A bridge to Design and Construction

Designing and building computer software is challenging creative. Building software is compelling that many software developers want to jump right in before they have a clear understanding of what is needed. Requirement engineering must be adapted to the needs of the process, the project ,the product and the people doing the work. Requirement engineering is a software engineering action that begins during the communication activity and continues into the modeling activity. Requirement engineering establishes a solid base for design and construction. Without it the resulting software has a probability of not meeting customers need.

Requirement engineering builds a bridge to design and construction. It begins at the feet of the project stakeholders (managers, customers, users), where business need is defined, user scenarios are described, functions and features are delineated and project constraints are identified. It begins with a broader system definition where software is one component of the larger system domain. The next step towards the bridge allows us above allowing the software team to examine the context of the software work to be performed, the specific needs that design and construction must address, the priorities that guide the order in which work is to be completed and the information, functions and behaviors that will have a profound impact on the resultant design.

Requirement engineering Tasks

1. Inception

   Most projects begin when a business need is identified or a potential new market or service is discovered. Stakeholders from the business community define a business case from the idea, try to identify the breadth and depth of the market, do a rough feasibility analysis, and identify a working description of the project's scope. All of this information is subject to change as the project progresses.At the project inception, the software engineers ask a set of context free questions , the purpose is to establish a basic

understanding of situation, the problem of the customer and the people who want the solution, the nature of the solution desired and the effectiveness of the communication and collaboration of the customer and the developers of the software.

2. Elicitation

The term elicitation means a detailed idea of what customer wants. There are few questions which are to be taken care of during the elicitation process they are :

What are the objectives for the system or product are?

What is to be accomplished?

How the system or products fits into the need of business?

How the system or products are going to be used in daily basis?

Answers to all the above questions give an idea of scope of products, understanding of software , the extent of volatility of software.

3. Elaboration

The information obtained from the customer during inception and

Elicitation is expanded are refined during elaboration.This requirements engineering activity focuses on developing a refined technical model of software functions, features and constraints.Elaboration is an analysis modeling action that is composed of a number of modeling and refinement tasks.Elaboration is driven by the creation and refinement of user scenarios that describes how end users will interact with the system. Each user scenario is parsed to extract analysis classes business domain entities that are visible to the end user. The end result of elaboration is an analysis model that defines the informational, functional and behavioral domain of the problem.

4. Negotiation

Since the normal circumstances do reveal that customers and users face conflict regarding the achievement through the software engineering practices because of limited business resources. So requirement engineer must reconcile these conflicts through the process of negotiation. Customers, users and other stakeholders are asked to rank the requirements and then discuss conflicts in priority. Risks associated with each requirements are identified

and analyzed. Rough estimates are made and used to assess the impact of each requirement on project cost and delivery time. Requirements are eliminated, combined and modified so that each party achieves some measure of satisfaction.

5. Specification

The term specification means different things to different people in context to software engineering. A specification can be a written document, a set of graphical models a formal mathematical model, a collection of usage scenarios, a prototype, or any combination of these. Some template should also be developed and used for specification of requirements. The specification is the final work product produced by the requirements engineer. It serves as the foundation of subsequent software engineering activities. It describes the function and performance of a computer based system and the constraints that will govern its development.

6. Validation

The work products produced as a consequence of requirement engineering are assessed for quality during this validation step. Requirement validation examines the specification to ensure that all software requirements have been stated unambiguously that inconsistencies, omissions and errors have been detected and corrected and that the work products confirm to the standards established for the process, the project and the product.

The primary requirement validation mechanism is the formal technical review. The review team that validates requirements includes software engineers, customers, users and other stake holders who examine the specification looking for errors in content or interpretation areas where clarification may be required, missing information inconsistencies, conflicting requirements or unrealistic requirements.

7. Requirement Management :

The requirements for the computer based system change and that the desire to change requirements persists throughout the life of the system. Requirement management is a set of activities that help the project team identify, control and track requirements and changes to requirements at any time as the project proceeds. Many of the requirement management activities are similar to software configuration management techniques. Steps are:

1. Requirement management begins with identification. Each requirement is assigned a unique identifier.
2. Once the requirement is identified, traceability tables are developed. Each traceability table relates the requirements to one or more aspects of the system or its environment