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Department of CSE

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Course Title : System Analysis & Design

Assignment Name: Agile Development Methodology

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The agile software methods and development is practices based on approach empowered with values, principles and practices which make the software development process easier and in faster time. Agile method which includes methods like Extreme programming, Feature Driven Development, Scrum, etc. are more coming into the software development world. There has been a remarkable importance in the field of agile software development approaches in the recent past. This is because of the fastness that agile approaches bring in the life cycle of software development. This interest in the field shows that there are benefits and non-benefits to obtain through successful implementation of agile methods. This paper has been carried with the distinct objectives of examine and gain insights into the current agile methods and practices, understanding how each of phases in each agile methods works and how agile system development life cycle works. And in this paper it has been highlighted some of difference between Traditional Development and Agile Development.

What are Agile Methodologies

If Agile is a mindset, then what does that say about the idea of Agile methodologies? To answer this question, you may find it helpful to have a clear definition of methodology.

Alistair Cockburn suggested that a methodology is the set of conventions that a team agrees to follow. That means that each team is going to have its own methodology. which will be different in either small or large ways from every other team's methodology.

So Agile methodologies are the conventions that a team chooses to follow in a way that follows Agile values and principles.

"Wait," you're probably saying, "I thought Scrum and XP were Agile methodologies." Alistair applied the term framework to those concepts. They certainly were born from a single team's methodology, but they became frameworks when they were generalized to be used by other teams. Those frameworks help to inform where a team starts with their methodology, but they shouldn't be the team's methodology. The team will always need to adapt its use of a framework to fit properly in its context.

Principles of Agile Methodology

Basically there are 12 principles of agile methodology, which are mentioned below:

1. Highest priority to customer satisfaction is earned by providing valuable and quality software on-time and continuous delivery.

2. Changes in requirement should be welcomed even at the later stage of development.

3. Releasing working quality software in shorter duration instead of months in weeks.

4. Working and quality software is the measure of progress.

5. Business people and developer and everyone work collaboratively throughout the project till the completion.

6. Highly motivated individual needed to complete to project. Necessary environment and support provided trust them to get the job done.

7. Face to Face communication within team members so that conveying information will be the most effective and efficient way.

8. Promotion of sustainable development and everyone clients, developers, testers, end users to maintain constant pace indefinitely.

9. Attention towards technical excellence and good design.

10. Maximizing the art of work not done – Excellence.

11. Best architectures, requirements, design comes from self-organizing teams.

12. Day to day basis team shows the best attitude to be more effective, compatible, adjusts and adapts responses and behaviors accordingly. (Trivikram, 2011)

The Bottom Line

Widely used in software development today, agile methodology was developed for work that lacks defined processes. Agile methods, unlike sequential approaches, are not intended for repetitive types of work. Many industries have and continue to implement agile methodology within their business structures.

The agile framework contains multiple subsets, including Scrum, lean and extreme programming, which help individuals deal with unpredictability and flexibility. On the surface, agile methodology can help improve end-to-end processes; however, individuals must be committed, adaptable and able to learn in order for it to work.

Companies That Use Agile Method

Although there is no official list of companies that use the Agile Method for their projects, IBM is one of the companies that openly uses this method to develop software. Many companies will adopt the use of this method within their development structure, but they aren't always open about their choice to use it.

According to IBM, the use of the Agile Method means that significant organizational changes will take place. They believe that many Agile software development teams will increase their chances of success by partnering with a trusted guide. They help clients implement their own Agile software development strategies for their projects. They provide critical guidance that will help Agile software development teams to avoid common adoption, expansion, and implementation pitfalls.

Example of Agile Methodology

Adobe is working on project to come up with a competing product for Microsoft Word, that provides all the features provided by Microsoft Word and any other features requested by the marketing team. The final product needs to be ready in 10 months of time. Let us see how this project is executed in traditional and Agile methodologies.

In traditional Waterfall model

At a high level, the project teams would spend 15% of their time on gathering requirements and analysis (1.5 months)

20% of their time on design (2 months)

40% on coding (4 months) and unit testing

20% on System and Integration testing (2 months).

At the end of this cycle, the project may also have 2 weeks of User Acceptance testing by marketing teams.

In this approach, the customer does not get to see the end product until the end of the project, when it becomes too late to make significant changes.

The image below shows how these activities align with the project schedule in traditional software development.

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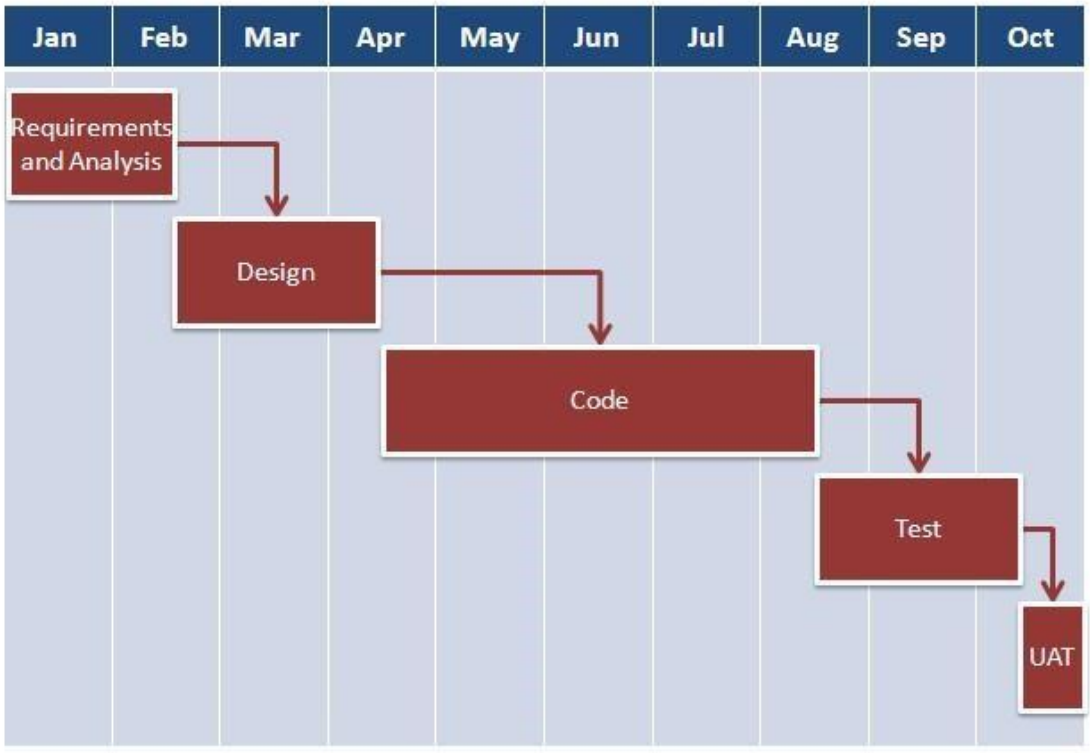
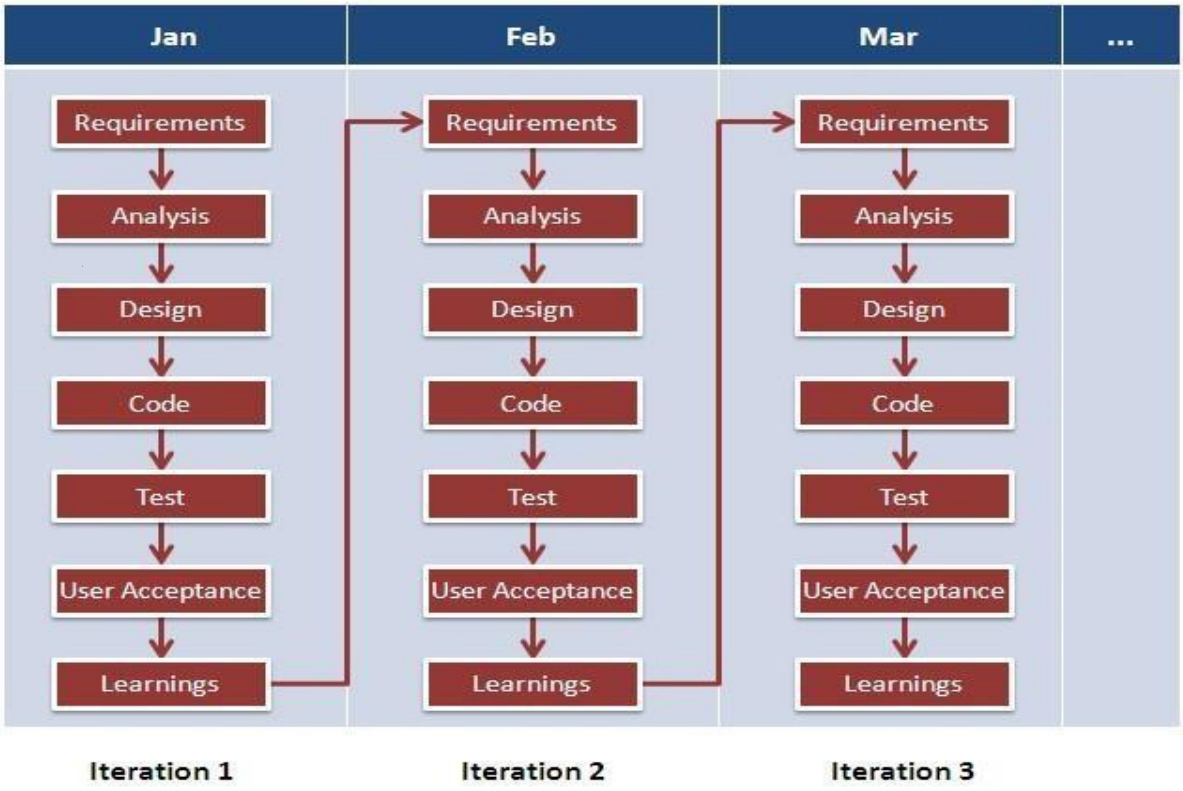


With Agile development methodology

- In theAgile methodology, each project is broken up into several 'Iterations'. All Iterations should be of the same time duration (between 2 to 8 weeks).
- At the end of each iteration, a working product should be delivered.
- In simple terms, in the Agile approach the project will be broken up into 10 releases (assuming each iteration is set to last 4 weeks).

- Rather than spending 1.5 months on requirements gathering, in Agile software development, the team will decide the basic core features that are required in the product and decide which of these features can be developed in the first iteration.
- Any remaining features that cannot be delivered in the first iteration will be taken up in the next iteration or subsequent iterations, based on priority.
- At the end of the first iterations, the team will deliver a working software with the features that were finalized for that iteration.
- There will be 10 iterations and at the end of each iteration the customer is delivered a working software that is incrementally enhanced and updated with the features that were shortlisted for that iteration.

- **The iteration cycle of an Agile project is shown in the image below.**



This approach allows the customer to interact and work with functioning software at the end of each iteration and provide feedback on it. This approach allows teams to take up changes more easily and make course corrections if needed. In the Agile approach, software is developed and released incrementally in the iterations. An example of how software may evolve through iterations is shown in the image below.

Agile methodology gives more importance to collaboration within the team, collaboration with the customer, responding to change and delivering working software.

Advantages of Agile Methodology

- In Agile methodology the delivery of software is unremitting.
- The customers are satisfied because after every Sprint working feature of the software is delivered to them.
- Customers can have a look of the working feature which fulfilled their expectations.
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- If the customers has any feedback or any change in the feature then it can be accommodated in the current release of the product.
- In Agile methodology the daily interactions are required between the business people and the developers.
- In this methodology attention is paid to the good design of the product.
- Changes in the requirements are accepted even in the later stages of the development.

Disadvantages of the Agile Methodology

- In Agile methodology the documentation is less.
- Sometimes in Agile methodology the requirement is not very clear hence it's difficult to predict the expected result.
- In few of the projects at the starting of the software development life cycle it's difficult to estimate the actual effort required.
- The projects following the Agile methodology may have to face some unknown risks which can affect the development of the project.

Conclusion

As we came to know that traditional software development approaches are more automatic which concentrate more on Processes, tools, contracts and plans. In contrast to traditional methods, agile methods keep emphasis on interaction, working software, embracing change at any moment of the project, customer relationships. The method can be agile if it is: Incremental, Cooperative Straightforward and Adaptive. (Naidu) "Agile view is more people centric rather than plan-centric." Agile methods are not defined by a small set of principles, practices and techniques. It creates a strategic capability which has capability of responding to change, capability to balance the structure and flexibility, capability of innovation and creations through development team and uncertainty. (Naidu) In this paper we have also discussed about the Advantages, disadvantages of Agile Methodology, difference between traditional and agile software development and Agile System Development Life Cycle. And we have also discussed about different Agile Software development models such as XP (Extreme programming), Scrum and FDD (Feature driven development).

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