

A Study on SCRUM Agile Methodology And Its Knowledge Management Process

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-----Abstract-----

The traditional software development process involves the water fall model where the development cycle starts from requirement gathering to deployment, involving the customers in requirements gathering phase only. Where in the agile development of software projects involves the customer in each and every phase right from the requirements gathering till the deployment of the final product. This paper is a study about one of the Agile development practices that is followed in the latest years for the software development-SCRUM and its Knowledge Management Process.

Keywords: Scrum, Agile, SDLC, Knowledge Management

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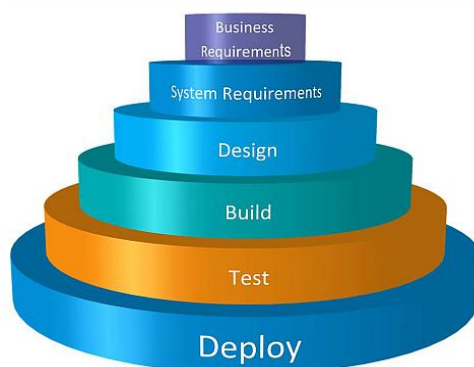


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I. Introduction

The traditional software development life cycle involves in Requirements gathering, Analysis, Design, Coding, Testing and Deployment. These are the series of actions that are performed step by step once the requirements are collected from the end user, and go on as series of actions and hence the name Water Fall model. As, we know that each and every process has Pros and Cons. The traditional model too has few limitations like changing the requirements at the later stage of the projects [1].It is difficult for the end user to state all the requirements explicitly at one point of time, and also the working version is not available until the entire project is deployed and many more. In order to overcome these issues the AGILE method of software development has come into existence which solved the main issues of the traditional SDLC.

Software is said to be successful if it meets the customer's requirements and satisfied. Any software though it is free from bugs, can't be said that it is a successful project until it attains a 100% SAT from the end user. Customer's satisfaction can be attained by maintaining a continuous rapport with the customer. Hence came the Agile Methodology of software development where the basic frame work activities of the agile involves in customer communication ,planning ,modeling, construction, delivery and evaluation There are many Agile Methodologies that share common principles but different practices. Few of them are extreme Programming (XP), Scrum, Crystal, Lean Development (LD) Adaptive Software Development (ADS), and Feature Driven Development (FDD) etc. Now in this paper we discuss about the SCRUM Agile Method, and how the Knowledge is managed in the Agile team and few comparisons with the traditional development.



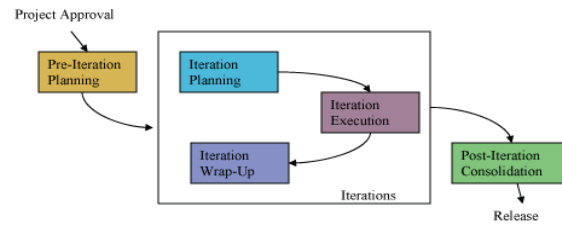


Fig 1: Traditional Vs Agile Methods of Software Development

II. Life Cycle And Characteristics Of AGILE Scrum

The Scrum Development process involves group effort to move quickly to counter the end user and carry on with the development process. Scrum includes both management and development processes. Once the scope of the project is defined, the entire development process is divided into a number of iterations. The life cycle involves Planning, Staging, Development and Release [2]. The Planning phase involves in setting the vision and expectations right and the funding. In the staging stage the requirements are identified and the iterations are prioritized. In the development phase the system is implemented and the release stage has the operational deployment.

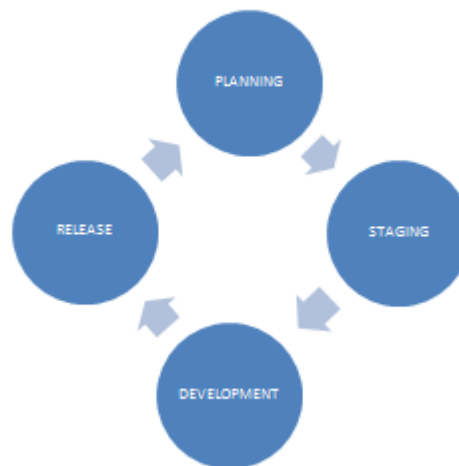


Fig 2: Life Cycle of SCRUM

Each iteration is known as Sprint. Every sprint is time bounded and can last from 2-4 weeks long. During each sprint all the features of that particular sprint are developed and the functionality is tested. The entire Scrum values on five major points which are as follows [2]

2.1) Commitment: The entire team takes the whole responsibility to complete the sprint and solve the barriers that come their way.

2.2) Focus: Team Focus to attain the target is maintained and any distractions or disruptions are not entertained.

2.3) Openness: Overall project and individual status are kept open to all the team members so that each individual will have the flexibility to know as to what is happening in the project.

2.4) Respect: Team maintains utmost respect to each individual of the team rather than bullying and scapegoating.

2.5) Courage: Management and team have the courage to take responsibility to do what is necessary.



Fig 3: Scrum Values

III. Knowledge Management in Scrum

Knowledge Management is the set of activities that are performed in the team in order to communicate within themselves and the customers and exchange their views and procedures in order to develop the software. The following are the SCRUM activities [4].

3.1) **Sprint Planning:** The first and foremost activity of Scrum is the Sprint Planning. This activity is carried out in the presence of the product owner also known as the end user. All the requirements are delivered by the product owner in the Product Backlog and depending upon which highest priority the goal for the sprints are decided in the Sprint backlog by the team. The Product owner need not give all the requirements at a stretch; he has the privilege to make changes in the later stages of the development in the Product Backlog. There are two main artifacts for the Sprint Planning namely The Sprint Goal and The Sprint Backlog. In the Sprint goal, the task that the Scum Team plans and decides to achieve its target of development in that particular Sprint prioritized. Whereas, in The Sprint Backlog the tasks that are yet to be delivered in that sprint and in the next iterations are being discussed in the team in the presence of Product Owner.

3.2) **Daily Scrum:** This is another activity performed by the Scrum Team, where the entire team gathers in a huddle room discussing about the tasks that are performed in the last day and what are the things that are to be done today by asking three main questions[5]

- 1) What was the task accomplished yesterday?
- 2) What is going to be done today?
- 3) Are there any hurdles your way to be sought out?

The daily Scrum is about 10-15 minutes time bounded session answering the above questions by each member of the team.

3.3) **Scrum Review:** This is the phase where the team along with the product owner reviews the entire sprint. The team members have to discuss about the functionality of the developed sprint and if any changes or comments that are suggested have to be made effective in the next sprints. The Scrum review concentrates on the following aspects.

- 1) Goal of the Sprint
- 2) Achieved tasks
- 3) Comments

3.4) **Scrum Retrospection:** This activity involves after the Scrum Review. Depending upon the comments that are received in the Review 3 main points are to be determined by the team about the Sprint

- 1) Start Doing
- 2) Stop Doing
- 3) Continue Doing

All these 4 activities form a major part in the successful development of the Scrum project.



Fig 4: Knowledge Management in Scrum

IV .Roles In Scrum

The key roles in the Knowledge Management of Scrum development are The Scrum Master, The Product Owner, and The Scrum Team. The first Person is the Scrum Master heads the entire team and acts as a coach in handling all sought of issues and achieve high level of performance .He differs from the normal Project Manager as he doesn't assign the tasks to the team but helps in achieved the goals by guiding them in the right path and track in the Sprint [6]. The Second Person involves is the Product Owner is the person who is the end user, for whom the product is being developed. He is involved from the gathering of requirements to the deployment of the product. He is responsible for maintaining the Scrum Product backlog. The last is the Scrum Team itself which includes people with different designations performing their specified tasks, but still gets involved in all the team activities. Hence we say that the keen involvement of the three roles helps in developing a successful project by following the Knowledge Management activities.



Product Owner

Fig 5: Roles in Scrum

V. Other Aspects

Few Other important aspects of the Scrum Method are Story Board and Release Burn down charts [6].

5.1) Story Board: Story Board is a place where all user stories, tasks to do, in progress task etc. are displayed User Story is the words or sentences that are written by the user specifying the tasks and also encouraging the team in accomplishing the task. This is a kind of sticky note that is pinned upon the Story Board. Story Board has the following aspects:

5.1.1) To Do: All the tasks that are yet to be done are piled up.

5.1.2) In process: All the team members whose tasks are In Process pins up a card displaying their work. For e.g."Cart Page in designing by Joy".

5.1.3) To Verify: As everything developed is to be verified. The things that are to be verified are piled up here. E.g.:"BugID#123"

5.1.4) Done: All the tasks that are done for that particular Sprint are piled up in this section

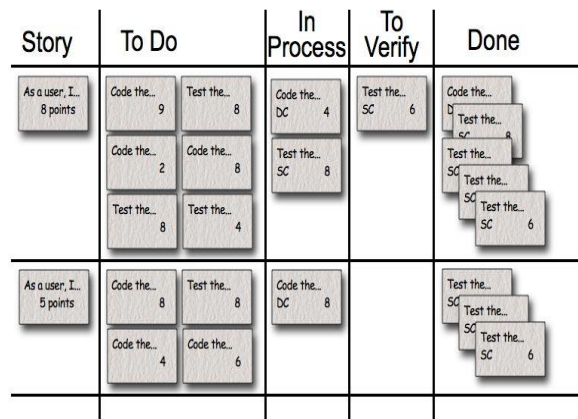


Fig 6: Story Board

5.2) Release Burn down Charts: These are the charts that are plotted throughout the project at the end of each Sprint Release. The Horizontal axis plots the iterations and the vertical axis plots the work remaining.

The work remaining can be plotted with any unit like the story points, team days.etc.

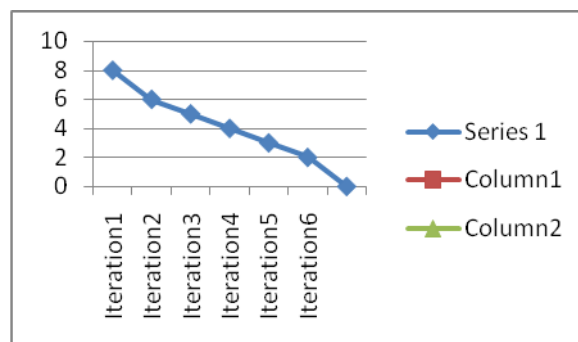


Fig 7: Release Burn Down Chart

Vi. Research Work And Comparative Analysis Of Traditional To Scrum Agile Sdlc

In order to say that Agile methods are far better than Traditional ways the development of a website for an NGO (www.sikshanaam.org) is chosen. The website development team involved the developers and the Product Owner. Initially as per the regular trend all the requirements have been gathered from the end user and the development process has started. But after few days of the designing the end user have added few more options for the website, and changing at that phase made the development of the site a pretty delayed task and the only reason being the frequent changing of the user requirements. Hence they decided to follow the Agile Scrum Methodology involving the Customer at all phases and he can have a better look and feel of the system under development. Every module is developed as a Sprint and the Sprint Review is being conducted, enhancing for the future changes in the system. Once the Sprint is completed it is exposed in the real time so as to check its performance. The website is under construction and till date it has been following the SCRUM Agile Method for its successful completion of the project.

The TABLE Comparisons shows the comparative analysis of Water Fall and Agile Scrum SDLC [7].

Table: COMPARISONS

| FEATURE | WATERFALL MODEL | AGILE SCRUM |
|----------------------------|-----------------|--------------------|
| Requirements Specification | Beginning | Frequently changes |
| Cost | Low | High |
| Guarantee of Success | Low | Very High |
| Risk Involvement | High | Reduced |
| Risk Analysis | Beginning | Every Phase |
| User Involvement | Beginning | High |
| Flexibility | Rigid | Flexible |
| Time Frame | Long | Less Possible |

Vii. Conclusion

There are many SDLC models used in various organizations. Each of models provides a different perspective depending upon the project that is being developed. A successful project is one which results in Customers Ecstasy rather an exclusively bug free software that doesn't leads to the Customers satisfaction. In Order to attain this there should be a good rapport that is to be maintained between the teams as well as the Customer which is only possible in Agile Developments. As discussed earlier, though there are several other Agile Methods, SCRUM plays its vital role in the current years because SCRUM is both managerial as well as development processes.

VIII. Acknowledgments

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Bibliography

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