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# Goal Oriented Requirements Extraction with Hybrid Approach Based on Both Customer & User Needs

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**Abstract.** The previous reseaches suggested the requirement extraction & prioritization method individually from either the customer or the user needs[1,2]. Those approaches did not only difficult to compare/analyze as to individually reflect requirement, but also hard to exactly develop software product with biasedly reflecting only individually need, that is, even through good requirements satisfied based on either the customer or the user needs. In this paper, we propose intergrated use case oriented requirement engineering process for exactly reflecting/priorizing with requirement extraction from both the customer and user needs. To do this, we adapt hybrid approach with requirements extracted from each method[3]. As a case study, we show requirement extractions and prioritization with hybrid approach based on both cutsemer and user needs on the car product management system.

**Keywords:** Goal Oriented Requirements Extraction, Hybrid Approach, Customer & User Needs, Use Case Point, and Requirement Engineering

## 1 Introduction

It was very important to extract/analyze requirements for successful development even on the previous software development method. But it should be reworked when identify new requirement or change requirements [1]. The previous reseaches modified *Value-Innovative Requirement Engineering* (ViRE) approach to extract good requirements [1,2]. But those approaches did not reflect simultaneously both customer and user needs to identify requirements, and also should execute duplicative procedure because of individually extracting requirements. To solve this problem, we suggests to simultaneously reflect requirements of both customer and user needs.

With our process, we exactly reflect requirements based on both sides. This Paper is organized as follows: Chapter 2 mentions Integrated Use Case Oriented Requirements Process. Finally, in chapter 3 conclusion future work will be described.

## 2 Integrated Use Case Oriented Requirements Process

In this process, we can extract both requirements from the customer & user needs, , and also consist of seven steps such as Customer requirement extraction, Use case prioritization based on Use Case point, Full requirements, Analyzing correction, Analyzing Matrix, Requirement Prioritization, and Hybrid approach. In this paper, we limit to describe just hybrid approach of step 7. To do this Integrated Use Case Oriented Requirements Engineering Process, we should have redefined a scope of Hybrid approach [3].

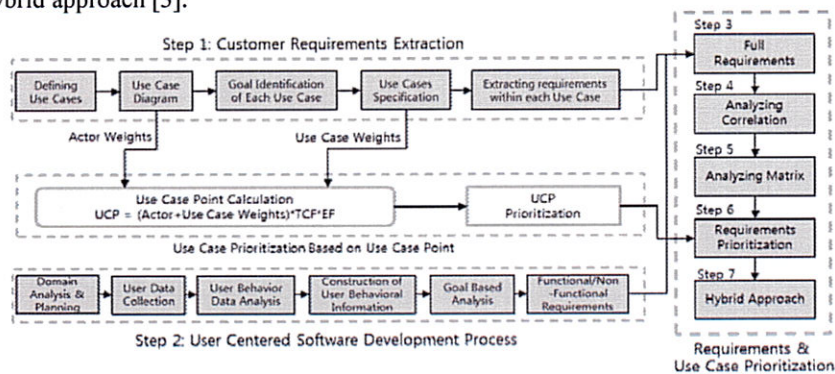


Fig. 1. Integrated Use Case Oriented Requirements Engineering Process.

Hybrid approach has different scope values as to each requirement from the customer or the user needs. To integrate both requirements, we should redefine the scope of Hybrid approach. In next step, we re-establish threshold value of extracted use cases. Therefore, they have different threshold value on the different scopes. These values show dot line in figure 2. Based on the changed threshold values, we rearrange use cases, and decide *Elimination, Reduce, Raise, and Create* (ERRC) which are value decision method for reclaiming Blue Ocean when analyzing requirements on Value-Innovative Requirements Engineering (ViRE). After deciding ERRC, we rearrange use cases through being in conference with stakeholders. On this process, we finally decide ERRC. In this paper, our proposed method simultaneously can analyze and compare the difference between the customer and the user needs, which easily apply these requirements on developing software product.

When individually extracting requirements from either customer or user needs, we should duplicate to proceed from step 3 to step 7 like figure 1. But our Integrated Use Case Oriented Requirements Process does not necessary to duplicate this procedure.

It shows extracting use cases (such as UC3, UC17, UC20) as the dark circles on customer requirements, and also use cases(UC10, UC16) as the white circle on user preference requirements. The dark arrow includes this particular use case into “Crease” area, which means to add use cases (such as UC10,UC16,UC3,UC17,UC20) to the product. The dot arrow means to decrease the function of use case, which include this use cse (such as UC6, UC8, UC14) into into “Eliminate” area.



## Goal Oriented Requirements Extraction with Hybrid Approach Based on Both Customer & User Needs

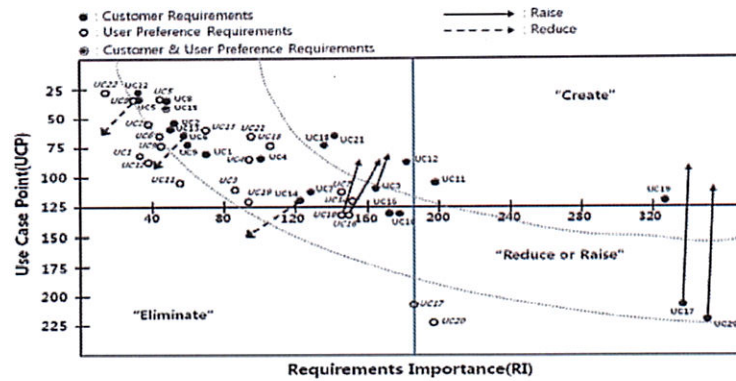


Fig. 2. ERRC Results of Use Cases

### 3 Conclusion

The previous researches suggested the requirement extraction & prioritization method individually from either the customer or the user needs. Those approaches did not only difficult to compare/analyze as to individually reflect requirement, but also hard to exactly develop software product with biasedly reflecting only individually need. Our Integrated Use Case Oriented Requirements Process does not necessary to duplicate this procedure.

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