CSCI 568- Requirement Engineering Homework 1 [Chapter 2]

Q1. Why is it important to have a Conops or mission statement at the start of requirement engineering?

Ans. The main thing while undertaking the development of the system is to obtain the concise description of what the system is supposed to do. This statement formed is known as the product mission statement. Mission statements are normally short and simple statements which outlines what the organization's purpose is and as well as how are they related to the specific sector an organization in which it operates.

A concept of operations (Conops) is a document describing the characteristics of a proposed system. It is like the mission statement but is usually longer in length. A Conops should describe the process which the implementation system should follow. It is used to broadcast the quantitative and qualitative system characteristics to all stakeholders.

A general CONOPS structure will help in the following:

- Helps scope the problem & solution
- Bridges where we are and want to be
- Illustrates how a system will function
- Facilitates communications among stakeholders
- Provides a logic trail of capability
- Provides baseline for measuring system efficacy
- Provides basis for requirements

Conops is extremely crucial in the system because it tells us about the project and what is it supposed to do i.e. it gives us an idea of what and how the system is supposed to function and what type of output is expected from it.

Q2. What is the relationship of a system or product mission statement to a company's mission statement?

Ans. The relationship between the product mission statement to the company's mission statement is interdependent. The latter focuses on the overall goals and functionality of company. It can be in the broad scope of the system. On the other hand, the product's mission statement is specific and is based and roams around just the product itself. It does not pay attention to other aspects which are not related to the product in direct or indirect manner. In short, it has a very narrow scope of the system.

But one cannot ignore the fact, that the product mission in some way or the other is also fulfilling the general goals of the company, thus leading the company to much greater heights. If a product enhances, thus the company prospers else there is downfall.

Example: If the mission statement of apple company is to innovate new things. Then a product's mission statement (like iPad) can be light in weight, which will be an innovation wrt the weight as compared to the previous gadgets.

Thus, in my perception both product as well as the company's mission statement are interdependent on each other.

Q3. When should a domain vocabulary be established?

Ans. Domain vocabulary is a method of creating useful and usable software solutions in the communication between the different stakeholders. This eventually creates the detailed understanding and chances of miscommunication is reduced to a minimum which eventually leads to better product delivery. Domain vocabulary captures the main idea, abbreviations, detailed meaning of words used frequently [like trucks and heavy vehicle example], facts, policies viewpoints, interests and so on.

Domain Vocabulary must be used in places, where there is complex problems that could be solved using a software solution only. It can also be used when we need to improve the communication between the stakeholder and project developers.

Without domain vocabulary, there can be miscommunication amongst the stakeholders as well as the engineers which could lead to the development of a wrong product thus all the resources and investment not being utilized properly.

Q4. Under what circumstances might the customer's needs and desires be considered secondary?

Ans. The main motive of the complete system is to satisfy and fulfill the needs of the customer. But there arises a time when these needs are not necessary considered primary but rather treated as secondary. Some of these circumstances are as follows:

- The consumer does not have enough knowledge of that particularly domain and thus has vague needs. They can be ignored and the project developer could give more insight about that domain to the customer.
- The needs are incomplete. The complete detail is not provided by the user. One could ask for more specifications from the user, but till then other needs are given much priority.
- If the needs have been mentioned before or like current needs have already been implemented i.e. redundancy in the needs details.
- If the needs are contradicting other needs mentioned before, then those needs are considered secondary.

These are some scenarios, if not all, where customer's needs can be considered secondary.

Q5. Think of a system or a product you use often and try to guess what the mission statement is for that product or the company that makes it?

Ans. One product that I use often is YouTube. YouTube is a video sharing website which provides easy access to all the videos uploaded on it. It is one of the subsidiaries of Google.

The mission statement of it could be: To provide access to the videos across the web in an easy manner.

Q6. Search the internet for its actual mission statement and compare it to your guess. Does such a mission statement exist? If it does, how does the actual mission statement compares to yours?

Ans. Yes, the mission statement for YouTube does exists and is as follows:

The mission statement of YouTube is to provide fast and easy video access and the ability to share videos frequently.

The comparison between the actual and my guess about the mission statement is somewhat similar. Mine included the video access over the web whereas the actual statement also included the ability to share those videos frequently.

Q7. At what stage of requirement development are additions to the requirements considered scope creep?

Ans. Scope creep refers to the uncontrolled changes or continuous growth in a project's scope. It can occur when the scope of a project is not properly defined, documented, or controlled. It refers to a project that has seen its original goals expand while it's in progress. Even if the project is completed, scope creep can end up giving the final product with a completely different output from the original final product estimated in the beginning.

Scope creep can occur due to many reasons, some of which could be:

- Weak project management
- Miscommunication between parties
- Poor understanding of the original project
- Changing market conditions and so on.

Scope creep is considered an evil thing in the field of development. It is can hinder the project in way too many aspects if they are mentioned in following stages:

- When the project is about 80% complete. Changing the functionalities might lead to more time consumption and money investment.
- During the beta testing phase of the project, as changes made later are very difficult to overcome.

Scope creep is usually considered to be a bad thing, but it might not be necessary. When in the early stages of development of the project it might be a boon for the overall system as it will entail more functionalities along with the different prospects that can be used to attain them, thus enabling the developers to a different field all together.

Q8. List 5 goals for airline baggage handling system.

Ans. Few of the goals are as follows:

1. Offsite bag drop: There can be drop-off locations for baggage which can accept the bags of the customers flying in recent times, thus reducing their efforts in carrying their bags on the day of travel. Thus, overall making the travel easy. And these bags to be sent directly to the aircraft.

2. Automated baggage handling systems: This helps baggage handling and ground support personnel improve flight turnaround times, which also ensures the right bag goes to the right plane for the right passenger.

3. Centralized system that optimizes the operation and functionality of the bag system: Having a general baggage counter rather than having different bag deposits counters on the site. This will lead to less space utilization, thus making more space for other new facilities which might aid the customers.

4. RFID: The most futuristic development is the new eTag and eTrack system. These devices allow you to track your bags throughout the journey directly on your smartphone using GSM, GPS and Bluetooth technology. The eTag automatically updates and displays flight details and a barcode when one checks-in online from home.

5. Delivery of baggage to final destination: Final destination should be mentioned on the baggage. If the customer has a connecting flight, then he/she should not collect the bags at the halt and then redeposit. Rather they should be transferred internally without bothering the customer.

Q9. Investigate the KAOS Requirement Modelling methodology and discuss how goals are modified in this approach.

Ans. Goal oriented requirement engineering involves the analysis of the stakeholder goals in order to obtain new functional requirements to meet these goals.

KAOS stands for Knowledge Acquisition in automated Specification. KAOS is a goal oriented requirements analysis method. The main advantage of KAOS over other requirements analysis methods is its ability to align requirements to business goals and objectives. KAOS focus on realizing and indicating the business goals.

Goal oriented requirement focuses of the 5 W's i.e. what, when, where, who, why and how of the requirements, which in order is much useful in clarifying the requirements. It is useful in the early phases of the project as they are the center of how the implementation of the product should be done to attain those goals.

A goal model allows larger goals to be subdivided and operated as smaller goals. If the goals are met, only then the requirements are considered to be complete. It can also identify and resolve the conflicts of cost, security, performance etc as it reveals different interests amongst the stakeholders.

The overall system functions around what is the main goal of it and how can it be achieved. The developer does not take the requirements details from the customer but rather the overall goal of what product is to be delivered. According to the final output, the requirements are considered. The requirements tend to be modified on each level so as to achieve the ultimate goal.