Abstract: This paper provides an overview of quality assurance process for Web Applications. Producing reliable and robust software has become one of the most important software development concerns in recent years and testing is a process by which software quality can be assured through the collection of information about software [1]. This paper describes the review of basic parameters that should happen at the time of testing for every Web Application. The terms “quality assurance” is often used interchangeably to refer to ways of ensuring the quality of a service or product. “Security”, “Performance”, “Compliance”, “UI” and “functional” are the five basic type’s parameter on which we are giving emphasis for the Testing or QA of web application.

Keywords: Retest, Regression Test, Staging Environment, User Acceptance Test, Black Box, System testing, Site Compliance

1. INTRODUCTION

Testing is an important process to support quality assurance by gathering information about the software being developed or modified. It is, in general, extremely labor and resource intensive, accounting for 50-60% of the total cost of software development [2]. This paper describes the flow of Web application testing process and procedure. It does not matter at all whether it is web or desktop, client server or peer to peer, enterprise or individual business, testing always takes its place. Similarly, whether it is healthcare of finance, leasing or retail, mailing application or controlling spaceship, behind the scene now a day’s web application is always in action. As per the requirements testers proposed a basic model for the Web application testing.

In this model testers describe the test process from development environment to production environment. The test plan starts at the requirement analysis phase and as per the requirement testers divide the process into different phases. In this model testers divide it into three different phases like functional testing, Site compliance testing and performance testing. These three phases mostly cover all the objectives and outcomes, usability and usefulness as well as validation and verification.

In this proposed model testers generally found the defects or bugs at the time of testing in the development or local environment. After all the bugs or defects once fixed testers move files to the staging environment. In the staging environment user acceptance testing will happen if the user acceptance testing will pass then the files will push to the production else again it will come to the development environment then testing environment and the cycle will continue. The staging environment lets you move website assets within and across different environments. For example, you can move a new Web page or a marketing campaign from a test environment to a production environment. In an enterprise deployment, you can define staging projects to move content from the development environment to the integration/test environment, from there to the staging environment, and then production environment [3]. In figure one, we designed our proposed model.
II. FUNCTIONAL TESTING

Functional testing is a type of black box testing that bases its test cases on the specifications of the software component under test. Functions are tested by feeding them input and examining the output, and internal program structure is rarely considered.

An effective functional testing practice involves the definition of guidelines for using functional testing technologies effectively, and then the implementation and integration of those guidelines (along with supporting technologies and configurations) into your software development lifecycle to ensure that your teams apply the policy consistently and regularly. It also requires a means to monitor and measure the policy's application, as well as report the data it is tracking.

Functional testing "verifies a program by checking it against the design document(s) or specification(s)" [4]. Functional testing typically involves five steps:

1. The identification of functions that the software is expected to perform
2. The creation of input data based on the function’s specifications
3. The determination of output based on the function's specifications
4. The execution of the test case
5. The comparison of actual and expected outputs

III. GUI TESTING

Purpose of GUI Testing Checklist is to help you understand how your application can be tested according to the known and understood standards for GUI. This checklist can give some guidance to both development and QA teams. Development team can make sure that during the development they follow guidelines related to the compliance, aesthetics, navigation etc. But as a tester it is your responsibility to validate your product against GUI standards followed by your organization.
check boxes, push buttons, dropdown list boxes, combo box, list box etc. In this case tester scan test the user interface as per the client requirement by following the style guides provided by them where tester scan verify the hex code, font, font-size and above all look and feel in the perception of end user.

IV. DEFECT CYCLE
In this phase testers are raising the bugs/defects that the test lead/tester found in the application for the initial builds. The Life Cycle varies from organization to organization and is governed by the software testing process the organization / project follows and/or the Bug / Defect tracking tool being used. The general procedure for the defect cycle mentioned in the Fig-2.

![Figure 2: General Procedure for Defect Cycle](image)

V. QA ENVIRONMENTS
QA environment is the systematic monitoring and evaluation of the various aspects of a project, service or facility to maximize the probability that minimum standards of quality are being attained by the production process?[5] QA cannot absolutely guarantee the production of quality products. Two principles included in QA are: "Fit for purpose", the product should be suitable for the intended purpose; and "Right first time", mistakes should be eliminated. QA includes regulation of the quality of raw materials, assemblies, products and components, services related to production, management, production and inspection processes.

Quality is determined by the product users, clients or customers, not by society in general. It is not the same as 'expensive' or 'high quality'. Low priced products can be considered as having high quality if the product users determine them as such.

VI. STAGING ENVIRONMENT
Staging site, in website design, is a website used to assemble, test and review its newer versions before it is moved into production. This phase follows the development phase. The staging phase of the software life-cycle is often tested on hardware that mirrors hardware used in the production environment. The staging site is often different from the development site, and provides a QA zone that is separate from the development or production environments. This is the replica of the production environment. So in some organization/Projects it is known as the pre-production environment.

VII. PERFORMANCE TESTING
Performance testing is the process which is performed to determine how fast some aspects of a system perform under a particular workload. In this testing method “Load Testing”, “stress Testing”, “Soak Testing”, “Configuration Testing”, “Isolation testing”, “Stress Testing”, “volume Testing” are used to monitor the performance of web application. For this organizations are used the tools like jmeter, Load runner, VSTS, etc.

VIII. SITE COMPLIANCE TESTING
This method contains two separate methods. The methods are “privacy & Accessibility” and “Security Testing”. Basically testers are using the Hi-Soft compliance tool for the “privacy and accessibility”. For accessibility testers check the check-list like “Markup”, “Visual Appearance and content”, “dynamic Content”, “forms”, “Testing”. These check points testers have to test as per the W3C standard. In this case testers can measure the health of our website/Application in the form of privacy and accessibility aspects.
IX. SECURITY TESTING

Security testing is a process to determine that an information system protects data and maintains functionality as intended. The six basic security concepts that need to be covered by security testing are: confidentiality, integrity, authentication, availability, authorization and non-repudiation. This process is required to save our application from the external attacks. In this process testers have to check the XSS, SQL injection, critical and high to measure the health of the site in the form of security aspects.

In the figure 1 we stated the entire above step which are required for a good health application where all of the key functional and non-functional testing can be done. At the time of testing if testers found any defects/bugs then testers have to raise it in the defect tracking tools where tester scan set the priority and severity of the bug. Once the developer marks as fixed then testers have to test and close the defect ID. Once all the defects are closed in the system testing then testers will go for regression testing and smoke testing.

Once the build is complete and the QA lead confirms then only tester scan go for the UAT (User Acceptance Testing). Here also tester sare following the same procedure that testers are following at the QA environment and follow all the process that mentioned in the figure 1.

X. CONCLUSION

In web application testing testers can make a more robust framework where testers can do all the testing procedure and make it through automation tool for which they can save time for regression testing and reuse the scripts. It will not save our time but also it will give more accuracy by using the tool. In the current stage testers are using different tool like selenium, QTP, Load Runner, Jmeter, HiSoft Compliance Sheriff, HP-Web Inspect etc. to full fill the above requirements in the testing process. They have to find out a single tool where testers can solve all our purpose and process there.

References

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