

HTML5 <VIDEO>

KICKING PLUGINS TO THE CURB

@matt_mcclure

Developer Week 2014



STILL A LITTLE AWKWARD

...but getting *waaaay* better

A BRIEF HISTORY LESSON

With examples from eBaum's World

THE DARK AGES

Right-click, download as.

Video::The Prank

eBaum's World



To watch this movie - right click [here](#) and save target as.

Please note: If this video does not work you will need to download this special driver. This video uses a special video compression driver called DIVX. You will need to set that up first before watching this movie. Trust me it is worth it!

CIRCA 2000: PLUGIN-MANIA



Videos: Hilarious Videos Page 5: Road Trip Prank

Info: One of the funniest pranks we have ever seen.

If video does not play, click here to Download.

To save the file above, right click and "save target as".



Please have patience. File downloading....



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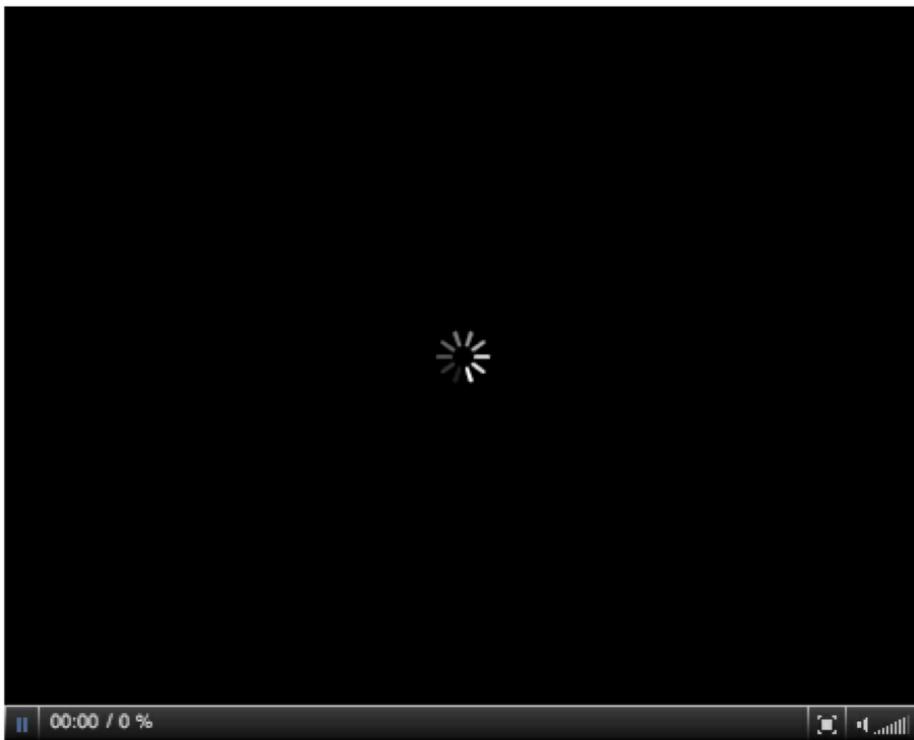
>>> *Send this to a friend!!!*

CIRCA 2008: FLASH



Happy Thanksgiving from Sarah Palin

Sarah Palin does an interview in front of turkeys being slaughtered for Thanksgiving!



00:00 / 0 %

Add To Favorites

Rate This: ★★★★☆ (137 Ratings)

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Media Details



Submitted By: [ebaum](#)

Date Added: Last week

Featured: Last week

Category: [funny video](#)

Tags: [thanksgiving](#) [politics](#) [palin](#)

Views: 64,204 / Comments: 1,586

Embed <embed src="http://www.ebaumsworld.cc

Url <http://www.ebaumsworld.com/video/watch/1075126>

CIRCA 2015: HTML5

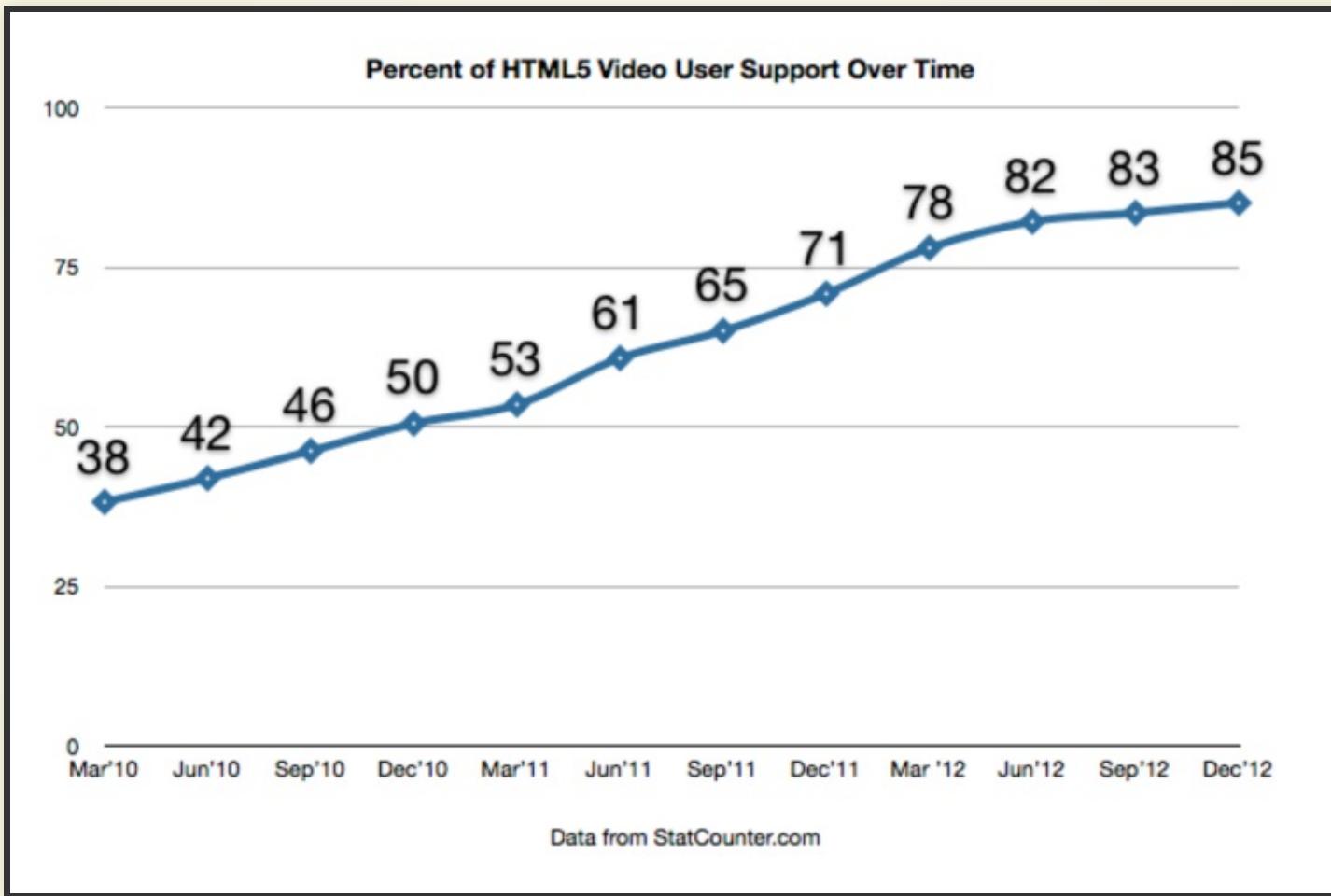




0:12 / 0:46

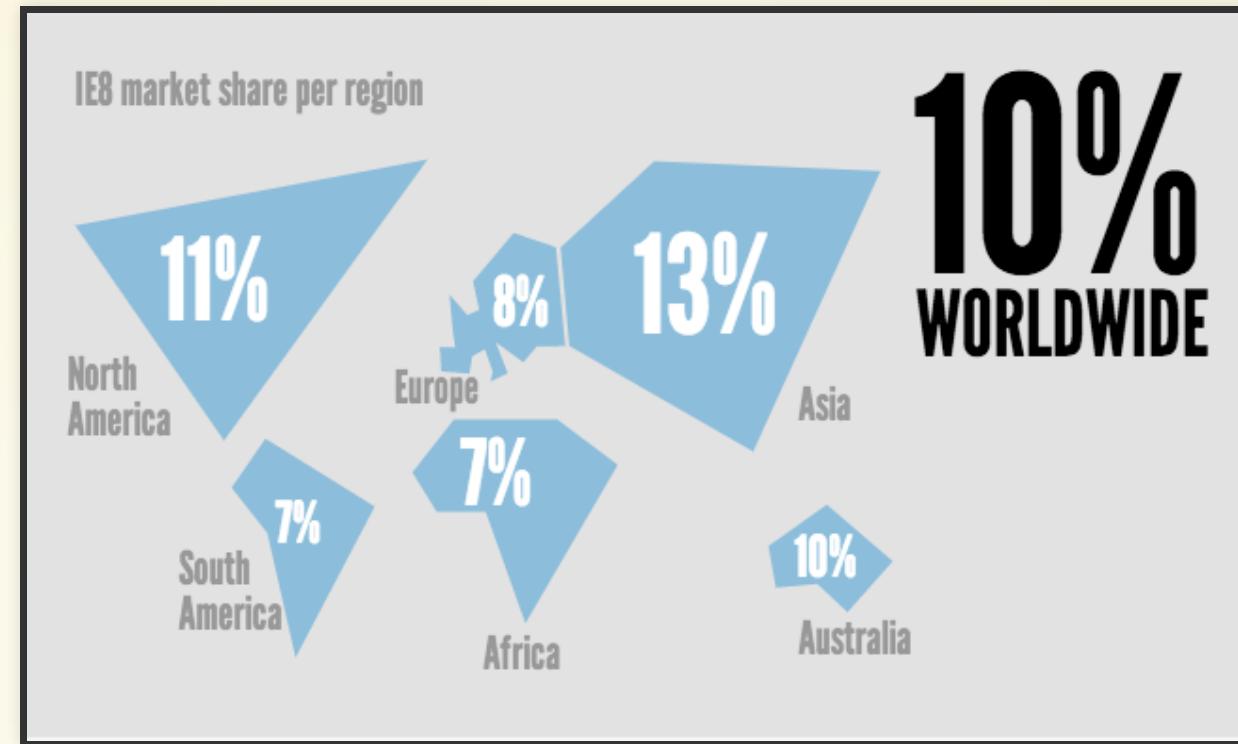


UP AND TO THE RIGHT



WHAT ABOUT THE LAST 15%?!





theIE8countdown.com

WHY USE HTML5 NOW?

- It's the future!
- Runs natively in the browser
- Cleaner code

THE DREAM

```
<video src="video.mp4" controls=""></video>
```

THE REALITY

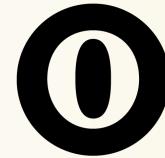
```
<video controls="">
  <source src="video.mp4" type="video/mp4">
  <source src="video.webm" type="video/webm">
  <source src="video.ogv" type="video/ogg">
  <object type="application/x-shockwave-flash" data="flash.swf">
    <param name="movie" value="flash.swf">
    <param name="flashvars" value="file=video.mp4">
  </object>
</video>
```

ALREADY WELL SUPPORTED

NO (17%)



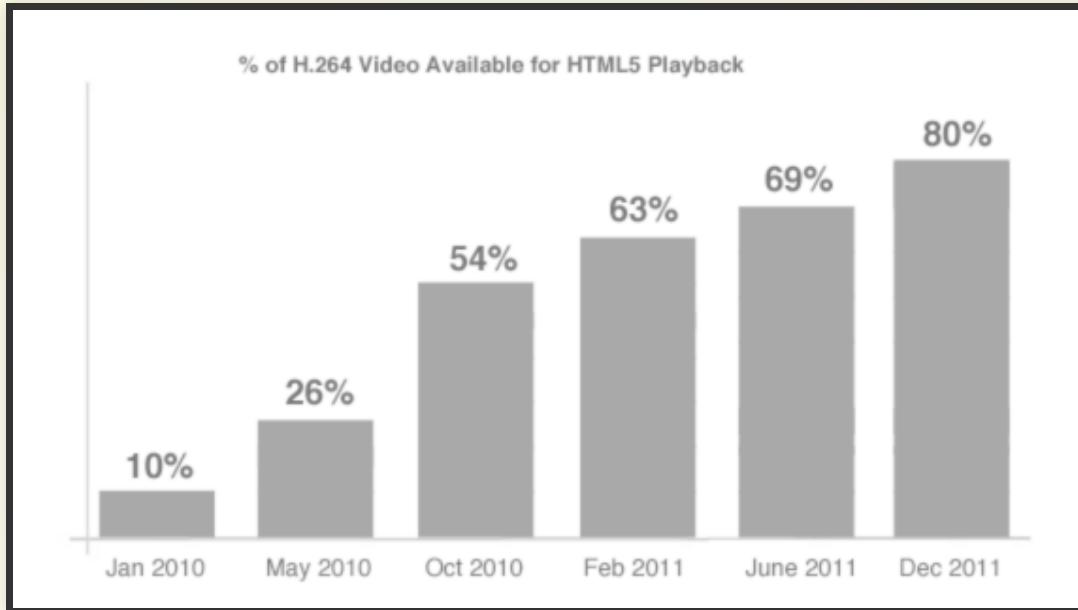
YES (83%)



FLASH IS WAS UBIQUITOUS

So what brought about the shift to HTML5 video at all?





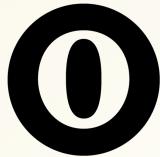
THE FORMAT WARS



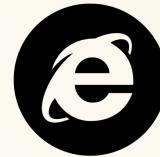
web▶m



OPEN

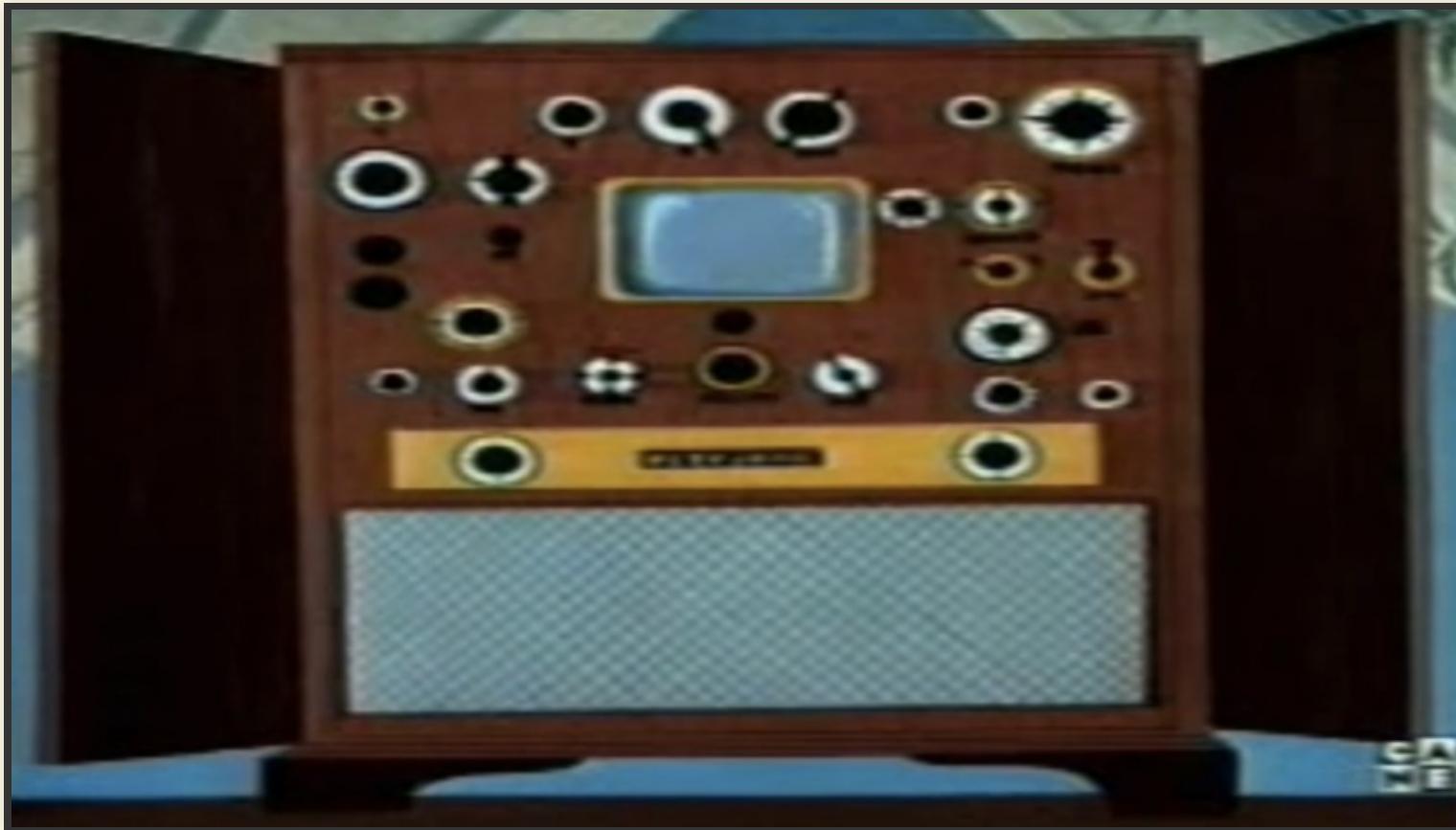


CLOSED



EASY TO USE API

THE FUTURE



BATTERIES INCLUDED, NO PLUGINS NECESSARY*



* most some of the time

WEBVTT

- **Web Video Text Tracks**
- Main use is captioning
- Plain text
- Specified in the <track> element

```
<video controls="">
  <source src="video.mp4" type="video/mp4">
  <source src="video.webm" type="video/webm">
  <source src="video.ogv" type="video/ogg">
    <track label="English" kind="subtitles" srclang="en" src="captions.vtt">
</video>
```

WEBVTT

00:00.001 --> 00:04.000

Awwwww yeah.

00:04.001 --> 00:06.000

caption caption caption

00:06.001 --> 00:12.000

You're not limited to one line either

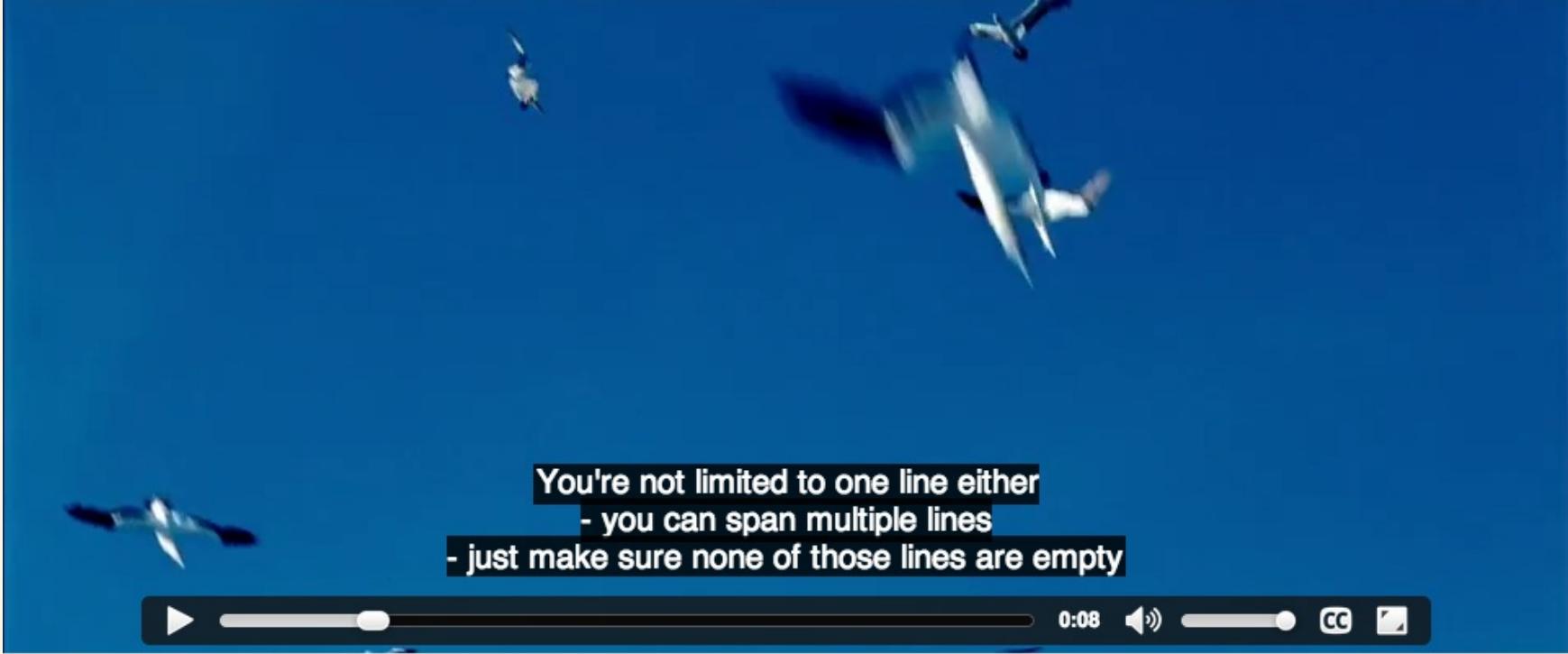
- you can span multiple lines
- just make sure none of those lines are empty

00:12.001 --> 00:16.000

Usually you don't want timestamps that overlap

00:15.000 --> 00:19.000

But it's ok if they do.



You're not limited to one line either
- you can span multiple lines
- just make sure none of those lines are empty



WEBVTT CUE COMPONENTS

WEBVTT

00:00.001 --> 00:03.000

<u>Captions</u> <i>are</i> cool

00:03.001 --> 00:06.000

<c.blue-text>Especially when styled

00:06.001 --> 00:12.000

<v john="">Perhaps style each instance of a voice</v>

00:12.001 --> 00:17.000

That way you can make it easier to differentiate

<v john="">- between when one person's captions</v>

<v jane="">- And another</v>

STYLING CUE COMPONENTS

```
video::cue(c.blue-text) { color: #b6dae6 }
video::cue(v[voice="John"]) { color: yellow }
video::cue(v[voice="Jane"]) { color: orange }
```

STYLED PREVIEW

That way you can make it easier to differentiate
- between when one person's captions
- And another

0:12

MORE THAN SUBTITLES

```
WEBVTT
```

```
slide-1
00:00.001 --> 00:04.000
{
  "title": "JSON!",
  "description": "This is some awesome JSON. You could manipulate this wi
  "image": "images/json.gif",
  "href": "http://json.org"
}
```

KIND='METADATA'

```
<video controls="">
  <source src="video.mp4" type="video/mp4">
    <track label="json-stuff" kind="metadata" src="json.vtt"></track>
</video>
```

```
var extraInfo = document.querySelector("#extra-info");
var videoElement = document.querySelector("video");
var textTracks = videoElement.textTracks;
var textTrack = textTracks[0]; // since we only have one
textTrack.oncuechange = function () {
    var cue = this.activeCues[0];
    if (cue) {
        var content;
        try {
            content = JSON.parse(cue.text);
        } catch (e) {
            return false;
        }
        console.log(content);
        if (content) {
            extraInfo.innerHTML = '<a href="'+ content.href +' alt="'+ content.title +'">' +
                '<h3>' + content.title + '</h3>' +
                '<br>' +
                '<div>' + content.description + '</div>';
        }
    }
}
```

WEBVTT BROWSER SUPPORT

-  18+
-  6+
-  31+ (beta)
-  10+
-  12.10



Google

 Microsoft

NETFLIX

 Adobe

ENCRYPTED MEDIA EXTENSIONS

- Not a DRM specification
- Outlines the structure for a DRM plug-in mechanism

HOW DOES IT WORK?

An EME implementation consists of a...

- Key System
- Content Decryption Module
- License Key Server
- Packaging Service

PROPONENTS

To enable the playing of protected videos like feature-length Hollywood films, **developers are forced to rely on plugins or non-standard browser extensions**. As Adobe supports Open Web development more and more, we need to find a way to provide this capability to developers.

- Joe Steele, Sr. Computer Scientist at Adobe



OPPONENTS

We recognize the need for the W3C to respond to the changing landscape of the Web and to reconcile the interests of multiple parties. But ratifying EME would be an abdication of responsibility; **it would harm interoperability, enshrine nonfree software in W3C standards and perpetuate oppressive business models.**

Joint open letter to W3C

EVERYONE ELSE

People want to watch video, including movies and TV shows.

Browsers must provide the ability to watch video or the browser becomes less and less the tool users need. A number of content owners (in particular film and TV studios) require technical mechanisms to reduce the ways in which people can use that content, such as preventing people from making copies...**Browsers must implement DRM in a way that makes the content owners comfortable. Otherwise they won't allow their content to be viewed through that browser.**

DRM and the challenge of serving users - Mitchell Baker (Mozilla)

IN THE WILD

EME is already being used in production!

- Chromecast
- Netflix

EME BROWSER SUPPORT

-  23+
-  8 (Yosemite)
-  Soon?
-  11+



WEBRTC

- **Web Real Time Communication**
- Open-source project supported by the W3C, Google, Mozilla and Opera

WebRTC is a new front in the long war for an **open** and
unencumbered web.

- Brendan Eich, inventor of JavaScript (via HTML5rocks.com)

WHAT'S THE **BIG** DEAL?

- Improved quality
- Faster
- Reduced latency
- No Flash required
- Native

3 APIs

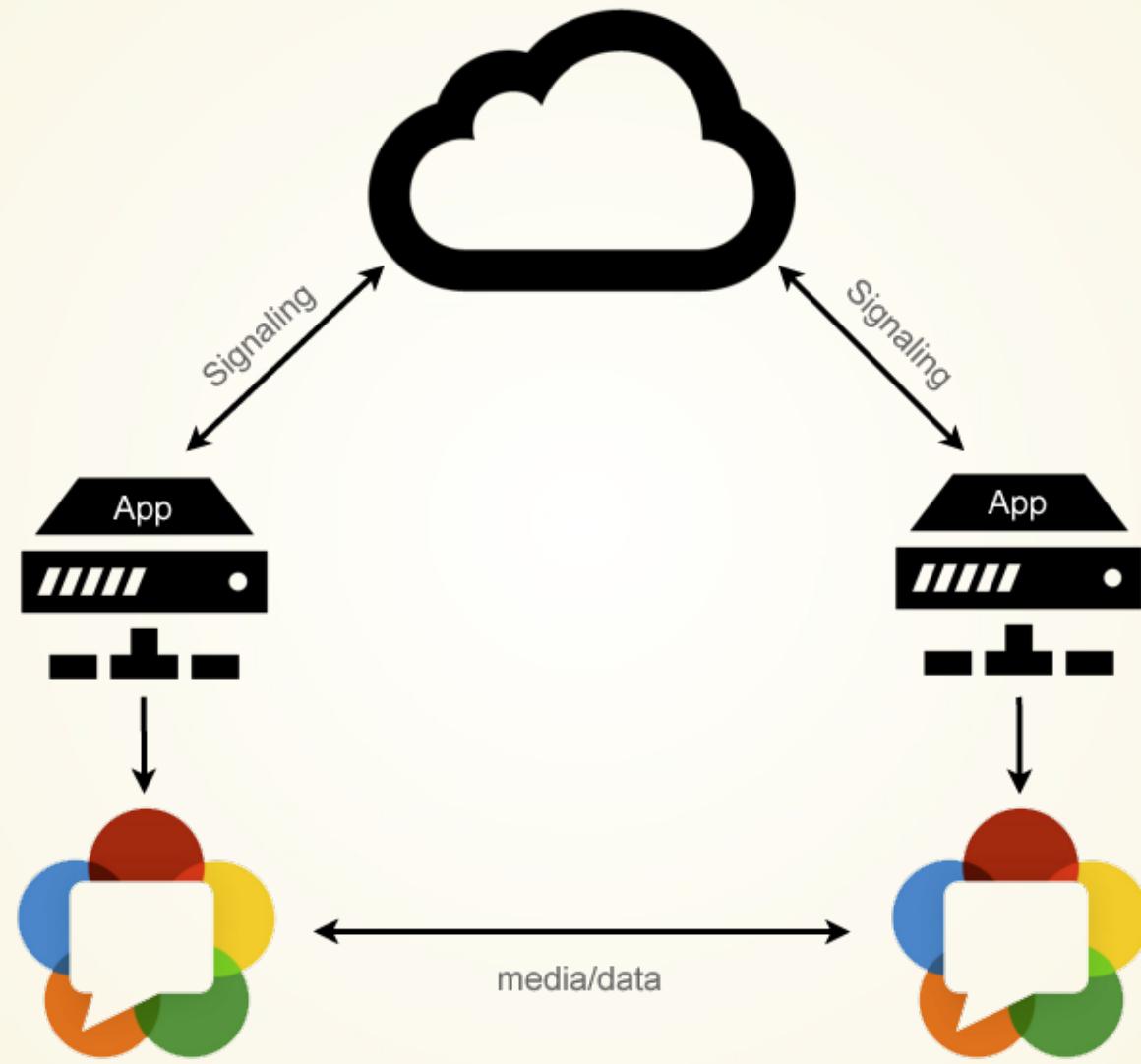
- **GetUserMedia** - access camera and microphone
- **PeerConnection** - send/receive media
- **DataChannels** - send/receive non-media

COOL ALL ALONE

```
navigator.getUserMedia({video: true, audio: false}, function(mediaStream)
  var video = document.getElementById('get-user-media');
  video.src = window.URL.createObjectURL(mediaStream);

  video.onloadedmetadata = function(e) {
    console.log('Locked and loaded.');
  };
}, errorCallback);
```

Get That Media!



THERE ARE TOOLS...

```
var webrtc = new SimpleWebRTC({
  // the id/element dom element that will hold "our" video
  localVideoEl: 'localVideo',
  // the id/element dom element that will hold remote videos
  remoteVideosEl: 'remotesVideos',
  // immediately ask for camera access
  autoRequestMedia: true
});

// we have to wait until it's ready
webrtc.on('readyToCall', function () {
  // you can name it anything
  webrtc.joinRoom('your awesome room name');
});
```

SimpleWebRTC.com by &yet

PRAY TO THE DEMO GODS...

Go to: <http://mmcc.github.io/devweek-kicking-plugins/#/12/9>

Start RTC

IN THE WILD

- P2P CDN / File Sharing
 - Sharefest.me
 - Peer5
- Audio Calls
 - ATT.js
 - Phono
 - FrisB
- Video Conferencing
 - TokBox
 - Talky

CURRENT BROWSER SUPPORT

-  23+
-  22+
-  18+

All are still vendor prefixed

WEBRTC COMPLEXITY == SUPPORT??

							
	Canary	Chrome 35	Nightly	Firefox 30	IE	Safari	Opera 22
PeerConnection API	Green	Green	Green	Green	Red	Red	Green
ORTC API	Red	Red	Red	Red	Yellow	Red	Red
getUserMedia	Green	Green	Green	Green	Yellow	Red	Green
Simulcast	Green	Red	Red	Red	Red	Red	Red
mediaConstraints	Yellow	Yellow	Yellow	Red	Red	Red	Yellow
TURN support	Green	Green	Green	Green	Red	Red	Green
MediaStream API	Green	Green	Yellow	Yellow	Red	Red	Green
WebAudio Integration	Green	Green	Green	Green	Red	Red	Green
dataChannels	Green	Green	Green	Green	Red	Red	Green
Screen Sharing	Yellow	Yellow	Red	Red	Red	Red	Red
Stream re-broadcasting	Yellow	Yellow	Red	Red	Red	Red	Red
Multiple Streams	Green	Green	Red	Red	Red	Red	Green
Solid interoperability	Yellow	Yellow	Yellow	Yellow	Red	Red	Yellow
Echo cancellation	Green	Green	Yellow	Red	Red	Red	Yellow

IsWebRTCReadyYet.com/

STREAM ALL THE
THINGS!



EXISTING STREAMING SOLUTIONS

- RTMP
- Microsoft Smooth Streaming
- HTTP Live Streaming (HLS)
- HTTP Dynamic Streaming (HDS)

Stream all the formats?



MPEG-DASH

- Dynamic Adaptive Streaming over HTTP
- Not a codec, a protocol, a system, or a format. Instead, it is a standard for interoperability--essentially end-to-end delivery--of video over HTTP.

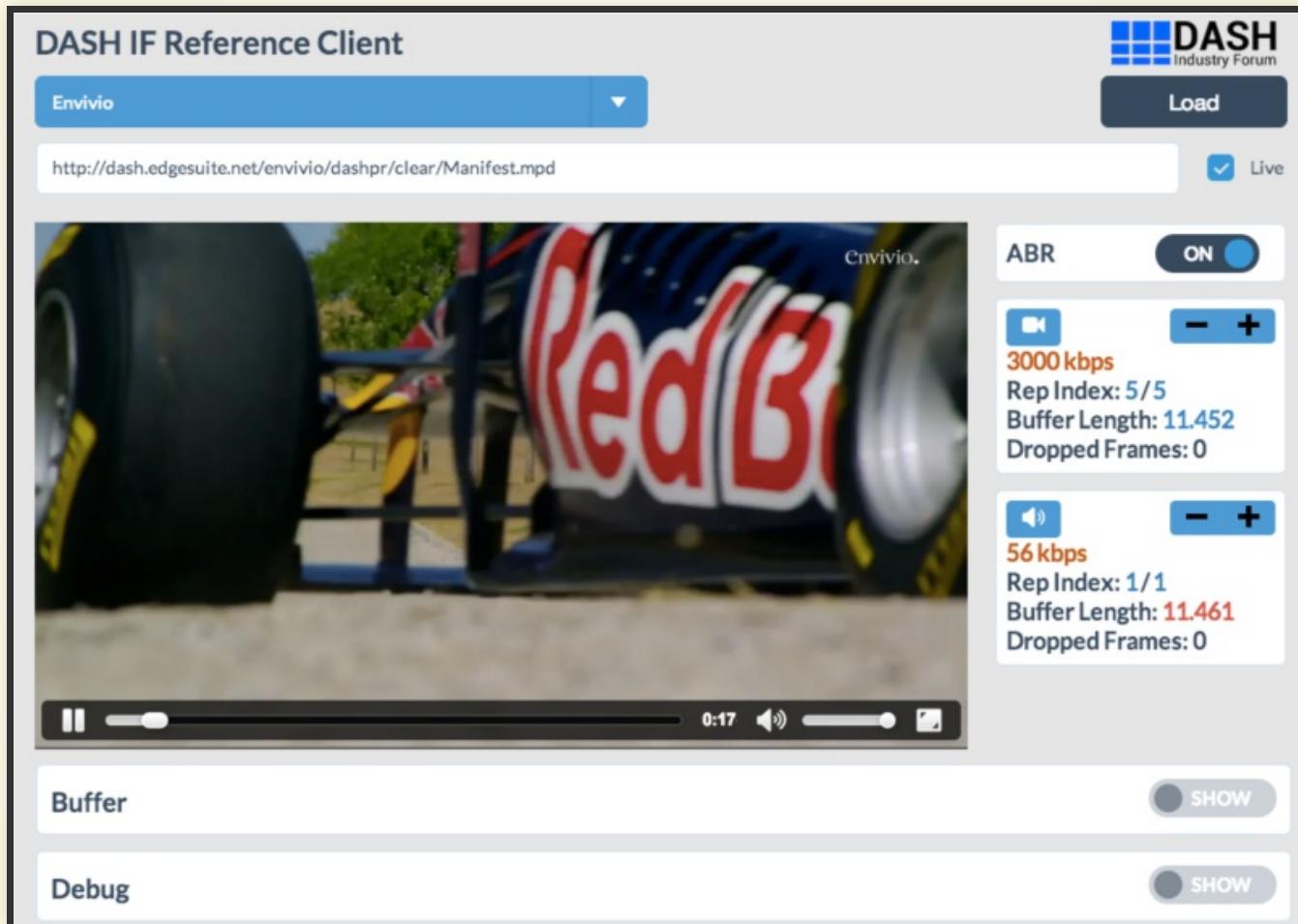
WHAT MAKES DASH SPECIAL?

- Codec agnostic - can be implemented in either H.264 or WebM
- Does not specify a DRM method but supports all DRM techniques specified in ISO/IEC 23001-7: Common Encryption
- Supports trick modes for seeking, fast forwards and rewind
- Supports advertising insertion

DASH - POTENTIAL ISSUES

- Codec Agnostic - fragmentation we currently see in HTML5 video could be indicative of what we will encounter with MPEG-DASH.
- Publishers still have to piece everything together
- What does Apple gain by supporting it?

DASH.JS



GitHub.com/dash-industry-forum/dash.js

GO FORTH AND <VIDEO>

And let us know if we can help

QUESTIONS?

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@MATT_MCLURE

