Embracing Agile: Where Innovation Meets Increment

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ABSTRACT

The purpose of this research is to gain insight into how agile development has bloomed over the past decade and become an integral part of organizations. Agile software development is an incremental approach to design and put forth a product which has been refined at each step meeting customer requirements to the fullest. This paper focuses on not only how agile methods were implemented but on how agile is being utilized of late and contributed to the innovation of software technologies.

KEYWORDS

Agile, implement, incremental, team, requirements, development

ACM Reference Format:
Sanay Devi. 2019. Embracing Agile: Where Innovation Meets Increment. In *Proceedings of ACM Conference (Conference'17).* ACM, New York, NY, USA, Article 4, 3 pages. https://doi.org/10.1145/nnnnnnn.nnnnnnn

1 INTRODUCTION

Agile software development is an incremental and innovative approach to create a product. It is essentially a lightweight methodology which means it is more suitable for smaller projects. The basic idea behind it is that the production team predicts certain outcomes of the final requirement and then continues working incrementally to achieve the goals[6]. This constant refinement would eventually deliver an accurate product with high level of customer satisfaction. To implement agile the team should have good cooperation and communication skills. Also, the customer involvement should be very high and regular testing should be performed. Agile methods put forth quality products in a short amount of time with low costs. The history of agile and types of agile is discussed later where the types of agile methods and where agile can be placed in the list of methods is discussed. The first thing that this method does is to simplify the development activities. By finding defects early in the development cycle expensive re-work is not done in the later stages. The next aspect embraced by agile methods is people. The Agile manifesto writers took under consideration the involvement of people as one of the most crucial steps for developing a project [1]. Rather than buying expensive things for the company, focus on getting the right agile driven minded people who can work together and come up with solutions to various problems. The agile method starts with defining requirements where all the people involved with the project will set forth specific requirements. After this each part of the project is integrated and tested incrementally getting review and feedback for each iterative task. This process goes on until the final product is refined and approved, only after which it would be released to the market. The Figure 1 portrays the Agile Development Process, where the project is started by defining initial requirements, then multiple integrated tests are performed throughout the life cycle of the development process. These add functionality and improve the product incrementally. Finally reviews and feedbacks are taken into consideration and if approved the product is released to the market. If not, the changes which the product should undergo are recorded and the next iteration begins. The pop up on the top right corner symbolizes the constant involvement of client, users and developers throughout the entire development cycle.

Conference'17, July 2017, Washington, DC, USA

ACM ISBN 978-x-xxxx-xxxx-x/YY/MM…$15.00
https://doi.org/10.1145/nnnnnnn.nnnnnnn

2 AGILE HISTORY

Agile development came into the picture when software projects were not depicting satisfying results, were being delivered late and exceeding the initial budget. The agile manifesto was formed which set twelve ground rules for implementing agile development. The most important out of them is customer involvement and embracing change[1]. In 2001, the agile manifesto was written by seventeen practitioners who laid the ground rules for the agile development methods. The manifesto states that agile development should focus on four core values viz. Individuals and interactions over processes

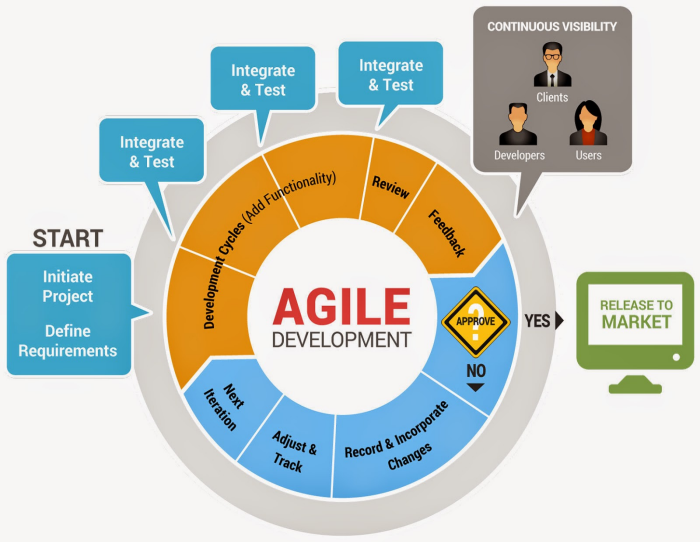

Figure 1: Agile At A Glance

and tools, working software over comprehensive documentation, customer collaboration over contract negotiation, responding to change over following a plan [1]

3 AGILE TYPES

Agile software development started as a term for a collection of lightweight methodologies, such as eXtreme Programming(XP), Crystal, Scrum, Evo however it has become much bigger than that. All Scrum teams apply Agile but not all Agile teams follow Scrum. Agile is again a subpart of Lean which in turn belongs to learning organization. Lean organizations focus on removing waste while Learning organizations believe learning and adapting to be the main focus of organizations. According to Jim Highsmith creator of adaptive software development 'Agility is the ability to both create and respond to change in order to profit in a turbulent business environment'. Highsmith (2002).

As seen in Figure 2 Agile is a part of a bigger method called Learning organizations. Whether the agile team follows XP, Scrum or any other method it needs to learn. Learn from observations and by adapting to the changing environment. The team members must adapt lean and learning methods if they want to be agile. SCRUM is the most widely used agile methodology in the software industry and is used when the organization needs a fundamental shift. Kanban is a recent agile method and is used to improve an already working system. There are many methods that come under the category of Agile. All these methods are slightly different from each other, however they all have to follow the Agile principles in addition to their own.

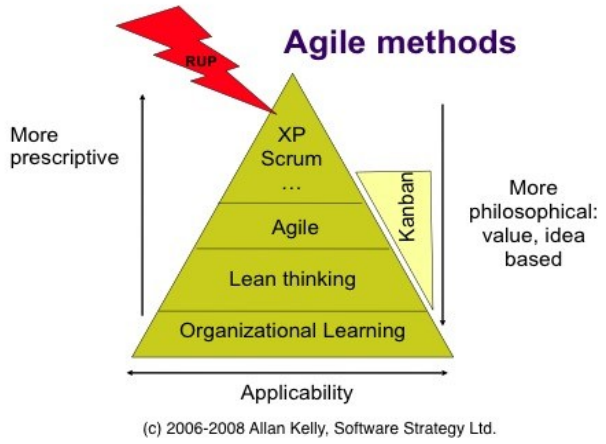

Figure 2: Positioning Agile[3]

4 AGILE IN TODAY'S WORLD

Agile in recent times has been used almost everywhere to increase efficiency. Small agile teams have been put together to oversee operations day to day and work on problems efficiently. Agile methodology has been adopted by companies like PayPal, Apple, CA technologies, L3 Communication Integrated Systems, and Northrop Grumman Corp[5].

Table 1: Types Of Agile Methods

AGILE METHODS	DESCRIPTION
SCRUM	Daily reviewing of Scrum backlog by the team and scrum master. This method is used when requirements are not known beforehand.
EXtreme Programming(XP)	It focuses entirely on the best options to go about the project and tries to implement them first.
Kanban	It implements a visual framework and applies small incremental changes to the system.
Feature Driven Development (FDD)	It creates a required feature list and focuses on it primarily. It is essentially customer driven.
Crystal	It focuses on communication between small teams.
Evolutionary Project Management (EVO)	Makes a critical top ten list of project objectives and goes on about achieving them [4].

Agile is not about following specific rules but it is about working together meticulously by constantly reviewing the task at hand. To apply Agile methods, one should not only follow the manifesto but they themselves should be agile. Agile methodology can be applied to a wide spectrum of companies and organizations. What agile basically aims to achieve is responsiveness from customers and delivering them incrementally each time, addressing a specific customer need.

Earlier agile methods were being implemented for small projects and small teams. However today companies are shifting their entire development process from the waterfall model to an agile system. Big software projects are implemented using agile and bigger agile teams have been created. Such companies are highly responsive to its customers and focus on the core value of the product incrementally.

Outside of the software world companies like Toyota, Dell, Southwest Airlines, the Tesco retail chain and the US marine Corps are a few companies who implement the agile methodology [3]. However, these organization would not describe them as an agile organization but as a learning organization. The companies today adopt agile by setting goals every morning and conducting team discussions from all over the globe, the teams discuss the agenda for the day, what they are going to do and what they learned the previous day.

When companies adopt an Agile software development process at a specific speed to create the product, the entire corporate ecosystem needs to speed up accordingly and meet the needs in a timely fashion[2].

5 OPPORTUNITIES AND OBSTACLES

Agile software development techniques have reshaped how we tackle a problem. Applying agile increases customer satisfaction since the product is being discussed by the customer and being worked on regularly by applying new changes. Issues can be determined prior because of the daily discussions and meeting. Any enhancement can be made at any time without considering the budget constraint. Less resources are being wasted since work is performed on up to date tasks and immediate feedback is received. Agile has its own demerits, the most crucial one is if the customer is not sure of what he wants the project can deviate from the actual idea. Also applying agile to large projects is very challenging since a well-established communication and integrated effort is required by the teams. Another major demerit of Agile is the constant interaction between the testers, customers and developers which involves more time and commitment. Agile can fail if the team lacks a proper structure, ignores customer feedback and when the tests are inefficient.

6 CONCLUSION

In summary, Agile software development is the most effective method for small projects. Due to its innovative and incremental approach, it is being used by most software companies in recent times. Agile in a broader perspective means to be efficient, everybody should embrace this efficiency and inculcate it into projects to get the best results. Being an Agile team is not only about specific practices, it is about learning, changing and growing to get the best results. You cannot do agile, you have to be agile.

ACKNOWLEDGMENTS

The author would like to thank Dr. Alexandra Mehlhase for introducing Agile Methodology and Latex. The author would also like to thank the anonymous referees for their valuable comments and helpful suggestions.

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