

# Chapter 7

## Web Accessibility for Persons with Motor Limitations

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### ABSTRACT

*Nowadays the internet is an important medium for serving people. Using the internet can help people completing several tasks and accessing different types of information (e.g., reading news, finding location for places, buying and selling products online, and so on). Accessing the internet is not an easy task for people with motor disabilities. The main barriers come from two issues: difficulty or inability in using the mouse and difficulty or inability on typing on the keyboard. The web accessibility guidelines are a set of suggested techniques to be used by web developers when designing, implementing, and maintaining websites to make them easy to access by people with disabilities. This chapter presents the importance of applying web accessibility standards and guidelines when designing and developing web pages. These guidelines are obtained from Web Content Accessibility Guidelines 2.0 (WCAG), section 508, and other literature. The challenges and barriers encountered by people with motor disabilities when they use the web are presented. Then, different techniques that can be used by web developers to ensure the accessibility of websites for people with motor disabilities are introduced. At the end a discussion on evaluating and testing the website conformance to the web accessibility standards and guidelines is presented. Several evaluation techniques that can be used for web accessibility evaluation is introduced and explained to clarify the process of web accessibility testing.*

### INTRODUCTION

*Disability need not be an obstacle to success. I have had motor neurone disease for practically all my adult life. Yet it has not prevented me from having a prominent career in astrophysics and a happy family life. - Professor Stephen W Hawking*

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Nowadays, the internet is considered an important medium that can be used to accomplish several tasks (e.g., reading news, reserve a flight ticket, check bus schedule, and buy or sell items online). It is also used to acquire knowledge and to learn new skills (e.g., searching for information, distance learning, and online training). A wide range of devices can be used to access the internet (e.g., laptop, mobile phone, or a tablet). This allow

people to have different internet services available on the move whenever they have internet connection.

According to the World Health Organization (2011) (WHO,2012) Over a billion people live with some form of disability, this corresponds to about 15% of the world's population. Out of this number between 110-190 million people have very significant difficulties in functioning.

There are four different types of disabilities: visual (e.g., low vision and color-blindness), hearing (e.g., low hearing and deaf), motor skills (e.g., spinal cord injuries, loss or damage of limb(s), and Parkinson's disease), and cognitive disabilities (e.g., a person who has a problem in memory, problem-solving, attention, and reading) (W3C, 2004). A person with disability can face three types of barriers when trying to interact with the surrounding environment: environmental, attitudinal, and electronic barrier.

The environmental barriers are barriers that environmentally limit persons with disabilities from accessing and using public facilities (e.g., no ramp available for a person with a wheelchair to access the building). Attitudinal barriers means discriminating a person with disabilities through people's attitude, ideas, and assumptions (e.g., assuming a person with motor disabilities cannot drive car).

The electronic barriers happened when the technology cannot be reformed into another format accessible by assistive technologies. Assistive technologies are hardware or software tools that are used by people with disabilities to access and use different technologies (e.g., screen readers for people who are blind or sip-and-puff for people with motor disabilities) (Abu Doush, 2010).

The web is information and this information can be presented graphically or auditorily to the user. The web contents can be in text, video, audio, or graphics. Web accessibility means that the web site can be accessed and used effectively by people with and without disabilities (Abu Doush, 2010). This is achieved by having web contents easily

transformed into different formats accessible by assistive technologies. People with disabilities need to surf and use the web easily this can help them to overcome physical barriers by completing different services online.

The United Nations Convention on the Rights of Disabled Persons established in 2006 a commitment from governments to give people with disabilities access to different public facilities. It also stated that measures should be taken to guarantee the accessibility of technologies and the accessibility of physical environment. This resulted in changing the policies and laws in many countries to ensure the accessibility of governmental and educational websites.

Kirchner (Kirchner, 2002) identified that the main problem in web accessibility is that the majority of web sites are not suitable for all types of disability. Nevile (Nevile, 2005) suggested that to create a content that is universally accessible a developer has to build redundant components with different ways to access the contents.

Providing accessible web will give disabled people the opportunity to be more independent and be more productive. National Organization on Disability (NOD, 2012) estimated the growth of disabled people who use the web is twice more than the non-disabled. The Disability Rights Commission Report (DRC, 2012) indicated that accessible web sites are 35% more usable for all the people, not just people with disabilities. Federal Agencies Web Pages (USDOJ, 2012) presented several benefits of building accessible web sites and this included: it will produce well-designed web pages; it will help users with slow internet connections; it will help elderly people and it will help users of mobile devices.

For a web site to be accessible by a broad range of users it needs to recognize that different requirements are needed by different types of disabilities (Brewer, 2004).

People with motor disabilities who cannot use their hands or arms can use special input devices to the computer such as: specialized mouse; a

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