Cross Browsers Compatibility of E-Government Websites

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ABSTRACT
The growth of internet users in India has been exponential & these users are dynamic in nature. Websites are becoming an important interface between the citizens of a country and different government organizations rendering different types of services. Because of its possible instant worldwide audience a Website’s quality and reliability are crucial. The very special nature of the Web applications and Websites pose unique software testing challenges. Webmasters, Web applications developers, and Website quality assurance managers need tools and methods to study dynamic user behavior. An attempt has been made in this paper to check the cross browser compatibility of different types of e-government websites of J&K state with respect to resolution which changes when websites are accessed through different browsers. Although there are a variety of browsers available today but the performance of e-governance websites is not uniform across all these browsers. The study has evaluated their performance by physically accessing all the e-government websites of J&K state across the different browsing platforms. The result provides empirical evidence that these websites are not being developed strictly according to the standards approved by the World Wide Web Consortium (W3C) which leads to the change in there resolution when accessed through different browsers.

KEYWORDS
E-Government Websites, Browsers, Compatibility, Standards

1. INTRODUCTION
With the rapid growth of internet, Govt. of Jammu & Kashmir has recognized the importance of World Wide Web services and its capabilities to provide information to its citizens across the world and reduce the gap between the Govt. and the citizens. The information useful in public domain is published on the internet through various websites developed by the concerned agencies of the government [1]. However, these web sites are being developed in ad hoc way, which contributes to problem in there reliability, quality, performance and efficiency across different browsing platforms. No doubt almost, all government department and private sector organizations have developed their websites but a question mark arises whether these organizations are providing quality service to under developed people living in inaccessible and far flung areas by meeting the approved & recommended standards,. It is often observed that the websites developed by these organizations perform differently on different browsers. With huge growth in network of websites at global level it becomes very much essential to put more focus on website design and it become mandatory for the developers to carefully design the websites. With vide variety of e-government websites available in the state of J&K the author restricts his study only to one category of the websites i.e. websites of various districts of J&K and try to find out that developers are providing quality web service or not. Poorly developed web-applications that are mushrooming now days that have varying performance across different browsing platforms high probability of low performance or failure. This propagates lack of confidence in the web and ultimately it leads to Web-Crisis [2].

In order to avoid Web-Crises, there is a desperate need developing the websites strictly according the website development rules & regulations. As such there is a need of disciplined approach towards the development of web-based systems.

This paper aims to discuss the need of designing web sites, which are having same performance on all the browsers. To overcome the problems identified in the above discussion and to have a better designed web sites to satisfy the dynamic user community.

2. NEED OF DISCIPLINED APPROACH TOWARDS WEB-SITE DEVELOPMENT
In most cases, the development approach used in Websites development has not strictly followed the rules designed for web development which causes the websites to show different appearances over different browsers. Now a days least attention is given to the development methodologies, measurement & evaluation techniques, application quality and performance management. The web site development also lacks a proper documentation, which is needed for maintenance and upgradation of the system.

3. METHODOLOGY
3.1 Problem identification:
Why does the resolution of the images changes in different browsers?
3.1.1 What is Resolution?
Image resolution describes the detail an image holds. The term applies to digital images, film images, and other types of images. Higher resolution means more image detail and lesser
resolution means lesser detail. Resolution quantifies how close lines can be to each other and still be visibly resolved. According to the guidelines of W3C, a resolution of images in a websites should be constant across different browsing platforms [3].

3.1.2 Factors that affect resolution of images in websites

**Browser display**

A web browser is a translation device. It takes a document written in the HTML language and translates it into a formatted Web page. The result of this translation is a little like giving two human translators a sentence written in French and asking them to translate it into English. Both will get the meaning across, but may not use the same words to do so. The basic rules for translating HTML documents are established by the World Wide Web consortium (W3C), which publishes the official HTML standards. However, there's considerable room for interpretation within those ground rules. For example, the HTML standards say that the TABLE tag should support a CELLSPACING attribute to define the space between parts of the table. But standards don't define the default value for that attribute, so unless you explicitly define CELLSPACING when building your page, two browsers may use different amounts of white space in your table. In addition, the HTML standards usually run ahead of what the browser supports. No browser as yet supports 100% of the HTML Version 5 standard. The best way to reduce these problems is to pay attention to the browser compatibility while building the web pages. The use of cutting edge features of the developing language should be avoided as may not be compatible with the major browsers. In other words the international standards.

**Different Browsers Versions**

The major difference between two versions of a browsers is that a newer version of a browser may support a newer portions of a language i.e. a newer browser will have a better display features than the older one. But practically for some length of time after a newer version of a browser appears, a signifiant group of people still use the previous version. So building web pages with HTML features supported by new browser versions should be avoided. A good thumb rule is to design web pages which are compatible with last two versions of the browsers.

**Display resolution of the Computer Screen**

Display of website is also dependent upon the resolution of a the screen of the user. If the guidelines designed for the developing a websites are not properly followed, a websites might face multiple display problems. We have a diverse community of users who use diverse screen resolutions. If the web sites are developed in ad hoc ways bypassing the guidelines they might be stretched to fit a large screen or may be cropped to adjust into a small screen.

**HTML errors**

An HTML error is a spot where the developer has violated the official rules of HTML. Whether the developer is an HTLM coder of a designer who uses any third party tool like Dream weaver or FrontPage to design webpage, the finished web pages have a lot of HTML errors, signifying that the websites are violating the official rules [4].

3.2 Sample Data

The sample data for the studies undertaken in this paper constitutes the websites of all the districts of J&K. Since the objective of the study is to analyze the performance of various Govt. websites of the region. Therefore, to carry out such a study the websites of different districts of J&K was considered. Since the districts are considered as the basic unit of division in a state, a critical analysis of such websites shall be a reflection of the performance evaluation of other Govt. websites as well[5]. The districts of J&K state having E-government website along with their web addresses are: Kathua(www.Kathua.nic.in), Jammu(www.Jammu.nic.in), Samba(www.Samba.nic.in), Udhampur(www.Udhampur.nic.in), Rajouri(www.Rajouri.nic.in), Poonch(www.Poonch.nic.in), Pulwama(www.Pulwama.nic.in), Doda(www.Doda.nic.in), Baramulla(www.Baramulla.nic.in), Budgam(www.Budgam.nic.in), Srinagar(www.Srinagar.nic.in), Kupwara(www.Kupwara.nic.in), Kargil(www.Kargil.nic.in), Leh(www.Leh.nic.in).

4. RESULTS AND DISCUSSIONS

Authors evaluated the performance of different district websites across eight different browsers and found that the district websites of districts Kupwara(www.Kupwara.nic.in), Srinagar(www.Srinagar.nic.in), Pulwama(www.Pulwama.nic.in), Kargil(www.Kargil.nic.in), Leh(www.Leh.nic.in) are compatible with 100% of the browsers. Table I summarizes the results & findings.

5. CONCLUSION

The investigations carried out in this paper site sufficient region to state that the 21.42% of district websites are neglecting guidelines approved by W3C. As observed the district websites of J&K have different performance on different browsing platforms and as such do not meet various standards as proposed and recommended for the development of the websites by W3C. It is clear in our research that more efforts are required to meet with these criteria in the context of website design. Authors suggest that web developers responsible for district websites should follow and encourage the use of recognized guidelines when designing websites. Further the organizations for which the websites are developed must also be educated regarding the standards to be followed for the development of the website. Not only this the standards framed for the design and development should be widely circulated in various institutions.

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and organizations so that the software developing organizations are well aware of such standards.

6. FUTURE SCOPE
As a future work the e-government websites can also be evaluated for larger samples. Other parameters like download speed, website composition can also be taken into consideration while discussing web related issues. Other perspective like the impact of each browser and its usability can also be evaluated. Moreover the ultimate determinant of quality website is the user; hence future directions for this research can also involve the objective and subjective views regarding problems encountered from user’s perspective.

ACKNOWLEDGMENT

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REFERENCES

Fig. 1: Compatibility of E-government websites
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<th>OPERA 10.02</th>
<th>GOO GL</th>
<th>CHROME</th>
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<th>SAFARI 5.3.18.5</th>
<th>NETSCAPE 9.0.0.6</th>
<th>MAXTHON 3.0.17.10</th>
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**TABLE I:** Compatibility of E-Government Websites Across Different Browsers

Some blinking features do not work.