

MEMOS: A Methodology for Modeling Services

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Abstract

Research in the area of Semantic Web Services aims to totally or partially automate activities that occur in the process of using Web services. Such automation is required due to the large amounts of human effort required to find, select, understand, test, and invoke Web services, which becomes infeasible as the number of services on the Web steadily grows. Automation of activities like service *discovery*, *composition*, *selection*, *mediation*, and *invocation* within a Semantic Execution Environment is achieved through the creation of semantic descriptions of the available services and of the requirements of a given service requester. It is important that engineers on both the service provider and the service requester sides have a clear understanding of the tasks they must perform to create these descriptions. To date no methodological support has been available to these engineers. Individual development projects have had to spend significant effort in understanding what descriptions need to be created to support a particular use case and how to go about creating these descriptions.

The aim of this work is to assist engineers in the process of developing Semantic Web Services, by providing a clear understanding of what description need to be created in particular use cases, by specifying the different tasks that must be performed in order to successfully create these descriptions, and by offering tool support that reduces the effort needed to create the descriptions. The main contribution of this work is a Methodology for Modeling Services (MEMOS) that defines activities and tasks that should be conducted by different roles in the software development cycle of Semantic Web Services. The methodology is built around a collection of Semantic Web Service engineering scenarios, which identify the different Semantic Web Service artifacts that need to be semantically described in order to enable each scenario. The individual scenarios can be combined to create complex use cases, while still maintaining a clear understanding of exactly which descriptions need to be created to enable such a use case. Engineers are assisted in the execution of individual tasks in the methodology by the Web Service Modeling Toolkit (WSMT), an integration development environment for Semantic Web Services that provides tool support for many of the mundane or error prone tasks.