Html 5 multimedia

Old Days of HTML

- Before HTML5, browsers could only natively display one type of multimedia – **animated GIF**
  - `<img src="omgcat.gif">`
- Later, plugins appeared
  - 1991: Apple Quicktime (.mov)
  - 1994: MIDI (background music)
  - 1995: RealAudio (.ra, .ram)
  - 1997: RealVideo (H.263)
  - 1998: Windows Media Player
  - 1999: Quicktime for Windows (.mov, .mp3, .mp4, .swf)
  - 2002: Macromedia Shockwave Flash (.swf)
    - `<embed type="application/x-shockwave-flash" src="flash.swf"/>`
  - 2007: Microsoft Silverlight (flash, vid, etc.)

HTML5 Multimedia

- In HTML5, you can embed audio or video using native HTML tags **audio** and **video**, and if the browser supports the tags, it will give users controls to play the file.
  - No plugins needed
  - Better performance
  - Native, accessible controls
- The **audio** element is used for embedding an audio player inside a page for a particular audio file.
  - `<audio src="music.ogg" controls="true" preload="true"></audio>`
- The **video** element embeds a video player for a particular video file.
  - `<video src="movie.ogv" controls width="390"></video>`

Multimedia Codecs

- **Audio -** An audio track is compressed, stored, and decoded according to a codec. The most relevant audio codecs are:
  - **MP3**: Patent-encumbered.
  - **AAC (Advanced Audio Coding)**: Patent-encumbered. Used in Apple products.
  - **Ogg Vorbis**: Free, open-source, patent-free
- **Video file**, like an ".avi" file, is really a **container** for multiple related files that describe a video, like **video track**, one or more **audio tracks** with synchronization markers and **metadata** (title, album art, etc). The most popular video containers are:
  - **MPEG4**: .mp4, .m4v
  - **Ogg**: .ogv
  - **WebM**: .webm

Audio Codec Browser Support

- There is **no official codec** for browsers to support

Browser	Operating system	Formats supported by different web browsers						
		Ogg Vorbis	WAV PCM	MP3	AAC	WebM Vorbis	Ogg Opus	WebM Opus
Google Chrome	All supported	9	Yes	Yes	Yes	Yes	25 (since v31 in Windows)	Yes
Internet Explorer	Windows	No	No	9	9	No	No	No
Mozilla Firefox	All supported	3.5	3.5	Windows (21.0), Linux (24.0, needs a gstreamer codec), OS X (26.0)	Windows (21.0) and Linux (24.0, needs a gstreamer codec) only	4.0	15.0	28.0[3]
Opera	All supported	10.50	11.00	14	14	10.60	14	Yes
Safari	OS X	Yes	3.1	3.1	3.1	No	No	No

Source : wikipedia.org

Video Codec Browser Support

- Although the HTML5 specification initially mandated support for the **Theora Ogg** video codec, this requirement was dropped from the specification after it was challenged by Apple and Nokia.

Browser	Operating system	Latest stable release	Video formats supported			
			Theora	H.264 (MP4)	VP8 (WebM)	VP9 (WebM)
Android browser	Android	4.2.1 "Jelly Bean" (November 27, 2012; 15 months ago) [+][58][59]	2.3[40]	3.0[40]	2.3[40]	No
Chromium	All supported	N/A	r10297[41]	Manual install[note 1]	r17759[42]	r172730[44]
Google Chrome	33.0.1750.152 & 33.0.1750.154 (March 14, 2014; 16 days ago[45]) [±]		3.0[46][47]	3.0[47][note 2]	6.0[49][50]	29.0[note 3]
Internet Explorer	Windows	v11.0.9600.16521 (11.0.4) (11 March 2014; 19 days ago) [±]	Manual install[note 4]	9.0[24]	Manual install[note 5]	No
	Windows Phone	10.0 (November 22, 2012; 15 months ago) [±]	No	9.0[24]	No	
	Windows RT	10.0		10.0[50]		
Konqueror	All supported	4.12.3 (4 March 2014; 26 days ago) [±][59]	3.5[60]	4.4[note 6]	4.0[66][67]	No
Mozilla Firefox	Windows 7+	28.0 (March 18, 2014; 12 days ago[51]) [±] ESR 24.4.0 (March 18, 2014; 12 days ago[52]) [±]		21.0[note 7]		20.0[68][69]
	Windows Vista			22.0[70]		
	Linux			26.0 (using GStreamer)[note 8]		
	Android			17.0[73]		
	All other supported			No		
Opera	16 for Android (September 18, 2013; 6 months ago[74]) [±] 12.0.22 for Symbian S60 (June 24, 2013; 20 months ago[74]) [±] 10.0 for Windows Mobile (March 16, 2010; 4 years ago[75]) [±]		No	11.50	15.0	16.0
	Windows, OS X 20.0.1387.82 (March 20, 2014; 10 days ago[76]) [±] **Linux, FreeBSD** 12.15 (July 4, 2013; 9 months ago[77]) [±]		10.50[78]	No	10.60[78][80]	No

Source : wikipedia.org

Multiple Media and Fallback Options

- HTML5 allows to specify multiple sources for the video and audio elements;browsers can use whichever works for them.
  - Example

```
<video height="200" controls="">
    <source src="video.webm" type="video/webm"/>
    <source src="video.mp4" type="video/mp4"/>
    <source src="video.ogv" type="video/ogg"/>
</video>
```

- Some browsers that don't support these new elements. In that case, you can provide a fallback option via a browser plug-in, like Java or Flash
  -

```
<video src="video.ogv" controls>
    <object data="flvplayer.swf" type="application/x-
     shockwave-flash">
    <param value="flvplayer.swf" name="movie"/>
    </object>
</video>
```

API Attributes

- Many of these attributes can be set via JS, and trigger events on change:
  - duration
  - autoplay
  - loop
  - controls
  - muted
  - src
  - currentSrc
  - networkState
  - preload
  - buffered
  - readyState
  - volume
  - playbackRate
  - paused
  - ended
  - width
  - height
  - poster
- Example

```
var video = document.getElementsByTagName("video")[0];
alert(video.currentTime);
video.playbackRate = video.playbackRate * 2;
```

- **https://developer.mozilla.org/en-US/docs/Web/HTML/Element/video#Attributes**

API Events

- loadstart
- progress
- suspend
- abort
- error
- emptied
- stalled
- loadedmetadata
- loadeddata
- canplay
- canplaythrough
- playing
- waiting
- seeking
- seeked
- ended
- durationchange
- timeupdate
- play
- pause
- ratechange
- volumechange

- Example

```
<div id="time">0</div>
<script>
  var video = document.getElementsByTagName("video")[0];
  video.addEventListener('timechange', function() {
      document.getElementById("time").innerHTML = video.currentTime;
      }, false);
</script>
```

API Functions

- Basic functions
  - load()
  - play()
  - pause()
  - canPlayType()
  - AddTextTrack()
- Example

```
<button id="play" title="play" onclick="pv()">play</button>
<script>
function pv() {
  var video = document.getElementsByTagName("video")[0];
  video.play();
}
</script>
```

JavaScript Libraries / Players

- https://github.com/videojs/video.js
- http://mediaelementjs.com/
- http://www.leanbackplayer.com/
- http://www.storiesinflight.com/js_videosub/
- http://www.delphiki.com/html5/playr/
- http://popcornjs.org/
- https://github.com/cgiffard/Captionator

Background playback example

```
function play(sound) {
        if (window.HTMLAudioElement) {
           var snd = new Audio('');
           if (snd.canPlayType('audio/ogg')) {
              snd = new Audio('sounds/' + sound + '.ogg');
           } else if (snd.canPlayType('audio/mp3')) {
              snd = new Audio('sounds/' + sound + '.mp3');
           } else {
              alert('Audio support is present, but without ogg/mp3');
              return;
           }
           snd.play();
        } else { alert('Audio support is not present'); }
}
```

thanks