

Analysis Report

After requirements have been elicited, they need to be analyzed to ensure that the correct requirements are in place. This ensures that we can detect and resolve conflicts between requirements. This also helps to elaborate system requirements in order to derive software requirements. This starts off by requirements classification. Requirements classification can be done based on whether a requirement is functional vs nonfunctional, priority, scope, or volatility/stability. The next step in the process is conceptual modeling. Through various types of models such as case diagrams, data flow models, and other models, we can get the software context which provides a connection between the intended software and its external environment. This helps understand the context of the software in its operational environment and to identify external interfaces. Architectural Design and Requirements Allocation is the next step followed by the next step, Requirements Negotiation. Requirements negotiation is important for resolving conflicts withing two stakeholders' requirement needs. Both stakeholders need to be consulted in order to come to a consensus for an appropriate tradeoff. Finally, the last step is Formal Analysis. This enables requirements to be specified precisely and avoid misinterpretation. Requirements can also be reasoned over allowing for desired properties of software to be proven.

When writing a complete set of requirements in Jira for my project, I labeled each requirement as nonfunctional or functional. I also set the priority of each requirement from low, medium, or high. After eliciting requirements for my project, I analyzed my requirements by classifying them as mentioned above. I also made use case diagrams and level 0 data flow diagrams to show how the intended software operates with its external environment. I also did requirements negotiation since certain stakeholders had conflicting needs. After consulting both of them, a tradeoff was made.

When doing requirements negotiation, critical thinking was an important part of helping to resolve conflicts. Using elements of thought from the Elder Paul Critical Thinking Model really helped to achieve a proper tradeoff. Thinking in the point of view from stakeholders

allowed me to see how important their need was in the conflict. Thinking of the implication and consequences of outcomes was important as both stakeholders would need to be satisfied.

Ethics plays a really important part in making engineering decisions. It is the duty of every engineer to be honest, fair, equal, and dedicated to public safety and general wellbeing. If a decision made is biased, it can lead to many problems throughout the world. It is every engineer's duty to report any of these broken ethics. This can lead to negligence which is a very serious issue.