Framework for New Generation Web Form and Form Filling for Blind User

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Abstract—**Blind users have very low vision to interact with the world. Information accessibility is always a problem to them. The traditional application form filling task can always be difficult for them to accomplish. In a lot of cases, they rely on Braille technology or assistant from a sighted people in order to fill the form. As the Internet gets popular with advancement in web technologies, web form has replaced a lot of the traditional printed form as a tool for information acquisition. Assistive technology has also been introduced to assist web form filling but there are still issues of web form that need to be solved in order to have a better experience in form filling. In this paper, an innovative framework to enable a better web form filling for blind user will be presented.**

Keywords-Xforms; XML; Blind user; Web form; framework.

I. INTRODUCTION

Web form is used for information acquisitions of a particular website to their visitor through the Internet. Blind user is defined as those have no light perception and less than 3/60 of vision [1]. However, they are still able to go online to surf the Internet with the help of assistive technologies. The population of blind users is more than 45 million around the world [1]. From [2], Internet user of Malaysia is half of its population, and about 7 million of Malaysia Internet users are senior citizen or disabled people. This foreseen a serious matter to be noted by all the web developers in order to create websites with better accessibility for both normal and visually challenged Internet users..

Assistive technology is very important to help a blind user to overcome the information accessibility restriction. Screen reader is one of the many examples of assistive technology that is used to interact with the device interface. Screen reader is used to speak loud the words or texts that are available on the screen sequentially, from left to right, top to bottom. However, there are still few problems to be encountered by the blind user in using the screen reader even though it is currently the most popular and widely used for accessing the website [3].

Web form is getting popular and started to be used by the government or the private sectors. This is due to web form through the Internet enables fast, simple and systematic data processing compared to the traditional printed form. The first version of web form is HTML based, where the filled data in the web form will be uploaded to a web server for further processing. By using a screen reader, blind user is required to listen carefully while trying to fill the forms. In [4], the behavior of web browsing for blind user is 2.5 times slower than a normal sighted people. Owing to that, they may encounter difficulty in web form filling especially during information key in using a keyboard. This paper is organized in the following sections, Section 2 studied research works concerning the problem of web form filling, Section 3 highlights current research initiatives in providing better accessibility and usability of website, Section 4 outlines the requirements, guidelines and recommendations for better web form design. Lastly in section 5, an innovative framework is proposed, called the BFF (Blind Form Filling) which is an extension of the VIOF (Verify Instead Of Filling) method.

II. PROBLEM OF WEB FORM FILLING

The problems of web form filling encountered by the blind users are closely related to the web design and web technology used. The problems that encountered are mainly form navigation, form error correction, unawareness of dynamic content update.

A. Web design

A bad website design makes the blind users tend to speed up the reading speed in order to skip the unnecessary information. The complicated layout structure of a website is hard to imagine by the blinds [9], [17]. Some of the good design approach such as the modular layout is well suit the sighted users, but not for the blind user who is using a screen reader [18]. As a result, the screen reader may mislead the blind user to fill data into the wrong field of the form. In addition, form navigation is also not friendly to them. This is