

Participants

Exchange Student: Dipl. Wi.-Ing. Christoph Tempich (University of Karlsruhe Institute AIFB)

Exchange with: Técnico Lisbon, Institute Inesc-ID at Prof. H. Sofia Pinto

Duration 22.11.2004 – 12.02.2005

Research Area

A prerequisite to the success of the Semantic Web are shared ontologies which enable the seamless exchange of information between different parties. Engineering a shared ontology is a social process. It requires an engineering process supporting the specifics of the semantic web, namely the semantic web is distributed, open and evolves quickly. DILIGENT is a new ontology engineering methodology which was designed with these requirements in mind [Pinto et al. 2005]. DILIGENT supports users and ontology engineers to build and maintain a shared ontology, while it enables the users of the shared ontology to change it as their requirements change.

Goal of Exchange

The exchange has two goals:

1. The DILIGENT methodology is currently defined on a stage level. Five stages are defined, but the methodology does not yet describe in detail the activities which must be performed in each stage. A case study in the tourism domain was conducted and the results of the case study help to specify the activities in the DILIGENT methodology. The detailed analysis of the case study will enable us to provide detailed descriptions of the activities defined in the DILIGENT methodology.
2. The participants in a DILIGENT process have slightly different views on the world, thus harmonizing an ontology requires discussing the shared ontology. During the discussion, participants exchange arguments which may support or object to certain ontology engineering decisions. Experience from software engineering shows that tracking exchanged arguments can help users at a later stage to better understand the assumptions underlying the design decisions. Furthermore, as the constructed ontology becomes larger, ontology engineers might argue in a contradictory way without knowing so. We want to formalize the main concepts which are used in an DILIGENT ontology engineering discussion and thus enable tracking arguments and allow for inconsistency detection.

Results

Both goals of the exchange were achieved and resulted in two different papers.

1. Based on the observations from the case study in the tourism domain we were able to refine the DILIGENT methodology. We have introduced 13 actions describing each of the stages in the process with more detail. We could also identify a number of tools which we envision to support the process. Furthermore argument provision was integrated into the methodology as an activity [Vrandecic et. al, 2005].
2. Regarding our second goal, we have developed the first formal argumentation model for Ontology Engineering, in particular for DILIGENT OE processes. This model is an adaptation of the IBIS argumentation model specifically for Ontology Engineering. It clearly distinguishes between phases: discussions should be about the conceptual model, about Issues, and about the formal model, about Ideas. Moreover, from our previous experiences in DILIGENT OE processes this model clearly states the arguments that have been identified as speeding and easing the consensus building process needed to build shared ontologies. Finally, this is the first model that attempts to integrate arguments from (semi-)automatic ontology building based on learning [Tempich et al., 2005].

Although the DILIGENT methodology is not yet complete, the results of this T-Rex exchange moved it further to a wider applicability. The methodology is further developed and evaluated in the SEKT project.

References

- Tempich et al., 2005 Tempich, C., Pinto, H. S., Sure, Y., and Staab, S. (2005). An argumentation ontology for distributed, loosely-controlled and evolving engineering processes of ontologies (diligent). In Bussler, C., Davies, J., Fensel, D., and Studer, R., editors, *Second European Semantic Web Conference, ESWC 2005*, LNCS, Heraklion, Crete, Greece. Springer.
- Vrandecic et. al, 2005 Denny Vrandecic, H. Sofia Pinto, York Sure, Christoph Tempich. The DILIGENT Knowledge Processes *Journal of Knowledge Management* 9 (5): 85-96. October 2005
- Pinto et al. 2005 H. Sofia Pinto, Christoph Tempich, Steffen Staab, York Sure. Distributed Engineering of Ontologies (DILIGENT) In S. Stuckenschmidt, S. Staab, *Semantic Web and Peer-to-Peer*, pp. 301--320. Springer, 2005