

## 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.

# Table of Contents

Declaration.....	i
Abstract.....	ii
Acknowledgements.....	iii
Table of Contents.....	iv
List of Tables.....	vii
List of Figures.....	xi
Overview.....	1
Chapter 1 Introduction to Goal-Based Requirements Engineering (GBRE).....	4
1.1 Requirements Engineering (RE).....	4
1.1.1 Component-based Analysis of Definitions of RE.....	5
1.1.2 Why RE.....	11
1.2 Goals.....	13
1.2.1 Goal Definition.....	13
1.2.2 Goals Usefulness Justification.....	14
1.3 Goal-Based Requirements Engineering (GBRE).....	16
1.3.1 Why GBRE.....	17
1.3.2 Introduction to Several GBRE Methodologies.....	18
1.4 Conclusion.....	20
Chapter 2 GBRE Exploration with the ‘RADIE’ Approach.....	21
2.1 Introduction to the ‘RADIE’ Approach.....	21
2.1.1 Recognition.....	24
2.1.2 Fundamental Analysis.....	25
2.1.3 Radical Redesign.....	26
2.1.4 Implementation.....	27
2.1.5 Evaluation.....	28
2.1.6 Conclusion.....	28
2.2 GBRE in the ‘RADIE’ Approach.....	29
2.2.1 GBRE in Recognition Stage.....	30
2.2.2 GBRE in Fundamental Analysis Stage.....	31
2.2.3 GBRE in Radical Redesign Stage.....	32
2.2.4 GBRE in Implementation Stage.....	33
2.2.5 GBRE in Evaluation Stage.....	33
2.2.6 Conclusion.....	34
2.3 Conclusion.....	35
Chapter 3 Component-based Taxonomy of Goals and Requirements.....	36
3.1 Introduction to Taxonomy.....	36
3.2 Component-based Taxonomy of Goals Definition.....	39
3.3 Taxonomy Results – Goals.....	42

3.3.1	Surveyed Goals .....	45
3.3.2	Tabulate Surveyed Goals with the ‘5W, 1H’ Approach .....	48
3.3.3	Goal Concepts and Actual Real-life Goals Reconciliation based on the ‘5W, 1H’ Approach.....	55
3.3.4	Goal Types .....	57
3.3.5	Goal Definitions .....	60
3.3.6	Integration of the Goal Definitions and Actual Real-life Goals .....	63
3.4	Component-based Taxonomy of Requirements Definition .....	66
3.5	Taxonomy Results – Requirements .....	67
3.5.1	Surveyed Requirements .....	69
3.5.2	Tabulated Surveyed Requirements with the ‘5W, 1H’ Approach .....	71
3.5.3	Requirement Concepts and Actual Real-life Requirements Reconciliation based on the ‘5W, 1H’ Approach .....	74
3.5.4	Requirement Types .....	76
3.5.5	Requirement Definitions .....	77
3.5.6	Integration of Requirement Definitions and Actual Real-life Requirements ..	78
3.6	Conclusion .....	82
Chapter 4	Goal-Requirement Coupling (GRC) Model for GBRE.....	83
4.1	Goal Types and Requirement Types Analysis – Mapping .....	84
4.2	Goal and Requirements Coupling (GRC) Model.....	85
4.3	The GRC Model and RE Definitions.....	88
4.4	Conclusion .....	89
Chapter 5	Ontological Elaboration of the GRC Model .....	90
5.1	Introduction to the Ontological Model .....	90
5.2	The GRC Model Elaboration – Systems Establishment Perspective.....	92
5.2.1	Business Goals Elicitation .....	93
5.2.1.1	Introduction to CATWOE (Checkland, Scholes, 1999) .....	93
5.2.1.2	Elicit Business Goals from the Owner, Actor and Client .....	94
5.2.1.3	Enrich Business Goals with the Problem Domain and the Solution Domain Interactions.....	95
5.2.2	Product and Process Goals Elicitation .....	97
5.2.3	Environmental Goals Elicitation.....	100
5.3	The GRC Model Elaboration – Systems Definition and Specification Perspective .....	101
5.3.1	Requirements Elicitation.....	101
5.3.2	Implementation Goals Elicitation .....	102
5.3.3	Maintenance Goals Elicitation .....	103
5.3.4	Reorganize the Requirements as the System Design Components.....	104
5.3.4.1	Operation and Procedure Document Elicitation .....	104
5.3.4.2	Data Modeling Performance .....	105
5.3.4.3	DFD Design .....	106
5.3.4.4	System Computerization with the Operation and Procedure Document, the ERDs, and the DFDs.....	108
5.4	Conclusion .....	109

Chapter 6 Case Study.....	110
6.1 Design Process of the GRC Model.....	110
6.2 Case Study – Car Fleet Management (CFM) System.....	112
6.2.1 Case Description of the CFM System.....	112
6.2.2 System Establishment with the GRC Model – the CFM System .....	114
6.2.2.1 Business Goals Elicitation .....	114
6.2.2.2 Product Goals and Process Goals Elicitation.....	117
6.2.2.3 Environmental Goals Elicitation.....	119
6.2.3 System Definition and Specification with the GRC Model – the CFM System .....	120
6.2.3.1 Requirements Elicitation.....	120
6.2.3.2 Implementation Goals Elicitation .....	125
6.2.3.3 Maintenance Goals Elicitation.....	125
6.2.3.4 Operations and Procedures Elicitation.....	126
6.2.3.5 Data Modeling .....	131
6.2.3.6 DFD Design .....	134
6.3 Case Study – Research Postgraduate Student Information Management (RPg) System.....	138
6.3.1 Case Description of the PRg System .....	138
6.3.2 System Establishment with the GRC Model – the RPg System .....	142
6.3.2.1 Business Goals Elicitation .....	142
6.3.2.2 Product Goals and Process Goals Elicitation.....	144
6.3.2.3 Environmental Goals Elicitation.....	146
6.3.3 System Definition and Specification with the GRC Model – the RPg System .....	146
6.3.3.1 Requirements Definition.....	146
6.3.3.2 Implementation Goals Elicitation .....	149
6.3.3.3 Maintenance Goals Elicitation.....	150
6.3.3.4 Operations and Procedures Elicitation.....	150
6.3.3.5 Data Modeling .....	155
6.3.3.6 DFD Design .....	162
6.4 Conclusion .....	166
 Chapter 7 Conclusion and Future Works.....	 167
 Bibliography .....	 172
 CURRICULUM VITAE.....	 177