# W3C Media Pipeline TF Requirements

November 1-4, 2011

# R1. Combined main + description audio track

- **Use case:** Playing descriptive audio tracks , which come in two forms:
    - description pre-mixed with main audio (e.g. USA, Canada)
    - description not mixed with main audio (e.g. Europe)
- **What doesn't work:** HTML5 spec only supports non-premixed description tracks.
- **Submitted bugs:**
    - ☐ LC1 Bug 13357 - <track>: Additional AudioTrack.kind categories are needed to identify tracks where audio descriptions are premixed with main dialogue.
- **Section:** 4.8.10.10.1 AudioTrackList and VideoTrackList objects
    - Table "Return values for AudioTrack.kind() and VideoTrack.kind()" defines seven Category values: "alternative", "description", "main", "sign", "translation", "commentary", "" (empty string).
    - Pre-mixed audio descriptions mix both "description" and "main", which cannot be specified.
- **Suggested changes:**
    - Define two new Category values:
        - "main+description" - pre-mixed main audio track and audio descriptions
        - "translation+description" - pre-mixed translated audio track and audio descriptions.
    - Make Category a list, allowing other combinations (e.g. video with main and sign).

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# R3. Handling of In-band Tracks

- **Use case**: Playing in-band multiplexed media streams (e.g. broadcast television, live events and recorded movies) with track elements that come and go over time (e.g. secondary audio, subtitles in different languages, application signaling and content ratings.)
- **What doesn't work:** Application doesn't know type of data tracks or when tracks end.
- **Submitted bugs:**
  - ☑ LC1 Bug 13358 - <video> also fire a 'change' event at VideoTrackList, AudioTrackList, and TextTrackList objects when their list of tracks changes.
  - ☐ LC1 Bug 13359 - A way is needed to identify the type of data in a track element
  - ☐ Bug 14492 - <video> change event when tracks are removed (merge with LC1 Bug 13358?)
- **Section:** 4.8.10.12.2 Sourcing in-band text tracks
  - o References "relevant specifications" for setting in-band text track values. CableLabs has developed one of these specs for MPEG-2 TS. More will be needed for relevant media container formats. Should we publish these in W3C?
- **Suggested changes:**
  - o Mapping of in-band tracks needs to be done in a standard way within each transport: should W3C publish mapping specs?
  - o The transport "directory" info(e.g. PMT) can be mapped as text track using current spec. Would be better as a track type.
  - o Deletion of track causes some notification.

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# R7. Additional Media Parameters

- **Use case:** Playing adaptive rate video via video element. Currently deployed object element adaptive rate video players allow application control of adaptive play-out. Common parameters for other media should also be considered.
- **What doesn't work:** HTML5 spec has no APIs to control adaptive video.
- **Submitted bugs:**
  - ☐ ISSUE-179 (LC Bug 13333): {audio,video} require param child (or equivalent)
  - ☐ LC1 Bug 13625 - There is no way to pass audio and video content metadata to the user agent that is required in some cases for playback.
- **Section:** 4.8.10 Media elements
  - ○ Interface HTMLMediaElement : HTMLElement.
- **Suggested changes:**
  - ○ Expose information, such as the available bit rates and set a maximum used by the user agent
  - ○ Expose and set parameters of an adaptive bit-rate fragment selection algorithm
    - ○ E.g. contentInfo and size from LC Bug 13625
  - ○ Ability to signal and play media spliced seamlessly onto end of current video.

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# R8. Additional Media Feedback and Errors

- **Use case:** The media element interface should support the feedback of relevant adaptive bit rate, or other media information (e.g. delivery statistics, events, and errors).

- **What doesn't work:** HTML5 spec lacks error messages and events specific to adaptive bit rate video or other media specific support.

- **Submitted bugs:**

  ☐ ISSUE-179: {audio,video} require param child (or equivalent)

  ☐ LC1 Bug 12399 – There is a need to expose the performance of media elements to JavaScript (see also http://wiki.whatwg.org/wiki/Video_Metrics)

- **Section:** 4.8.10.1 Error codes
  - ○ MEDIA_ERR_ABORTED
  - ○ MEDIA_ERR_NETWORK
  - ○ MEDIA_ERR_DECODE
  - ○ MEDIA_ERR_SRC_NOT_SUPPORTED

- **Suggested changes:**

  Add error codes common to media errors, and additional events or information, e.g.
  - ○ DNS failures, TCP failures, TLS failures
  - ○ Delivery statistics (packet drop rate, etc.)
  - ○ Change in rendered stream event

# R10. Content Protection Parameters

- **Use case:** The media element interface should support secure specification of content protection and digital rights management parameters (e.g. subscription requirements, etc.).

- **What doesn't work:** HTML5 spec has no APIs to control content protection.

- **Submitted bugs:**
  - ☐ ISSUE-179 (LC Bug 13333): {audio,video} require param child (or equivalent)
  - ☐ LC1 Bug 13625 - There is no way to pass audio and video content metadata to the user agent that is required in some cases for playback.

- **Section:** 4.8.10 Media elements
  - ○ Interface HTMLMediaElement : HTMLElement.

- **Suggested changes:**
  - ○ Retrieve DRM system information like DRM system is ready, it is initializing, error, etc.
  - ○ Exchange DRM related messages with the underlying DRM system.
  - ○ Result on exchange of DRM related messages if exchange is successful or an error occured. Errors may include user consent is required, unknown DRM sytem id for incoming content, wrong format, etc.
  - ○ [This example is taken from OIPF DAE specification. Refer to Section 7.6 on Content Service Protection]

# R11. Content Protection Feedback and Errors

- **Use case:** The media element interface should support the feedback of relevant content protection and digital rights management information (e.g. supported DRMs, DRM ready, need to reactivate license, etc.).

- **What doesn't work:** HTML5 spec lacks error messages and events specific to content protection support.

- **Submitted bugs:**
  - ☐ ISSUE-179: {audio,video} require param child (or equivalent)

- **Section:** 4.8.10.1 Error codes
  - ○ MEDIA_ERR_ABORTED
  - ○ MEDIA_ERR_NETWORK
  - ○ MEDIA_ERR_DECODE
  - ○ MEDIA_ERR_SRC_NOT_SUPPORTED

- **Suggested changes:**
  - ○ Receive errors from DRM system with additional information like DRM rights URL for retrieval of keys. Errors may include: No license, Invalid license, Valid license

  [This example is taken from OIPF DAE specification. Refer to Section 7.13.6 on Extension to video/broadcast for DRM rights errors]

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# Summary

| Use Case | Issue 179 | LC 12399 | LC 13357 | LC 13358 | LC 13359 | LC 13625 | LC 14492 | Mapping |
|---|---|---|---|---|---|---|---|---|
| R1. Combined main + description audio track | | | ✔ | | | | | |
| R3. Handling of In-band Tracks | | | | ✔ | ✔ | | ✔ | ✔ |
| R7. Adaptive Bit Rate Parameters | ✔ | | | | | ✔ | | |
| R8. Adaptive Bit Rate Feedback | ✔ | ✔ | | | | | | |
| R10. Content Protection Parameters | ✔ | | | | | ✔ | | |
| R11. Content Protection Feedback | ✔ | | | | | | | |

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# Requests

- Work with HTML group to accept the specified LC bugs or develop better solutions
- Determine a preferred method for referencing mapping specifications
  - Developed within W3C
  - Referenced by HTML5 specification
  - Neither of the above