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Feedback on the Discussion Report
"Access to Electronic Media for the Hearing and Vision Impaired: Approaches for Consideration"
Dr. Silvia Pfeiffer

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Summary
This submission provides clarification on a technical inaccuracy in the Discussion Report and adds further information on the possibilities of accessibility technology for audio-visual content on the Internet. It further recommends to begin treating the Internet as a mature means of broadcasting audio-visual content and suggests the Government start looking into captioning and audio description standards for commercial audio-visual services on the Internet.

Introduction

The Discussion Report summarises nicely the state of the art in technology for free-to-air and subscription television, DVDs, and films in cinemas, but the technical description of the possibilities for audio-visual content on the Internet were lacking. Further, statements made about MPEG-2 capabilities are inaccurate and will be adjusted in this contribution.

Technical Inaccuracy

In several sections of the Discussion Report, notably in the sections on digital TV p.16 and advertising p.37, it is mentioned that MPEG-2 is not compatible with the delivery of closed audio description. This is technically inaccurate. MPEG-2 is capable of delivering several independent tracks of audio and video content inside the same container, see for example http://www.chiariglione.org/mpeg/standards/mpeg-2/mpeg-2.htm :

> "The Transport Stream combines one or more Packetized Elementary Streams (PES) with one or more independent time bases into a single stream. "

This could for example be a Video track with an Audio track and an Audio Description track. These tracks can be used separately from each other. Even the DVB specification according to http://en.wikipedia.org/wiki/DVB-T talks about these possibilities. http://www.erg.abdn.ac.uk/future-net/digital-video/dvb-trans.html explicitly mentions the possibility of using audio descriptions in DVB.

Where audio descriptions are delivered in a separate audio track, they can be added to the main audio track on demand, thus enabling closed audio description. Thus, MPEG-2 does support such delivery of closed audio descriptions.

Unfortunately, most DVB encoding and decoding systems will not support audio description tracks. Thus, the lack of support of closed audio descriptions is not an inherent, technical problem with MPEG-2, but rather an implementation problem with the available commercial DVB systems that make use of MPEG-2. To summarise: set-top boxes and televisions lack that functionality.

In order to have digital TV support audio descriptions, one will need to lobby the digital TV manufacturers to add this capability and the digital TV content broadcasters to add this content.

Internet Content: HTML5
Unfortunately, chapter five of the Discussion Report lacks technical depth. There is no mention of the new HTML5 standard that is currently in development and already implemented in a majority of major browsers (alas not Microsoft's Internet Explorer). In the new HTML5 standard, audio and video will become prime citizens of the Web. In particular, they will no longer require installation of non-native plugins into a Web Browser, thus vastly simplifying the publication of audio and video.

As part of the standardisation process of the new HTML5 audio and video elements, accessibility functionality is also being developed. An accessibility subgroup is looking into standard ways of associating captions, audio descriptions, and sign language with HTML5 audio and video elements. Right now, such text- and non-text equivalents can already be associated and displayed using JavaScript. However, development of standard declarative means of associating them are the target.

Several demonstrations of how to display captions with HTML5 media elements have been given - here is an incomplete list:
- http://www.annodex.net/~silvia/itext/elephant_no_skin_v2.html
- http://www.mozbox.org/pub/srt/index2.xhtml
- http://v2v.cc/~j/jquery.srt/
- http://people.opera.com/brucel/demo/video/accessible-html5-video-captions.html
- http://open.bbc.co.uk/rad/demos/html5/rdtv/episode2/index.html

Discussions are ongoing in the standards body about how to represent videos that have an audio description and/or a sign language track.

Internet Content: Textual Audio Descriptions
One interesting development of HTML5 video accessibility work has been the emergence of demonstrations of textual audio descriptions. These are essentially text files with time markers that are being fed to screen readers by the Web Browser and are thus being read back to vision-impaired users in synchronisation with the audio-visual content. The ARIA standardised aria-live attribute is being used for this purpose.

A demo of this approach can be found here:
http://annodex.net/~silvia/itext/elephant_no_skin_v2.html
(Note: you will need to run a screen reader to experience this demo.)

This is a new alternative to the existing requirements on creating actual audio recordings for providing audio descriptions to the vision-impaired. Since this alternative is text-only, it is much cheaper to produce than the audio recordings and much easier to distribute. This new type of accessibility data has not been considered in any of the traditional media, though it could potentially be relevant to digital TV as well as the Internet. Textual audio descriptions are particularly relevant to the Web because the Web is a text-centric medium.

Seach engines can be enabled to make use of such information and other services, such as translation services, can build on top of this data. A extensive collection of textual audio descriptions could emerge, similarly to how extensive collections of subtitles and captions already exist on the Internet.

Internet Content: WCAG
Interestingly, the WCAG Web Content Accessibility Guidelines as developed by the W3C have not yet considered textual audio descriptions as a relevant means of providing accessibility to the vision-impaired. They may, however, be of interest for the Department of Finance and Deregulations's current review of WCAG 2.0.

It should also be mentioned that the recommendations of WCAG 1.0 are really not sufficient any longer. WCAG 1.0 only prescribes provding text-equivalents to audio-visual content. Such text-equivalents are neither required to be synchronised with the media file under consideration, nor are they required to exist on the same page. It is, however, a really poor experience when e.g. a deaf person has to link off to another document and try synchronising the text in that other document to a video that is playing back in different window and at an undetermined speed. Or worse still: a blind person has to try and synchronise their screenreader's playback speed of an external text with the playback speed of a video. Such synchronisation is impossible.

In comparison to WCAG 1.0, WCAG 2.0 has some very intensive requirements on media accessibility. On its lowest conformance level – level A – an audio-only or video-only document has to be provided with a text-equivalent, while an audio-visual document has to be provided with both, captions and audio descriptions. Since the creation of audio descriptions is a highly intensive task - even more intensive than captions - it is unlikely that many commercial entities will be able to achieve this level of WCAG 2.0 support. Even government organisations face large challenges with these requirements, resulting in them either not publishing video online, or just adhering to the unacceptable WCAG 1.0 requirements.

The suggestion of this submission is to find a middle ground of requirements in Australia between WCAG 1.0 and WCAG 2.0: requiring captions, and only requiring textual audio descriptions. Both, captions and textual audio descriptions, provide text-equivalents (as per WCAG 1.0 requirements), but with the added bonus of being synchronised and displayed with the audio-visual content on the same page. Further, the creation of textual audio descriptions may be possible with existing captioning services since they create essentially the same kind of output: text with timing.

Internet Content: Legacy Video
Incidentally, the discussion about meeting WCAG 2.0 requirements applies equally to legacy video content in e.g. Adobe Flash format as well as the modern HTML5 elements. There are good examples of the use of captions and audio descriptions using Adobe Flash, e.g. http://www.longtailvideo.com/support/tutorials/Making-Video-Accessible .

Internet Content: Regulatory Framework
As described above, Internet audio-visual content is starting to mature as a common means of broadcasting. This will further evolve as the Government's National Broadband Initiative

will bring broadband to every household in Australia and as HTML5 matures and will inspire the creation of even more audio-visual content on the Internet. Commercial services are starting to emerge, that are right now not accessible.

The regulatory approach that is expressed in the Discussion Report is currently a rather passive one: continued monitoring of the international developments, and industry encouragement. This is a stand-back approach, which is understandable, given the still relatively young online audio-visual market.

However, as WCAG 2.0 exists now and as new opportunities will open up with textual audio descriptions and HTML5, it should be possible to move forward with government regulations faster than the report implies. It would be good if the Government considered creating caption requirements on commercial audio-visual services on the Internet by 2013, followed with (textual) audio description requirements possibly by 2015. These could be voluntary industry standards as agreed between Government and stakeholders, similar to how it is envisaged for DVDs. In the meantime, technical trials should be undertaken between Government, stakeholders, and disability representative groups to analyse the feasibility of such industry standards and the additional expense as well as the business cases they may provide.

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