CTA Specification

Web Application Video Ecosystem – Web Media API Snapshot 2017

CTA-5000

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Consumer Technology Association™

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(Formulated under the cognizance of the CTA **WAVE Project** in cooperation with the W3C; for information please see cta.tech/WAVE.)

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Foreword

The CTA WAVE Project was launched at the 2016 CES in Las Vegas, NV. The goal of WAVE is to improve interoperability in the commercial Over-the-Top (OTT) video ecosystem using industry-standard protocols including HTML5 with MSE Extensions [MEDIA-SOURCE] and EME [ENCRYPTED-MEDIA], MPEG-CMAF[1], MPEG-CENC[2] and adaptive bit-rate streaming protocols MPEG-DASH[3] and Apple HLS[4].

The process under which WAVE develops specifications is available online at the WAVE public home page (https://cta.tech/Research-Standards/Standards-Documents/WAVE-Project/WAVE-Project.aspx).

The *Web Media API Snapshot 2017* was co-developed between the CTA WAVE HTML5 API Task Force and the W3C Web Media API Community Group. It is jointly published between CTA (as a CTA specification, CTA-5000) and W3C (as a Final Community Group Report), by agreement between the two organizations.

Web Media API Snapshot 2017

CTA Status: CTA Specification CTA-5000, "WAVE Web Media API Snapshot 2017"
W3C Status: Final Community Group Report, 20 December 2017
Latest editor's draft:
https://w3c.github.io/webmediaapi/
Editors:
David Evans (British Broadcasting Corporation)
Mark Vickers (Comcast)
Participate:
Web Media API Specification Repository: https://github.com/w3c/webmediaapi
File a bug: https://github.com/w3c/webmediaapi/issues/
Commit history: https://github.com/w3c/webmediaapi/commits/gh-pages
Pull requests: https://github.com/w3c/webmediaapi/pulls/

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[1] ISO/IEC 23000-19:2018, "Information technology -- Multimedia application format (MPEG-A) -- Part 19: Common media application format (CMAF) for segmented media", https://www.iso.org/standard/71975.html
[2] ISO/IEC 23001-7:2015, "Information technology -- MPEG systems technologies -- Part 7: Common encryption in ISO base media file format files", https://www.iso.org/standard/65271.html
[3] ISO/IEC 23009-1:2014, "Information technology -- Dynamic adaptive streaming over HTTP (DASH) -- Part 1: Media presentation description and segment formats", https://www.iso.org/standard/65274.html
[4] Pantos, R., Ed., and W. May, "HTTP Live Streaming", https://tools.ietf.org/html/draft-pantos-http-live-streaming-20

Abstract

This specification lists the Web APIs to support media web apps that are supported across all four of the most widely used user agent code bases at the time of publication. This specification should be updated at least annually to keep pace with the evolving Web platform. We encourage manufacturers to develop products that support the APIs in the most recent version of Web Media API Snapshot. This specification is comprised of references to existing specifications in W3C and other specification groups. The target devices will include any device that runs a modern HTML user agent, including televisions, game machines, set-top boxes, mobile devices and personal computers.

The goal of this Web Media API Community Group specification is to transition to the W3C Recommendation Track for standards development.

Status of This Document

This technical specification was developed under the auspices of the Consumer Technology Association's™ WAVE Project, in the HTML5 API Task Force in conjunction with the W3C Web Media API Community Group.

This specification was published by the Web Media API Community Group[5]. It is not a W3C Standard nor is it on the W3C Standards Track. Please note that under the W3C Community Contributor License Agreement (CLA)[6] there is a limited opt-out and other conditions apply. Learn more about W3C Community and Business Groups[7].

[5] https://www.w3.org/community/webmediaapi/
[6] https://www.w3.org/community/about/agreements/cla/
[7] https://www.w3.org/community/

Table of Contents

Web Application Video Ecosystem – Web Media API Snapshot 2017

1. Introduction

This section is non-normative.

Writing portable media web apps across browsers on consumer products (e.g. smart TVs, game machines, set-top boxes) is much more difficult than writing portable media web apps across PC browsers. One main reason for this is that the browsers on consumer products are often quite out-of-date. While browsers integrated into consumer products are often built from the same major HTML user agent code bases as PC browsers, it is not unusual for a consumer product to be using a code base release that is three or more years old, while PC browsers use recent code base releases.

This specification is intended to address this problem by collecting together into one definition key specifications used by media web apps that are all supported in common by all of the four major web user agent code bases, as of 2017. The specification will then be used to generate a test suite, to enable device manufacturers to specify and verify that their browsers are up-to-date with current web standards.

However, this specification is not a complete definition of the Web platform. There may be additional specifications that are included in all code bases that are not included in this specification. Furthermore, individual code bases include APIs that are not supported on all other code bases, but are nonetheless widely used. Therefore, this specification and associated tests should only be used as verification of a minimum set of required APIs. There is no suggestion that APIs not included in this specification should be removed from implementations.

It is intended that this specification be updated periodically to reflect adoption of new specifications in the Web platform. For example, the specification might be updated once a year for media devices being introduced onto the market in the following year.

Each version of the specification will additionally recommend a set of useful web specifications which are not yet supported by all code bases, in order to encourage all code bases to support these recommended APIs.

Specifications that are required in this version of this specification may fall out of use in the web and be dropped in whole or in part from some user agent code bases. Hence a specification being "Required" in this version of this specification does not guarantee that it will remain "Required" in future versions of this specification.

This specification is being developed in close cooperation with the CTA WAVE Project[8].

2. Conformance

As well as sections marked as non-normative, all authoring guidelines, diagrams, examples, and notes in this specification are non-normative. Everything else in this specification is normative.

[8] http://cta.tech/WAVE

The key word *MUST* is to be interpreted as described in [RFC2119].

3. Web Media APIs currently supported on all platforms

3.1 Introduction

This section is non-normative.

This section lists the Web APIs to support media web apps that are supported across all four of the most widely used user agent code bases at the time of publication (though there are no requirements around explicit version number or release date for any client code bases). We encourage manufacturers to develop products that support the APIs in the most recent version of this specification.

The approach taken in this draft is only to include specifications that are of particular significance to authors, but not include all the specifications cited by those included specifications. For example, IETF RFC 1345, Character Mnemonics and Character Sets [RFC1345] is required by HTML 5.1 [HTML51], and is therefore not included as a required specification here.

3.1.1 Features with limited implementation

Parts of some web specifications are not currently implemented across all user agent code bases and may never be. Consequently, these features will not be included in our tests. Any such features are noted as exceptions under that API.

3.1.2 At-risk features

Some specifications referenced in this section may not have reached Recommendation and, as such, may contain 'at-risk' features. Since the most common reason for features being marked as at-risk is lack of implementations, such features may not be present in some implementations of this specification and will not be tested as part of our tests.

3.2 HTML core specifications

Devices *MUST* be conforming implementations of the following specifications:

- HTML 5.1 [HTML51], devices acting as Web browsers that support the HTML syntax and the XHTML syntax, scripting, and the suggested default rendering.
- ECMAScript Language Specification, Edition 5.1 [ECMASCRIPT-5.1]

3.3 CSS specifications

EDITOR'S NOTE

The following list of widely deployed and interoperable CSS specs is taken directly from CSS Snapshot 2017 [CSS-2017]

Devices *MUST* be conforming implementations of the following specifications:

- Cascading Style Sheets Level 2 Revision 1 (CSS 2.1) Specification [CSS2]

- CSS Syntax Module Level 3 [CSS-SYNTAX-3]
- CSS Style Attributes [CSS-STYLE-ATTR]
- Media Queries [CSS3-MEDIAQUERIES]
- CSS Conditional Rules Module Level 3 [CSS3-CONDITIONAL]
- CSS Namespaces Module Level 3 [CSS-NAMESPACES-3]
- Selectors Level 3 [SELECT]
- CSS Cascading and Inheritance Level 3 [CSS-CASCADE-3]
- CSS Values and Units Module Level 3 [CSS-VALUES]
- CSS Color Module Level 3 [CSS3-COLOR]
- CSS Backgrounds and Borders Module Level 3 [CSS3-BACKGROUND]
- CSS Image Values and Replaced Content Module Level 3 [CSS3-IMAGES]
- CSS Fonts Module Level 3 [CSS-FONTS-3]
- CSS Multi-column Layout Module [CSS3-MULTICOL]
- CSS Basic User Interface Module Level 3 (CSS3 UI) [CSS-UI-3]
- Compositing and Blending Level 1 [COMPOSITING]
- CSS Transitions [CSS3-TRANSITIONS]
- CSS Animations [CSS3-ANIMATIONS]
- CSS Flexible Box Layout Module Level 1 [CSS-FLEXBOX-1]
- CSS Transforms Module Level 1 [CSS-TRANSFORMS-1]

3.4 Media specifications

Devices *MUST* be conforming implementations of the following specifications:

- Encrypted Media Extensions [ENCRYPTED-MEDIA]
- Media Source Extensions [MEDIA-SOURCE]
- Web Audio API [WEBAUDIO]
    - Exceptions: Since not all environments currently support Media Streams [mediacapture-streams], MediaStreamAudioSourceNode and MediaStreamAudioDestinationNode are not yet widely supported.

3.5 Graphics specifications

Devices *MUST* be conforming implementations of the following specifications:

- HTML Canvas 2D Context [2DCONTEXT]
- Fullscreen API Standard [WHATWG-FULLSCREEN]
- JPEG File Interchange Format [JPEG]
- Portable Network Graphics (PNG) Specification (Second Edition) [PNG]
- Graphics Interchange Format [GIF]

3.6 Font specifications

Devices *MUST* be conforming implementations of the following specifications:

- Open Font Format [OPEN-FONT-FORMAT]
- WOFF File Format 1.0 [WOFF]

3.7 Networking specifications

Devices *MUST* be conforming implementations of the following specifications:

- The WebSocket API [WEBSOCKETS]
- XMLHttpRequest [XHR]
- Fetch [FETCH]

3.8 Security specifications

Devices *MUST* be conforming implementations of the following specifications:

- Content Security Policy Level 2 [CSP2]
- Web Cryptography API [WebCryptoAPI]

3.9 Other web specifications

Devices MUST be conforming implementations of the following specifications:

- Web Storage [WEBSTORAGE]
- Web Workers [WORKERS]
    - Exceptions: Shared Workers are not yet widely supported.
- Indexed Database API [IndexedDB-20150108]
    - Exceptions: Array key path[9] and array keys[10] are not yet widely supported.
- Cross-document messaging [WEB-MESSAGING]
- Channel messaging [CHANNEL-MESSAGING]
- Web Notifications [notifications-20151022]

4. Web Media APIs proposed to be supported on all platforms

This section is non-normative.

APIs in this section represent desired functionality that is important for web media delivery, but is not yet implemented widely enough to be Required. We encourage the following APIs be implemented on all HTML user agents as soon as possible. It is expected that, as implementations become available, some of these specifications may become Required Specifications in a future version of this specification.

4.1 HTML core specifications

- ECMAScript Language Specification, Edition 6 [ECMASCRIPT-6.0]

4.2 Media specifications

- Sourcing In-band Media Resource Tracks from Media Containers into HTML [INBANDTRACKS]
- Media Fragments URI 1.0 (basic) [media-frags]
- Media Session Standard [MEDIASESSION]

4.3 Graphics specifications

- WebGL Specification [WEBGL-103]

[9] See https://www.w3.org/TR/2015/REC-IndexedDB-20150108/#dfn-key-path
[10] See https://www.w3.org/TR/2015/REC-IndexedDB-20150108/#dfn-key

NOTE

Whilst WebGL is already supported in all four of the most widely used user agent code bases, hardware support may be required to implement the specification. Where performant hardware is present, the CG encourages implementation of the specification.

4.4 Networking specifications

- Server-Sent Events [EVENTSOURCE]

4.5 Other web specifications

- Web App Manifest [appmanifest]
- Service Workers 1 [service-workers-1]

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Consumer Technology Association Document Improvement Proposal

If in the review or use of this document a potential change is made evident for safety, health or technical reasons, please email your reason/rationale for the recommended change to standards@CTA.tech.

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