

Tracing the Implementation of Non-Functional Requirements

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ABSTRACT

A software architecture has to enable the non-functional properties like flexibility, scalability, or security, because they constitute the decisive factors for its design. Unfortunately, the methodical support for the implementation of non-functional requirements into software architectures is still weak; solutions are not generally established. Recently, there are only few approaches that actually deal with non-functional requirements during design, even less take advantage of traceability, which supports a mapping of requirements to solutions through the development process. Therefore, in this chapter we present the new architectural design method TraGoSoMa, which supports these issues. The method uses a so-called Goal Solution Scheme, which guides the design activities, supports conflict resolution, decision-making, and the classification of solutions. For illustration purposes we use a case study from a reengineering project for a Manufacturing Execution System (MES) that is restructured according to the SOA principles and integrated with an Enterprise Resource Planning (ERP) system.

KEYWORDS

Software Architecture, Architectural Design Method, Traceability, Software Quality, Non-Functional Requirements, Flexibility, Scalability, Security, Web Services, Enterprise Resource Planning, Manufacturing Execution System