

MASTER'S THESIS

Goal-based requirements engineering -- exploring with the "RADIE" approach for ontological elaboration

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**Goal-Based Requirements Engineering –
Exploring with the ‘RADIE’ Approach for
Ontological Elaboration**

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**A thesis submitted in partial fulfillment of the requirements
for the degree of
Master of Philosophy**

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Abstract

The Goal-Based Requirements Engineering (GBRE) is applied for defining system requirements systematically. The GBRE defines requirements with rationale, which could reduce the project failure at the beginning of the system analysis. Therefore, for the project success and cost effectiveness, the GBRE improvement is necessary.

As GBRE could be viewed as a business process, the GBRE improvement could be considered as a Business Process Reengineering (BPR) project. In order to make the BPR project successful, we should take the failures and success factors into account, and incorporate the guidelines of BPR. The 'RADIE' Approach could handle these issues.

By analyzing GBRE with the 'RADIE' Approach, we note that even if in many proposed GBRE methodologies, people use goals to define requirements, there is lacking of theoretical and empirical support that could justify the sufficiency and effectiveness of this issue. In order to discuss the relationships between goals and requirements, we use the taxonomy, which is a strong alignment and reconciliation mechanism to analyze the surveyed goals and requirements. Based on the tabulated taxonomy results, we elicited goal types and requirement types, which could map with each other. Also, we propose the Goal-Requirement Coupling (GRC) model based on the goal types and requirement types for requirements definition.

The thesis is divided into three parts. Firstly, we discuss the GBRE, the 'RADIE' approach, and the GBRE exploration with the 'RADIE' approach. Secondly, we explore the goals and requirements relationships. Thirdly, we construct the GRC model for system definition and perform two case studies to demonstrate the applicability of the model.

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