

# Web Testing

# Web Testing

**Introduction** We are aware as to how important web application testing is. We have all been the frustrated users of websites that always seem to be down or temporarily unavailable. The status of the site will not only lead to user frustration, but could greatly impact the sales of the site.

The Internet has quietly become the body of the business world, with web applications as the brains. This means that software faults in web applications have potentially disastrous consequences. Most work on web applications has been on making them more powerful, but relatively little is done often times to ensure their quality. Important quality attributes for web applications include reliability, availability, interoperability and security apart from ensuring the functional & usability aspects. Web applications share some characteristics of client-server, distributed, and traditional programs; however there are a number of novel aspects of web applications. These include the fact that web applications are “dynamic”, due to factors such as the frequent changes of the application requirement as well as dramatic changes of the web technologies, the fact that the roles of the clients and servers change dynamically, the heterogeneity of the hardware and software components, the extremely loose coupling and dynamic integration, and the ability of the user to directly affect the control of execution.

Driven by the extreme demands of the business world and enthusiasm of the public, the Internet has become indispensable to business, education, and even our personal lives. Thus malfunctions of the Internet or in applications built on it can cause serious damages. For example, a glitch during an unscheduled maintenance at Amazon.com in 1998 put the site offline for several hours, with an estimated cost as high as \$400,000. Even more costly, the relationship between customers and the company can be seriously damaged by such outages; the users do not care why the outage happened, all they know is that the web site does not offer good service. Therefore, methodologies for adequately analyzing, constructing, understanding, testing and maintaining web applications will be essential, not only to the Internet industry, but to the commerce industry a whole.

This paper discusses quality attributes of a website and testing methodology to be adopted for testing web applications.

**Solution** Web application testing should test every facet of the website to ensure it is capable of performing once it has gone live. If the objective of testing is to create a high-quality web application, it is helpful to understand what constitutes a quality web application. At the end of the day, the quality of a web application is defined by the perceived value to the end user. If the client is not satisfied, the quality of the web application is not acceptable. Users have a low tolerance for problems with web applications. Quality factors that must be considered when testing a web application include:

- Functionality
- Reliability
- Usability and Navigation
- Presentation
- Security and Privacy
- Performance
- Recoverability
- Browser and Operating System Compatibility

# Web Testing

**Method** At Mindlance, we have developed a web testing methodology to cover a set of software quality factors that has been given the acronym FURPSSI – Functionality, Usability, Reliability, Performance, Supportability, Security and Installation.

## ☞ **Functionality**

Functionality testing will ensure that web application software performs as it was designed to. Functionality testing can include configuration, setup confirmation, business rule verification and adherence. In summary functionality testing when utilized proves itself to be a very important tool in the entire process from beginning to end.

## ☞ **Usability and Navigation**

Usability is a key factor in whether a web application succeeds or fails. Usability refers to both ease of use and ease of learning. Web application users have little patience! They're not interested in figuring out how to use a web application. They expect the navigation to be intuitive. If your web application is targeted at external customers, it won't take a very high level of frustration, before your customers abandon it for a competitor's. Navigation is a key component of usability. Users expect that it is clear how to get around the application and adequate markers, instructions, and application maps are provided.

Presentation is another aspect of the usability. The look of your web pages has a big impact on the customer experience. The pages should look professional and should be consistent throughout the application. It is important to test the look of the web pages as they appear on different browsers.

## ☞ **Reliability**

Users expect a web application to be available when needed and that any transactions performed will be executed consistently. Again, it is important to remember that reliability must be measured from the perception of the user. Testing must reflect the expectations of the customer.

For example, customers using an on-line trading application expect their trades to be successfully executed in seconds on a consistent basis.

## ☞ **Performance**

So many of the aspects of web performance are uncontrolled, which makes providing adequate performance a difficult challenge. There are a whole slew of factors that can affect the performance. Web testing should check for possible loading issues for applications that run in web pages, as well as applications that run on the server side.

Performance testing will help to see how the site performs under heavy user loads. Is the site capable of handling heavy loads of traffic? What are the expected loads on the server and what kind of performance do you require under these loads? These points are crucial to ensuring that no down time is experienced.

## ☞ **Supportability and Compatibility: Browser and Operating System Capability**

Not only do clients use different browsers – they use multiple versions and configurations of each browser. Browsers don't necessarily follow the same standards and functions that work in one browser

# Web Testing

or version of a browser may not work in another. The same is true of operating systems. The combinations of browsers and operating systems can be enormous. It's important to identify the most likely configurations your typical user will have and to test across multiple configurations.

## ☞ Security and Privacy

Security is also another area that testing should evaluate. Security is a growing concern for web users, as identity fraud seems to be happening a little too common. Being able to assure customers that making purchases online will be secure will impact the sales greatly. If the organizations are spending so much time, manpower, and money on developing a site, doesn't it make sense to evaluate it to make sure it will perform as planned?

It is critical that a great deal of attention be devoted to testing the security of the web application. Evaluating the strength of an Internet application's security is difficult because security threats can come from anywhere on the globe and because security testing requires very specialized knowledge on the part of the tester. Many of the security measures used in web applications are products from third-party vendors. The best way to prevent security defects is by researching current security issues with these products before making your decision as to which product to use. During testing, password functionality and Secure Sockets Layer protocol must be thoroughly tested.

## ☞ Installation

Some web applications may require that a small client program be downloaded and installed on the client or end user computers. Installation testing focuses on what customers will need to do to install and set up the new software successfully. The testing process may involve full, partial or upgrades install/uninstall processes.

Process of installing the software could be different for different platforms. Usually installation programs prompt for a series of questions and based on the response of the user, installation changes. Installation testing covers each and every step of the entire process.

## Mindlance Professional Services Offerings

Mindlance offers a full spectrum of consulting services to help you take full advantage of the benefits of Web Testing. Our specialized service offerings include: Test Automation and Performance Testing Services using any of the industry standard commercial or open-source tools. For more details, please visit our website [www.mindlance.com](http://www.mindlance.com), Test Management section.

This document is for information purpose only. Mindlance Inc. makes no warranties, express or implied in this paper.

The names of actual companies and products mentioned herein may be the trademarks of their respective owners.