Lecturer: W. Reisig

Title: Service Orientation as a Paradigm of Programming

Abstract
This contribution spans the broad spectrum from fundamental aspects of service modeling to tool-based analysis techniques of such models. We start with some fundamental considerations about the nature of service orientation as an architecture principle for software embedded systems. As a grand challenge of informatics we identify the missing theoretical foundation of modeling any kind of reactive systems, in particular service oriented computing.
In the second part we critically investigate the notion of models in general, and of services in particular. Compared to models in other sciences, we show that models in informatics frequently lack means to derive properties of a system from its model.
The third part suggests a couple of notions that may serve as a starting point for a systematic build-up of a theory of services.
In the fourth part we study in detail a particularly useful notion of composition of services.
Finally, we turn to applied aspects of service models: The tool chain as described in service-technology.org. This tool chain provides a number of integrated tools that support the analysis of models of services. The tools base on Petri Nets because Petri Nets provide powerful and efficient analysis techniques. Further tools are available to generate Petri Nets from programs and models formulated in languages such as BPEL and BPMN.