Intertwining of Requirements with Testing

[1]Neha
Department of Computer Science and Engineering
School of Computer Science, AL-Falah University
Dhauj, Faridabad, Haryana, INDIA
E-mail: silent.angel02@gmail.com

[2]Mohd. Sadiq
Computer Engineering Section, UPFET
Jamia Millia Islamia (A Central University)
New Delhi, INDIA
E-mail: sadiq.jmi@gmail.com, msadiq@jmi.ac.in

Abstract: This paper presents a method called AGOTRFR, i.e., an attributed goal oriented testing requirements elicitation from functional requirements. The objective of this method is twofold: (i) to elicit the testing requirements from functional requirements; and (ii) to manage the requirements change process. Therefore, two attributes are attached with the AGOTRFR graph. One attribute is used to indicate the priority of the functional requirements and the other is used to indicate the implementation status of the requirements during the requirements change process. To compute the priority of the functional requirements we used the analytic hierarchy process. During the computation of the priority, cost and effort are considered as the criteria during pair-wise comparisons among the requirements. Finally, the proposed method is demonstrated with the help of an example.

Keywords: Functional requirements, Testing requirements, AND/OR graph, analytic hierarchy process, function point, and COCOMO.

I. Introduction

Requirements engineering (RE) and software testing are two different processes for the successful development of any software product. People who are involved in these processes have different mindset. For example, the mindset of RE people is to identify, model, and analyze the need of the stakeholders [2]. On the other hand side, the objective of the testing team is to identify as many errors as possible in the software so that complete set of requirements can be delivered during different releases of software without having any error. Because of the different mindset of the people, who are working separately in RE and testing process, it is difficult to develop the software within time and budget [1]. Therefore, it is an important research issue that how to bridge the gap between the RE people and testing people so that successful software can be developed [4]. Based on our literature review, we identify the following research issues that are present in the literature of the "*goal oriented and testing process*" [1, 6, 7, 8, 9, 11, 12, 13]:

1. How to generate the testing requirements from the functional requirements?
2. How to incorporate the requirements attributes such as priority and implemented status during the requirements change process?

Therefore, to address the above research issues we proposed a method called AGOTRFR, i.e., attributed goal oriented graph for generating the testing requirements (TR) from the functional requirements (FR).

This paper is organized as follows: In section II, we present the related work. Proposed method is given in section III. Case study is given in section IV; and finally, the conclusion and future work is given in section V.