

## 1. Steps involved in managing a software development projects

- a. Planning
- b. Analysis
- c. Building
- d. Testing
- e. Review
- f. Deploy
- g. Maintenance

## 2. Differences between Waterfall and Agile Model

Agile	Waterfall
It separates the project development lifecycle into sprints.	Software development process is divided into distinct phases.
It follows an incremental approach	Waterfall methodology is a sequential design process.
Agile methodology is known for its flexibility.	Waterfall is a structured software development methodology so most times it can be quite rigid.
Agile can be considered as a collection of many different projects.	Software development will be completed as one single project.
Agile is quite a flexible method which allows changes to be made in the project development requirements even if the initial planning has been completed.	There is no scope of changing the requirements once the project development starts.

Agile methodology, follow an iterative development approach because of this planning, development, prototyping and other software development phases may appear more than once.	All the project development phases like designing, development, testing, etc. are completed once in the Waterfall model.
Test plan is reviewed after each sprint	The test plan is rarely discussed during the test phase.
Agile development is a process in which the requirements are expected to change and evolve.	The method is ideal for projects which have definite requirements and changes not at all expected.
In Agile methodology, testing is performed concurrently with software development.	In this methodology, the "Testing" phase comes after the "Build" phase
Agile introduces a product mindset where the software product satisfies needs of its end customers and changes itself as per the customer's demands.	This model shows a project mindset and places its focus completely on accomplishing the project.
Agile methodology works exceptionally well with Time & Materials or non-fixed funding. It may increase stress in fixed-price scenarios.	Reduces risk in the firm fixed price contracts by getting risk agreement at the beginning of the process.
Prefers small but dedicated teams with a high degree of coordination and synchronization.	Team coordination/synchronization is very limited.
Products owner with team prepares requirements just about every day during a project.	Business analysis prepares requirements before the beginning of the project.

Test team can take part in the requirements change without problems.	It is difficult for the test to initiate any change in requirements.
Description of project details can be altered anytime during the SDLC process.	Detail description needs to implement waterfall software development approach.
The Agile Team members are interchangeable, as a result, they work faster. There is also no need for project managers because the projects are managed by the entire team	In the waterfall method, the process is always straightforward so, project manager plays an essential role during every stage of SDLC.

### 3. Benefits of Agile Methodology

- It is focused client process. So, it makes sure that the client is continuously involved during every stage.
- Agile teams are extremely motivated and self-organized so it likely to provide a better result from the development projects.
- Agile software development method assures that quality of the development is maintained
- The process is completely based on the incremental progress. Therefore, the client and team know exactly what is complete and what is not. This reduces risk in the development process.

#### 4i. Components for developing a computer based test for tertiary institution

- a. Students/users authentication
- b. Generation of questions
- c. Computation of result
- d. Presentation of scores/grades
- e. Record keeping (Storage)

#### 4ii. Human resources

- a. Product Owner
- b. Scrum master

- c. Developers/Software engineers
- d. Quality control/Assurance personnel
- e. End users

#### 4iii. Tools

- a. Good computers/Laptops
- b. Version control tools e.g Github
- c. Project management tool eg Trello
- d. Database tool eg MYSQL Workbench
- e. Editors eg Sublime,Vim
- f. HTML, CSS
- g. Bootstrap
- h. Activecollab
- i. Zoom
- j. Google Docs
- k. Google forms
- l. Slack
- m. Etc

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