



## TV Services

- Features that cable and other commercial video providers are required, or want, to provide:
  - Closed captions – required
  - Subtitles
  - Main audio dialogue translations
  - Audio description of video track– required
  - Content advisories for parental controls – required
  - Interactive applications synchronized with video
  - Client ad-insertion for targeted advertising

## TV Services and HTML5

- Good news! HTML5 multiple media and timed text tracks largely meet TV Services requirements.
- Specifications are needed that define how browsers recognize in-band TV services tracks and expose them in HTML5.
  - Detailed description in Web and TV Media Pipeline TF Use Case [http://www.w3.org/2011/webtv/wiki/MPTF/MPTF\\_Discussions/TV\\_services\\_transport\\_mapping](http://www.w3.org/2011/webtv/wiki/MPTF/MPTF_Discussions/TV_services_transport_mapping)

## TV Services and Media Transport Mapping to HTML5

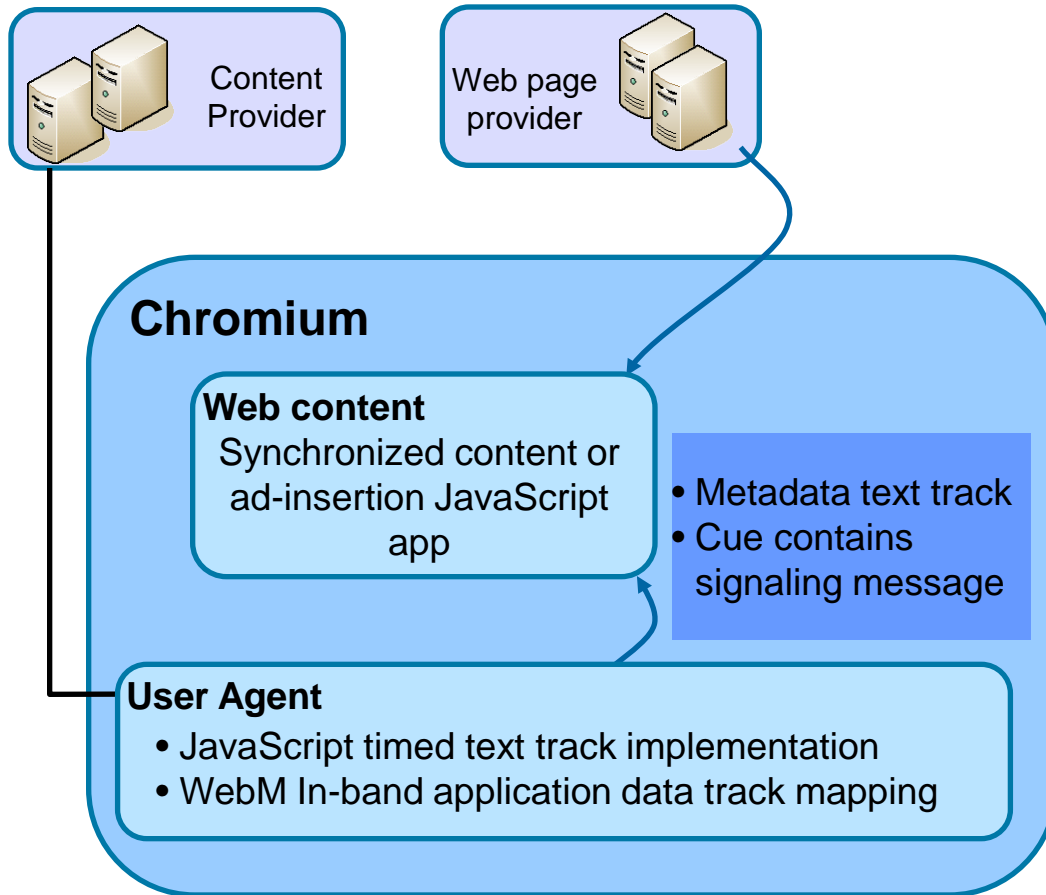
	MPEG-2 TS	MPEG-4 File Format	MPEG DASH	Other containers and transports
Synchronized Web content				
Client ad insertion				
Content advisories				
Audio translations				
Audio description				
Closed captions				
Subtitles				

- The mapping defines:
  - How TV service tracks are encoded – mostly references existing specifications. Specific to media transport or container.
  - How tracks are exposed in HTML5.

# MPEG-2 TS Example

	MPEG-2 TS
<b>Synchronized Web content</b>	<ul style="list-style-type: none"> <li>• Can be in private data stream type 0x05 or 0xC0, identified by etv signaling descriptor (0xA2). Specified in CableLabs SP-ETV-AM1.0</li> <li>• Track element: kind=metadata, label/type = 'mpeg2ts; pmt="0x05 0xC,0xA2"'</li> <li>• Cue: Start time = Now, Cue text = message payload in private data stream</li> </ul>
<b>Client ad insertion</b>	<ul style="list-style-type: none"> <li>• Carried in private data stream type 0x86. Specified in ANSI/SCTE 35</li> <li>• Track element: kind=metadata, label/type = 'mpeg2ts; pmt="0x86"'</li> <li>• Cue: Start time = Now, Cue text = message payload in private data stream</li> </ul>
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## Synchronized Web Content and Ad-insertion Proof-of-concept



- Script uses iframe to control overlay of interactive app or selected advertisement
- Some issues to resolve
  - How does script distinguish the type of signaling messages a track contains? (bug 13359)
  - How to support changing set of tracks in long-lived streams, e.g. broadcast channel? (bug 13358)

# Proof-of-concept Application Layering



`<video>`  
Program Video



`<iframe>`  
Client-Side  
Advertisement



`<iframe>`  
Synchronized  
Application



**Big Buck  
BUNNY**

Purchase Tickets Now  
For a Theater  
Near You!