Lean as Agile methodology – A Study

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ABSTRACT

The Many approaches and methodologies are available in the development of software with error free to its end user by fulfilling the values of stake-holders. Among the available methodologies Agile is a popular methodology which is introduced in 2001. Agile consists of various development processes such as Scrum, XP, Kanban, Lean and others. Among them Lean is one of the methodology in development of software domain which is adapted from Toyota Production System. This paper concentrates on how Lean sustains in the business stagnation because there exists some problems such as missing deadline, over development and ineffective management. Lean is having its own advantages and pitfalls. To overcome the pitfalls of Lean an adaptive approach is needed which may fit with existing industry standards.

Keywords –**Agile, Lean, Elimination of Waste, Stream, Alterable programming**

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1. Introduction

The Lean is a set of principles by the Japanese automobiles manufacturing industry in the 1980's.The Toyota quality engineer, John Krafcik, coined the term, while observing the processes and tools used to eliminate waste in mass automobile production. It was not until 2003 that Mary and Tom Poppendieck introduced Lean, a software development process

Lean [1,2,6] concept primary goal is how to improve the processes that transform the raw materials into their finished products with more efficiency. It is a continuous process of finding improving bottlenecks in the process.

The following Lean principles were adapted in software development cycle.

- Eliminate waste
- Amplify learning
- Decide as late as possible
- Deliver as fast as possible
- Empower the team
- Build integrity
- See the whole

Lean processes mainly focus on how to reduce waste and improve overall flow of value to achieve best system optimization. Lean has very good record in manufacturing and is gaining popularity in software development too.

2. Agile method

Agile programming [3,5,7]advancement is a gathering of programming improvement techniques in view of iterative and incremental improvement, where prerequisites and arrangements advance through joint effort between self-sorting out, cross-utilitarian groups. It advances versatile arranging, transformative improvement and conveyance; a period boxed iterative approach, and energizes fast and adaptable reaction to change. It is a reasonable structure that advances anticipated communications all through the improvement cycle. The Agile Manifesto presented the term in 2001

In case you're considering receiving Agile standards, it's vital that you comprehend what you're in for. You should make sure that you, your task group and the administration supporting your undertaking all comprehend these exchange offs, and are cheerful to acknowledge and bolster them in inclination to a more conventional methodology. Agile is more of a technique, suitable for the software development industry.

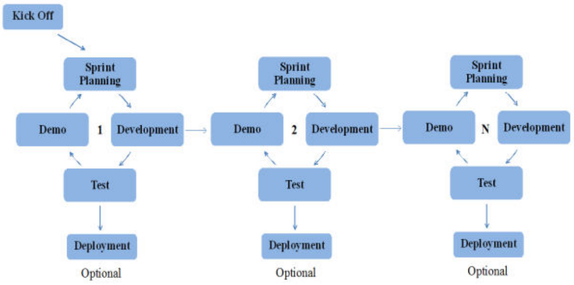

Fig 1 : Agile Development Process

Kickoff:

Kick-Off meeting is the first legal meeting directed between Project group and Client of that venture. The principle reason for this meeting is to choose and talk about the components as Schedule, Deadlines, Role of every colleague and difficulties, then again chances which may prompt the development of Time estimation and so forth. Members of meeting are Customer, Project team and partner.

Sprint planning:

The Sprint Planning [4] Meeting is usually broken into two sections. Section one of the sprint planning meeting is a survey of the product backlog things the Product Owner will request that the group to figure out and convey. At the end of sprint planning section one, the group will choose a sprint objective: a one-sentence portrayal of the general result of the sprint.During section two of the sprint planning meeting, the Team chooses how the work will be assembled. The result of the section two planning meeting will be the Sprint Backlog.

Development:

This procedure incorporates the real written work of code as well as the readiness of necessities and destinations, the outline of what is to be coded, and affirmation that what is created has met targets.

Test:

Testing is a technique for evaluating the usefulness of a product program. There are a wide range of sorts of programming testing however the two fundamental classifications are dynamic and static testing[8]. Dynamic testing is an evaluation that is directed while the system is executed; static testing, then again, is an examination of the project's code and related documentation. Dynamic and static techniques are regularly utilized together.

Demo:

A case of an item, particularly a developed program given to client to validate the requirements met with finished ones.

Deployment:

Deployment envelops all the procedures required ingetting new programming or equipment up and running appropriately in it surrounding, including installation, arrangement, running, testing, and rolling out fundamental improvements.

2.1 Advantages of Agile Model:

- Consumer loyalty by quick, consistent conveyance of helpful programming.
- Individuals and collaborations are underlined instead of procedure and apparatuses. Clients, designers and analysers always collaborate with each other.
- Working programming is conveyed much of the time (weeks instead of months).
- Up close and personal discussion is the best type of correspondence.
- Close, day by day collaboration between representatives and engineers.
- Nonstop regard for specialized brilliance and great outline.
- General adjustment to evolving circumstances.
- Indeed, even late changes in prerequisites are invited

2.2 Disadvantages of Agile:

- In instance of some product deliverables, particularly the expansive ones, it is hard to evaluate the exertion required toward the start of the software development life cycle [5,6].
- There is absence of accentuation on fundamental planning and documentation.
- The undertaking can without much of a stretch get taken off track if the client delegate is not clear what final result that they need.
- Only senior software engineers are equipped for taking the sort of choices required amid the improvement procedure. Consequently it has no spot for beginner software engineers, unless joined with experienced assets.

3. When to use Agile Model

- When new changes are should have been executed. The opportunity coordinated provides for change is imperative. New changes can be executed at almost no cost in view of the recurrence of new additions that are delivered.
- To actualize another component the designers need to lose just the work of a couple days, or even just hours, to move back and execute it.
- Unlike the waterfall model in Agile model [4,7] extremely restricted arranging is required to begin with the project. Agile expect that the end clients' needs are always showing signs of change in a dynamic business and IT world. Changes can be examined and elements can be recently affected or expelled in light of

criticism. This adequately gives the client the completed framework they need or need.

- Both framework engineers and partners alike, discover they likewise get more flexibility of time and alternatives than if the product was created in a more inflexible successive way. Having alternatives gives them the capacity to leave imperative choices until increasingly or better information or even whole enabling projects are accessible; which means the undertaking can keep on moving forward without apprehension of achieving a sudden halt.

4. Lean over Agile:

- Agile ensures faster tasks by adapting the changes easier. As Lean build as smart development, at initial stage itself it will eliminates the waste which not gives any value to the customer which will reduce the development cost and time.
- Agile is flexible but Lean is sustainable for any kind of environment
- The main difference between Agile and Lean action plan is that Agile proposes consideration of backlogs, conduct sprints and try to solve them but Lean concept is to build the product, measure and learn it.

In agile the demonstration has been done with definition only, where as in agile it is validation learning.

5. Why Lean

Lean Development model spotlights on the making of effectively alterable programming. This Software Development technique is more deliberately centered than some other kind of dexterous procedure. The objective of this strategy is to create programming in33% of time, with extremely constrained spending plan, and less measure of required work process.

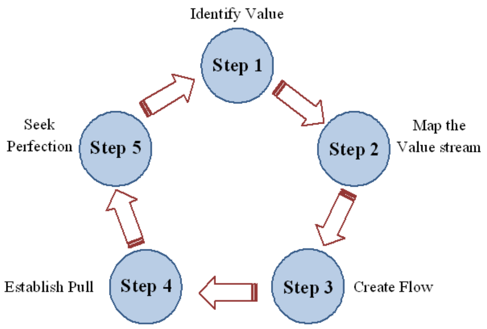

Fig 2. Lean development process

Identify Value: The beginning stage is to perceive that lone a little division of the aggregate time and exertion in any association really includes esteem for the end client. By plainly characterizing Value for a particular item or administration from the end client's viewpoint, all the non-esteem exercises - or waste [2] - can be focused for evacuation.

Map the Value stream: The Value Stream is the whole arrangement of exercises over all parts of the association required in together conveying the item or administration. This speaks to the end-to-end prepare that conveys the worth to the client. When you comprehend what your client needs the following stride is to distinguish how you are conveying (or not) that to them.

Create Flow: Regularly when you first guide the Value Stream you will find that lone 5% of exercises include esteem, this can ascend to 45% in an administration situation. Executing this waste ensures that your thing or organization "streams" to the customer with no interruption, reroute or holding up.

Establish Pull: This is about comprehension the client request on your administration and after that making your procedure to react to this. Such that you create just what the client needs when the client needs it.

Seek Perfection: Making stream and force begins with fundamentally revamping singular procedure steps, yet the additions turn out to be genuinely noteworthy as all the strides connect together. As this happens increasingly layers of waste get to be obvious and the procedure proceeds towards the hypothetical end purpose of flawlessness, where each benefit and eachactivity includes esteem for the end client.

5.1 Disadvantages of Lean

- Communication problem within the team and hiding of major issues
- Lack of discipline in the team
- Issues regarding the client decisions
- One time deployment of product
- Lack of Business Requirement Documentation (BRD)
- Flexibility among customer and developer through Software Requirement Specification(SRS)
- Rework is not minimized

6. Conclusion

The study of software development approaches says that Lean is one of the approaches which can be used as effective tool for stagnation persistence. Lean offers faster development with good strength. Various shortcomings (pitfalls) are existed in Lean methodology. It is essential to adapt new methods to avoid pitfalls of Lean such as Team organization, Elimination of waste, Business Requirement Document (BRD) and Software Requirement Specifications (SRS) which gives more oxygen to Lean to compete other methods of Agile to give better approach in software development.

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