A Comparative Study of Agile Software Development & SCRUM with the Traditional Software Engineering Approach

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Abstract-In today's fast pacing world, there are a lot of business ventures and products /software where development is taking place at а high rate which requires a proper set of instructions and methodology to follow. Following the Traditional Models is not co nsidered effective nowadays due to their limitations as a lot of dynamic changes happen during the development of any product or software and during that life cycle, a more designed and modern approach is needed which is considered to be"Agile Software Development". It offers a faster generation of quality software using iterative and incremental approaches consideri ng customer involvement and simplicity at its priority. It is needed to satisfy the customer changing requirements while building any software or product.

The objective of this paper is to give a brief understanding of the traditional software development models with their characteristics and limitations, and the trending Agile Software Development methodology which is mostly used nowadays due to changing requirements in the industry. Furthermore, it also covers all the features and advantages of the Agile Model in detail along with one of its widely used subsets -Scrum which is a lightweight framework used in managing highcomplexity work. Neha Sehrawat

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Keywords-

Agile Software Development, Traditional Methods, Software Engineering, Software Development Life cycle(SDLC), Scrum .

I. INTRODUCTION

In earlier times, a lot of approaches were considered good for building software and products due to steady flow in Software Development Life Cyclei.e there was less change in requirements of users & customers and often thev were completely defined and structured. But in today's growing world there is a need for change at various steps whilebuilding any software due tohigh competition in markets and the requirements for

mor equality software. So to deal with such modern situations, the "Agile Software Development" methodology was introduced which led to improvement in quality of product and software and met all the user's requirements.

While the traditional software development models like Waterfall and Spiral model were heavily used by companies because of their straight forward and structured nature but due to their extensive planning and thick documentation, they were not treated as a good approach in today's world where there is no fixed set of attributes to work on and anything can be demanded as a change by customer.

II. AGILESOFTWAREDEVELOPMENT

For over a while the Agile approach has beenheavily used but few people know the exact meaning of agile.

Agile means 'flexible' which is a term being widely used in Software Development under the "Agile Development Model". So this model practices identifying and discovering requirements by the involvement of a collaborative team and environment along with the customers which make the software building process smooth and results in a high-end quality product.



Image1 – Agile Methodology Approach The main advantages of using Agile Software Development are:-

- 1. PragmaticandpracticalCustomerExpectati ons: the customer is treated as apart of the agile team as they contribute to the development of the product by giving their feedback and ideas to the development team which leads to realistic and reasonable expectations resulting in no conflict.
- 2. Agile results in good quality software: the constant interaction of customers and the development team assures usability of the product in real-time without having any defects. Also, the technical focus of the peers helps to make reliable and maintain able software.

3. **TransparencyinManagement**:due to small mile stone sand as tructured road map, the manager's visibility of the project goes high and there is no such chance of chaos in the understanding of the working project.The manager will easily be aware of the road mp, any change in requirements, risks, and all the required estimates.

III. TRADITIONALVSAGILE

The Traditional software development models include the Waterfall model and various more but the short coming sof these models led to the the evolvement of Agile model.

These are some major agile benefits in comparison to the traditional approach:-

- 1. Moretolerantindynamicrequirements :one of the major drawbacks of the traditional model likeWaterfall was the user requirements should be completely defined at the first stage which was merely impossible achieve. So to in а dynamic environment where the requirements get changed multiple times as per the expectation of the user, the Agile approach lighted the way.
- Fastandrapidproductdelivery: in the traditional life cyclebasedapproachtheproduct is delivered to

the user only after the full completion of software due to which the customer has no idea for along time about what the is getting at the end, Where as the agile approach works iteratively and evolutionarily, thus giving an important initial released product to the user while continuously working on it which helps the customer to get the idea of the final product.

IV. SCRUM

SCRUM is treated as one of the major subsets of agile methodology and was first termed and used in a 1986 paper entitled "The New New Product Development Game"by HirotakaTakeuchi and Ikujiro Nonaka. This term was taken from Rug by sport, where team formation is referred to as SCRUM which was used to emphasize teamwork.

It is an iterative, light in weight, and an incremental framework majorly used to manage high complexity processes and work. This was introduced to challenge the traditional approaches towards software development stating that no volatile changes will affect the production of software, instead, it will increase the quality of it.



The fundamental and main team of SCRUMincludes a SCRUM master, product owner, and developers who are collaborative and strongly aim at a single objective.

a. SCRUMmaster: the Scrum master acts as abridge between the product owner and the scrum team while making sure of the working of various processes and functioning. It also makes sure of the sprint planning by the scrum team.

- b. **Product owner**: the product owner istermed as the leader of the team who prioritizes the tasks and delivers thefinal product to the customers as per his requirements and expectations. Incase of any mishappening, the product owner is responsible.
- c. **SCRUM team**: this is a team of usually five to seven who are responsible forthe actual making and development of the product by planning sprints and doing the tasks from backlog while communicating with others.

V. WHY SCRUM IS THE WIDELY USED AGILE METHODOLOGY?

Scrum is the widely adapted agile technology in today's world due to its great abilities to do efficient work in less time. Many companies use Scrum as well as Kanbanor XP buttheno of companies and developers using Scrum is much higher than any one else. There as ons for it are:-

- a) It is an efficient and costeffective approach where changes are also reversible.
- b) High quality is maintained throughout in scrum.
- c) One of the most important reasons to adopt scrum is thatit offers a quick and effective response to the market needs and rapid changes.
- d) Customer satisfaction is the main criteria that are always taken into consideration.
- e) It is also easy to in corporate rapid changes as the work is done in various iterations.



Image 3 – Pie Chart (% of Agile MethodologyUsed)

VI. CONCLUSION&FUTUREWORK

With the change in user's requirements, the traditional models and approaches like Waterfall and V-model are not able to cope up, so the Agile Software Development is considered as the best approach to handle dynamic requirements change and to meet user's expectations in time due to its amazing features and characteristics.

In this paper, the major advantages and

characteristics of Agile Software development have been described and a brief comparison with theTraditional Software Development Approach is shown along with one of its key frameworks– SCRUM. So it can be concluded that Agile Software development will lead the development industry to great heights and more use of it will be there in the future.

Also, future research can be done on the of comparison different types of Agile frameworks of with their characteristics and features. This research will be amazingly helpful for deciding developers in which framework to use as per their requirements.

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