

From Requirements to Architectural Style Focusing on Connector Properties

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Abstract

Even though the quality of software requirements and software architecture have a significant impact on the success and quality of a software project, few tools exist to support the transition from requirements to architecture. Many desired qualities in a software project that are expressed in the software requirements can be achieved with software architectural styles. This paper proposes an approach towards an automated approach that can help choose an appropriate architectural style given a set of natural language software requirements. The approach, Automated Architecture Scoring Method (AASM), transforms software requirements into a formal model in conceptual graphs which is analyzed for possible software architectural components, and possible properties of those components. AASM then analyzes those properties and develops a recommendation for an architectural style. This paper focuses on using conceptual graphs to guide architectural style selection, with a particular emphasis on software architectural connector properties.

1. INTRODUCTION

When choosing the best software architecture for a project, a software architect is influenced by many factors including time constraints, the experience of his team, and his own biases towards (or against) certain software architectures. A tool that provides an unbiased software architecture recommendation based solely on the given requirements can serve as a valuable starting point. Tools exist for automated requirements analysis and development environments exist for constructing a software architecture, but few automated approaches exist for choosing between software architectural styles given a set of software requirements [Galster 2006]. The ultimate goal of our research is to develop automated tools to select an architectural style from a given set of natural language software

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