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Focus Group on Audiovisual Media Accessibility

Technical Report

Part 7: Final Report of activities: Working Group C "Visual signing and sign language" and D "Emerging access services" on common topics

FOREWORD

The procedures for establishment of focus groups are defined in Recommendation ITU-T A.7. The ITU-T Focus Group on Audiovisual Media Accessibility (FG AVA) was proposed by ITU-T Study Group 16 for creation in-between TSAG meetings and it was established on 22 May 2011. The Focus Group was successfully concluded in October 2013.

Even though focus groups have a parent organization, they are organized independently from the usual operating procedures of ITU, and are financially independent. Texts approved by focus groups (including Technical Reports) do not have the same status as ITU-T Recommendations.

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Summary

This Technical Report of FG AVA was prepared by Working Group C "*Visual signing and sign language*" and D "*Emerging access services*" and outlines the conclusions of the work of both working groups. The content of Technical Report has particular relevance to the work in ITU-R Study Group 6.

This Technical Report presents the issues and conclusions reached by the two working groups on six different topics.

1 Subtitle/captioning systems using extensible markup language (XML)

FG AVA evaluated the possibility of ITU to propose a Recommendation on a single standard for subtitling using 'XML'. If there were such a system, it could be used in principle across all media production, transmission, packaged media, and archives. However, the current situation is that there are at least three different systems being developed independently, and because of such factors as the different character sets in use in different countries, the proponents are not disposed to create a single system.

Systems have been developed by the Society of Motion Picture and Television Engineers (SMPTE), the European Broadcasting Union (EBU), Ultraviolet, the World Wide Web Consortium (W3C) and Nippon Hōsō Kyōkai (Japan Broadcasting Corporation), (NHK). There are in fact more different digital systems that there are different analogue systems. These systems would seem to a viewer quite similar in use, and they are all founded on the W3C timed text markup language (TTML) system. However, they all have differences which are significant.

FG AVA concluded from those working in the W3C group[1] that W3C can now develop a single system covering all needs, and hopes that, when it is available, it could be included in future ITU texts.

However, some members of the FG AVA are sceptical that this new system will help, because the differences between some of the systems are based on different national languages and different traditions for using subtitles. Some FG AVA members suggest that having an umbrella system would in fact only be one more additional system, one that would never be used.

2 Broadcast subtitle systems

During one of meetings, FG AVA considered the possibility of preparing a deliverable which includes the different broadcast subtitling systems being used for digital video broadcasting (DVB), Advanced Television Systems Committee (ATSC), digital multimedia broadcasting (DMB), converged mobile multimedia broadcasting (CMMB) and integrated services digital broadcasting (ISDB).

The following organizations were contacted: ARIB[2], ATSC, DVB, SARFT[3] and SBTVD[4] and were requested to supply information.

A statement was sent from ATSC (also representing CEA), dated 1 May 2013, informing that:

– ATSC prescribes the use of CEA-708, digital television (DTV) closed captioning, in both its base and mobile standards, A/53 and A/153 respectively.

– US decoder devices are required by US law to support closed captions, and thus they must decode the technology defined in CEA-708.

– The United States has undertaken efforts to prescribe closed captions in Internet-delivered content. This has resulted in SMPTE timed text becoming a "safe harbour" technology. CEA has produced an informational report on this topic, CEA-TR-3, Closed Captioning in IP-delivered Video Programming.

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1 The group is chaired by Sean Hayes, Microsoft.

2 Association of Radio Industries and Businesses (ARIB).

3 State Administration of Radio, Film, and Television (SARFT).

4 Sistema Brasileiro de Televisão Digital (SBTVD).

3 Signer systems

FG AVA prepared a document giving guidelines and requirements for signing systems (see **FG AVA Tech Report Part 11**).

Concerning the technology for signing systems, it was noted that there is currently no technical specification for a 'closed signing system' (where the signing can be included or not at the wish of the viewer). There is interest in developing a common system in the DVB Project and possibly ATSC. There seems to be some scope for a common system.

4 Clean audio systems

FG AVA was aware that there would be considerable benefit for many groups of users in being able to adjust the level of the 'foreground' sound against the level of the 'background' sound for television and radio services. Technically, this could be arranged by deriving the foreground and background sound when the programme is made, or in the viewer/listener's receiver.

During the FG AVA meeting in January 2013, the system developed in Europe for deriving the foreground and background sound at the point of production was explained and demonstrated to the participants. Using a new Moving Picture Experts Group (MPEG) audio coding system, the system is arranged so that viewers/listeners with conventional receivers have 'normal audio', while viewers with appropriate receivers can adjust the levels of foreground and background sound as they wish.

The developers welcomed advice about the requirements the system should fulfil. FG AVA understood that ATSC is also considering such a system, as is the FOBTV[5] group.

FG AVA had an initial discussion about the system. The Focus Group believed it would be most useful with sports and news programmes. It may be less useful with drama or music. Other elements to consider are the costs of production (some estimates would be useful) and the potential for irritation for programme makers in having extra tasks. Programme makers of drama and music may see their 'mixes' as part of their creation.

FG AVA prepared a draft text addressing this subject (see **FG AVA Tech Report Part 12**).

Technical details of the system will be made available in an EBU Technical Review paper. The development of the system began in March 2013 in the DVB CM-AVC[6] group.

On the other hand, an introduction of "dialogue only sound track" could be a great help for the hard of hearing (HoH) listeners, as long as the original source sound recording is available. However, the broadcasters may not be in favour of this method, as some additional tasks are required for the production, and would not be applicable to legacy content[7].

At the FG AVA meeting in July 2013, a system developed in Japan which can adjust foreground and background sound level at the receiver side was explained to the participants. It derives foreground and background sound from stereo original sound track and modifies mixing level between them. Evaluation experiments were said to show an equivalent effect of suppression of background sound at about 4.5 dB. Additional improvement to the suppression effect was reported to be expected at 1 or 2 dB by using a voice emphasis technique.

5 Integrated broadcast and broadband (IBB) service

Integrated broadcast and broadband (IBB) service is the combination of television or radio

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5 Future of Broadcast Television Iniative (FOBTV).

6 DVB Commercial Module Audio Video Coding.

7 http://www.guidogybels.eu/docs/Clean%20Audio%20on%20Television.pdf; and http://www.acoustics.salford.ac.uk/res/shirley/itc/index.php.

delivered content with Internet delivered content. The combination can be displayed on the same screen or on separate screens. The combination of a TV and a tablet can be used.

A number of different systems have been developed in different regions of the world, such as Hybridcast, HbbTV, Open Hybrid TV, MHP 2.0, YouView, which are all incompatible.

FG AVA was given a demonstration of one of the IBB systems in January 2013.

Such systems could be used to provide access services, with the auxiliary content needed being received via the Internet. IBB is undergoing an evolution of its technical system, which should be available at the end of 2013, based on hypertext markup language 5 (HTML 5) and including specific measures to synchronize vision and Internet content. This would make the system technically able to provide a wide range of access services. The system was demonstrated at the IFA[8] in September 2013. There may be some similarities between the Hybridcast and IBB 2.0 systems.

FG AVA considered that it may be possible for the future to prepare a draft text for requirements for access services using hybrid technologies. The requirements could include signing, audio descriptions, text subtitles and audio subtitles and the combination of them, and their appropriate maximum delays, and clean audio, with maximum personalization.

FG AVA also considered whether different regional groups could be persuaded to work together and use the same basic synchronizing system. Members are invited to discuss this possibility regionally.

FG AVA also considered whether a list of possible ways a second screen service could improve the accessibility of television could be prepared in the future by ITU.

6 Spectrum for wireless hearing aids

Progress was made in the field of wireless hearing aids and exchanges were made among FG AVA and other groups in the Radio and Standardization sectors of ITU. Among others, FG AVA received a copy reply liaison from ITU-R Working Party 5A (AVA-i-0198) in reaction to FG AVA liaison statement (Document 5A/116-E).

In this reply, ITU-R WP5A agreed to undertake the revision effort in Recommendation ITU-R M.1076 to reflect changes in the technical characteristics of wireless aids for hearing impaired people since the Recommendation was developed in 1994. A working document towards a draft revision of Recommendation ITU-R M.1076 was made available, as prepared during the WP5A meeting of November 2012.

ITU-R WP5A also answered regarding the questions on the spectrum, proposed by ITU-T FG AVA, stating that that portion of the spectrum is allocated to services which are within the purview of ITU-R WPs 5B and 5C. ITU-R WP5A requested guidance from ITU-R Working Party 5B and 5C on the suitability of the bands proposed by ITU-T FG AVA, which are 156 MHz and 960-1 164 MHz bands, or other bands under the responsibility of ITU-R Working Parties 5B and 5C for this purpose as appropriate.

The summary of ITU-R WP5A reply[9] is as follows: Working Party 5A took note of the liaison statement from Working Party 5B: the two frequency bands (see Document 5A/196*: 156.4875-156.5625 MHz, 156.7625 156.8375 MHz and 960-1 164 MHz*) will no longer be considered and Working Party 5A will further investigate suitable tuning ranges.

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[8] Internationale Funkausstellung Berlin (International radio exhibition Berlin).

[9] http://ifa.itu.int/t/fg/ava/docs/1307-Geneva/in/ava-i-0274-iLS%20from%20ITU-R%20WP5A.zip