

## TV Services and Media Transport

Bob Lund – CableLabs, August 15 2011

HTML5 supports media resources with multiple embedded media tracks[1] and text tracks[2]. In the case of multiple media tracks, the user agent creates the AudioTrackList and VideoTrackList objects that contain audio and video tracks in the media resource. The HTML5 specification does not define how the user agent creates these objects from the media resource. In the case of text tracks, a media-resource-specific text track can be created from data found in the media resource[3] where the HTML5 specification states “*When a media resource contains data that the user agent recognizes and supports as being equivalent to a text track...*”. Again, the HTML5 specification does not define how the user agent does this - [3] suggests “*Set the new text track’s kind, label, and language based on the semantics of the relevant data, as defined by the relevant specification*” (emphasis by the author).

If multiple media tracks and text tracks are to be recognized by user agents in a standard manner, specifications need to be created that define how this is done. Various media delivery formats are in use today, e.g. WebM[4][5], Ogg[5], MPEG-2 transport stream[6], MPEG-4 file format[7], HTTP Live Streaming[8] and Smooth Streaming[9]. New delivery format specifications are nearing completion, e.g. MPEG DASH[10]. How tracks are recognized by user agents can be expected to differ by delivery format.

The phrase “TV Services” refers to some specific use cases of multiple media tracks and text tracks that many commercial video providers would like supported in user agents. How a user agent recognizes the track or tracks “TV Services” can also be expected to differ by the specific “TV Service”.

An example of the scope of the specification(s) for how user agents recognize multiple media and text tracks for a set of media delivery formats and TV Services is shown in Table 1.

|                          | MPEG-2 TS | MPEG-4 File Format | DASH | HTTP Live Streaming | Smooth Streaming | WebM |
|--------------------------|-----------|--------------------|------|---------------------|------------------|------|
| ETV triggers[11]*        |           |                    |      |                     |                  |      |
| Ad insertion[12]*        |           |                    |      |                     |                  |      |
| Content advisories[13]*  |           |                    |      |                     |                  |      |
| Audio translations[14]   |           |                    |      |                     |                  |      |
| Audio description[14]    |           |                    |      |                     |                  |      |
| Closed captions[13]*[15] |           |                    |      |                     |                  |      |
| Subtitles[15]            |           |                    |      |                     |                  |      |

Table 1 – TV Services and Media Transport

\* The references are illustrative of specifications that apply in certain applications – other specifications may apply.

Each row represents a specific TV service that utilizes specific media or text tracks in the media resource. The columns represent media delivery formats that could be relevant. Each cell in the table represents one aspect of the user agent specification – how are the tracks needed for a TV Service recognized by a user agent for a given media delivery format.

Given the potential scope of the specification, there will likely be several specifications – perhaps by delivery format. Several things need to happen if these specifications are to result in interoperability of these TV Services across delivery formats and user agents:

- 1) There should be consensus on the set of the TV Services and delivery formats.
- 2) There should be agreement on what standards or specification organizations are appropriate, perhaps by individual spec.

## References

- [1] <http://dev.w3.org/html5/spec/Overview.html#media-resources-with-multiple-media-tracks>
- [2] <http://dev.w3.org/html5/spec/Overview.html#the-track-element>
- [3] <http://dev.w3.org/html5/spec/Overview.html#sourcing-in-band-text-tracks>
- [4] [http://www.webmproject.org/code/specs/#webm multimedia container guidelines](http://www.webmproject.org/code/specs/#webm_multimedia_container_guidelines)
- [5] <http://xiph.org/ogg/doc/>
- [6] ISO/IEC 13818-1:2007 [http://www.iso.org/iso/catalogue\\_detail?csnumber=44169](http://www.iso.org/iso/catalogue_detail?csnumber=44169)
- [7] ISO/IEC 14496-12:2008 [http://www.iso.org/iso/catalogue\\_detail?csnumber=51533](http://www.iso.org/iso/catalogue_detail?csnumber=51533)
- [8] <http://tools.ietf.org/html/draft-pantos-http-live-streaming-06>
- [9] <http://www.iis.net/download/SmoothStreaming>
- [10] Standard development in progress. See overview here [http://www.w3.org/2010/11/web-and-tv/papers/webtv2\\_submission\\_64.pdf](http://www.w3.org/2010/11/web-and-tv/papers/webtv2_submission_64.pdf)
- [11] <http://www.cablelabs.com/specifications/OC-SP-ETV-AM1.0-I06-110128.pdf>
- [12] [http://www.scte.org/documents/pdf/standards/ANSI\\_SCTE%2035%202007%20Digital%20Program%20Insertion%20Cueing%20Message%20for%20Cable.pdf](http://www.scte.org/documents/pdf/standards/ANSI_SCTE%2035%202007%20Digital%20Program%20Insertion%20Cueing%20Message%20for%20Cable.pdf)
- [13] [http://www.ce.org/Standards/browseByCommittee\\_2525.asp](http://www.ce.org/Standards/browseByCommittee_2525.asp)
- [14] <http://dev.w3.org/html5/spec/Overview.html#media-resources-with-multiple-media-tracks>
- [15] <http://dev.w3.org/html5/spec/Overview.html#timed-text-tracks>