



Transitioning Applications to Ontologies

<http://www.tao-project.eu>

TAO

Transitioning Applications to Ontologies

The goal of the TAO project is to define a low-cost route to transitioning legacy systems to the open semantic Service-Oriented Architectures (SOAs), which will enable semantic interoperability between heterogeneous data resources and distributed applications.

Impact

This project will offer a low-cost migration path for legacy applications to knowledge technologies and will be accessible to both SMEs (which are cost sensitive) and large enterprises (with huge investments in complex and critical IS). The results will be validated in two high-profile case studies: a comprehensive open source platform (with thousands of users) and a data-intensive business process application (managing a multi-million aviation business).

TAO's main innovation

There are three main technological innovations in the project:

1. Semantic Web Service bootstrapping via semi-automatic acquisition of domain ontologies – an innovative methodology, based on state-of-the-art ontology learning and semantic data integration. SWS bootstrapping is a problem not yet addressed by the SWS community as part of ongoing initiatives and projects both in Europe and internationally.
2. Augmentation and integration of legacy content relative to the domain ontologies to enable ontology-based information access.
3. Infrastructure for transitioning legacy applications to semantic- and service-based ones. The main innovative aspect of the transitioning environment is the introduction of automation when supporting the developer in creating SWS definitions, based on the semantic analysis of existing application documentation and legacy content. The TAO infrastructure will be based on and compliant with relevant architectures, such as WSMO, WSMX, SWSI.

TAO's results so far

The project has completed successfully its first year deliverables, with all public ones now available for download from the project's web site. In particular, this includes the first version of the innovative TAO bootstrapping methodology.

The first public prototypes of the automatic ontology learning tools and the heterogeneous knowledge stores have also been made freely available from the project's web site (Results link).

In addition, the two case studies have completed their requirement specification stage and defined the scenarios to be addressed in years 2 and 3. A number of scientific papers have also been published, with more under review.

More details

More information on the project is available on the TAO website at <http://www.tao-project.eu>, including all scientific and general purpose publications, deliverables, open-source prototypes, and demos.

TAO's upcoming work

In order to achieve its ambitious goal, the project comprises a number of research and technical development activities, structured as work packages:

- In year 2, WP1 will refine the TAO methodology covering all aspects of the Semantic Web Services (SWS) bootstrapping process;
- WP2 will continue work on learning domain ontologies from existing application documentation (specifications, UML diagrams, code documentation, software manuals, incl. images);
- WP3 will research methods for automatic semantic augmentation of legacy content, going beyond textual sources;
- WP4 will develop further the first prototype of distributed heterogeneous knowledge repositories, capable of efficient indexing, query, and retrieval;
- and WP5 will integrate all these into a transition support Integrated Development Environment (IDE).

The achievement of the project's objectives will be validated in two case studies. The first case study (WP6) will undertake the transitioning of an existing large-scale open-source system, its software documentation, related papers, video tutorials and screen shots. The resulting ontology- and service-based system will act as a publicly available reference showcase of the TAO technology. The second case study (WP7) will focus on providing semantic-based support to aircraft maintenance business processes. Within the reengineered applications, ontology-based representations of maintenance technical data and services will be exploited to ensure semantic interoperability between maintenance management systems and to provide standardised knowledge inputs for user-mediated semantic annotation of technical publications. TAO methodology and platform will be used to elaborate the software support that will allow logistic analysts to build ontologies from existing databases and standards, and to redesign maintenance processes into the semantic-powered SOA framework.

In summary, by the end of the second year all preparations will have been made for the case studies to start experimenting with the technology, which will also improve further in parallel. During year 3 feedback from the case studies will aid the refinement of the software tools. The case studies will also feed into the dissemination activities and influence the final exploitation plans.

Administrative details

TAO (FP6-026460) is a specific targeted research project of the European Union's 6th Framework Programme - call 4.

TAO started on 1 March 2006 and finishes on 29 February 2009.

The overall budget is around 4.4 million euro.

7 partners from 5 European countries are involved in the project.

List of participants

- University of Sheffield, UK
- University of Southampton, UK
- Atos Origin S.A.E, Spain
- Jozef Stefan Institute, Slovenia
- Mondeca, France
- Ontotext Lab, Sirma Group Corp., Bulgaria
- Dassault Aviation, France

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Events in connection with TAO

More information on the project is available on the TAO website at <http://www.tao-project.eu>.

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