Alpha and Beta Testing

Alpha Testing

- Alpha testing takes place at the developer's site by the internal teams, before release to external customers. This testing is performed without the involvement of the development teams.

- The main purpose of conducting an alpha test is to ensure the quality of the software system before it goes into the production environment. That's why an alpha test relies on internal testers — team members, stakeholders, etc. — at the developer's site, in a virtual environment similar to the actual production environment.

What is an alpha test used for?

An alpha test is conducted before a beta test, towards the end of the software development process.

The main aim is to verify the input and output functionality of the software, at a high level. To do so, alpha testing is rolled out in three phases:

- **Pre-alpha testing:** A quick, high-level testing cycle to understand whether the system can be passed on to the next phases of testing.
- **Alpha testing:** A lengthy and full cycle of thorough and rigorous testing to stress-test all the features of the system.
- **Post-alpha testing:** A parallel process where one set of developers work on fixing any defects found, whilst other testers continue to search for bugs.

How do you conduct an alpha test?

1. The first step of alpha testing is to **review the design specification** and **understand the functional and non-functional requirements**.
2. Next, an **extensive test plan** is created, to generate all the necessary test cases.
3. Once the test plan and the test cases are ready, **the team starts alpha testing**. Here, the main priority is to check for any bugs or defects in the system.
4. As soon as the team comes up against a bug or defect, the **issue is logged** in a separate system.
5. These defects are then **assigned to the members of the development team** to work on and fix.
6. When the development team confirms that the issues have been resolved, the testing team **retests the software product**. This testing cycle will continue until no more issues are found.

Advantages of running an alpha test

- **You accomplish adequate and thorough testing**: Alpha testing uses both black box and white box testing. The black box testing techniques will test the system's input and output functionality at a high level. While the white box techniques test the system's design and internal structure. This is important to verify the product's input and output flows, for all required and possible scenarios.

- **Improved software quality**: In alpha testing, the system is tested in a *simulated environment* which is *similar to the environment it will be used in*. This creates realistic testing conditions, trying to empathize with end-users as much as possible. Of course, if the software is then taken into beta testing, the team will get feedback from genuine end-users as well. Any and all early feedback should improve the final product quality immensely.

Disadvantages of running an alpha test

Alpha testing means a longer test execution time: In alpha testing the complete product will be tested at a high level *and* in-depth, using the different black box and white box techniques. This means the test execution cycle takes a longer time to complete. The duration of the testing cycle also depends on the features of the product and the number of defects uncovered during the test cycle. If the product has more features and finds a number of uncovered defects, the testing duration will drag on.

Beta Testing

- Beta testing is a type of **U**ser **A**cceptance **T**esting among the most crucial testing, which performed before the release of the software. Beta Testing is a type of Field Test.

- This testing performs at the end of the *software* testing life cycle.

- This type of testing can be considered as external user acceptance testing. It is a type of salient testing. Real users perform this testing. This testing executed after the alpha testing.

- In this the new version, beta testing is released to a limited audience to check the accessibility, usability, and functionality, and more.

- Beta testing is the last phase of the testing, which is carried out at the client's or customer's site.

Features of Beta testing

- Beta testing used in a real environment at the user's site. Beta testing helps in providing the actual position of the quality.

- Testing performed by the client, stakeholder, and end-user.

- Beta testing always is done after the alpha testing, and before releasing it into the market.

- Beta testing is black-box testing.

- Beta testing performs in the absence of tester and the presence of real users

- Beta testing is performed after alpha testing and before the release of the final product.

- Beta testing generally is done for testing software products like utilities, operating systems, and applications, etc.

Lifecycle of Beta Testing

The process of beta testing follows the following steps:

1.**Planning:** Like another testing process, beta testing also supports proper planning. In this stage, the team prepares a testing strategy and defines the goal of testing. In this case, the team establishes the need of users for testing, duration, and necessary details related to the process.

2.**Participant Recruitment:** This is the second stage of the beta process in which the team recruits a group of selected end-users for testing. This group can change as per the requirement of the organization and the product.

3.**Product Launch:** When a team of users (testers) recruited. The beta version of the product is launched or installed at the client or user side, and users will test the product for quality assurance.

4.**Collect and Evaluate Feedback:** When the testing finished, developers will collect the feedback provided by the testers and evaluate it. In the end, based on the feedback, issues, and bugs are fixed and resolved by the responsible individual team.

5.**Closure:** When all the problems fixed and the organization meets the exit criteria, beta testing achieved, and the rewards offered to the testing team.

Advantages of Beta Testing

1. Beta testing focuses on the customer's satisfaction.

2. It helps to reduce the risk of product failure via user validations.

3. Beta testing helps to get direct feedback from users.

4. It helps to detect the defect and issues in the system, which is overlooked and undetected by the team of software testers.

5. Beta testing helps the user to install, test, and send feedback regarding the developed software.

Disadvantages of Beta Testing

1. In this type of testing, a software engineer has no control over the process of the testing, as the users in the real-world environment perform it.

2. This testing can be a time-consuming process and can delay the final release of the product.

3. Beta testing does not test the functionality of the software in depth as software still in development.

4. It is a waste of time and money to work on the feedback of the users who do not use the software themselves properly.

Differences between the Alpha testing and Beta testing

Sr. No.	Alpha Testing	Beta Testing
1.	Alpha testing performed by a team of highly skilled testers who are usually the internal employee of the organization.	Beta testing performed by clients or end-users in a real-time environment, who is not an employee of the organization.
2.	Alpha testing performed at the developer's site; it always needs a testing environment or lab environment.	Beta testing doesn't need any lab environment or the testing environment; it is performed at a client's location or end-user of the product.
3.	Reliability or security testing not performed in-depth in alpha testing.	Reliability, security, and robustness checked during beta testing.
4.	Alpha testing involves both white box and black-box techniques.	Beta testing uses only black-box testing.
5.	Long execution cycles maybe require for alpha testing.	Only a few weeks are required for the execution of beta testing.

Thank You