Assignment 1: Scrum and Lean Analysis

Vinod Kumar Karantothu

vika17@student.bth.se

Abstract:

Context: Most of the software development companies are accepting and transitioning from traditional software development methods to agile software development methods. Scrum comes hastily accepted and most widely adopted agile methodology. Many companies today introduce both scrum and lean methods with an intention to minimize the development cost and project durations.

Objective: The objective of this report to conduct a study on agile and lean methods and do reflection on scrum and lean on what areas they focus and differences they had and analyse how our project is setup and created adopting the scrum and lean.

Method: This document presents a systematic literature review on agile/lean practices from different sources and empirical study. This document is a project report to set out product development practices and interpretation of results.

Results: The results are Scrum process and its artefacts. The result is a developed software product.

Conclusion: Using Scrum framework to manage the process and develop a software product "btBox" an online file storage web application and then change to use Lean to remove waste.

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1.SCRUM:

Scrum, rather considering it as methodology; considered as a framework for managing processes in an agile way. Agile methods are more preferred and adopted by software companies these days to overcome traditional software development methods. Challenges faced by the software development companies are dynamic customer requirements, complex product requirements, project schedules and cost. These challenges demand to call for a hard-headed software development Scrum is the one methodology to handle software development in different small iterations called sprints[1]. Each sprint is scheduled for a short duration ranging from days to weeks. Each sprint is a collection of all software development phases such as design, code, testing and review, etc.

1.1 Scrum Roles[2]*:*

Each scrum team constitutes of Product Owner, Scrum Master and Developer Team. These are three core roles in responsible to deliver the product increments. Though there are many other roles defined by the different software companies adopted Scrum However, Scrum defines only these three primary roles.

Product Owner: Product owner represents the customer or stakeholders. The job of the product owner is defining the product requirements typically are the user stories and adding them to product backlog and prioritizing them. Where to take the product, he had a vision over it.

Scrum Master: Scrum master is to help the product manager to head the product backlog understood by the development to increment the work progress. Scrum rules and principles are enforced by scrum master. To enhance the development team, improve the process and product being developed is the key to remove the impediments.

Development Team: Development Team constitutes of Software developers for coding and implementing the user stories. They execute the tasks assigned by the product owner in a sprint schedule.

1.2 Scrum Artifacts[1]*:*

Product Backlog: Product backlog is list of all the requirements are usually the user stories for the software product that are to be delivered. These user stories may be the features, bug fixes, and other non-functional requirements. In the product backlog, the user stories are prioritised and moved top of the product backlog and less prioritised user stories are moved to down. Release backlog is created with this prioritised user stories and later moved to sprint.

Sprint Backlog: Sprint backlog is list of user stories the development team must work on in the next sprint. Sprint backlog items are filled with product backlog items selecting the prioritised items from the top of the product backlog. Sprint backlog is derived on basis of the capacity of the developer team and the past performance on previous sprint.

2.LEAN

Lean Development is rendering of manufacturing principles and practices to Software Development with an essence creating value for the customer and eliminate waste. In Software Development, there exists some waste that doesn’t add value to the software product but creates unnecessary cost and complexity that leads product become progressively worse. To overcome these

challenges software companies started adopted Lean methods applying them for software production[3][4][5].

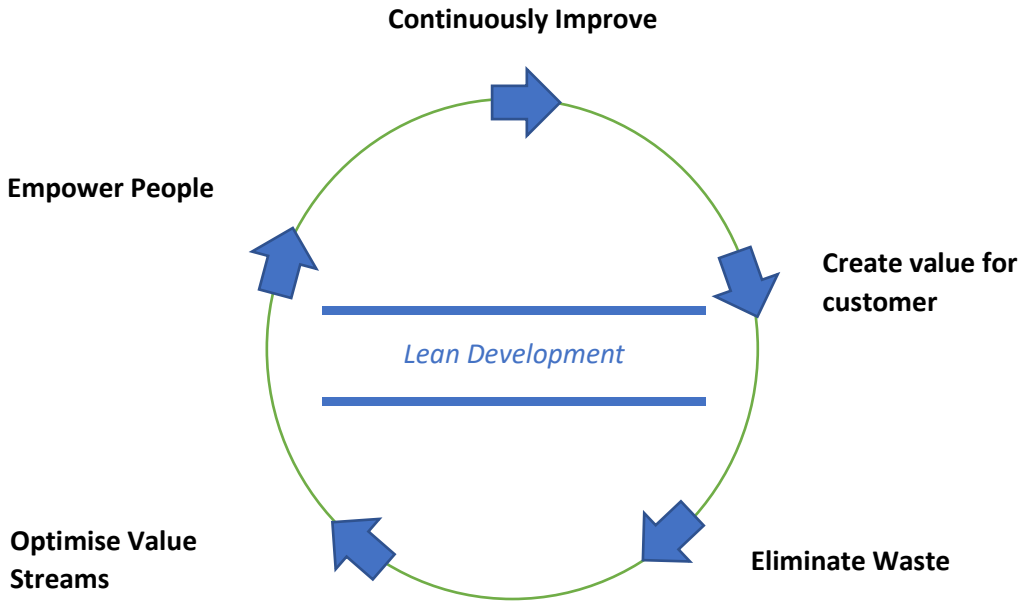

Fig.1 Lean development heads from creating value to empowering team to gain continuous improvement.

2.1 Create Value for customer: Create value for customer is defining value from the customer perspective and express to customer in form specific product or service.

2.2 Eliminate Waste: Eliminate waste is to identify the unnecessary functions and extra work processes in the development and minimize them or completely removing them. Coming identified development wastes are building a wrong feature or product, Backlog mismanaging, Rework, Multitasking etc.

2.3 Optimise Value Streams: Reaching the end users and defining them the features they need and building the correct features. Build the planned features and right product to customers and getting feedback from them about those features and moving to the post task based on the feedback

2.4 Empower Team: Empowered team will have enhanced levels of responsibility and dedication on managing work and task completion. Team empowerment is the key factor for continuous delivery of work and high production.

2.5 Continuous Improvement: Continuous improvement heads to next iteration of building the features or execute task. This is last phase in the Lean software development life cycle.

Project Setting

The project is an Online File Storage system “btBox” a web based application where the users create account and manage their files. The main features of the application are User registration, user login, store and manage files online. The aim of the project is build this web application adopting the Scrum methodology and lean methods.

This is a team project consists of 6 members team. Usually a Scrum team is of 3 to 9 members so, we 6 members team constitutes the Scrum team now and each team member take each role in Scrum. As scrum defines 3 core roles, for this product development considered these primary roles and carried the development process.

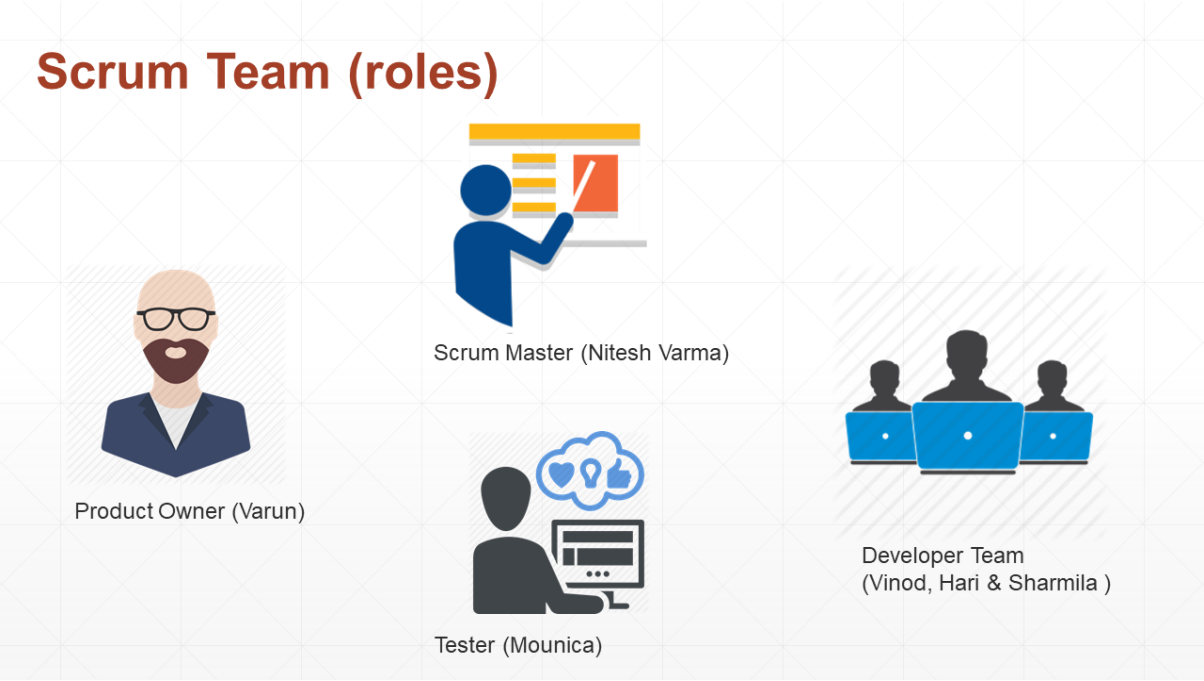

Fig.2 Scrum Team.

My role was developer in the developer team. The objective of the project is implement scrum framework and build the successful product.

Methodology

SCRUM

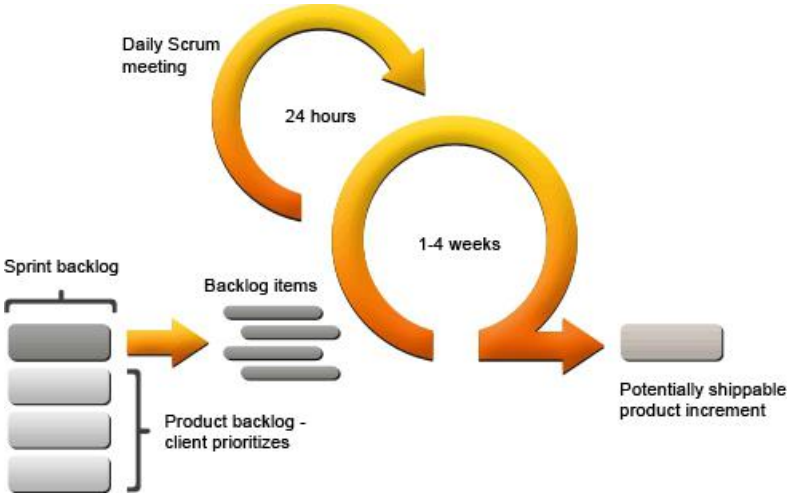

Fig.3 Scrum diagram[6].

Product backlog

We team members initially planned for the product backlog and listed all the user's stories from the user's perspective and made a product backlog and listed all the prioritised user stories top and less prioritised items at the bottom. We listed more than 10 items in product backlog.

User stories:

Registration Page

I want to create an account to store files and manage them

Login Page

I want to login into my account to review my files and manage them

Create Database & table for Users details

I need to create a database and store user details in it

User Page

User page must be created to view the user all his files in his account

File Upload

I want to upload a file into my account and store in it.

File Delete Option

I want to delete a file into my account and store in it.

File Usage

I want to view my file usage

File properties

I want to view the properties of my file ex. Size, type etc.

User Feedback

I want to give feedback over the product and send issue I have using this service

Mobile Version

I want to use this application on mobile with a mobile view

File sharing

I want to share a file with my friend

Download Links

I want to send a download link to another person so he can download it

Release backlog:

Item		Sprint	Original Estimate
Registration Page		Sprint 1	5
Login Page		Sprint 1	6
Create Database and create table for user details		Sprint 1	5
User Page		Sprint 1	4
File Upload		Sprint 1	3
File Delete Option		Sprint 2	5
File Usage details		Sprint 2	6
File Properties		Sprint 3	5
User Feedback		Sprint 3	3

Mobile Version		Sprint 3	6
File Sharing		Sprint 3	8
Download Links		Sprint 4	7

Release backlog is prioritised list of product backlog and subset to it. In the release backlog the estimate effort is mentioned that was estimated by the planning poker and the sprint release dates can be scheduled[6].

Daily Scrum Meeting: Daily we conduct the scrum meetings between the development team and the scrum master to discuss previous day work progress and the work done today and impediments occurred in the mean while. By considering each person accomplishment yesterday and will accomplish today in the meeting attains an excellent comprehension of what work is done and the work remains. The meeting is not for a daily update but each team member decides his own commitments to the other team members.

Sprint Planning Meeting: This meeting is held in presence of the product owner, scrum Master and whole scrum team that I mean including the development team. In this meeting, the product owner mentions the high priority items to the development team. The team may discuss on the item and they can make that item to high priority and add more detailed user story to the sprint backlog.

Sprint Review Meeting: After completion of each sprint a sprint review meeting held and development team exhibits their accomplishments and demo the features to increment the product. Assessment is given according to the sprint goal that is set during the sprint planning meeting. Participants in the meeting are typically the product owner, scrum master, development team, end users and developers from the external team or developers of other projects.

Sprint Retrospective: This is done after the sprint review meeting involving scrum master, product owner and entire team. A topic or conflict may rise within the team and discus continues on whether to start the iterations or stop or continue.

Burn Down Chart

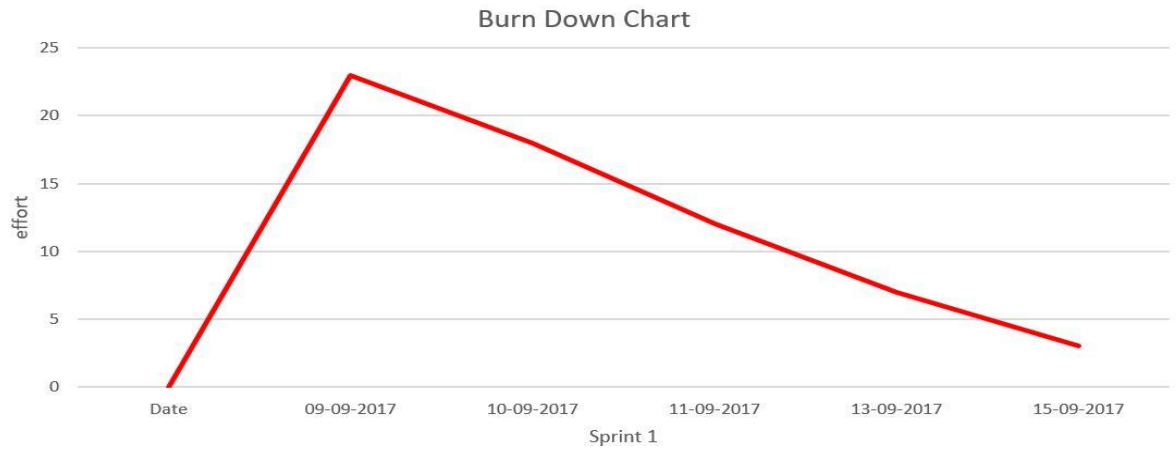

Fig.4 Burn-down chart

Burn down chart is used to keep the track of scum project progress. For each sprint, the burn down chart is generated to have a visual view on the work progress. The burn down chart is updated by the scrum master at the end of each sprint. For a clear view, the vertical axis represents the effort and the horizontal axis represents schedule of the sprint. As the task completes the effort decreases when all items in the sprint are executed the effort levels lasts to zero that mean further no effort is need and sprint was completed. Burn down chat is the most essential thing for any agile project for the team to have a sight what is happening and what is the progress throughout each sprint[7].

Scrum Board

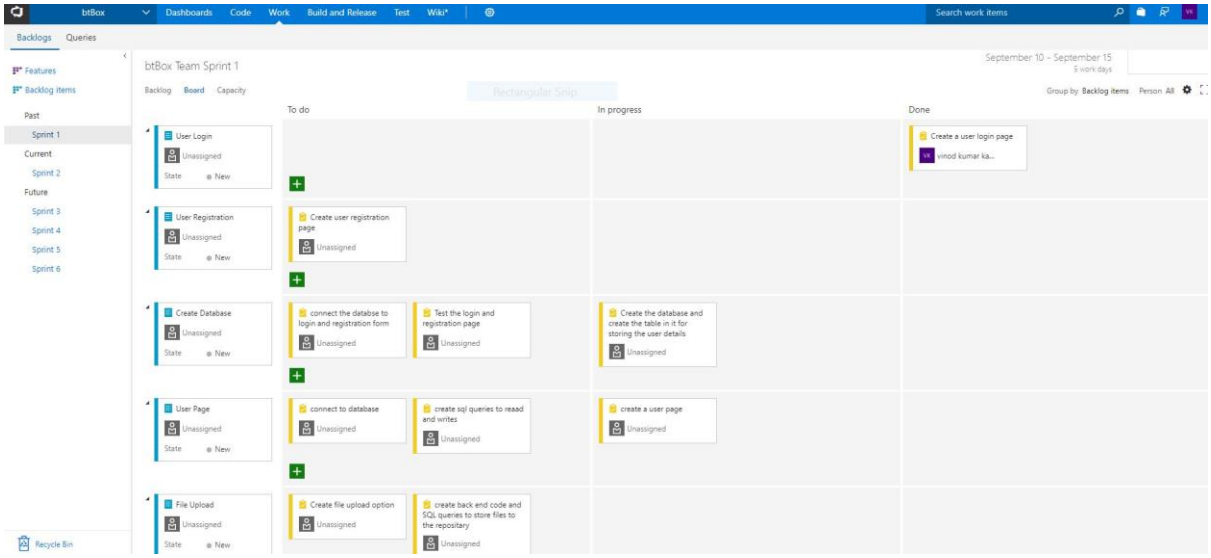

Fig.5 Scrum Task Board

Team moves the items to the sprint backlog from the product backlog. On the scrum task board, the items in the sprint backlog are listed left side the board. There are three columns on the scrum task they are mainly To-do, In Progress and Done. The team selects the items conceptually what they can accomplish. Team member update the task he assigned according to its status whether it To-do, in progress if she or he still developing the item. If the is completed it is moved to under Done column. The scrum master should be vigilant if any impediments occurs in the team he should capture them and display's in Scrum team's task board.

Metrics

Goal	Question	Metric
To evaluate the communication and collaboration between the Team members (Scrum Team)	How well the communication between team, product owner and scrum master?	Though observing and listening to them.
	How enthusiastic the team is?	Observing team in sprint meeting and interview them.
	Understanding of sprint goal and scope?	Asking them how his commitment done to the task

Velocity of Team	What is the team velocity?	Sprint to sprint team estimates
	Velocity of team member?	Actual work done by committed work
Quality assured to customer	Is the product build with features what customer needs?	Verify whether the features need by customer
	Will the product work?	Validating each sprint realise is working product or not

When a product is measured it can be improved or enhanced, when a product can't be measured be it can't attain quality and performance. So, metrics play an important role giving value on certain aspects. Size, quality, cost and effort are measured to estimate productivity and quality of the process[8].

Discussions

User stories vs. Traditional requirements

User stories are small descriptions to the features that are built for a product development. Generally, user stories are associated in the agile methods and where requirements are associated in traditional software development methods such waterfall model. User stories are written in a simple language from the users' perspective. A user stories is defined as how and why the user intent to use the feature. Any feedback or response from the end user or team development can be a user story.

Requirements in traditional software development are what task should the software should execute. Focus is on the system intent. How software should work goes with the requirements document.

In our project, we used user stories instead of traditional requirements because Scrum is an agile methodology and in agile methodology user stories are associated and not the traditional requirements[1].

Scrum vs. Lean

SCRUM

Scrum is framework for agile methodology set on certain principles and values. To list to most extent focuses on.

- Adaptive to change
- Shorter planning and commitment cycles
- Collaboration and iteration

LEAN

Lean Development is rendering of manufacturing principles and practices to Software Development with an essence creating value for the customer and eliminate waste[9].

- System of value stream
- Way to eliminate or remove waste
- Limit queues

Commonalities[7][3]:

- Improve quality
- Continuous improve
- Amplify learning
- Empower people

Conclusion

Using Scrum framework to manage the process and develop a software product "btBox" an online file storage web application and then change to use Lean to remove waste. This document is a analysis report for Scrum methods and practices we adopted for the development of the application. Only one sprint is release is managed up to now. Further experience will be documented for next sprint releases and emerging of Lean to extent on to the Scrum to eliminate waste.

References

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