**HTML Multimedia**

Multimedia on the web is sound, music, videos, movies, and animations.

What is Multimedia?

Multimedia comes in many different formats. It can be almost anything you can hear or see.

Examples: Images, music, sound, videos, records, films, animations, and more.

Web pages often contain multimedia elements of different types and formats.

In this chapter you will learn about the different multimedia formats.

Browser Support

The first web browsers had support for text only, limited to a single font in a single color.

Later came browsers with support for colors and fonts, and images!

Audio, video, and animation have been handled differently by the major browsers. Different formats have been supported, and some formats require extra helper programs (plug-ins) to work.

Hopefully this will become history. HTML5 multimedia promises an easier future for multimedia.

Multimedia Formats

Multimedia elements (like audio or video) are stored in media files.

The most common way to discover the type of a file, is to look at the file extension.

Multimedia files have formats and different extensions like: .swf, .wav, .mp3, .mp4, .mpg, .wmv, and .avi.

Common Video Formats

|  |  |
| --- | --- |
| Videoformats | MP4 is the new and upcoming format for internet video.  MP4 is recommended by YouTube.  MP4 is supported by Flash Players.  MP4 is supported by HTML5. |

|  |  |  |
| --- | --- | --- |
| Format | File | Description |
| MPEG | .mpg .mpeg | MPEG. Developed by the Moving Pictures Expert Group. The first popular video format on the web. Used to be supported by all browsers, but it is not supported in HTML5 (See MP4). |
| AVI | .avi | AVI (Audio Video Interleave). Developed by Microsoft. Commonly used in video cameras and TV hardware. Plays well on Windows computers, but not in web browsers. |
| WMV | .wmv | WMV (Windows Media Video). Developed by Microsoft. Commonly used in video cameras and TV hardware. Plays well on Windows computers, but not in web browsers. |
| QuickTime | .mov | QuickTime. Developed by Apple. Commonly used in video cameras and TV hardware. Plays well on Apple computers, but not in web browsers. (See MP4) |
| RealVideo | .rm .ram | RealVideo. Developed by Real Media to allow video streaming with low bandwidths. It is still used for online video and Internet TV, but does not play in web browsers. |
| Flash | .swf .flv | Flash. Developed by Macromedia. Often requires an extra component (plug-in) to play in web browsers. |
| Ogg | .ogg | Theora Ogg. Developed by the Xiph.Org Foundation. Supported by HTML5. |
| WebM | .webm | WebM. Developed by the web giants, Mozilla, Opera, Adobe, and Google. Supported by HTML5. |
| MPEG-4 or MP4 | .mp4 | MP4. Developed by the Moving Pictures Expert Group. Based on QuickTime. Commonly used in newer video cameras and TV hardware. Supported by all HTML5 browsers. Recommended by YouTube. |

Only MP4, WebM, and Ogg video are supported by the HTML5 standard.

Audio Formats

MP3 is the newest format for compressed recorded music. The term MP3 has become synonymous with digital music.

If your website is about recorded music, MP3 is the choice.

|  |  |  |
| --- | --- | --- |
| Format | File | Description |
| MIDI | .mid .midi | MIDI (Musical Instrument Digital Interface). Main format for all electronic music devices like synthesizers and PC sound cards. MIDI files do not contain sound, but digital notes that can be played by electronics. Plays well on all computers and music hardware, but not in web browsers. |
| RealAudio | .rm .ram | RealAudio. Developed by Real Media to allow streaming of audio with low bandwidths. Does not play in web browsers. |
| WMA | .wma | WMA (Windows Media Audio). Developed by Microsoft. Commonly used in music players. Plays well on Windows computers, but not in web browsers. |
| AAC | .aac | AAC (Advanced Audio Coding). Developed by Apple as the default format for iTunes. Plays well on Apple computers, but not in web browsers. |
| WAV | .wav | WAV. Developed by IBM and Microsoft. Plays well on Windows, Macintosh, and Linux operating systems. Supported by HTML5. |
| Ogg | .ogg | Ogg. Developed by the Xiph.Org Foundation. Supported by HTML5. |
| MP3 | .mp3 | MP3 files are actually the sound part of MPEG files. MP3 is the most popular format for music players. Combines good compression (small files) with high quality. Supported by all browsers. |
| MP4 | .mp4 | MP4 is a video format, but can also be used for audio. MP4 video is the upcoming video format on the internet. This leads to automatic support for MP4 audio by all browsers. |

Only MP3, WAV, and Ogg audio are supported by the HTML5 standard.

**HTML5 Video**

HTML Video Example. Courtesy of [Big Buck Bunny](https://www.bigbuckbunny.org/).

Playing Videos in HTML

Before HTML5, a video could only be played in a browser with a plug-in (like flash).

The HTML5 <video> element specifies a standard way to embed a video in a web page.

Browser Support

The numbers in the table specify the first browser version that fully supports the <video> element.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Element |  |  |  |  |  |
| <video> | 4.0 | 9.0 | 3.5 | 4.0 | 10.5 |

The HTML <video> Element

To show a video in HTML, use the <video> element:

Example

<video width="320" height="240" controls>  
  <source src="movie.mp4" type="video/mp4">  
  <source src="movie.ogg" type="video/ogg">  
Your browser does not support the video tag.  
</video>

How it Works

The controls attribute adds video controls, like play, pause, and volume.

It is a good idea to always include width and height attributes. If height and width are not set, the page might flicker while the video loads.

The <source> element allows you to specify alternative video files which the browser may choose from. The browser will use the first recognized format.

The text between the <video> and </video> tags will only be displayed in browsers that do not support the <video> element.

HTML <video> Autoplay

To start a video automatically use the autoplay attribute:

Example

<video width="320" height="240" autoplay>  
  <source src="movie.mp4" type="video/mp4">  
  <source src="movie.ogg" type="video/ogg">  
Your browser does not support the video tag.  
</video>

The autoplay attribute does not work in mobile devices like iPad and iPhone.

HTML Video - Browser Support

In HTML5, there are 3 supported video formats: MP4, WebM, and Ogg.

The browser support for the different formats is:

|  |  |  |  |
| --- | --- | --- | --- |
| Browser | MP4 | WebM | Ogg |
| Internet Explorer | YES | NO | NO |
| Chrome | YES | YES | YES |
| Firefox | YES | YES | YES |
| Safari | YES | NO | NO |
| Opera | YES (from Opera 25) | YES | YES |

HTML Video - Media Types

|  |  |
| --- | --- |
| File Format | Media Type |
| MP4 | video/mp4 |
| WebM | video/webm |
| Ogg | video/ogg |

HTML Video - Methods, Properties, and Events

HTML5 defines DOM methods, properties, and events for the <video> element.

This allows you to load, play, and pause videos, as well as setting duration and volume.

There are also DOM events that can notify you when a video begins to play, is paused, etc.

Example: Using JavaScript

HTML5 Video Tags

|  |  |
| --- | --- |
| Tag | Description |
| [<video>](https://www.w3schools.com/tags/tag_video.asp) | Defines a video or movie |
| [<source>](https://www.w3schools.com/tags/tag_source.asp) | Defines multiple media resources for media elements, such as <video> and <audio> |
| [<track>](https://www.w3schools.com/tags/tag_track.asp) | Defines text tracks in media players |

**HTML5 Audio**

Audio on the Web

Before HTML5, audio files could only be played in a browser with a plug-in (like flash).

The HTML5 <audio> element specifies a standard way to embed audio in a web page.

Browser Support

The numbers in the table specify the first browser version that fully supports the <audio> element.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Element |  |  |  |  |  |
| <audio> | 4.0 | 9.0 | 3.5 | 4.0 | 10.5 |

The HTML <audio> Element

To play an audio file in HTML, use the <audio> element:

Example

<audio controls>  
  <source src="horse.ogg" type="audio/ogg">  
  <source src="horse.mp3" type="audio/mpeg">  
Your browser does not support the audio element.  
</audio>

HTML Audio - How It Works

The controls attribute adds audio controls, like play, pause, and volume.

The <source> element allows you to specify alternative audio files which the browser may choose from. The browser will use the first recognized format.

The text between the <audio> and </audio> tags will only be displayed in browsers that do not support the <audio> element.

HTML Audio - Browser Support

In HTML5, there are 3 supported audio formats: MP3, WAV, and OGG.

The browser support for the different formats is:

|  |  |  |  |
| --- | --- | --- | --- |
| Browser | MP3 | WAV | OGG |
| Internet Explorer | YES | NO | NO |
| Chrome | YES | YES | YES |
| Firefox | YES | YES | YES |
| Safari | YES | YES | NO |
| Opera | YES | YES | YES |

HTML Audio - Media Types

|  |  |
| --- | --- |
| File Format | Media Type |
| MP3 | audio/mpeg |
| OGG | audio/ogg |
| WAV | audio/wav |

HTML Audio - Methods, Properties, and Events

HTML5 defines DOM methods, properties, and events for the <audio> element.

This allows you to load, play, and pause audios, as well as set duration and volume.

There are also DOM events that can notify you when an audio begins to play, is paused, etc.

For a full DOM reference, go to our [HTML5 Audio/Video DOM Reference](https://www.w3schools.com/tags/ref_av_dom.asp).

HTML5 Audio Tags

|  |  |
| --- | --- |
| Tag | Description |
| [<audio>](https://www.w3schools.com/tags/tag_audio.asp) | Defines sound content |
| [<source>](https://www.w3schools.com/tags/tag_source.asp) | Defines multiple media resources for media elements, such as <video> and <audio> |

**HTML Plug-ins**

The purpose of a plug-in is to extend the functionality of a web browser.

HTML Helpers (Plug-ins)

Helper applications (plug-ins) are computer programs that extend the standard functionality of a web browser.

Examples of well-known plug-ins are Java applets.

Plug-ins can be added to web pages with the <object> tag or the <embed> tag.

Plug-ins can be used for many purposes: display maps, scan for viruses, verify your bank id, etc.

To display video and audio: Use the <video> and <audio> tags.

The <object> Element

The <object> element is supported by all browsers.

The <object> element defines an embedded object within an HTML document.

It is used to embed plug-ins (like Java applets, PDF readers, Flash Players) in web pages.

Example

<object width="400" height="50" data="bookmark.swf"></object>

The <object> element can also be used to include HTML in HTML:

Example

<object width="100%" height="500px" data="snippet.html"></object>

Or images if you like:

Example

<object data="audi.jpeg"></object>

The <embed> Element

The <embed> element is supported in all major browsers.

The <embed> element also defines an embedded object within an HTML document.

Web browsers have supported the <embed> element for a long time. However, it has not been a part of the HTML specification before HTML5.

Example

<embed width="400" height="50" src="bookmark.swf">

Note that the <embed> element does not have a closing tag. It can not contain alternative text.

The <embed> element can also be used to include HTML in HTML:

Example

<embed width="100%" height="500px" src="snippet.html">

Or images if you like:

Example

<embed src="audi.jpeg">

**HTML YouTube Videos**

The easiest way to play videos in HTML, is to use YouTube.

Struggling with Video Formats?

Earlier in this tutorial, you have seen that you might have to convert your videos to different formats to make them play in all browsers.

Converting videos to different formats can be difficult and time-consuming.

An easier solution is to let YouTube play the videos in your web page.

YouTube Video Id

YouTube will display an id (like tgbNymZ7vqY), when you save (or play) a video.

You can use this id, and refer to your video in the HTML code.

Playing a YouTube Video in HTML

To play your video on a web page, do the following:

Upload the video to YouTube

Take a note of the video id

Define an <iframe> element in your web page

Let the src attribute point to the video URL

Use the width and height attributes to specify the dimension of the player

Add any other parameters to the URL (see below)

Example - Using iFrame (recommended)

<iframe width="420" height="315"  
src="https://www.youtube.com/embed/tgbNymZ7vqY">  
</iframe>

YouTube Autoplay

You can have your video start playing automatically when a user visits that page by adding a simple parameter to your YouTube URL.

**Note:** Take careful consideration when deciding to autoplay your videos. Automatically starting a video can annoy your visitor and end up causing more harm than good.

Value 0 (default): The video will not play automatically when the player loads.

Value 1: The video will play automatically when the player loads.

YouTube - Autoplay

<iframe width="420" height="315"  
src="https://www.youtube.com/embed/tgbNymZ7vqY?autoplay=1">  
</iframe>

YouTube Playlist

A comma separated list of videos to play (in addition to the original URL).

YouTube Loop

Value 0 (default): The video will play only once.

Value 1: The video will loop (forever).

YouTube - Loop

<iframe width="420" height="315"  
src="https://www.youtube.com/embed/tgbNymZ7vqY?playlist=tgbNymZ7vqY&loop=1">  
</iframe>

YouTube Controls

Value 0: Player controls does not display.

Value 1 (default): Player controls display.

YouTube - Controls

<iframe width="420" height="315"  
src="https://www.youtube.com/embed/tgbNymZ7vqY?controls=0">  
</iframe>

YouTube - Using <object> or <embed>

**Note:** YouTube <object> and <embed> were deprecated from January 2015. You should migrate your videos to use <iframe> instead.

Example - Using <object> (deprecated)

<object width="420" height="315"  
data="https://www.youtube.com/embed/tgbNymZ7vqY">  
</object>

Example - Using <embed> (deprecated)

<embed width="420" height="315"  
src="https://www.youtube.com/embed/tgbNymZ7vqY">