

Issues and Challenge towards Enhancement of Web Application Development

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Abstract

This paper discusses issues and challenges toward enhancement of Web application development. Firstly, the paper examines the concept of Web application and its importance to the technological development. Secondly, it reveals the problem and challenges encountered during Web application development such as difficulties in Web design, accessibility, browser compatibility, poor navigation structure, content placement, availability of various browsers, cookies, multicultural and search engines. Thirdly, it provides possible ways to overcome the challenges that affect Web application development. These solutions include; readability, user-friendliness, good response time, efficient interaction, less color application, well-structured text layout, page structure, well organised navigation structure and considering divers cultural background of stake holders. Finally, the paper gives recommendations that assist Web application developers as well as stake holders of the IT industries.

Keywords: Website, Web application, Information Technology, Web development, Enhancement, issues and Challenges.

Introduction

One of the consequences of the increasing use of digital information is that organisations are becoming more and more aware of the necessity of developing preserve Website. Both public and private organisations, need to maintain their digital information assets understandable and usable through time and technological changes. Web development is a broad term used for almost any activity involved in building a website. This can include web design, e-commerce and business development, web content development, client-side and server-side scripting, and even web server configuration. With the prolific growth of the World Wide Web (WWW), it became a necessity, for businesses to have a professional Website to maintain their competitive edge.

Before jumping into the Clause “website development”, it is important to make sure we have a basic grip on what webpage and websites are all about and how they work. A Web page can be defined as a document, typically written in Hyper Text Markup Language (HTML), which is almost always accessible via Hypertext Transfer Protocol (HTTP), a protocol that transfers information from the Web server to display in the user's Web browser¹. Likewise, **Website** is a collection of documents known as **webpages** (or **pages** for short) that contain information such as images, words and digital media. The main page in a website is called a **homepage**, and while other pages are called **subpages**. These are connected by **hyperlinks**, which are spots on a page (usually text or images) that, when clicked, take the user to different location. This can be another subpage, another location on the same page, or another website altogether.² Equally, “Web development is a broad term for the work involved in developing a web site for the Internet (World Wide Web) or an intranet (a private network)”. Web development can range from developing the simplest static single page of plain text to the most complex web-based internet applications, electronic businesses, and social network services. A more comprehensive list of tasks to which web development commonly refers, may include web design, web content development, client liaison, client-side/server-side scripting, web server and network security configuration, and e-commerce development.

Aim and Objective of Developing Web Application

The aim of this paper is to examine and review the issues and challenges of enhancing Web application development and to proffer possible solution that will make Web application dynamic and functional. Some of the objectives of Web application are listed below:

- It enhances business activities across the globe within possible shortest time
- It facilitate teaching and learning activities
- It simplifies research by accessing different materials through various databases
- It encourages research collaboration between institution of learning and otherwise.
- It brings people very close from different part of the world to interact through sharing ideas.

Issues and Challenges in Web application Development

¹ <http://www.kazdesignworks.ca/faq.html> access 23/08/14

² <http://www.coffeecup.com/help/articles/what-is-a-website/> access 23/08/14

In every industry there must be challenges in one way or the other. Similarly, Website developers also face some challenges in the process of developing website due to demands from various clients. Furthermore, the industry is constantly evolving due to rapid development of technology. Some of the challenges are outline bellow:

- **Issues in Design**

As a matter of fact, most of the human actives (banks, industries, education, and organization) can be accessed and managed through Web application. However, there are a lot of demands from different customers and the Information Technology (IT) industry is constantly evolving, as result of this, Web application developers faces some design challenges in order to satisfy the needs of clients (Qayyum, 2012). Therefore, constant changes of human needs to make life easy really contribute to the design challenges in Website development.

- **Making Website Accessible**

A fact that cannot be denied is that Web application has become an integral part of our daily lives. One of the biggest challenges a Web designer has to face is to make his Website accessible on a larger scale. To define website accessibility is not an easy thing but to be precise, your website should be accessible to people belonging to different countries, backgrounds using different browsers. According to Qayyum (2012), as a designer, it is your responsibility to create a website which is not only accessible across the globe but all the features are functional as well.

- **Browser Compatibility**

Earlier designers overlooked this aspect but with the introduction of many new browsers, designers have to face the challenge of creating a website, compatible with almost all browsers. Not only this, once you have created a browser compatible website, you need to get it tested on all browsers to make sure that website is dynamic and functional. (Qayyum, 2012).

- **Navigation Challenges**

Navigational structure is indeed a very big challenge for web designers. If a visitor is not able to navigate through a website, the user will leaves it without wasting any moment. So, navigation is one of the most important aspects of any website because usability of the website depends on a good navigational structure. (Qayyum, 2012). Hence, designers have to make sure that they provide users with a proper navigational structure that will attract users.

- **Content Placement**

Another issue faced by designers as identified by Qayyum (2012).is to provide a readable website. It is entirely up to a designer to place the content in a way which enhances the easy reading. While designers are working on website's structure, they have to be very careful with content placement because if the content is not readable, users will leave the website. When it comes to font, usage of proper colors is also very important.

- **Availability of Various Browsers**

To begin with, you can choose a browser that you use on regular basis. Initially, users' had only one browser which made it convenient for developers as well. They had to develop a website which was compatible with Internet Explorer (IE) only. But in past few years, a lot of new browsers have been introduced. As mentioned above, multiple browsers have been issue for designers but it is a major challenge for developers as well. Developers have to make sure that they take care of HTML/Cascade Style Sheet (CSS) needs for all the browsers available. Apart from this, a web developer has to validate codes for different environments since a lot of different windows platforms are available (Qayyum, 2012).

- **Cookies**

Cookies is a recurring challenge that web developers have to face every now and then. As a developer, you have to fix the bugs related to browsers however. However, users who have disabled their cookies will be a huge challenge for you. Since users are not very technical, they do not understand deactivating cookies can cause a lot of issues. In order to save yourself from so much hassle, do not allow viewing of your website if the cookies have been disabled. If a user who has disabled cookies visits your website, you can inform him to enable cookies in order to be able to view your website. This will save you and the user from a lot of trouble (Qayyum, 2012).

- **Culture**

If a company fails to present its online information in ways that are suitable for all types of cultural audiences, it is sure to miss out potential customers who cannot relate to how the information is being presented. Take a quick look at the McDonald's U.S. website and then at the site for Indian customers and you will notice a very stark differences in how the information is presented. The Indian site is heavily on color and is much more interactive. The U.S. site on the other hand is more minimalistic and straightforward in nature. This illustrates how web design for businesses should be approached – by understanding how people from different cultures prefer to have their information presented (Husain, 2013).

- **Search Engine**

Everyone in the Web development business is aware of the challenges they are facing when writing content for the Web. Probably the most difficult of these challenges is to write content that is optimized for search engines

and is clearly understood as well as relevant to your audience (Anum, 2011).

Possible Ways of Enhancing Website

In other to enhance Web application development, some designs guidelines need be adapted as enumerated below:

- **Readability and User-friendly**

Any good Website should be readable and user friendly to make it more efficient and dynamic. If content of website is readable and user-friendly, visitors will be able to scan and gather all relevant and important information they need and find it useful. This should be the objective of all websites wishing to drive more traffic, hence sales to their websites.

When creating web content that is user friendly you have to be able to blend both the design work and the content work. This means that although the content is important, so is its context. A well-designed page will make reading easier and enhance the content. Thus you will need to consider the color scheme, the typography, the way the paragraphs are spaced and the subtitles used. Also, keeping mind that the content on a web page needs to be tailored for scanning and not as a book page would be laid out. Users only scan content for information, so make sure relevant information is clearly emphasized. Always keep these essential points in mind when creating content for your web pages as mentioned in (Anum, 2011) and Ghane and Shockrizade (2014)

- Content needs to be easy to understand and provide useful information.
- Use pleasant and restful typography and text, rendering it legible and easy to read.
- Create scan able texts, as users will not read all the content, they will simply skim it.
- When creating content for web pages make sure it is as straightforward and concise as possible.
- Consider users as your children.

- **Response Times**

To prevent users of an interactive application from losing a feel for the interactivity and active flow control, the system's response times in all interaction steps have to be below certain thresholds associated with the mechanism of human information processing: a system response time of 0.1 second is felt as a direct response; waiting times of up to 3 seconds are tolerated without disturbing the train of thought; longer waiting times are perceived consciously (and normally unpleasant) (Kappel et al, 2006).

- **Interaction Efficiency**

Web applications normally, have point-and-click interface, with mouse activities playing a dominating role. Efficient interface of this sort minimize the distance to clickable elements. At the same time, the size of the elements should not be below a certain minimum to ensure that (visually handicapped) users can accurately hit them easily. Moreover, if Web application require user input on a keyboard (eg. To fill in forms), frequent changes between mouse and keyboard should be avoided, since these changes translate to considerable time delays. Furthermore, Web developers should ensure that interesting items is reachable in as few interaction (mouse clicks) steps as possible (Kappel et al, 2006).

- **Less Usage of Colors**

A fundamental guideline consists in the warning not to make excessive use of colors on Website. This will distract the attention of the users. As the rule of thumb, roughly five colors are believed to represent the upper limit. Extreme hues of colors, such as flashy or highly saturated colors should be avoided (Kappel et al, 2006).

- **Text Layout**

Reading text on a screen is significantly less efficient than reading it on paper. For this reason, text should be carefully laid out, especially in Web applications with large amount of text (Kappel et al, 2006). Tiny or small character of text will really suffer the eyes and this will result into problem. Therefore, large amount of text will make application more eligible and it will not suffer the eyes.

- **Page structure**

To ensure easy orientation within a page, the Web developer should avoid the need for horizontal scrolling because line-by-line reading means that users have to permanently move the window contents back and forth. Surveys have shown that a column-oriented layout similar to the usual format in daily newspaper accelerates the visual screening of a page, where the general search is "from top to bottom and from left to right" (in this sequence) in the western culture. The page structure should also allow users to print pages. If printing is not possible or difficult due to complex table or frame structure, then a separate print option or print pane should be offered (Kappel et al, 2006).

- **Navigation Structure**

Navigation within a Web site or Web application represents a particularly important key criterion for a site's or application's usability. To this end, a clear and logical basic structure, supported by a sitemap, constant feedback

on the current position within the structure (“Where I am?”), clear information about the content on the current page (What can I do or find here?”), and the item reachable in the next interaction step (“Where can I do or find here?”) are the important ingredients of a well-designed dialog and navigation system (Kappel et al, 2006).

- **Multiculturality**

Culture varies from tribe to tribe, region to region, country to country, and continent to continent. Considering multicultural diversity of users, Web application developers should consider the integration of colors, symbols, language and representation of information during Web development in order not to offend users. Each of these attributes has a different meaning from one culture to another. It appears that inappropriate use of culture may offend many users of Website and this will make it non-dynamic and non-functional.

Conclusion

In conclusion, the paper was able to examine and present the issues and challenges towards enhancement of Web application development. It also, provides some techniques that will help Web developers in developing any Web application. However, Web application is very vital in human endeavour hence it needs more new features that will make it vibrant.

Recommendation

For web designers and developers, it is important to know the social, cultural and political issues, as they are closely related to the development of their business. In view of these, the following points are recommended:

- Software developers should actively participate in the decision-making as a stake holders for giving professional advice and opinions.
- Web developers should keep in their mind the design guidelines for developing Web application that will make it dynamic and functional.
- Stake holders (government, non-governmental agencies and individuals) should be encouraged to support Web application developers.

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