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Study of Agile Scrum Model to Improve the Software Development Process

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Abstract

Software plays a vital role in today's world. IT industry has entered into almost all the field of work. Domains like Mechanical, Electronics; Banking etc requires deep domain knowledge to develop software for such domains. Hence developing software's has become tedious process these days. Software engineers needs to be encouraged and their skills must be properly utilized under supervision to get the best out of them. Models like waterfall and prototype is not sufficient enough for the product requirements. Agile methodology has wide scope for customized product development. Scrum is not only better development model for software but also plays a great role in finance, electronics and education sectors.

Keywords: *Scrum, Sprint, Agile Development, Less*

INTRODUCTION

Agile development model gives a new dimension in the software development lifecycle (SDLC). In today's world software's are developed based on customer's suggestion and necessity in all the domains. Traditional development models like waterfall model or prototyping model is not suitable for dynamic development. Scrum based agile development has a wide scope for dynamic development in an incremental process. The software can be developed and tested at the same phase. This is possible only with agile development. Not just the development process even the developers

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and testers are given enough freedom and are encouraged to keep track of their performance on their own. This makes maximum use of the available resources without stressing anyone.

METHODOLOGY

Developing software needs some customized planning and approach which is possible through scrum model. It holds good to work with wide range of projects, which has variety of requirements. It is also good because it has flexible requirement selection for sprints and has no specific procedure to hang on.

Popular agile models like Crystal, ASD (Adaptive Software Development), FDD (Feature Driven Development), XP (Extreme Programming) and RUP (Rational Unified Process) were all flexible, has iterative stage, feedback and gradually approaching the target. In this paper let's research how scrum works and how scrum is implemented in the SDLC process.

MODEL

Scrum model consists of the team members and scrum master in close collaboration with the product owner over continuous iterations in the process of evolving software. The scrum master, the scrum team and the product owner involves in the process of scrum. The scrum master's duty is to conduct scrum meetings, maintain scrum board.

The scrum board reflects the performance of the Scrum team, percentage of tasks completed pending tasks and the scrum members working in that sprint. Product owner can easily find all the necessary details about the level of development of his product.

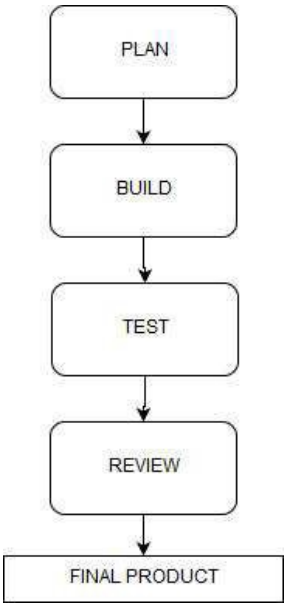


Fig.1: Basic Scrum Model

Thus this model is so comfortable for the product developers compared to all other traditional models as most other models do not provide transparency in the development process. The scrum model holds a cross functional work process which comprises of the development team

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and the testing team working together which ultimately brings functional and creative products which meets customer satisfaction. (See Figure:-1)

Sprint is a piece of block in scrum model. A sprint may last for 2-3 weeks depending on the scrum master's choice. Tasks for every sprint are decided based on the sprint backlog. Sprint backlog is set of requirements to be completed in the particular sprint. Product backlog is the requirements raised by the product owner which was referred to as the user stories.

Sprint backlogs are broken from the product backlog which leads to sprint planning that has the methods to complete the current sprint. Every day at the end daily scrum takes place in which the daily tasks completed and the locks in tasks for the last day will be discussed. Sprint aims at developing a ready to use software for the customer. After every sprint a sprint review takes place between the scrum team, scrum master and the product owner to discuss about the increment in the development of the product in the current sprint.

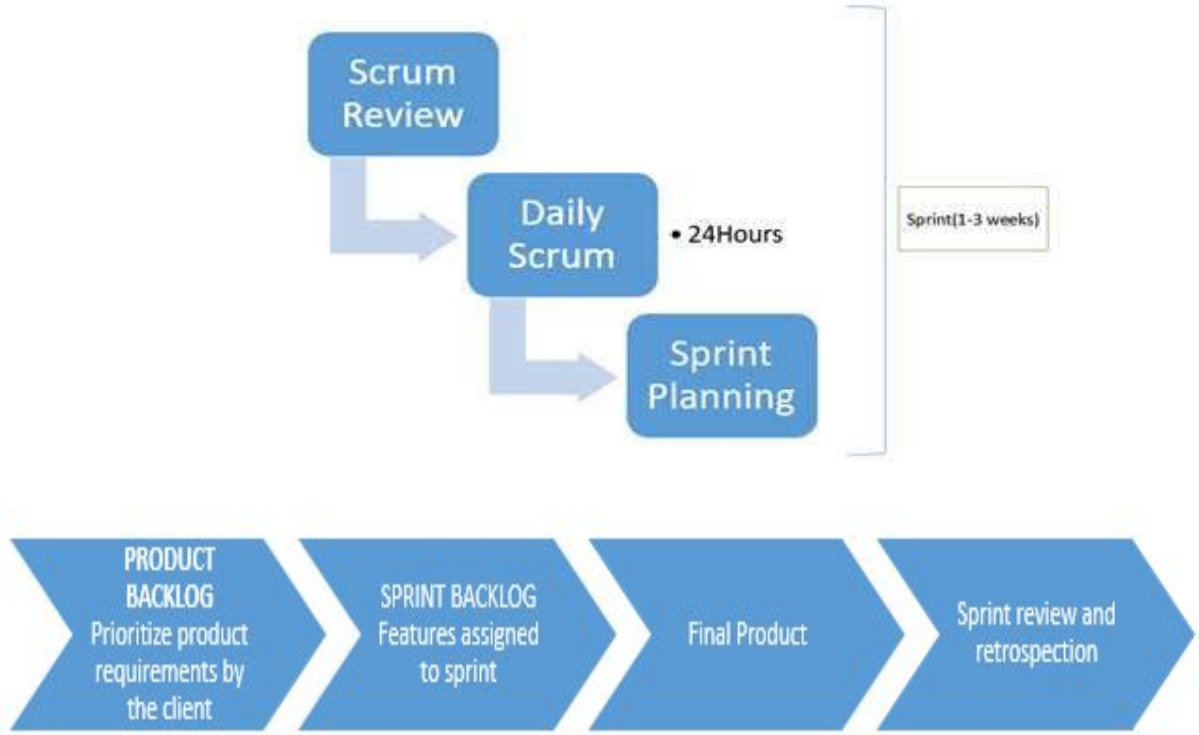


Fig.2: Scrum Cycles

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The goals of sprint cannot be changed in the middle of sprint, but during sprint review the product owner can add or modify the features of the software which were not enclosed earlier.

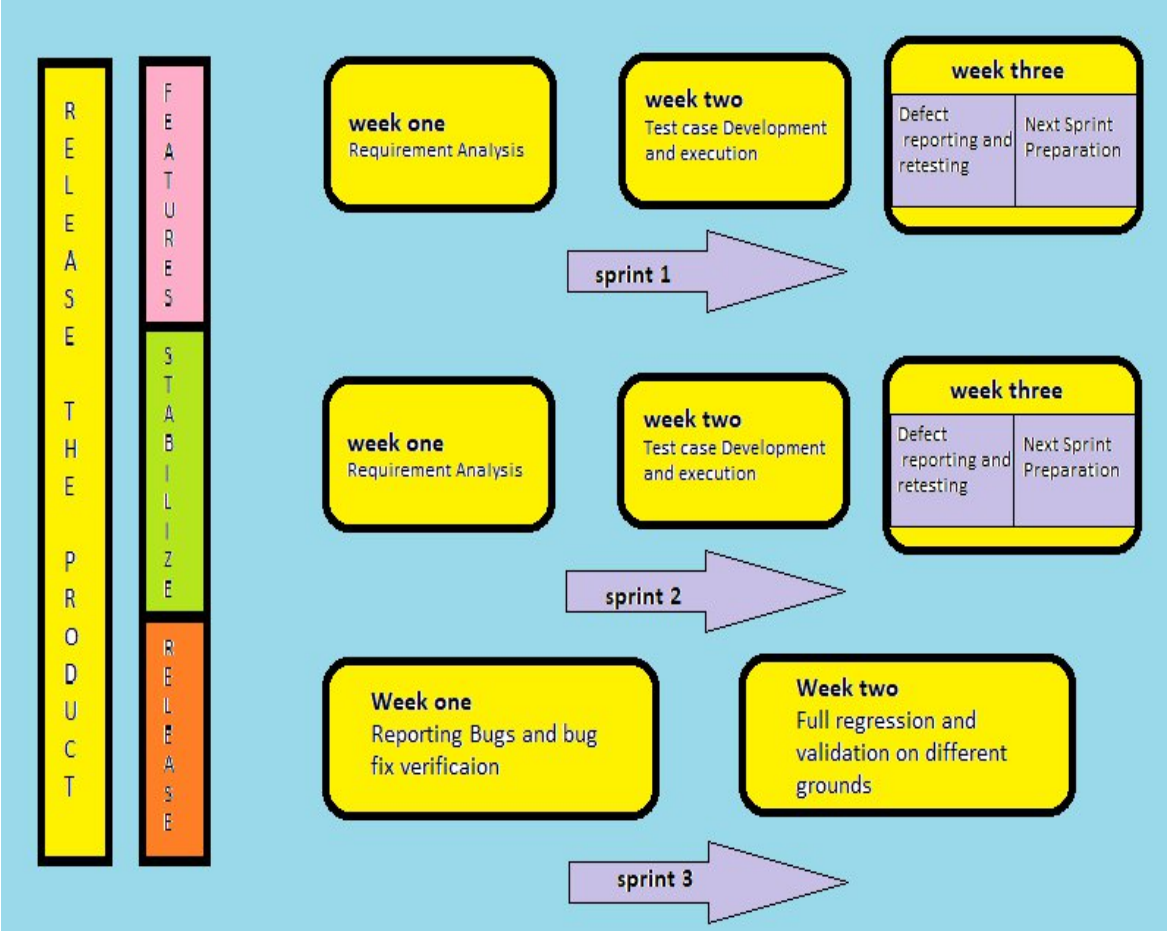


Fig. 3: Sprint cycle Explanation in Scrum

Burn down charts is maintained to monitor the level of development yet to be completed. The burn down charts starts with maximum and ends with zero. On starting of sprint the burn down chart will be at maximum slowly when the tasks were completed the burn down charts drastically gets burned down and on completion of all the tasks in the sprint it will be drained to zero.

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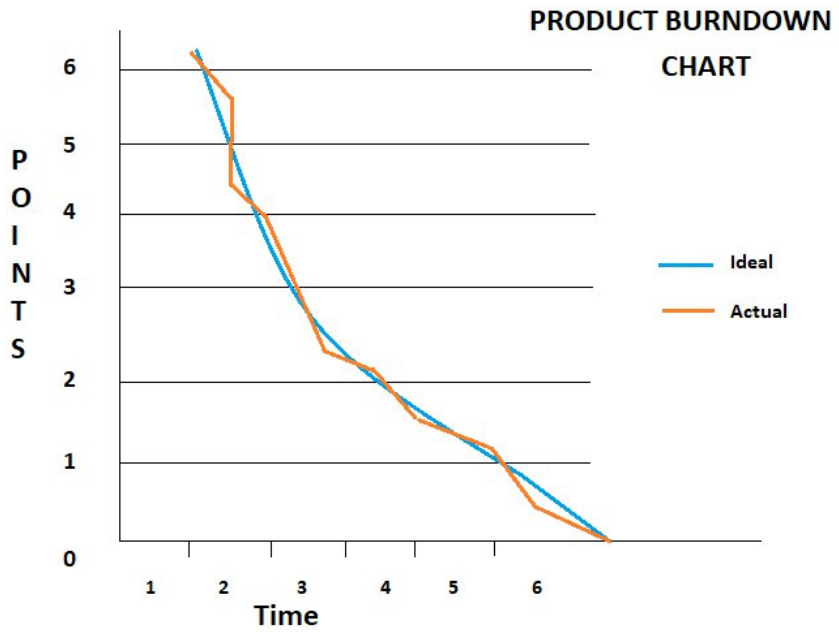


Fig.4: Product Burn down Chart

Why Scrum?

Scrum has close collaboration with the scrum development team, scrum master, product owner and all other members who are closely related in the sprint process. This model provides freedom to communicate and plan between the team members is essential for productivity of software through effective engineering methods. Scrum suits well for teams that concentrate on development of a software which is in hand. This model also has other advantages like cost reduction as this model involves in communication between the sprints members, that makes the team members aware of the problems and changes made in the software, which drastically improves the quality of the product.

SCALING SCRUM

Although agile methodology has different implementations scrum seems to be way better than all other agile models. Scaling in scrum is achieved through scrum of scrums (SOS). Scrum of scrums is a method of scrum methodology to overcome the communication barrier within the teams working in the parallel development process of an application. The various process such as the type of application, team size and the duration of project decides the number of levels in the SOS. In organizations that has multiple parallel process, Scrum can be scaled up to

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higher levels, where in one member of the daily scrum team will be representing their scrum meeting in the next level of scrum, thus other teams gets knowledge about what happens in the different teams and the status of the project. With the recent advancement in LeSS and LeSS huge scalability is no more an issue. Scrum is chosen over other methods for scaling up. LeSS is scrum by itself, its principles are similar to scrum and are easy to implement. LeSS aims at providing less organizational roles, less management, less organizational structure, less communication and more efficiency.(See Figure:-5)

LeSS works fine even with distributed systems. Scrum teams are broken into lots smaller teams for development process. Each team's works together on a project by developing code on a distributed platform and storing it on a central hub, like firebase where the code can be stored and analyzed. For every sprint in scrum there should be a saving depository and a common sharing point to have all the completed parts of the code and each part will be delivered in smaller parts so that they can be integrated with other parts of the project. In a typical less framework, there will be a "Centralized support" to handle large volumes of the work. At the end of each month, development made in every scrum will undergo final testing and all completed parts of project will be integrated together.

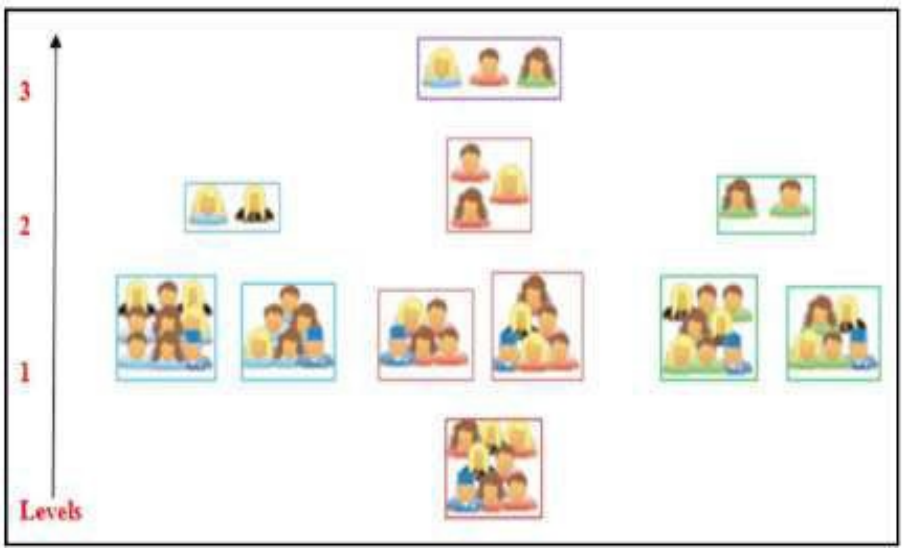


Fig 5: Scrum of Scrums (SOS)

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CONCLUSION

Scrum has the ability to serve the purpose of thousands of projects and can be scaled for large projects efficiently. It has small drawbacks like lack of automation in workflow and testing, better management support, unavailability of skilled and experienced team members. Though it has drawbacks it works better than most other models in terms of efficiency and customer relation. Scrum is the only model where the product owner gets complete knowledge about the development process, no other model is as open as Scrum based agile development hence this model is opted the most over all other development models.

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