



# Delivering Audio and Video Using Web Standards

## Part 2

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Safari and WebKit Engineer

# Introduction

- Basic `<video>` playback covered in Part 1
  - How to add `<video>` elements to your site
  - How to add a Play/Pause button
- Add additional functionality to the `<video>` element

# Where We Left Off

- `<video>` element

```
<video src="myMovie.m4v">
```

- Alternate sources

```
<video>  
  <source src="myMovie.m4v">  
  <source src="myMovie.mov">  
</video>
```

- Play/Pause

```
video.play();
```

# What You'll Learn

- How to add a custom controller
- How to add subtitles
- How to add bumpers to your videos

# Progress Meter

Step 1 — Make a progress meter

# Progress Meter

What is a progress meter?



# Progress Meter

## JavaScript API

- `timeupdate` event
- `currentTime` attribute
- `duration` attribute
- `startTime` attribute
- `durationchange` event

# Progress Meter

## Sample JavaScript code

```
var updateProgress = function(e) {  
    var percentDone = video.currentTime / video.duration;  
    progressDiv.style.width = percentDone + "%";  
}  
  
video.addEventListener('timechange', updateProgress, false);  
video.addEventListener('durationchange', updateProgress, false);
```

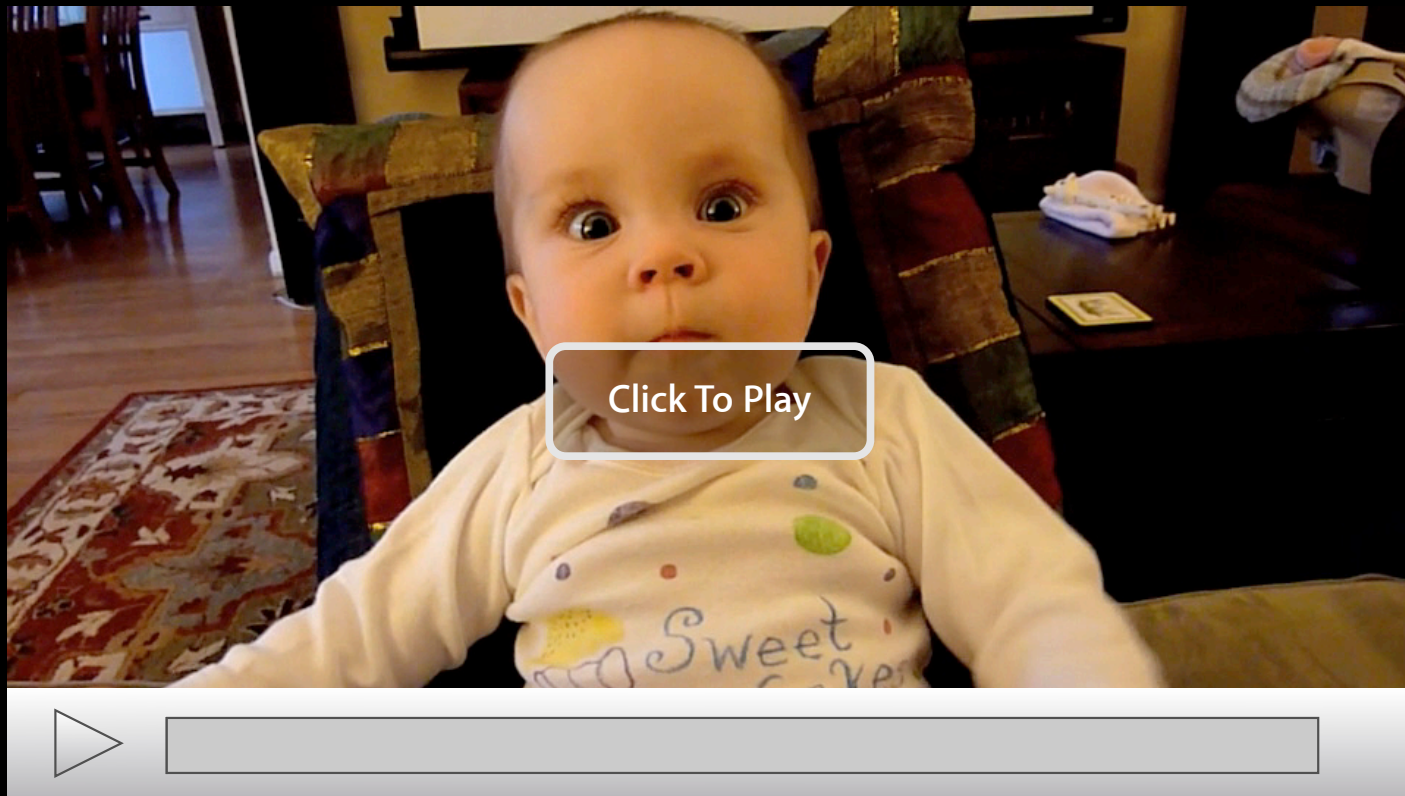


# Load State

Step 2—Show how much of the video is loaded

# Load State

Why should I add a load state bar?



# Load State

## JavaScript API

- **progress** event
- **buffered** attribute
- **TimeRange** type
  - Like an array
  - **length** attribute
  - **start**(index) function
  - **end**(index) function

# Load State

## Sample JavaScript code

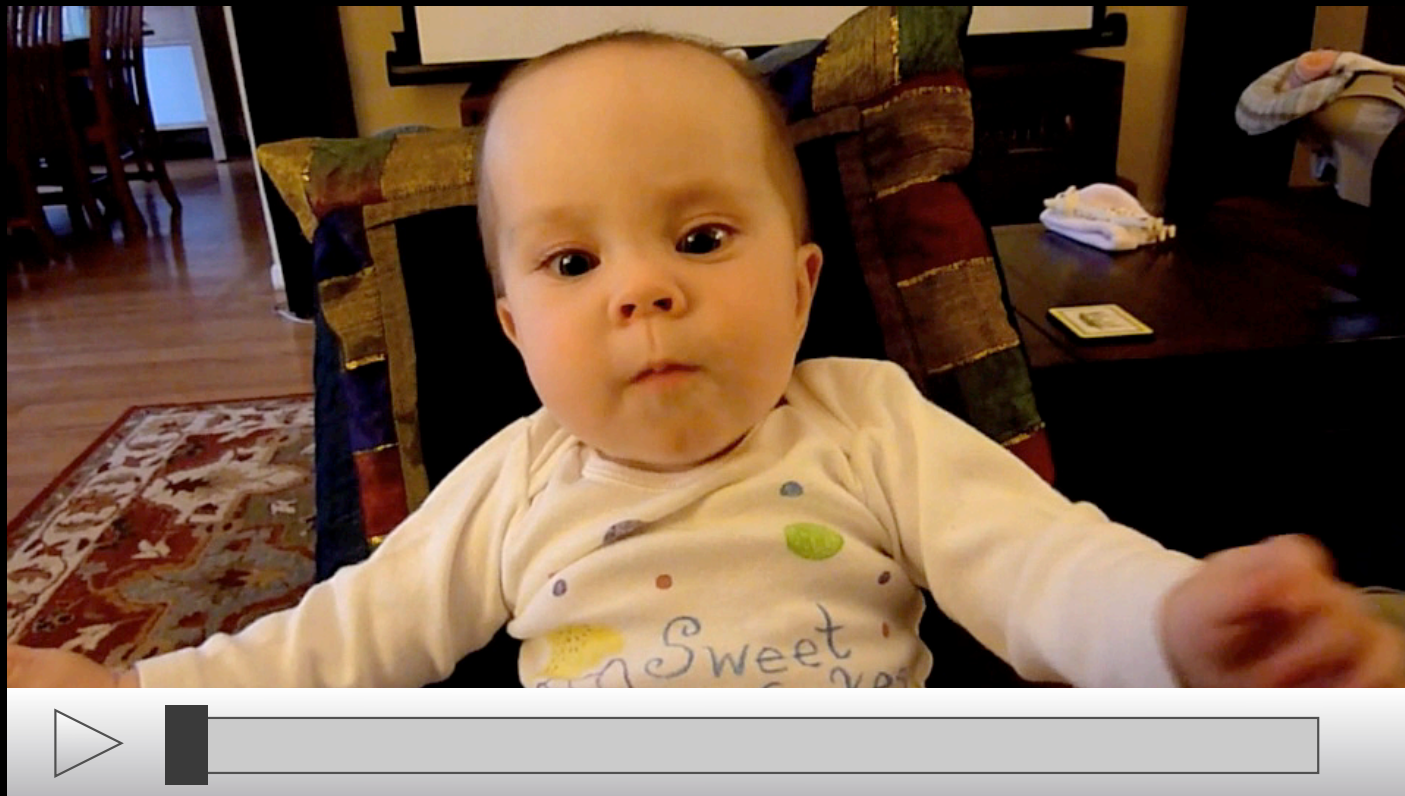
```
var updateLoadState = function(e) {  
    var maxLoaded = 0.0;  
    if (video.buffered.length > 0)  
        maxLoaded = video.buffered.end(video.buffered.length - 1);  
  
    var percentLoaded = maxLoaded / video.duration;  
    loadedDiv.style.width = percentLoaded*100 + "%";  
};  
  
video.addEventListener('progress', updateLoadState, false);
```

# Scrubber

Step 3—Add a scrubbing slider

# Scrubber

Why do I need a scrubber?



# Scrubber

## JavaScript API

- `currentTime` attribute
- `duration` attribute
- `seekable` attribute
- `<input type="range">`
  - `min` attribute
  - `max` attribute
  - `value` attribute
  - `change` event

# Scrubber

## Sample JavaScript code

```
// Assume scrubber's (min,max) = (0,1).
scrubber.addEventListener('change', function(e) {
    video.currentTime = video.duration * scrubber.value;
}, false);

video.addEventListener('timechange', function(e) {
    scrubber.value = video.currentTime / video.duration
}, false);
```



# Demo

Eric Carlson  
Safari and WebKit Engineer

# Subtitles

Step 4—Add subtitles to the movie

# Subtitles

Why subtitles?



# Subtitles

## Step 4—Add subtitles to the movie

- Future WHATWG Spec: [whatwg.org/html5](http://whatwg.org/html5)
- `webkitHasClosedCaptions`, `webkitClosedCaptionsVisible`
- Meanwhile:
  - Embed the subtitles in HTML
  - `timeupdate` event
  - `setTimeout`, `clearTimeout` functions

# Subtitles

## Sample HTML code

```
<html>
  <body>
    <video src="baby.mp4" />
    <div class="subtitle" start="0" end="1">Ma Ma</div>
    <div class="subtitle" start="2" end="3">Ga Ga</div>
  </body>
</html>
```

# Subtitles

## Sample CSS code

```
.subtitle {  
  display: none;  
  position: absolute;  
  text-align: center;  
  bottom: 0px;  
  width: 100%;  
}
```

# Subtitles

## Sample JavaScript code

```
video.addEventListener('timechange', function(e) {
  var now = video.currentTime;
  var subtitles = document.getElementsByClassName('subtitle')
  for (subtitle in subtitles) {
    if (subtitle.getAttribute('start') >= now
        && subtitle.getAttribute('end') < now) {
      subtitle.style.display = 'inherit';
    } else {
      subtitle.style.display = 'none';
    }
  }
}
```

# Demo

**Eric Carlson**  
Safari and WebKit Engineer



# Bumpers

Step 5—Add a bumper clip

# Bumpers

## What is a bumper clip?

- Secondary video inserted between two video clips
- a.k.a., Ads

# Bumpers

## Different approaches

- Burned-in
- Streaming
- Switch sources

# Bumpers

## JavaScript API

- **ended** event
- **src** attribute
- **play** function

# Bumpers

## Sample JavaScript code

```
var srcs = [ 'movie1.mp4', 'movie2.mp4', 'movie3.mp4' ];
var currentSrc = 1;

var advanceSrcs = function(e) {
    ++currentSrc;
    if (currentSrc < srcs.length) {
        video.src = srcs[currentSrc];
        video.play();
    }
};

video.addEventListener('ended', advanceSrcs, false);
```

# Demo

Eric Carlson  
Safari and WebKit Engineer

# Embedding

Step 6—Embed the clip in another web page

# Embedding

What is embedding, and why should I care?

- Means for inserting plugins into a webpage
- Also allows you to insert one webpage inside another
- Allows users to copy-and-paste your video into their webpage



# Embedding

## Techniques

- `<iframe>` tag
- Fragment argument passing

# Embedding

## Sample HTML code—Client side

```
<html>
  <body>
    ...
    <iframe src="http://mydomain.com/embed.html#movies/myMovie.mp4">
    ...
  </body>
</html>
```

# Embedding

## Sample HTML code—Your side

```
<html>  
  <body onload='init()'>  
    <video id='myvideo' preload='none'>  
    </video>  
  </body>  
</html>
```

# Embedding

## Sample JavaScript code—Your side

```
var init = function() {  
    var video = document.getElementById('myvideo');  
    // Remember to remove the '#' character:  
    video.src = document.location.fragment.substring(1);  
};
```

# Demo

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# More Information

## Vicki Murley

Safari Technologies Evangelist

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## Documentation

Safari Dev Center

<http://developer.apple.com/safari>

Safari HTML5 Audio and Video Guide

<http://developer.apple.com/safari>

HTML5:W3C Working Draft

<http://www.w3.org/TR/html5/>

## Apple Developer Forums

<http://devforums.apple.com>

# Related Sessions

Advances in HTTP Streaming

Marina  
Tuesday 11:30AM

CSS Effects, Part 1: UI Elements and Navigation

Marina  
Tuesday 3:15PM

CSS Effects, Part 2: Galleries and 3D Effects

Marina  
Tuesday 4:30PM

# Labs

HTML5 Audio and Video Lab

Internet and Web Lab A  
Tuesday 2:00-6:30

Safari Open Lab

Internet and Web Lab B  
Tuesday 2:00-6:30



# Q&A



