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An Approach to User Interface Design of an Accessible User Agent

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Abstract

The increase in rich and interactive content on the web has allowed the growth of the number and type of users that access them. This implies that such content should be accessible to anyone, including people with disabilities. Therefore, it should be accompanied with media alternatives (captions, audio description), which should be handled by an accessible user agent that provides support for them. This paper presents: 1) an approach with accessibility requirements following standards to include accessibility in a user agent for delivering accessible multimedia content, and based on it, 2) a conceptualization that provides an abstract user interface model with the ability to be integrated into the development process.

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Keywords: Web accessibility; User agent; Media player; Multimedia; Standard; UsiXML.

1. Introduction

Multimedia content, like video, is constantly increasing on the Web. This content has to be accessible through standards like the Web Content Accessibility Guideline (WCAG) [0] of Web Accessibility Initiative (WAI) [0], besides satisfying other accessibility requirements. Additionally, accessible multimedia content on the Web requires that a particular chain of essential, interdependent and accessible components [0] should be considered by user agents. Specifically, media players should enable the delivery of accessible multimedia content in order to obtain a friendly user-video interaction.

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Sometimes accessibility barriers inside the user agent that provides video content can cause accessibility problems. For example, this type of user agents or media players could not offer users an intuitive interface to work without a former background or any help; it would make sense to include accessibility requirements if a user who needs to use them cannot access through some assistive technologies or user agents need an specific software but users do not know how to install or use it according to technological diversity of multimedia field.

Taking into account these problems and User Agent Accessibility Guidelines (UAAG) [0] of WAI, our motivation is to design an accessible user agent, which would deliver accessible video content, so as to everybody can access them without any type of barriers.

Regarding what is previously mentioned; we propose a model of accessibility requirements to integrate the design of an accessible user agent in the development process. In order to accomplish that, we use UsiXML (User Interface Extensible Markup Language) [0], a User Interface Description Languages (UIDL) [0], which provides different tools to help the design process of user interfaces through the different abstraction levels.

The remaining of the paper is organized as follows: Section 2 covers related work and background of user agents that provide video content such as standards and regulations. Section 3 introduces a proposal of accessibility requirements for an accessible user agent or media player. Section 4 describes a modeling process with accessibility requirements. And Section 5 gives some conclusions.

2. Background

There are different standards which regulate multimedia content. Among these standards it is found WCAG 2.0 [0], which explains how to make Web content more accessible for people with disabilities. According to its Guideline 1.2, video content shall be accompanied with media alternatives such as captions (or subtitles for hearing handicap people), audio description, sign language, etc. [0]. The WCAG 2.0 guidelines are considered an unofficial standard which is referenced worldwide in most regulations. There are other important initiatives that are totally or partly related to Web accessibility, such as technical standards Section 508, BITV 2, RGAA and AODA. Most of these are less extensive than WCAG but they are very similar. Based on these standards of accessibility content, different checklists have been collected [0-0-0], as well as comparison among them.

As far as multimedia content is concerned, some works can be highlighted [0-0-0] and institutions like [0-0-0] that provide good practices guidelines according to accessible multimedia content on the Web.

On the other hand, there are standards which are related to user agent in particular. Among these standards the UAAG of WAI can be outlined. This international standard explains how to make user agents accessible for people with disabilities and how to increase accessibility on Web content. For example, media players shall ensure that all audio and video controls are accessible via keyboard or screen readers. Nowadays, this standard has two versions, UAAG 1.0 (reference version) [0] and UAAG 2.0 (draft version) [0]. This last version gives support to WCAG 2.0. Therefore, according to UAAG 2.0 guidelines, media players should provide support for these media alternatives required by the guideline 1.2 of WCAG 2.0.

Another standard is ISO 9241-171, Ergonomics of human-system interaction [0]. This standard provides guidance on software accessibility. In relation to user agent that provides video content, this international standard includes four guidelines that are necessary in order to consider this type of user agent accessible: 1) user agent shall enable users to stop, start and pause the reproduction; 2) it should enable users to replay, rewind, pause and fast or jump forward the reproduction; 3) it should enable users to select media streams which are presented; 4) it should enable equivalent alternatives to be updated when the content of a media presentation changes. This standard also includes other requirements related to captions, such as, if the contrast between the captions and the background is going to be enough or if the system-wide preferences change during reproduction, the new settings shall be used. Furthermore, the captions position should not interfere the visual content and the captions could be enabled and disabled.

About media player issues, it is necessary to consider the new standard HTML5 (HyperText Markup

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