Advancement of Agile Technology in Mobile Application Development and Validating Non-Functional Requirements

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ABSTRACT: Agile software development is one of the best iterative software methodology. It is simple and flexible in nature. It is more of collaborative and time-boxed in nature. The below information about Agile Methodology in various streams such as mobile application development and NERV methodology is clearly taken into picture. Where through mobile application development, Agile Methodology is said to be simpler, flexible, faster in nature. And through NERV methodology that contains non-functional requirements signifies that Agile methodology is not only suitable for development of software products but it is also useful in many of the other fields. The below information also speaks about how Agile Methodology is concerned with customers satisfactory.

I. INTRODUCTION

Agile development process is known to be the customer oriented software development process that is totally based on customer's requirement and his/her satisfaction when the particular software is delivered to them. Agile process describes a set of principles for software development through which the specification, requirements and solutions evolve under efforts of unity of self- organizing cross functional teams. Basically agile development process involves planning, evolutionary development, fast delivery and non-stop improvement. It also encourages fast and flexible response to the change in software product to meet satisfactory level of the customer. Agile methodology is also entitled as "21st Century Manufacturing Enterprise Strategy: An Industry Led View", which is being published by Iacocca Institute.

Agile processes have evolved to address some of the limitations of plan driven approaches. Agile processes are iterative and incremental. Agile software development has become very popular in the world in the recent years with the methods such as Scrum and Extreme programming and hence due to its principles and flexibility many number of companies have adopted agile methodology to have rapid development.

Agile is known as critical of development methodologies developed in 1970s and 1980s in response to other software development processes which were comparatively slow in producing a software. "During 1990's agile method were researched at agile aerospace manufacturing research center at the automation and robotics research institute of the university of Texas At Arlington, an industry led institute funded by the National Science Foundation and the Advanced Research Projects Agency of DoD".

II. PRINCIPLES OF AGILE METHODOLOGY

[1]Basically there are 12 principles of agile software development :
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- ➢ Satisfy the customer through early and continuous delivery.
- ➢ Welcome changing requirements, even late in development.
- ➢ Deliver working software frequently.
- ➢ Business people and developers work together daily.
- ➢ Build projects around motivated individuals.
- ➢ Convey information via face to face conversation.
- ➢ Working software is a primary measure of progress.

➢ Maintain a constant pace indefinitely.
➢ Give continuous attention to technical excellence.
➢ Simplify: maximizing the amount of work done.
➢ Teams self organizing.
➢ Teams retrospect and tune behavior

III. METHODS

[2]According to" Agile Software Development Processes for mobile applications":
Their research questions wanted to know the contribution of agile methods to meet the needs of the mobile software in a real environment. Hence to have a clear view of how agile practices can be implemented in a mobile project, the surveyed three major digital library (IEEE Xplore, ACM DL and Science Direct)searching for research articles that present complete mobile software development framework based upon Agile principles.[2] Hence they had certain criteria based on this research which are as follows:1)whatever the Frameworks are being implemented should be totally and mainly based on mobile applications.2)they should mainly concentrate or focus on the role and use of Agile practices;3)these implemented frameworks must be put up at least in one of the study cases preferably, 4)these implemented frameworks and case studies must be published in international conference proceedings or journals.

[2] Mobile-D was the first attempt to work under Agile practices for the development of the mobile applications.Mobile-D was first introduced in 2004 by Abrahamsson et al. The development methodology was totally based upon Extreme Programming, Crystal methodologies and Rational Unified Process(RUP). Instead of its sequential organization, it recommends for iterations. In general, Mobile-D is the most influential methodology in the field, being cited by 17 articles including case studies, though not all of them are referring to Mobile Application Development.

[2] Another most important mobile application development stream on the basis of Agile methodology was, Mobile Application Software development based on Agile Methodology (MASAM) which was presented by Jeong, Lee and Shin. MASAM software is basically based on Extreme programming, Agile Unified Process and RUP. Hence Mobile-D and MASAM development Lifecycle works on the basis of Agile methodology.

Scrum is one of the Agile Methodology that can also be used as the mobile application development. Scrum is an iterative and incremental framework commonly used in combination with other Agile practices. It basically uses iteration of fixed duration called as the sprint. At the beginning of the sprint meeting, during the stage of planning, the complete scrum teams sets for certain commitments of tasks which being taken from the product backlog and saves these backlogs as the sprint backlog. Later the scrum team members strategies and decides some amount of work to be done which should be achieved by the next sprint meeting. The scrum members set their goals such a way that by the end of the sprint, a functional product should be delivered. And hence the pending work will be featured as the new product backlog which will be forwarded to the next iteration. Scrum in mobile application development is simple and flexible and hence the process runs in such a way that it is[2] activity-centered with restricted number of actions when developed by small teams in short period of time.

[3] According to a lightweight process for addressing non functional requirements in agile software development which is called as "the NERV Methodology" :
The goals of NERV Methodology study contributes in filling the gaps that exists with respect to non-functional requirements which was early being avoided or not defined in Agile processes.[3]It is expected that quality attributes of the software being developed would be improved when non-functional requirements are addressed early in Agile software development. Different researchers have defined non-functional requirements in many different ways. Hence there is no specific definition considered for the non-functional requirements.[3] Some of the definitions of non-functional requirements includes technical constraints, non-technical attributes and architectural constraints among others. Hence the Sevier awareness comes from original work by the piece of framework of non-functional requirement.[3]A piece of framework of the non-functional requirements is process oriented which is used to represent the non-functional requirement of a particular software. The non-functional requirements are basically required to analyze and evaluate the graphical capability of a particular software product. An non-functional requirements mainly deals with cost, time, schedule, and customer's quality attributes such as performance, reliability and usability part of a particular software product.

Many artifacts were developed as a part of NERV methodology to evoke, reason and validate non-functional requirements in early Agile process. By this we can clearly notice that Agile development process is not only suitable for development of a software product but also for all sorts of product development.

Since Agile process is totally customer oriented the requirements of a customer is taken in the form of stories by a product manager of a particular company. These stories are given to the development team called as scrum team in the form of divided tasks. Hence Agile process completely works on customer specification, his/her satisfaction on the particular developed product would be the first priority. Keeping this in mind during the product development using Agile Methodology, the customer involvement at each and every step of product development evolution is very much essential. So that the scrum team would get a clear image of what the customers are expecting and produce the product in short period of time in easier and flexible manner. Agile process involves with many updates of a particular software product in a shorter period of time. Hence the customer would experience more advancement in his/her product.

IV. CONCLUSION

Agile Methodology, extreme programming are one of the most best upcoming methodologies or process to develop a particular software product in a shorter period of time. This would give profit to both the company who has developed the product as well as the customer who requires the product. Since more updating format of a particular software product is a part of Agile methodology, the customer would find more advancement in the product. Hence more the advancement in a paricular product, more happy the customer would be.

REFERENCES

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