



SNS COLLEGE OF ENGINEERING

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DEPARTMENT OF COMPUTER SCIENCE AND TECHNOLOGY

COURSE NAME : 19CS302 AGILE SOFTWARE ENGINEERING

II YEAR /III SEMESTER

Unit 2- Agile Development

Topic 5: Agile Process Models





Brain Storming



1. How to design a product with Iterative and incremental approach?



Agile-Basics



- Agile SDLC model is a combination of iterative and incremental process models which focus on process adaptability and customer satisfaction by rapid delivery of working software product.
- Agile Methods break the product into small incremental builds. These builds are provided in iterations. Each iteration typically lasts from about one to three weeks. Every iteration involves cross functional teams working simultaneously on various areas like –



- Planning
 - Requirements Analysis
 - Design
 - Coding
 - Unit Testing and
 - Acceptance Testing.
- At the end of the iteration, a working product is displayed to the customer and important stakeholders.



What is Agile?



- The meaning of Agile is swift or versatile.
- In Agile, the tasks are divided to time boxes (small time frames) to deliver specific features for a release.
- Iterative approach is taken and working software build is delivered after each iteration.
- Each build is incremental in terms of features; the final build holds all the features required by the customer.



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- The most popular Agile methods include Rational Unified Process (1994), Scrum (1995), Crystal Clear, Extreme Programming (1996), Adaptive Software Development, Feature Driven Development, and Dynamic Systems Development Method (DSDM) (1995).
- These are now collectively referred to as **Agile Methodologies**, after the Agile Manifesto was published in 2001.

Graphical illustration of the Agile Model

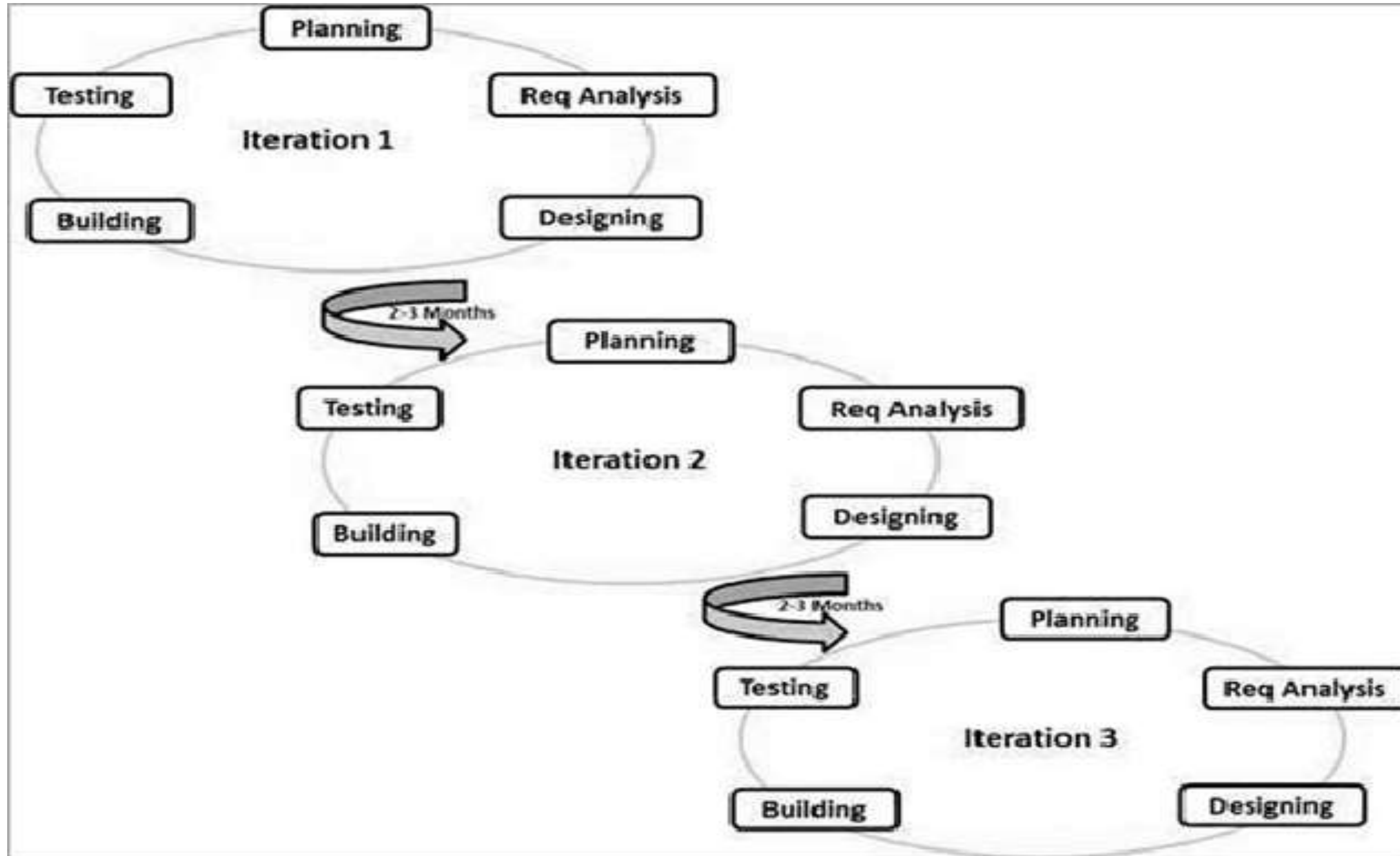




Fig. Agile Model



Phases in Agile



- Requirements gathering
- Design the requirements
- Construction/ iteration
- Testing/ Quality assurance
- Deployment
- Feedback



Conti...



- 1. Requirements gathering:** In this phase, you must define the requirements. You should explain business opportunities and plan the time and effort needed to build the project. Based on this information, you can evaluate technical and economic feasibility.
- 2. Design the requirements:** When you have identified the project, work with stakeholders to define requirements. You can use the user flow diagram or the high-level UML diagram to show the work of new features and show how it will apply to your existing system.



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3. Construction/ iteration: When the team defines the requirements, the work begins. Designers and developers start working on their project, which aims to deploy a working product. The product will undergo various stages of improvement, so it includes simple, minimal functionality.

4. Testing: In this phase, the Quality Assurance team examines the product's performance and looks for the bug.

5. Deployment: In this phase, the team issues a product for the user's work environment.

6. Feedback: After releasing the product, the last step is feedback. In this, the team receives feedback about the product and works through the feedback.



Agile Models



- Scrum
- Crystal
- Dynamic Software Development Method(DSDM)
- Feature Driven Development(FDD)
- Lean Software Development
- eXtreme Programming(XP)



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1. Scrum

SCRUM is an agile development process focused primarily on ways to manage tasks in team-based development conditions.

There are three roles in it, and their responsibilities are:

Scrum Master: The scrum can set up the master team, arrange the meeting and remove obstacles for the process

Product owner: The product owner makes the product backlog, prioritizes the delay and is responsible for the distribution of functionality on each repetition.

Scrum Team: The team manages its work and organizes the work to complete the sprint or cycle.



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2. eXtreme Programming(XP)

This type of methodology is used when customers are constantly changing demands or requirements, or when they are not sure about the system's performance.

3. Crystal:

There are three concepts of this method-

Chartering: Multi activities are involved in this phase such as making a development team, performing feasibility analysis, developing plans, etc.



Conti...



Cyclic delivery: under this, two more cycles consist, these are:

A. Team updates the release plan.

B. Integrated product delivers to the users.

Wrap up: According to the user environment, this phase performs deployment, post-deployment.

3. Dynamic Software Development Method(DSDM):

DSDM is a rapid application development strategy for software development and gives an agile project distribution structure.



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The essential features of DSDM are that users must be actively connected, and teams have been given the right to make decisions. The techniques used in DSDM are:

1. Time Boxing
2. MoSCoW Rules
3. Prototyping

The DSDM project contains seven stages:

1. Pre-project
2. Feasibility Study
3. Business Study



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5. Design and build Iteration

6. Implementation

7. Post-project

4. Feature Driven Development(FDD):

This method focuses on "Designing and Building" features. In contrast to other smart methods, FDD describes the small steps of the work that should be obtained separately per function.



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5. Lean Software Development:

Lean software development methodology follows the principle "just in time production." The lean method indicates the increasing speed of software development and reducing costs. Lean development can be summarized in seven phases.

1. Eliminating Waste
2. Amplifying learning
3. Defer commitment (deciding as late as possible)
4. Early delivery
5. Empowering the team
6. Building Integrity
7. Optimize the whole



Conti...



When to use the Agile Model?

- When frequent changes are required.
- When a highly qualified and experienced team is available.
- When a customer is ready to have a meeting with a software team all the time.
- When project size is small.



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Advantage(Pros) of Agile Method:

- Frequent Delivery
- Face-to-Face Communication with clients.
- Efficient design and fulfils the business requirement.
- Anytime changes are acceptable.
- It reduces total development time.



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Disadvantages(Cons) of Agile Model:

- Due to the shortage of formal documents, it creates confusion and crucial decisions taken throughout various phases can be misinterpreted at any time by different team members.
- Due to the lack of proper documentation, once the project completes and the developers allotted to another project, maintenance of the finished project can become a difficulty.



Assessment 1



1. List out the Agile Testing methods?

Ans : _____

2. List out the Phases in Agile SDLC?

Ans : _____





References



1. Roger S. Pressman, Software engineering- A practitioner's Approach, 10th Edition, McGraw-Hill, 2017.
2. Ken Schawber, Mike "Agile Software Development with Scrum" Pearson Education, 2nd Edition, 2015.

Thank You