W3C Media WG Meeting

TPAC 2023, 11 September 2023 14:30 - 18:30

Safety reminders

While attending TPAC, follow the health rules:

- Authorized masks are required indoors at all times. If you need to remove your mask during the meeting, please keep it short
- Daily test is expected

Please be aware of and respect the personal boundaries of your fellow participants

https://www.w3.org/2023/09/TPAC/health.html

Code of conduct

- Appreciate and accommodate our similarities and differences, be inclusive
- Have empathy when discussing sensitive issues
- Treat everyone with respect
- Be honest, be truthful
- Be aware of how much time is taken up
- Be sensitive to language differences
- Respect confidentiality and privacy

Refer to https://www.w3.org/Consortium/cepc/

Meeting logistics

- We use IRC for minute taking and to manage the speaker queue. Please join https://irc.w3.org/?channels=#mediawg
  - Type **`present+ Your_Name`** to record your attendance
  - Type **`q+`** to join the speaker queue
- Please volunteer to scribe
  - See IRC Guide: https://www.w3.org/wiki/IRC
- Remote participants, please mute unless you're speaking
- Please avoid side conversations in the meeting room (those get picked up by microphones)

Agenda

Time	Topic	Time	Topic
14:30 - 14:35	Welcome and Introduction	17:00 - 17:40	Media Session
14:35 - 15:10	WebCodecs	17:40 - 17:50	Audio Session
15:10 - 15:40	Media Source Extensions	17:50 - 18:10	Web Video Filter API
15:40 - 16:10	Media Capabilities	18:10 - 18:30	Media Session Coordinator
16:10 - 16:30	Encrypted Media Extensions	18:30	Close
16:30 - 17:00	Break		

Note: This is a draft, suggestions for alterations are welcome

Media Working Group: Introduction

- Mission
  - The media foundations for the web, such as **HTMLMediaElement** and **Media Source Extensions** have helped turn the Web into a major platform for media streaming and media consumption. The Media Working Group will extend those foundations with new standardized technologies to improve the overall media playback experience on the Web
- Charter
  - 26 June 2023 to 31 May 2025 (previous charter 22 July 2021 to 31 May 2023)
- Co-chairs
  - Chris Needham – BBC chris.needham@bbc.co.uk
  - Marcos Caceres – Apple marcosc@apple.com
- Team Contact
  - François Daoust – W3C fd@w3.org

WebCodecs

14:35 - 15:10

- Specification status: WD
- Horizontal Review status: Accessibility and i18n reviews to do
- WebCodecs Container Format (~20 mins)
  https://datatracker.ietf.org/meeting/117/materials/slides-117-moq-webcodes-container-00
- w3c/webcodecs#92 API for conversion between pixel formats (~20 mins)
  - w3c/webcodecs#677 Could ImageDecoder support non-RGBA8 color formats?
  - w3c/webcodecs#203 CMYK jpeg handling
- w3c/webcodecs#607 Add human face metadata to VideoFrameMetadata registry

Goals of VideoFrame pixel format conversion

1. Convert VideoFrame into a pixel format that is easy to use on the web and easy to feed to libraries like TensorFlow.js and OpenCV.js

2. Asynchronous

3. Color space aware

4. Preferable extendable to more pixel formats

Current ways to get pixel data from VideoFrame

1. Call VideoFrame.copyTo() and then do convert pixel format in wasm, webgl, webgpu (lots of complicated code that UA already has)
2. Use canvas (synchronous , requires a canvas)
   a. CanvasRenderingContext2D.drawImage()
   b. Canvas.getImageData()

Extensions to VideoFrame.copyTo() Conversion to canvas friendly formats

Two new members in *VideoFrameCopyToOptions* dictionary

```
dictionary VideoFrameCopyToOptions {
  // only supports “RGBA” and “RGBX” and the format of the VideoFrame itself
  VideoPixelFormat format;
  PredefinedColorSpace colorSpace; //  "srgb", "display-p3"
  DOMRectInit rect;
  sequence<PlaneLayout> layout;
};
```

Equivalent of rendering on a <canvas> and calling getImageData() afterwards.

Example

```
const options = {
  format: 'RGBA',
  colorSpace: 'display-p3'
};
const bufSize = frame.allocationSize(options);

const buffer = new Uint8ClampedArray(size);
await frame.copyTo(buffer, options);
const image_data = new ImageData(buffer, frame.codedWidth, frame.codedHeight,
                                 { colorSpace: 'display-p3' });
```

Further extensions to VideoFrame.copyTo()

1. Supporting more than “RGBA” and “RGBX” pixel formats in *VideoFrameCopyToOptions*
2. Adding *VideoColorSpace* to *VideoFrameCopyToOptions* to allow more sophisticated conversions between color spaces.

Examples: Convert I444 / BT.709 into I420 / BT.601

More work and inevitably more spotty support by UAs.

Media Source Extensions

15:10 - 15:40

- Specification status: WD
- MSE v2 planned issues:
  - https://github.com/w3c/media-source/issues?q=is%3Aopen+is%3Aissue+milestone%3AV2
- w3c/media-source#320 Managed Media Source
- Interop issues (? TBC)

Media Capabilities

15:40 - 16:10

- Specification status: WD
- Horizontal Review status: i18n and security reviews to do
- Media Capabilities for streaming video
  - w3c/media-capabilities#102 Discuss transition() ergonomics
  - w3c/media-capabilities#165 Define MediaCapabilitiesDecodingInfo.codecSwitchingSupported
  - w3c/media-capabilities#107 Mark keySystemAccess as default to null and optional and robustness properties as no longer defaulting
- WebCodecs and Media Capabilities
  - w3c/media-capabilities#205 Replace ColorGamut and TransferFunction with VideoColorSpace?
  - w3c/media-capabilities#202 Interaction of Media Capabilities with WebCodecs?

Media Capabilities

15:40 - 16:10

- MediaCapabilities for WebRTC
  - w3c/media-capabilities#185 Retrieving RTCRtpCodecCapability from MediaCapabilities when queried for webrtc
  - w3c/media-capabilities#186 PR: Add a new webrtcCodec parameter to MediaCapabilitiesInfo
- Privacy issues
  - w3c/media-capabilities#176 General approach to capability negotiation
  - w3c/webrtc-stats#674 Codec stats reveal hardware information which could be used for fingerprinting
  - w3c/webrtc-svc#92 Align exposing scalabilityMode with the WebRTC "hardware capabilities" check

Encrypted Media Extensions

16:10 - 16:30

- Spec Status: ED (pre-FPWD)
- w3c/encrypted-media#501 EME v2 FPWD tracking issue
- Next steps, when FPWD is ready:
  - Review Privacy section for v2 feature additions
  - Complete privacy and security self review
  - Request horizontal reviews (see status)
    - Accessibility, i18n, Privacy, Security

Break

16:30 - 17:00

Media Session

17:00 - 17:40

- Document status: WD: https://www.w3.org/TR/mediasession/
- Horizontal reviews:
  - Accessibility: Not requested yet
  - TAG: Completed (reviews: #149, #608)
  - Internationalization: Not requested yet
  - Privacy: Not requested yet
  - Security: Not requested yet
- Scope for Candidate Recommendation?

Media Session: Open PRs

17:00 - 17:40

- w3c/mediasession#294 and w3c/mediasession#295 Add enterpictureinpicture action
- w3c/mediasession#252 and w3c/mediasession#255 Definition of duration in MediaPositionState
- w3c/mediasession#237 The freezing in the artwork getter is broken
  - w3c/mediasession#176The "convert artwork algorithm" is somewhere between underdefined and nonsensical
  - w3c/mediasession#243 Update type of MediaMetadata's artwork
- w3c/mediasession#248 and w3c/mediasession#298 Change specification name

Media Session

17:00 - 17:40

- Media Session and Permissions Policy
  - w3c/mediasession#221 Integrate Media Session with Feature Policy
- Media Session with alternate sources
  - w3c/mediasession#261 MediaSession and stream srcObject?
  - w3c/audio-session#11 Does media session work with WebAudio?

Media Session: Bigger picture issues

17:00 - 17:40

- Media Session and video conferencing
  - w3c/mediasession#282 Dedicated video conference session API?
  - w3c/mediasession#279 Privacy issue: is it a good idea to let webapps lie about camera/mic ON/OFF on a user's lock screen?
  - w3c/mediasession#278 Definition of active media session and the togglemicrophone, togglecamera, hangup actions
- Background audio playback
  - w3c/mediasession#232 Use within a PWA context / Service Worker to replicate native audio apps?
  - WebAudio/web-audio-api#2423 Service Worker support for BaseAudioContext

Audio Session
17:40 - 17:50

- w3c/audiosession#1 Spec MVP
  - Should the first version of the spec also target platforms without mantantory audio focus management, e.g., Windows, Linux?
- Steps to FPWD

Web Video Filter API proposal

17:50 - 18:10

- Web Video Filter API proposal - Riju Bhaumik
  - See slides

Media Session Coordinator

18:10 - 18:30

- Introduction: Andy Estes
  - https://github.com/WebKit/explainers/tree/main/MediaSessionCoordinator
- Current status
- Q&A
- Next steps

If time allows…

Picture in Picture

- Steps to Candidate Recommendation
- w3c/picture-in-picture#184 disablePictureInPicture interoperability
- w3c/picture-in-picture#99 Should PiP video removed from the DOM leave PiP?
  - Agreement that playback should continue and not leave PiP, needs HTML spec change as proposed in whatwg/html#6271
- w3c/picture-in-picture#208 How to determine the correct video size?
  - PiP window devicePixelRatio?

Autoplay Policy Detection

- Spec status: WD
- Horizontal reviews
  - Accessibility (awaiting review feedback)
  - Security
- Privacy review feedback:
  - w3c/autoplay #42 Spec should document fingerprinting and XSLeak risk
  - w3c/autoplay #43 Notifying the site of a browser intervention can be user harming
- w3c/autoplay #13 Media autoplay permission

Thank you!