ebXML Case Study: Exploiting Web Service Semantics through ebXML Registries and Software Agents

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Abstract:

When looking towards the future of Web services, it is predicted that a breakthrough will come when the software agents start using the Web services rather than the users who need to browse, discover and compose the services. Providing the semantic of Web services gives the software agents the capability to discover and compose Web services.

When service ontology classes are explicitly related with the services advertised in the registry, it becomes possible for a software agent to dynamically query the registry to select service instances that satisfies user requests. A key issue here is to facilitate the service discovery by integrating the service semantics with the discovery mechanism of the registry.

When relating the semantics with services advertised, the capabilities provided by the registry effects how this is achieved. In this paper we exploit ebXML classification hierarchy mechanisms to relate service ontologies with services advertised. However, since the semantic constructs available through ebXML classification hierarchies do not allow the well-accepted DAML+OIL or OWL based service description ontologies, like DAML-S, to be directly stored, we first describe how OWL ontologies can be stored and accessed through ebXML registries.

Then through an agent system implemented on the JADE agent platform, we demonstrate how a software agent can be associated with a registry to discover and compose the service instances dynamically on behalf of a user. The agent has two behaviours: the querying behaviour and the reasoning behaviour. Through its querying behaviour, it obtains the necessary information from the registry to discover services. Through its reasoning behaviour it helps the user to compose services. The project and source code can be found at: http://www.srdc.metu.edu.tr/ebXMLProject/

(Submitted to VLDB '03 Conference)

Appendix A. *Revision History*

Rev	Date	By Whom	What
METU-01	02-19-2003	Asuman Dogac asuman@srdc.metu.edu.tr	Initial version

Appendix B. Acknowledgments

Appendix C. Notices

TBD