Modeling and Predicting Performance Impacts in a Service-oriented, Industrial Software System from the Automation Domain[*]

Heiko Koziolek, Roland Weiss, Jens Doppelhamer

Industrial Software Technologies
ABB Corporate Research, Forschungszentrum Deutschland
Wallstadter Str. 59
68526 Ladenburg
heiko.koziolek@de.abb.com
roland.weiss@de.abb.com
jens.doppelhamer@de.abb.com

Industrial software systems today have reached sizes and complexity such that introducing changes like adding new features or fixing bugs requires significant investments. How these changes affect system qualities like performance or maintainability is typically not know a priori and therefore increase the risks for the investment. In this work we show how based on architecture models early estimations of performance become possible. We present an industrial demonstrator from the automation domain for model based performance prediction. First, the architecture models of a service in a service-oriented automation system are manually created and annotated with performance parameters. After that, we compare performance predictions with actual measurements. The used analysis tools allow performance estimates of implementation, usage, or deployment changes to the system, relying on the created architecture models. The results of the initial demonstrator incarnation look promising, as the deviation of the performance estimations are below 10%.