

CSCI 5608 SOFTWARE PROJECT MANAGEMENT

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CUSTOMER INVOLVEMENT IN SOFTWARE DEVELOPMENT

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Introduction:

Customer involvement can be used as a general term describing direct contact with the customers^[6]. The latest trend in software development shows us that customers play an important role in the success of a project^[7]. Also, software industry is trying to build products with a more customer focused^[5] approach and hence it is very important to have customer involvement. Customers are very important to identify the requirements of a software project. The role of a customer is not the same in all software projects because not all software projects use the same development models or methodologies. This shows that role of a customer depends on the software development model being implemented. Also the role of customer varies in different phases of these models. In this paper, we define the term ‘Customer’ in the field of software development. We examine the role of a customer in the traditional Waterfall model and the currently used Agile model. We figure out the differences between these two models in terms of customer involvement. We look at the positive impacts or benefits and the challenges of user involvement. Interviews from Management professionals are also included to get an overview of customer involvement in real-time.

Definition of Customer in Software Development:

Customers are part of every software project, as they are the ones who pay for the work and use the product. The term customer can be used as a combined term for client and the end user^[1]. The client is the one who pays for the work and the end user is someone who uses the project deliverable. Sometimes organizations build software for themselves. In such cases the customer could be an employee or a group of employees in the same organization from a different department. If the product is being built for a client then the customer could be an end user who uses the client's product or it could be a group of persons from the client's organization. This group might include Project managers and Subject Matter Experts (SME's).

Customer Involvement in Waterfall Methodology:

In Waterfall methodology, developers and customers agree on what will be delivered, early in the development lifecycle^[2]. Hence, all the requirements are gathered at the beginning of the project. Communication with the user is done to the maximum in this phase, as the Project Manager tries to get a detailed understanding of the customer's requirements. Once this stage is complete, the customer is mostly not involved in the project until the product delivery. This is the scope of customer involvement in a waterfall model.

Challenges in Waterfall Methodology due to minimal Customer Involvement:

- Customers are not always able to visualize an application from the requirements document. They find it difficult to state all their requirements in a detailed manner at the beginning of the project and hence most of the requirements gathered may not be effective^[2].
- In waterfall model, each phase is perfected before the start of next phase. Because of this change is expensive. In maintenance phase of waterfall model if there occurs a situation of changing something, then the team might be reluctant and less flexible about accepting feedback from the user because making changes to core functionalities is very difficult.
- After the product is delivered, the customer may be dissatisfied with the product. Since the customer was not involved in the process of product development, the resultant product might not be the same thing he wished for.
- Changes are very expensive in waterfall model in terms of both time and money, because implementing a change is almost equal to developing the product once again from the beginning.

Customer Involvement in Agile Methodology:

Agile is an iterative and team based approach which emphasizes on fast development of an application in complete functional components. The team members work on a list of deliverables during each sprint. These deliverables are prioritized by business value as determined by the customer^[2]. If all the planned work for a sprint cannot be completed, the work is reprioritized on the guidelines of the customer. This way customer is involved most of the time in agile methodology. As the work is completed in functional components the customer and the project team can review and evaluate the work. Agile methodology heavily recommends customer involvement throughout the project.

Advantages of Customer Involvement in Agile Methodology:

- The customer or the user has frequent and early opportunities to see the work being delivered, and to make decisions and changes throughout the development project^[2].
- The customer gains a strong sense of ownership by working extensively and directly with the project team throughout the project. This helps in building a better product^[2].
- The development is more user-focused, as a result of more and frequent direction from the customer^[2].
- The customer can understand the limitations of the development team and will not ask for impossible things.
- A lot of time is saved because the customer is directly involved instead of middlemen.

Difference between Customer Involvement in Waterfall and Agile Methodologies:

- While traditional methodologies require the customers to provide a detailed idea of the exact requirements with respect to the required software, agile methodology is more flexible through its iterative style of work. With agile development, the customer is constantly in the loop, suggesting improvements and reviewing every phase.
- The increased customer involvement in agile makes the implementation of changes very easy, as opposed to the waterfall model where core part of the system might have to be removed and rebuilt.
- The customer satisfaction in agile is very high when compared to the traditional waterfall model.
- The customer interaction is very high in agile at every stage of development, because of which there is a lot of architectural, functional and fiscal flexibility. This kind of flexibility is not present in the waterfall model.
- There is an increased need of middlemen- Business Analysts in Waterfall model, because there is more emphasis on documentation. In agile there is little emphasis on documentation and hence Business Analysts are not required.

Positive impacts or Advantages of Customer Involvement:

We have already seen a few advantages of customer involvement as part of ‘Advantages of customer involvement in Agile methodology’. There are some more advantages of customer involvement on the overall, when we look at some other methodologies. They are as follows:

- Requirements gathering and requirements prioritization are done effectively due to which the scope of the project can be defined correctly.
- Customers may remember additional requirements that were not mentioned initially at the beginning^[3].
- Ultimately, a right product is built because the customer gives a better understanding of real world scenario. Without user involvement this may not happen all the time.^[3]
- The product is more intuitive and easy to use for the customer. This is important because most of the times, things that developers find intuitive may not be intuitive to the customers^[3].
- The process of developing the software is completely transparent. There is nothing to hide from the customer. This reduces errors in the software.
- Customers share responsibility for issues arising in development. The process becomes a joint team effort rather than a customer-supplier relationship^[3].
- All the important decisions are taken on time without any delay due to customer involvement.
- The development team is free from misinterpretations of the requirements.
- Due to onsite presence of the customer, the development team might feel more responsible to get the job done.

Challenges of Customer Involvement:

A customer might be ready to involve and join the development team. This may look encouraging and easy. But, there are also challenges in this process of customer involvement^[7].

Some of them are:

- Identifying the appropriate customer or user is a bit difficult^[6]. It depends on what type of product is being built. If it is within the organization then the management should be careful in selecting the customer for the development team. If it is for an outside client, there is nothing much the development team could do except for requesting a better person from the client side to be on their team as the user or customer. The client side should also have a clear understanding about who is going to be the customer on the development team.
- The customer might not be interested in getting involved. It becomes difficult for the development team to motivate the customers^[6].
- Sometimes, customers lack knowledge about the technical aspects and the technical limitations of the project. It becomes a duty of the development to invest some time and try to educate the customer.
- Customers might ask for additional features, and this might become a never ending process.
- Customers might discourage the development team.
- Over involvement of customers can sometimes cause problems for the development team. This might happen when there is an onsite customer. The customer might ask for frequent status updates and continuously monitor the development team.

Interview1:

My first interviewee was Mr. Ramesh Sankarnarayan. Ramesh works as Senior Software Manager at Echostar Corporation, Denver. Following are his responses.

- Question: Could you describe the current project you are working on?

Response: We are a team of 6 and my team is currently working on building a 'Video On Demand Content Management System' which is similar to what Netflix and Hulu provide.

- Question: What is the software development methodology being used for this project?

Response: We are using agile methodology.

- Question: How long have you been using Agile methodology and what was the methodology used before that??

Response: We have been using agile methodology for the past 3 years. We used waterfall methodology before agile.

- Question: Who is your customer in the current project?

Response: Our primary customer is our internal operations team which uses our system. We also have an external customer which is DISH Network.

- Question: Who are the customers involved from Dish network?

Response: There is a Program Manager from Dish, with whom we interact.

- Question: What do you think are the most important differences between agile and waterfall methodologies in terms of customer involvement?

Response: In agile, we get feedback early and often, which is not the case in waterfall. In agile we interact with the customer on a daily basis. But in waterfall the customer is involved only during the Requirements phase and the Beta Testing phase.

- Question: What are the advantages of Customer involvement in your project?

Response: We are continuously meeting the customer. This way we are continuously adding business.

- Question: What are the challenges you faced due to customer involvement?

Response: Initially one of the toughest challenge was to keep up with the change requests. There were a lot of change requests. But, we have figured out a way to deal with them.

Interview 2:

My second interviewee was Mr. Harish Kumar Kanchanapally. Harish works as Senior Manager at Sagitec Solutions LLC, Baltimore. Following are his responses.

- Question: Could you describe the current project you are working on?

Response: We are the functional team of our project and I am its lead. We are a team of 7 people and our job is to gather and analyze the requirements of the project. Our current project is a government project, a two-state consortium to modernize the Unemployment Insurance (UI) systems in the states of Maryland and West Virginia.

- Question: What is the software development methodology being used for this project?

Response: We are using the Rational Unified Process, an iterative methodology.

- Question: Who is your customer or client in the current project?

Response: Our clients are the governments of two states, Maryland and West Virginia.

- Question: Who are the persons involved from the client side?

Response: We have 2 Project Managers and a Subject Matter Expert (SME's) from each state, to discuss the requirements. So, totally we have 6 people from the clients side.

- Question: Is the client onsite?

Response: For this project our team moved to the client's office.

- Question: To what extent is the customer involved in your project??

Response: In each iteration we have 5 phases, over a time period of 10 weeks. The phases are Fitgap Sessions(Requirements), Design, Development, Testing and Client IUAT testing. Out of these the client is involved in 3 phases- Fitgap sessions, Design, IUAT sessions which account for 4 weeks.

- Question: Do you think that 4 weeks of customer involvement is enough?

Response: Yes, I think that's enough because we are not building a completely new product here. We are customizing an already built product according to the client's requirements. But for the development of a new product I recommend maximum customer involvement.

- Question: What are the major advantages of Customer involvement in your project?

Response: Since we are on site with the customer, we get early feedback from them.

- Question: What are the major challenges you faced due to customer involvement?

Response: We have something called as Fit Gap sessions where we have to discuss the requirements with our clients. Since this is a consortium we have to deal with people from both the states and convince them to a common point. This is bit challenging because personal perspectives come into play.

Who and How many are the customers?

One important inference that I could make from these interviews was about ‘who’ and ‘how many’ are the customers that should be involved with the development team. I tried to find answers for these questions online, but couldn’t find anything concrete. I think that the management of the client’s organization will take a final call on these two issues depending on their resources. So, if they choose the right number of suitable people, they get a successful product.

Conclusion:

This paper highlights the importance of customer involvement. Customer involvement is one of the key factors for the success of a project. Be it the traditional waterfall methodology or the latest agile methodology, or any other methodology, customer involvement is mostly desired. The only difference being the extent to which the customer is involved. No doubt that agile methodology has the highest customer involvement, but organizations following other methodologies also try to maximize customer involvement by setting up frequent review and feedback sessions with the customers. The interviews included in this paper help us get some knowledge about how the concept of customer involvement is implemented in real world and they also tell us the importance of customer involvement. Like any other implementation, customer involvement also has some challenges, which are of course not impossible to handle. There are very few negative impacts of customer involvement when compared to its numerous benefits. So, ultimately, I would say in most of the cases Customer Involvement is directly proportional to the success of a project.

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