

1st Workshop on Software Services: Frameworks and Platforms
Timisoara, September 23-25, 2010



SELF-ADAPTATION OF SERVICE BASED SYSTEMS BASED ON COST/QUALITY ATTRIBUTES TRADEOFFS

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ABSTRACT. An application should be self-adaptive in order to automatically and autonomously adapt its behavior for several reasons, such as service evolution (e.g. a new version may be available), hardware volatility (e.g. network quality changes) and varying users demands requiring new requirements (e.g. a new functionality or a different level of quality of service). In this paper we introduce a framework, based on an optimization model, that dynamically adapts a service based system (i.e. both the structural and behavioral software and hardware architecture) while minimizing the adaptation costs and guaranteeing a certain level for the system qualities. Adaptation actions can be triggered both by a user request and automatically after the runtime violation of system quality constraints, or the appearing (disappearing) of services into the environment. In particular, in this paper we give a general overview of the main components of the framework by providing a deeper discussion of the optimization model that is the core of the framework.