Assignment -1

Name of Assignment: Agile Development Methodology

Title: System Analysis & Design

Course Code: CSE-325 Course

Submitted to:

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Abstract

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.

The following principles are based on the Agile Manifesto.

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

1. Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.
2. Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.
3. Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.
4. Business people and developers must work together daily throughout the project.
5. Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.
6. The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.

7. Working software is the primary measure of progress.
8. Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.
9. Continuous attention to technical excellence and good design enhances agility.
10. Simplicity--the art of maximizing the amount of work not done--is essential.
11. The best architectures, requirements, and designs emerge from self-organizing teams.
12. At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.

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)

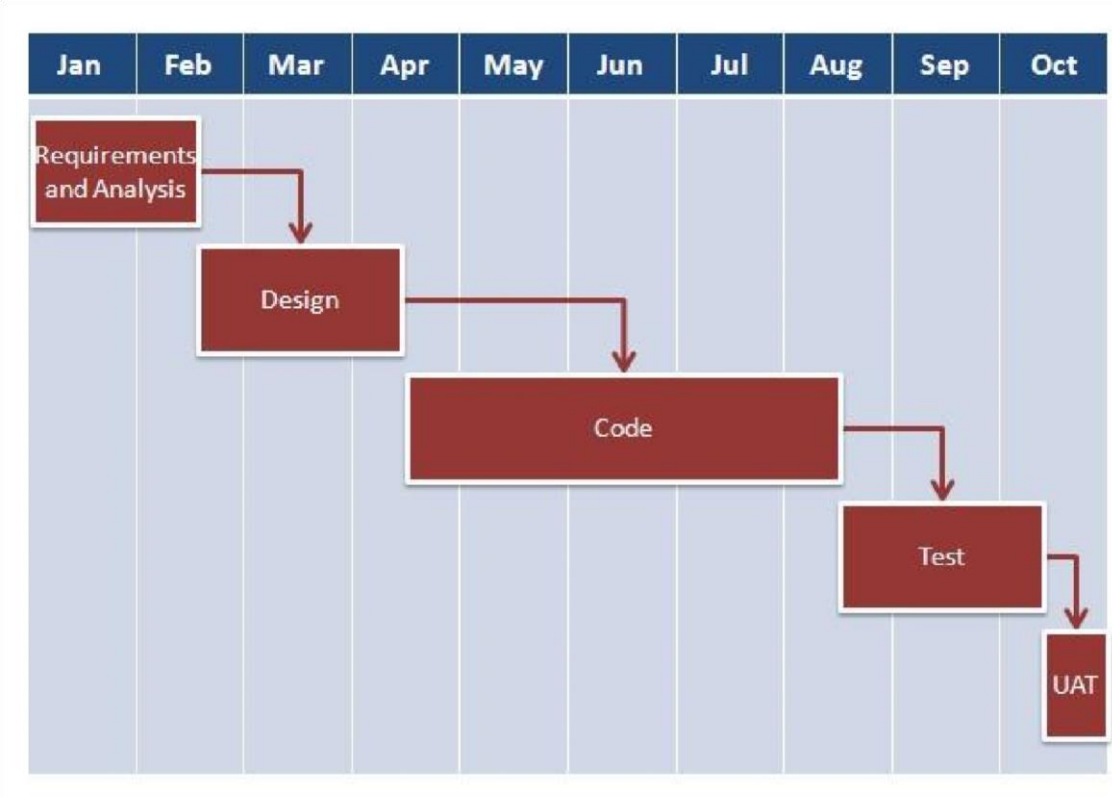
40% on coding (4 months) and unit testing

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.

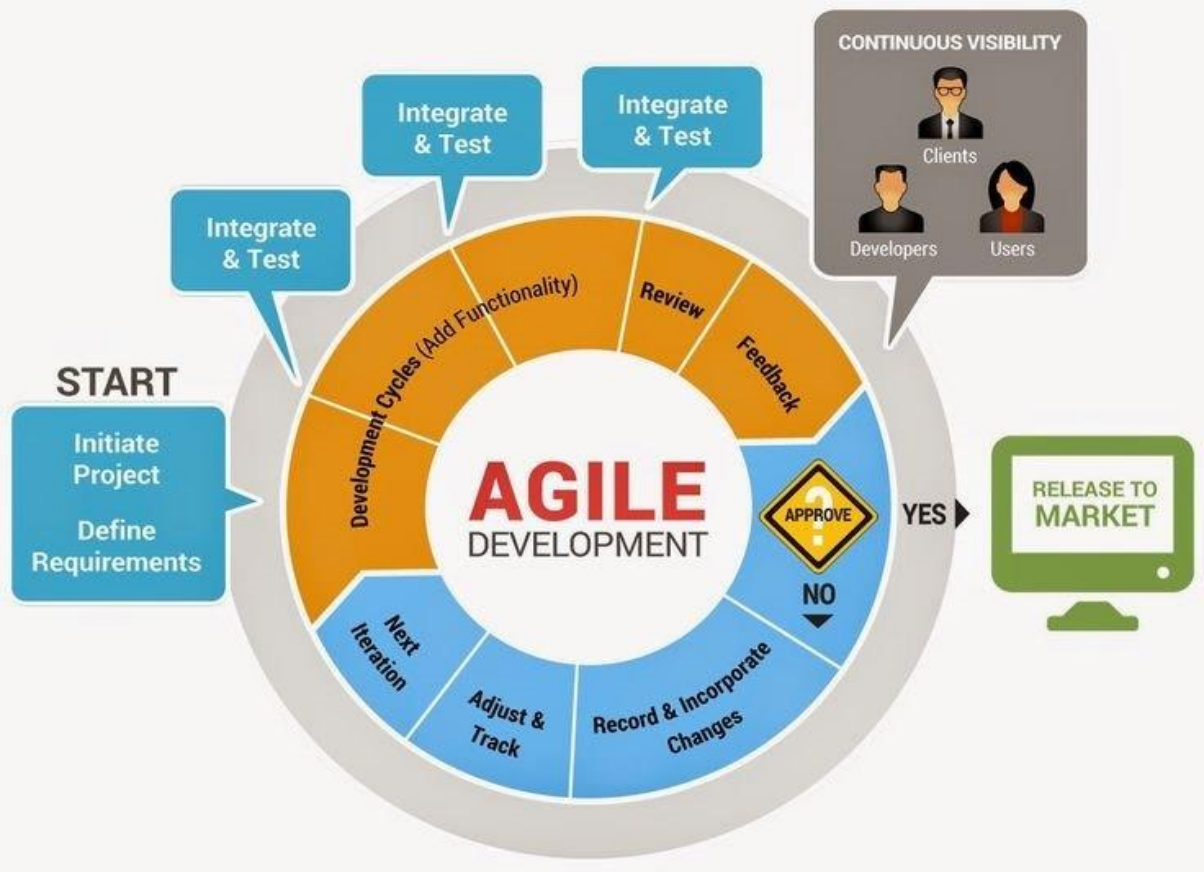


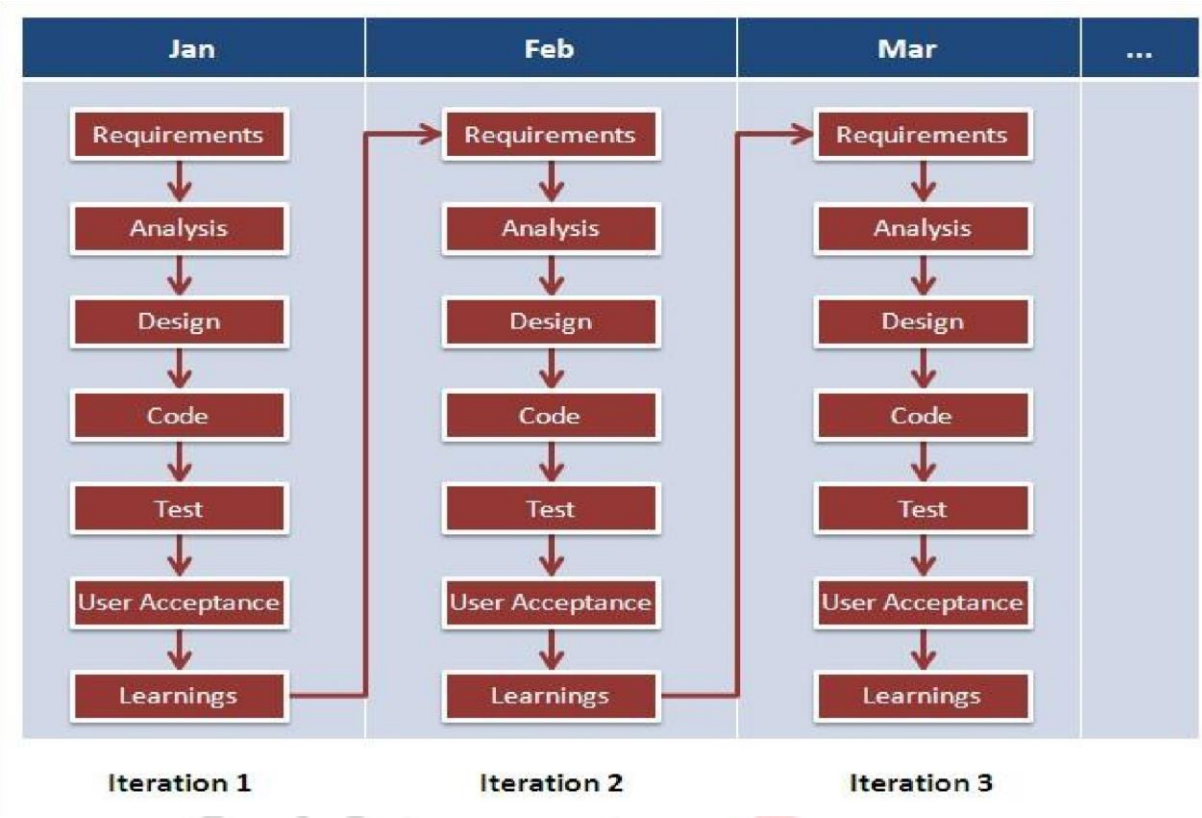
With Agile development methodology

- In the Agile 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

- Customer satisfaction by rapid, continuous delivery of useful software.
- People and interactions are emphasized rather than process and tools. Customers, developers and testers constantly interact with each other.
- Working software is delivered frequently (weeks rather than months).
- Face-to-face conversation is the best form of communication.
- Close, daily cooperation between business people and developers.
- Continuous attention to technical excellence and good design.
- Regular adaptation to changing circumstances.
- Even late changes in requirements are welcomed.

Disadvantages of the Agile Methodology

- In case of some software deliverables, especially the large ones, it is difficult to assess the effort required at the beginning of the software development life cycle.
- There is lack of emphasis on necessary designing and documentation.
- The project can easily get taken off track if the customer representative is not clear what final outcome that they want.
- Only senior programmers are capable of taking the kind of decisions required during the development process. Hence it has no place for newbie programmers, unless combined with experienced resources.

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).

Reference

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