Addis Ababa Science and Technology University

College of Engineering

Department of Software Engineering

Software Component Design

Agile Methodology

Group Members

1. Eyouel Melkamu – ETS0479/13
2. Eshetu Tessema – ETS0435/13
3. Fannuel Gulelat – ETS0488/13
4. Eyob Betemariam – ETS0462/13
5. Fikre Tadesse – ETS0505/13
6. Lealem Meseret - ETS1552/13

Date of Submission

Wednesday, Dec 18, 2024

Table of Content

What is Agile?.....1
What is the Agile Methodology?.....1
Life cycle of Agile Methodology.....1
1. Requirement Gathering.....1
2. Development (Coding).....1
3. Design.....2
4. Testing.....2
5. Deployment.....2
6. Review (Maintenance).....2
What are the benefits of using Agile methodology?.....3
Limitations of Agile Methodology.....3
Conclusion.....4
Reference.....4

What is Agile?

Agile is a project management and software development approach that aims to be more effective. [1] It focuses on delivering smaller pieces of work regularly instead of one big launch. This allows teams to adapt to changes quickly and provide customer value faster.

What is the Agile Methodology?

Agile methodologies are iterative and incremental, which means it's known for breaking a project into smaller parts and adjusting to changing requirements. They prioritize flexibility, collaboration, and customer satisfaction.

Life cycle of Agile Methodology

The Agile software development life cycle helps you break down each project you take on into six simple stages: Requirement Gathering, Design, Development, Testing, Deployment, and Review. **[2]**

1. Requirement Gathering

In this stage, the project team identifies and documents the needs and expectations of various stakeholders, including clients, users, and subject matter experts.

- It involves defining the project's scope, objectives, and requirements.
- Establishing a budget and schedule.
- Creating a project plan and allocating resources.

2. Development (Coding)

- Writing the actual code for the software.
- Conducting unit testing to verify the functionality of individual component.

3. Design

- Developing a high-level system architecture.
- Creating detailed specifications, which include data structures, algorithms, and interfaces.
- Planning for the software's user interface.

4. Testing

This phase involves several types of testing:

- Integration Testing: Ensuring that different components work together.
- System Testing: Testing the entire system as a whole.
- User Acceptance Testing: Confirming that the software meets user requirements.
- Performance Testing: Assessing the system's speed, scalability, and stability.

5. Deployment

- Deploying the software to a production environment.
- Put the software into the real world where people can use it.
- Make sure it works smoothly in the real world.
- Providing training and support for end-users.

6. Review (Maintenance)

- Addressing and resolving any issues that may arise after deployment.
- Releasing updates and patches to enhance the software and address problems.

What are the benefits of using Agile methodology?

Rapid progress: By effectively reducing the time it takes to complete various stages of a project; teams can elicit feedback in real time and produce working prototypes or demos throughout the process

Customer and stakeholder alignment: Through focusing on customer concerns and stakeholder feedback, the Agile team is well positioned to produce results that satisfy the right people

Continuous improvement: As an iterative approach, the Agile project management methodology allows teams to chip away at tasks until they reach the best end result.

Limitations of Agile Methodology

The disadvantages of the agile model are as follows:

Less Documentation: Agile methodologies focus on less documentation; it prioritizes working on projects rather than paperwork.

Challenges in Large Organizations: Busy schedule of clients can make daily meetup and face-to-face communication difficult.

Need for Senior Programmers: It may require experienced programmers to make critical decisions during the development of software.

Limited Scope Control: It has less rigid scope control, which may not be suitable in certain situations.

Predictability: Compared to more structured project management methods, it may lack predictability.

Conclusion

In conclusion, the Agile model is like building a project in small, flexible steps. It's about being quick to adapt, working closely with customers, and delivering value in small doses. This approach has become popular for many companies because it helps them meet changing needs and make customers happy.

Use the Agile model when your project needs to be flexible, your customers' needs might change, and you want to deliver small parts of your project regularly to make them happy. It's like building a puzzle piece by piece, adapting as needed.

Reference

[1] J. Highsmith, in *Agile Project Management: Creating Innovative Products*, Addison-Wesley, Boston, MA, 2013.

[2] e. a. R. Smith, "Agile Software Development Life Cycle," *Journal of Software Engineering*, vol. 45, pp. 10-15, 2018.