Managing R&D European Projects with ODESeW

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ABSTRACT

This demo presents a Semantic-Web-based knowledge management system that supports R&D European Projects in different aspects: dissemination of project information and generation of management reports for the European Commission (EC).

1. INTRODUCTION

In the field of Web application engineering, a large amount of content management systems (CMSs) are available for the development of standard Web applications. Among them we can cite the following: Zope[1], Mambo[2], Ruby on Rails[3], etc. All of them allow developers to generate in short time a portal to publish their information and, with some extra effort, to implement application-specific functionalities. These CMSs are oriented towards presenting information to human users, not to other software systems, and very few of them allowchanging the data model used in the portal.

ODESeW [3] is an application development framework, based on Semantic Web technologies, which overcomes the two previous limitations. In this demo we show how it can be used to implement a CMS for R&D European Projects. Using this CMS, members of the organisations involved in the project can manage all types of information about their organisations, persons, project meetings, all sorts of documents and deliverables, progress and administrative reporting information, etc. Furthermore, the project coordinator can manage the project progress using different types of reports that can be easily maintained. Besides external users can access the HTML pages generated by the CMS, taking into account the permissions in the system, and other software agents can access this information in other formats like RDF, RDF Schema and OWL.

2. ODESeW

ODESeW (Semantic Web Portal based on WebODE) was first described in [4] as a tool that could be used for the automatic generation of Web portals where all the information was indexed by means of ontologies. This portal generation system was built on top of the WebODE ontology engineering workbench [1], thus inheriting many of its features, such as the deployment of ontologies in databases, the availability of import and export functions from and to different ontology languages, etc.ODESeW has now evolved into a more comprehensive application development framework that eases the maintainability and personalisation of the content generated, while maintaining the feature of automatic application generation.

One of the main innovative features of ODESeW is the navigation and composition model [3]. This model allows Web developers to specify explicity how users will navigate the application and also allows them to reuse views more easily.

In ODESeW, views can be designed using JSTL [1] and JavaBeans [2]. They allow creating highly reusable views that can tolerate changes in the data model or to create fit views for specific information in the ontologies (concepts, instances) that are vulnerable through ontology changes.

Besides these content provision, visualization, and access functions, ODESeW provides more functionalities like a search engine, content implementation in different languages (RDF, RDFS and OWL) and administrator functionalities for user management, read/write permission management and selection of ontologies to be used in the portal.

ODESeW can manage different domain ontologies, which can have relations between themselves. Besides, it represents application users by means of an application-independent User Ontology. This ontology stores the different user profiles of the portal and has only two main concepts: User and Role. The User Ontology can be extended in the different web applications by adding attributes or relationships to any of the application-specific domain ontologies. In this way, the User Ontology can link a user to another piece of information in the portal, for example, an organization.

3. Ontologies in a R&D European Project

To describe a collaborative project we have used the following six ontologies, which can be easily reused for describing other similar projects[4]:

- The **Documentation Ontology** models knowledge of documentation used in the project;

- The **Event Ontology** models knowledge of events that are related to the project.

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[1] http://www.zope.org/

[2] http://www.mamboserver.com/

[3] http://www.rubyonrails.org/

[4] In fact, they have been already used in four EU projects of diifferent nature (Esperonto, OntoGrid, Knowledge Web and NeOn).

- The **Organization Ontology** models knowledge of organizations that work in the project.
- **Person Ontology** models knowledge of persons who work in the project.
- The **Project Ontology** models the Technical Annex of a project, including information about: milestones, workpackages, tasks, projects or networks of excellence, etc.
- The **Management Ontology** models the periodic reports that the consortium of the project must sent to the EC.

4. A case study of a R&D portal: Knowledge Web

The functionalities that are provided by the Knowledge Web portal are divided according to the different types of users that can access it. In the case of Knowledge Web portal there are two general users (partner and administrator user) to assert information in the ontologies that are publish in the portal as a part of public information and three user (reporting, area manager and project coordinator users) focusing to generate management document that are required by the EC.

Partner User

This general user is responsible of inserting his/her organization information and the information of all the participants in the project from his/her organization. If the partner is a workpackage leader, he/she is also responsible to upload deliverables inside the portal. Besides, an user of this type can insert concrete meetings, conferences, workshops, etc.

Administrator

This user is in charge of creating new users, setting their read and write permissions and specifying which ontologies in the ontology server (WebODE) are being managed inside the portal. The administrator is also allowed to change the ontologies inside the ontology server.

Besides all administration issues, this user is in charge of including all the project definition information: workpackages, deliverables, global efforts of each partner, etc.

Reporting User

When a reporting user logs into the system and goes into the reporting section, the portal shows all the tasks to be done. These tasks are**:**

- **Workpackage progress reports**, for each workpackage that the user's organisation is leader of**.**
- **Effort report** for the organisation the user belongs to.

Area Manager

In a large project, workpackages can be organised in different areas (this is specified in the project ontology). In the context of Knowledge Web there are four areas: industrial, research, educational and management. Each area has several workpackages associated and has also a person that is responsible of it, known as the area leader. In the **activity report**, area managers can include an area overview about the general progress of the area.

Managing Director

The managing director is a person that belongs to the project coordinator organization and is in charge of monitoring the progress of all reports generated by individual partners and generates and downloads a draft version of the **activity report**.

When this user logs into the system and accesses the reporting system, the portal shows the effort reports from all the project partners and the progress reports from all the workpackages. Besides, there is a link to a view for monitoring the current status of all the reports

The **activity report** is one of the documents that must be delivered by the project coordinator to the European Commission. This document compiles all the **workpackage progress reports**, the **effort reports** and the **area overviews** in one document. The generated document is presented in HTML and in MS Word formats. This document is a draft version in which the Managing Director can modify with specific information that only the project coordinator can include.

4.1 Others Knowledge Web functionalities

A part of the different users and differents views and forms for each of them, ODESeW gives other functionalities. These functionalities are the messenger service and mailing system.

The **messenger service** sends events from the portal like the request of a view from a user, the logging event of a user, the editing of an instance, a schedule event, etc. These events are sent to the messenger service and this one redirect all these events to others applications.

The **mailing service** generates a dynamic mailing using the domain ontologies.

These services are connected in Knowledge Web using the mailing service as a receipt of some events from the messenger service. In this way, the portal notify to the administrator when a progress report is submitted and send a warning message to the partner, area managers and the project administrator which reports are delayed according a schedule.

6. REFERENCES

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[5] http://knowledgeweb.semanticweb.org/