# **Sustainability of Digital Formats: Planning** for Library of Congress Collections

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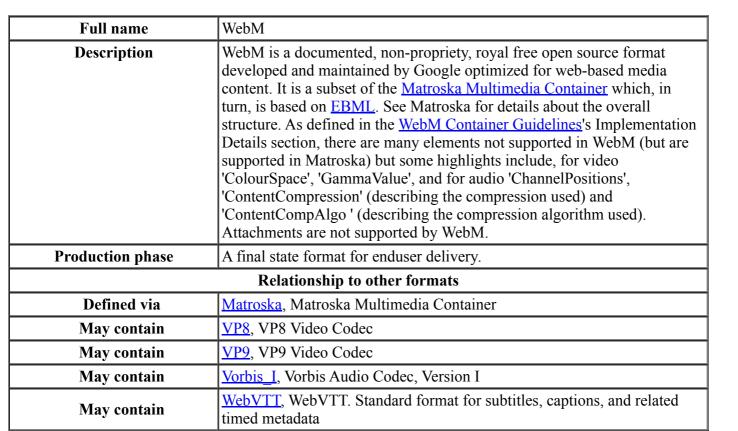
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#### Format Description Properties 1



- ID: fdd000518
- Short name: WebM
- Content categories: moving-image, sound, aggregate
- Format Category: file-format
- Other facets: container-wrapper, binary, unstructured
- Last significant FDD update: 2023-05-16
- · Draft status: Partial

### Identification and description i



## Local use 1

holdings	As of May 2023, the Library of Congress has over 4,300 files (14 GB) with the .webm extension in its digital collections. These have come from various sources, including archived websites.
LC preference	See the Recommended Formats Statement for the Library of Congress format preferences for moving image content.

## Sustainability factors 1

Sustainability factors	
Disclosure	WebM is a documented, non-propriety, royal free open source format developed and maintained by Google in collaboration with the <u>Alliance for Open Media</u> . WebM itself is a constrained version of the <u>Matroska</u> IETF specification. Matroska is based on <u>EBML</u> which is also standardized through IETF. As these are new-ish formats, all the specifications continue to evolve through formal processes and transparent peer review.
Documentation	<ul> <li>The WebM specification is available on the WebM Project website</li> <li>Matroska format specification is standardized through IETF. Draft version 04 is available as of this writing in August 2020</li> <li>EBML format specification is standardized through IETF. Draft version 17 is available as of this writing in August 2020.</li> </ul>
Adoption	The WebM Project lists a wide variety of tools for creating and publishing content in the WebM format including free and open source as well as commercial options. This includes FFmpeg, a popular open source "cross-platform solution to record, convert and stream audio and video" which has strong support for Matroska as well as FFV1.  Viewing options for WebM includes native support by Mozilla Firefox, Opera and Chrome while Internet Explorer 9+ requires the WebM for Internet Explorer plugin. According to Wikipedia, Safari for macOS which relied on QuickTime to play web media until Safari 12, still does not have native support for WebM. As of 2019 QuickTime does not natively support WebM, but does with a suitable third-party plug-in. In 2011, the Google WebM Project Team released plugins for Internet Explorer and Safari to allow playback of WebM files through the standard HTML5video tag. As of June 2012, Internet Explorer 9 and later supported the plugin for Windows Vista and later.  Other players with native support include VLC media player, MPlayer, K-Multimedia Player and JRiver Media Center.
	WebM is supported on popular video sites including YouTube (a subsidiary of Google).
Licensing and patents	WebM carries a Creative Commons Attribution 3.0 Unported License from Google which states that "Google hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer implementations of the WebM Specifications, where such license applies only to those patent claims, both currently owned by Google and acquired in the future, licensable by Google that are necessarily infringed by implementation of the WebM Specifications."
	In addition, Google lists the <u>Additional IP Rights Grant (Patents)</u> for "the use of WebM codecs distributed by Google as part of the WebM Project."

Transparency	Depends upon included encodings, some of which will depend upon algorithms and tools to read and require sophistication to build tools.
Self-documentation	
External dependencies	
Technical protection considerations	Encryption is supported in Matroska in a generic way "to allow people to implement whatever form of encryption is best for them" according to the IETF draft speficiation from October 2019. In Matroska, encryption data is contained by the ContentEncryption element. According to WebM project, there is an effort to develop a more structured effort to support AES encryption through a W3C proposal (last updated December 2019 as of this writing). This project includes defining new elements specifically for Matroska and WebM including adding a master element named ContentEncAESSettings as a sub-element of the existing ContentEncryption element, which contains elements representing the features of AES. "ContentEncAESSettings contains one sub element. AESSettingsCipherMode conveys the block cipher mode used with the AES encryption. AESSettingsCipherMode contains one value, CTR. With these new elements, clients should be able to decode frames encoded with AES." In addition, WebM supports the existing Matroska elements: ContentEncryption, ContentEncAlgo, ContentEncKeyID, ContentEncAESSettings and AESSettingsCipherMode. Comments welcome.

### Quality and functionality factors 1

Moving Image	
Normal rendering	Good support
Clarity (high image resolution)	Varies according to encoding

## File type signifiers and format identifiers 1

Tag	Value	Note
Filename extension	webm	From WebM Container Guidelines
Internet Media Type	video/webm	From WebM Container Guidelines. Not listed in IANA Media Type assignments as of August 2020. Comments welcome
Internet Media Type	audio/webm	For audio only content. From WebM Container Guidelines. Not listed in IANA Media Type assignments as of August 2020. Comments welcome
Pronom PUID	fmt/573	See <a href="http://www.nationalarchives.gov.uk/PRONOM/fmt/573">http://www.nationalarchives.gov.uk/PRONOM/fmt/573</a>
Wikidata Title ID	Q309440	See <a href="https://www.wikidata.org/wiki/Q309440">https://www.wikidata.org/wiki/Q309440</a>

## Notes i

General	
History	

### Format specifications 1

• WebM Container Guidelines from WebM Project (https://www.webmproject.org/docs/container/).

#### Useful references

#### **URLs**

- WebM from Google Open Source (https://opensource.google/projects/webm).
- WebM: an open web media project (https://www.webmproject.org/).
- Open source and commercial tools from WebM Project website (https://www.webmproject.org/tools/).
- WebM entry from Wikipedia (https://en.wikipedia.org/wiki/WebM).
- Encrypted Media Extensions by W3C (https://w3c.github.io/encrypted-media/). W3C Editor's Draft 13 December 2019
- <u>Alliance for Open Media Established to Deliver Next-Generation Open Media Formats: Press Release August 28, 2015</u> (https://aomedia.org/alliance-to-deliver-next-generation-open-media-formats/).
- FFmpeg (https://www.ffmpeg.org/).
- PRONOM entry for fmt/573 (http://www.nationalarchives.gov.uk/PRONOM/fmt/573). Information in PRONOM about WebM. PUID: fmt/573
- <u>Wikidata entry for Q309440</u> (https://www.wikidata.org/wiki/Q309440). Information in Wikidata about WebM. Wikidata Title ID: Q309440.

Last Updated: 05/18/2023

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