1. Introduction

Multimedia content, such as video and audio, is constantly increasing. This increase leads to more accessibility barriers in both the content and the software that delivers this type of content (user agent like browsers, media players, etc). Most of the videos and players do not comply with the accessibility standards. Due to this fact, some users, especially users with some kind of disability, elderly people or temporarily impaired people, cannot access all video content that is presented in the Web. The aim of this work is to integrate accessibility into the user agent or media player that provides video content. In order to accomplish this goal, in this work a model-based design solution for accessible media players is presented. This design proposal has to be carried out following accessibility standards such as the Web Content Accessibility Guidelines (WCAG) 2.0, the User Agent Accessibility Guidelines (UAAG) 2.0 and the ISO 9241-171 (“Ergonomic of human-system interaction – Guidance on software accessibility”).

2. Model driven development approach

The integration of the accessibility into a media player is carried out through a model-based design solution that follows a Model Driven Development (MDD) approach. This solution is composed of four steps: identification of requirements; conceptualization of these requirements; transformation of this conceptualization into specific levels and finally, the development of the user interface.

2.1 Identification of requirements

In this step, a review of accessibility standards and regulations (such as UAAG 2.0 and ISO 9241-171) has been carried out. After this review, a set of accessibility requirements related to media players is obtained. This set is divided in two categories: basic requirements (typical requirements that are included in a media player such as the play control) and additional requirements which include new functionalities and incorporate accessibility requirements such as providing support for captions or audio description.

2.2 Conceptual approach

The requirements which have been identified in Section 2.1 are modeled using the User Interface Extended Markup Language (UsiXML). This conceptualization of requirements is designed through the Task Model and the Abstract User Interface (AUI) Model of UsiXML [González-Garcia et al 2013b]. The task model shows the interaction between a user and a media player, whereas the AUI shows the structure of the interaction elements.

2.3 Concretization of the conceptual approach

The next step is to transform these concepts into concrete elements. In order to accomplish this step, a set of modeling primitives of the Concrete User Interface (CUI) Model of UsiXML has been used. Regarding the set of primitives, primitives related to media players and general primitives such as listener have been selected. For example, the ToolBarButton primitive has been used to transform the Play requirement into a concrete element. Due to the difficulty of using these types of primitives, a model-based graphical editor is developed to facilitate the design of an accessible media player [González-García et al 2013a]. This editor follows a MDD approach and is developed using the Eclipse Modeling Framework (EMF) and the Graphical Modeling Framework (GMF) of Eclipse.

2.4 Final user interface (FUI)

Using the proposed graphical editor, the next step is to design your own media player dragging and dropping the elements that are presented. Once the design is carried out, the designer has to select a technology and implement the media player. Figure 1 shows the FUI using HTML5 language.

4. Conclusions

Due to the amount of multimedia content that is found in the Web, it is essential that both the content and the user agent that provides this content should be accessible. In this work, a model-based design solution that integrates accessibility requirements has been presented.

References
