

# Abstract of Doctoral Thesis

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Title: Components and Services in Resource-Constrained Environments  
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## Abstract

*Appliances of every day use such as consumer electronics, automotive and telecommunication devices as well as various kinds of control systems have become a common and important part of our everyday lives. In comparison to general-purpose desktop systems, they are limited in terms of various resources, for example memory, CPU power, and battery capacity. Component-based software engineering is a well-established development technique, which has found its way to industry and has been successfully used for a long time in multiple domains. However, the industrially adopted component frameworks were designed for general-purpose systems and they can be hardly used in resource-constrained environments.*

*In the thesis, we explore the potential of component-based system engineering in resource-constrained environments. Stemming from a survey of existing component frameworks targeted to this domain, we identify the most important approaches to overcome resource constraints in component-based systems and explore their potential. In particular, the thesis discusses (1) adjusting component frameworks to resource-constrained environments, (2) introducing software architecture variability to free resources, when they are not needed, and (3) executing components remotely.*