Final Report,T-Rex exchange between UIBK and NUI Galway

Axel Polleres and Chris Bussler

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1   Duration and Aims

Current technologies for Web Services are based on syntactical descriptions and, therefore, provide limited automation support. Research efforts towards Semantic Web Services, such as WSMO, try to overcome this major deficiency by providing a complete semantic description of Web Services and their related aspects. During an exchange from July 20th until September 11th, 2004, wherein Axel Polleres from University of Innsbruck (UIBK) visited DERI at the National University of Ireland, Galway (NUIG), it was planned to investigate a logical framework which exploits such formal descriptions in order to dynamically discover Web Services that match requester goals. Based on the the WSMO conceptual model, we worked on defining proof obligations that formalize the concept of a match, and worked on the realization of such proof oblications with existing inference engines. This work has been conducted in cooperation with Prof. Michael Kifer, from University at Stony Brook, as the exchange overlapped with his visit to NUIG. The integration of the proposed framework with WSMX, the reference implementation for WSMO, also received attention during the exchange.

2   Achievements

A considerable part of the achieved results will be reflected in the UIBK contributiuon for the KnowledgeWeb Deliverable D2.4.2 "Semantics for Web Service Discovery and Composition" which is due to December 2004. In detail, the following has been achieved: Initial results on building up a logical framework for Semantic Web Service Discovery which have been achieved during the initial phase of the exhcange have been published in a Workshop paper [KLP+04b] which will be presented at the ISWC 2004 co-located workshop on Semantic Web Services in Hiroshima in November. This work has benefited a lot with the collaboration with Prof. Kifer in the beginning of the exchange and has been further elaborated it in collaboration with the researchers in NUI, Galway in the remaining time of the visit. Further issues to be covered during the visit

include the development of the Web Service Modelling Language WSML as well as exploring general reasoning on ontologies within this languages, with special focus on but also beyond Web Service Discovery.

The latest version of Deliverable D5.1 "WSMO Discovery" [KLP+04a] of the WSMO working group [1] have among others benefited from fruitful discussions with Doug Foxvog during the stay.

The results on Web Service Discovery have also influenced my presentation in a recent "Workshop on Semantic Web Service Composition" at ILOG, Paris, in the context of the related European Project dip [2].

Furthermore, in collaboration with several scientists from the hosting organisation a position paper on Web Service Capabilities and Constraints in WSMO [ABK+04] has been submitted and accepted for the "W3C Workshop on Constraints and Capabilities for Web Services" that will take place in October [3].

Ongoing work resulting from initial discussions during the exchange includes initial results on the grounding of WSMO to legacy web services in collaboration with the WSMX working group [4] Moreover, collaborations in the field of mediation within overlapping efforts of the SEKT and dip projects within the SDK cluster[5] have been initiated.

Overall, the exchange has served to establish and intensify personal contacts with researchers from NUI, Galway, which are expected to lead to further fruitful collaborations and common research results in the future.

References

[ABK+04] Sinuhé Arroyo, Christoph Bussler, Jacek Kopecký, Rubén Lara, Axel Polleres, and Michał Zaremba. Web service capabilities and constraints in WSMO. In *W3C Workshop on Constraints and Capabilities for Web Services*, October 2004. Accepted.

[KLP+04a] Uwe Keller, Rubén Lara, Axel Polleres, Ioan Toma, Michael Kifer, and Dieter Fensel. WSMO discovery. Working Draft D5.1, Digital Enterprise Research Insitute (DERI), November 2004.

[KLP+04b] Michael Kifer, Rubén Lara, Axel Polleres, Chang Zhao, Uwe Keller, Holger Lausen, and Dieter Fensel. A logical framework for web service discovery. In *ISWC'04 Workshop on Semantic Web Services*, Hiroshima, Japan, November 2004. Accepted.

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[1]http://www.wsmo.org
[2]http://dip.semanticweb.org
[3]http://www.w3.org/2002/09/wbs/1/cc-for-ws/
[4]http://www.wsmx.org
[5]http://www.sdk-cluster.org