks and the control flow description of these methods is an abstract workflow that mixes tasks with control primitives (*PSM Ontology*); and (4) finally two ontologies to define the knowledge representation entities used to model a SGS and the domain ontologies (*KR Ontology*)and its data types (*DT Ontology*).

ODESGS, as the implementation of the ODESGS Framework, is designed to carry out the aforementioned tasks. Its main requirements are (1) *(semi) Automatic discovery and composition of SGS and VO* will be seamlessly integrated as an aid to the designer, the user may access to huge SGS repositories, he/she will be able to make queries or even the tool in itself, depending of the context, should automatically show restricted views of these registries (2)*SGS and VO are graphically developed,* the user will not need to know the specific details of the semantic markup language or implementation language used to represent the service or the relationships between the elements of the VO; (3)*SGS description is a mix between a PSMs, workflows plus GS information,* as we already explained in the ODESGS Ontology description; (4)*WSRF compliant*, ODESGS must be able to generate (and understand) at least the WSRF grid services descriptions, and it must also handle WSRF containers, due the fact that the instances of the described SGS will be stored there; (5) *semantic markup export capable*, ODESGS must be able to generate the semantic markup information once the service is described at the Knowledge Level.

Finally, we have to remark that ODESGS is an in progress labour, but most of these requirements have been partially fulfilled.

[1] Gómez-Pérez, A., González-Cabero, R., and Lama, M. 2004, A Framework for Design and Composing Semantic Web Services", IEEE Intelligent Systems, vol. 16, pp. 24–32

[2] Goble, C. Gómez-Pérez, A., González-Cabero and Pérez-HérnandezODESGS Framework, Knowledge-based Markup for Semantic Grid Services K-CAP'05, October 2–5, 2005, Banff, Alberta, Canada.

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[1] www.ontogrid.net

[2] www.esperonto.net