

**MOBILE WEB**

**FRAMEWORK: JQUERY**

**MOBILE**

- What Is jQuery Mobile?
- A Simple jQuery Mobile Project
- Enhancing Pages
- Example Hotel Website
- Forms and Other Elements
- JavaScript API and Theming
- Other Mobile Web Frameworks

**WHAT IS JQUERY MOBILE?**

# MYTHS OF THE MOBILE WEB

Myth:

It's not the mobile web; it's just the Web!

- We are targeting very, very different devices
- Most obvious difference is the screen size
- Many other not-so-obvious differences
- Different contexts in which mobile devices and desktops are used

# MYTHS OF THE MOBILE WEB

Myth:

You don't need to do anything special when designing for the mobile web

- Smartphones can read and display full desktop websites
- But: Lot of zooming in and out, scrolling needed

# MYTHS OF THE MOBILE WEB

Myth:

One website should work for all devices  
(desktop, mobile, TV, etc.)

- One Web remains a goal for the future
- Good user experience for each mobile device usually needs additional work, however

# MYTHS OF THE MOBILE WEB

Myth:

Just create an HTML file with a width of 240 pixels, and you have a mobile website

- Several thousand mobile devices on the market
- With almost 50 different browsers
- More than 500 different browsers if we separate them by version number

# WHAT IS JQUERY MOBILE?

---

*jQuery Mobile is a unified user interface system across all popular mobile device platforms, built on the rock-solid jQuery and jQuery UI foundation. Its lightweight code is built with progressive enhancement, and has a flexible, easily themeable design.*

---

[jquerymobile.com](http://jquerymobile.com)



# WHAT JQUERY MOBILE IS NOT

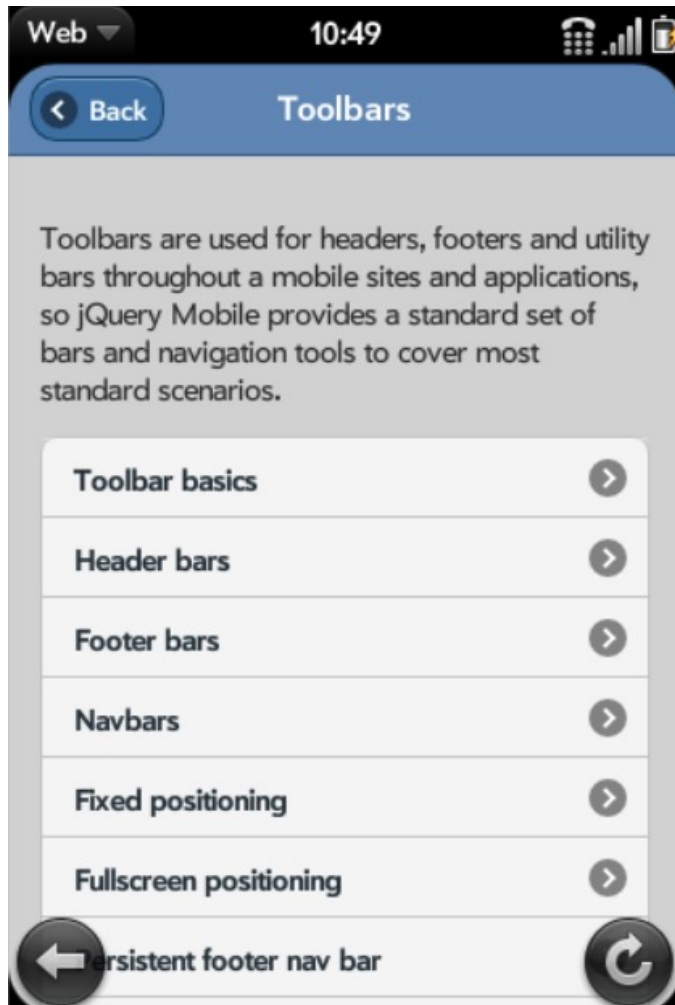
jQuery Mobile is not...

- ... a jQuery alternative for mobile browsers
- ... a webapp SDK
- ... a framework for JavaScript lovers
- ... the solution for all mobile apps, websites, or games

# WHAT IS JQUERY MOBILE?

- Comparable to jQuery UI on the desktop side:  
just a UI framework
- jQuery Mobile consists of
  - the jQuery “core” framework
  - a JavaScript library
  - a CSS3 stylesheet
  - some resource images

# LOOK OF A JQUERY MOBILE APP



# JQUERY MOBILE COMPATIBILITY

**A-grade** - Full enhanced experience with Ajax-based animated page transitions.

- **Apple iOS 4-8.1** – Tested on the original iPad (4.3 / 5.0), iPad 2 (7.2 / 8.1 / 6.1), iPad 3 (5.1 / 6.0), iPad Mini (7.1), iPad Retina (7.0), iPhone 3GS (4.3), iPhone 4 (4.3 / 5.1), iPhone 4S (5.1 / 6.0), iPhone 5 (6.0), iPhone 5S (7.0), iPhone 6 (8.1)
- **Android 5.0 (Lollipop)** – Tested on a Nexus 6
- **Android 4.4 (KitKat)** – Tested on a Nexus 5
- **Android 4.1-4.3 (Jelly Bean)** – Tested on a Galaxy Nexus and Galaxy 7
- **Android 4.0 (ICS)** – Tested on a Galaxy Nexus.  
Note: transition performance can be poor on *upgraded* devices
- **Android 3.2 (Honeycomb)** – Tested on the Samsung Galaxy Tab 10.1 and Motorola XOOM
- **Android 2.1-2.3** – Tested on the HTC Incredible (2.2), original Droid (2.2), HTC Aria (2.1), Google Nexus S (2.3). Functional on 1.5 & 1.6 but performance may be sluggish, tested on Google G1 (1.5)
- **Windows Phone 7.5-8.1** – Tested on the HTC Surround (7.5), HTC Trophy (7.5), LG-E900 (7.5), Nokia 800 (7.8), HTC Mazaa (7.8), Nokia Lumia 520 (8), Nokia Lumia 920 (8), HTC 8x (8.1),
- **Blackberry 6-10** – Tested on the Torch 9800 (6) and Style 9670 (6), BlackBerry® Torch 9810 (7), BlackBerry Z10 (10)

- 3-level graded system
- Only a fragment of the list shown here
- All popular platforms supported

# JQUERY MOBILE FEATURES

- Cross platform, cross device, and cross browser
- UI optimized for touch devices
- Usage of nonintrusive semantic HTML5 code
- Automatic AJAX calls to load dynamic content
- Lightweight size, 12Kb compressed
- Progressive enhancement
- Accessibility support

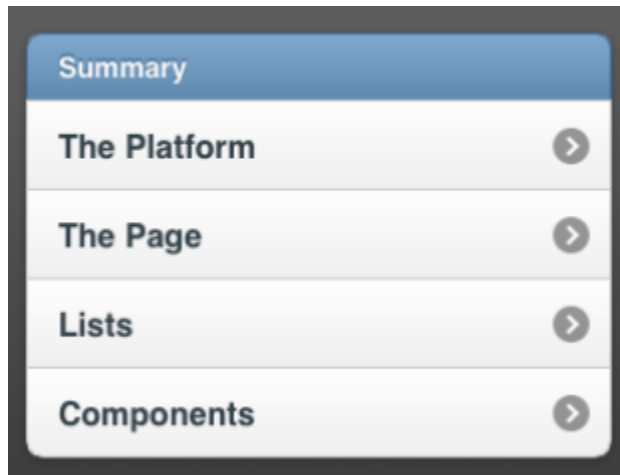
# NONINTRUSIVE SEMANTIC HTML5

---

```
<ul data-role="listview" data-inset="true" data-divider-theme="b">
  <li data-role="list-divider">Summary</li>
  <li><a href="ch1.html">The Platform</a></li>
  <li><a href="cap2.html">The Page</a></li>
  <li><a href="cap3.html">Lists</a></li>
  <li><a href="cap4.html">Components</a></li>
</ul>
```

↓ preview ↓

# NONINTRUSIVE SEMANTIC HTML5



# PROGRESSIVE ENHANCEMENT

- Allow any user to access the basic content, services, and functionality
- Provide an enhanced experience for better browsers
- jQuery Mobile is totally built using this technique



# PROGRESSIVE ENHANCEMENT PRINCIPLES

- Basic content is accessible to all browsers
- Basic functionality is accessible to all browsers
- Semantic markup contains all content
- Enhanced layout is provided by externally linked CSS
- Enhanced behavior is provided by unobtrusive, externally linked JavaScript
- End user browser preferences are respected

# ACCESSIBILITY SUPPORT

- jQuery Mobile is fully compatible with W3C's WAI-ARIA specification
- Apps built on JQuery will perform well with screen readers

# **A SIMPLE JQUERY MOBILE PROJECT**

# FIRST STEPS

- Create a simple HTML page
- Add jQuery Mobile to the page
- Make use of custom data attributes (data-\*)

# A SIMPLE HTML PAGE

```
<h1>Welcome</h1>
```

```
<p>
```

```
Welcome to our first mobile web site. It's going to be the best  
site you've ever seen. Once we get some content. And a business  
plan. But the hard part is done!
```

```
</p>
```

```
<p>
```

```
<i>Copyright Megacorp &copy; 2013</i>
```

```
</p>
```

---

↓ preview ↓

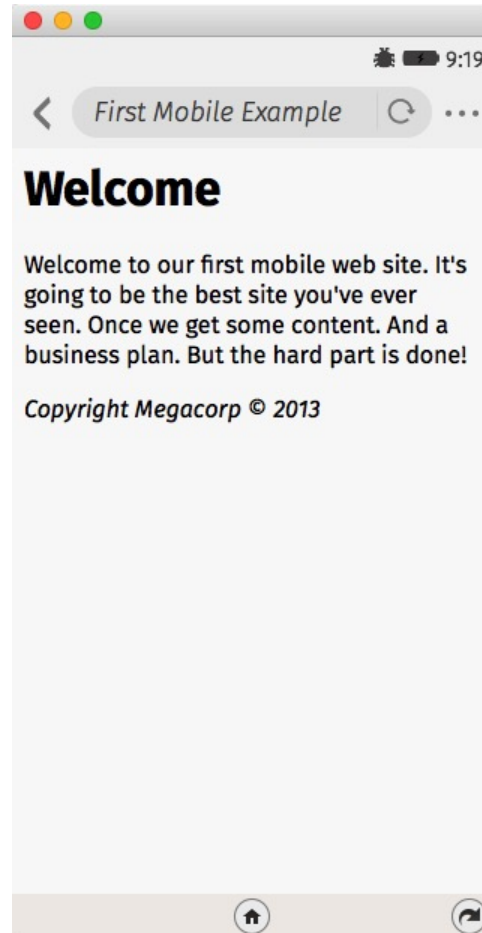


# Welcome

Welcome to our first mobile web site. It's going to be the best site you've ever seen. Once we get some content. And a business plan. But the hard part is done!

*Copyright Megacorp © 2013*

↓ mobile ↓



## ADD JQUERY MOBILE

- Download jQuery Mobile from [jquerymobile.com/download/](http://jquerymobile.com/download/)
- Alternatively use a CDN (jQuery, Google)
- Also needed: jQuery

In the following code samples we don't use version numbers



# ADD JQUERY MOBILE

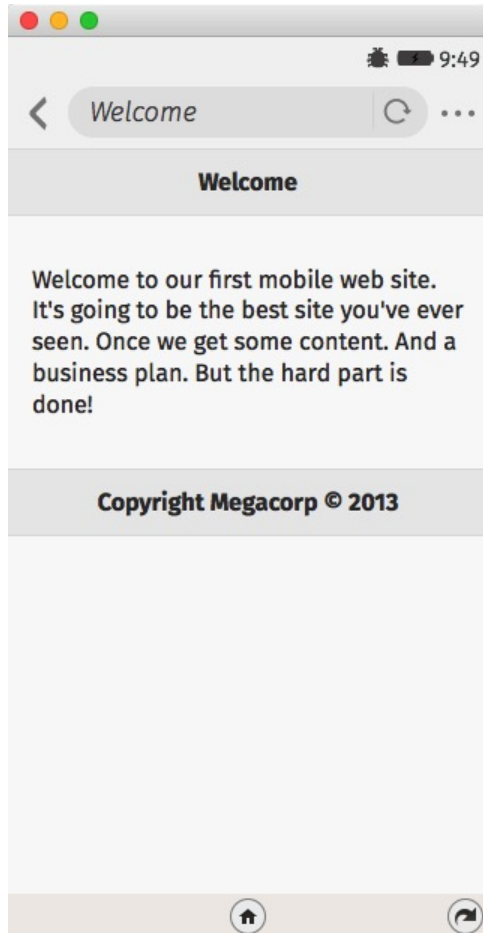
---

```
<head>
  <title>First Mobile Example</title>
  <meta name="viewport" content="width=device-width, initial-scale=1">
  <link rel="stylesheet" href="../jqm/jquery.mobile.min.css" />
  <script type="text/javascript" src="../jqm/jquery.min.js"></script>
  <script type="text/javascript" src="../jqm/jquery.mobile.min.js"></script>
</head>
```

# DATA ATTRIBUTES

```
<div data-role="page">
  <div data-role="header"><h1>Welcome</h1></div>
  <div class="ui-content" role="main">
    <p>Welcome to our first mobile web site. It's going
      to be the best site you've ever seen. Once we get
      some content.
      And a business plan. But the hard part is done!</p>
  </div>
  <div data-role="footer">
    <h4>Copyright Megacorp &copy; 2013</h4>
  </div>
</div>
```

↓ preview ↓



# MULTIPLE PAGES

- Multiple pages can be added to one jQuery Mobile file
- Every page is in a div-wrapper with `data-role="page"`
- Links from page to page use the `id` attribute
- Back button can be used to return to the previous page
- Page transition is smooth (default)



# JQUERY MOBILE LINKS

- Same file: transition to new page
- Other file: use Ajax request and transition to new page
- External site: normal link behaviour
- Enforce normal behaviour using the `data-ajax` attribute

---

```
<a href="foo.html" data-ajax="false">Normal, non-special link</a>
```

---

## **THINK ABOUT / DISCUSS**

Is it better to put a web app with say 15 pages into a single file or should multiple files be preferred?

## THINK ABOUT / DISCUSS

Assume we have two pages, *index.html* and *products.html* and a link from *index.html* to *products.html*. Do we need to include the jQuery Mobile library and CSS in *products.html*, too?



# JQUERY MOBILE LINKS

- When a new page is opened the browser URL is rewritten
- This enables bookmarking any page
- Requires the browser to support `history.pushState`
- In older browsers, hash-based navigation is used instead

---

```
// hash-based navigation in older browsers  
http://localhost/mobile/c2/test2.html#/mobile/c2/products.html
```

# PAGE TITLES

- As usual the title tag contents are used for the title
- This does not work in multipage files, however
- Sub pages in a single file use `data-role="header"` contents
- We can override this with `data-title`

```
<!-- Title is: About Megacorp -->  
<div data-role="header"><h1>About Megacorp</h1></div>
```

```
<!-- Title is: All About Megacorp -->  
<div data-role="page" id="aboutPage" data-title="All About Megacorp">
```

---

# PREFETCHING CONTENT

- Popular pages can be prefetched
- Just add a `data-prefetch="true"` to the link

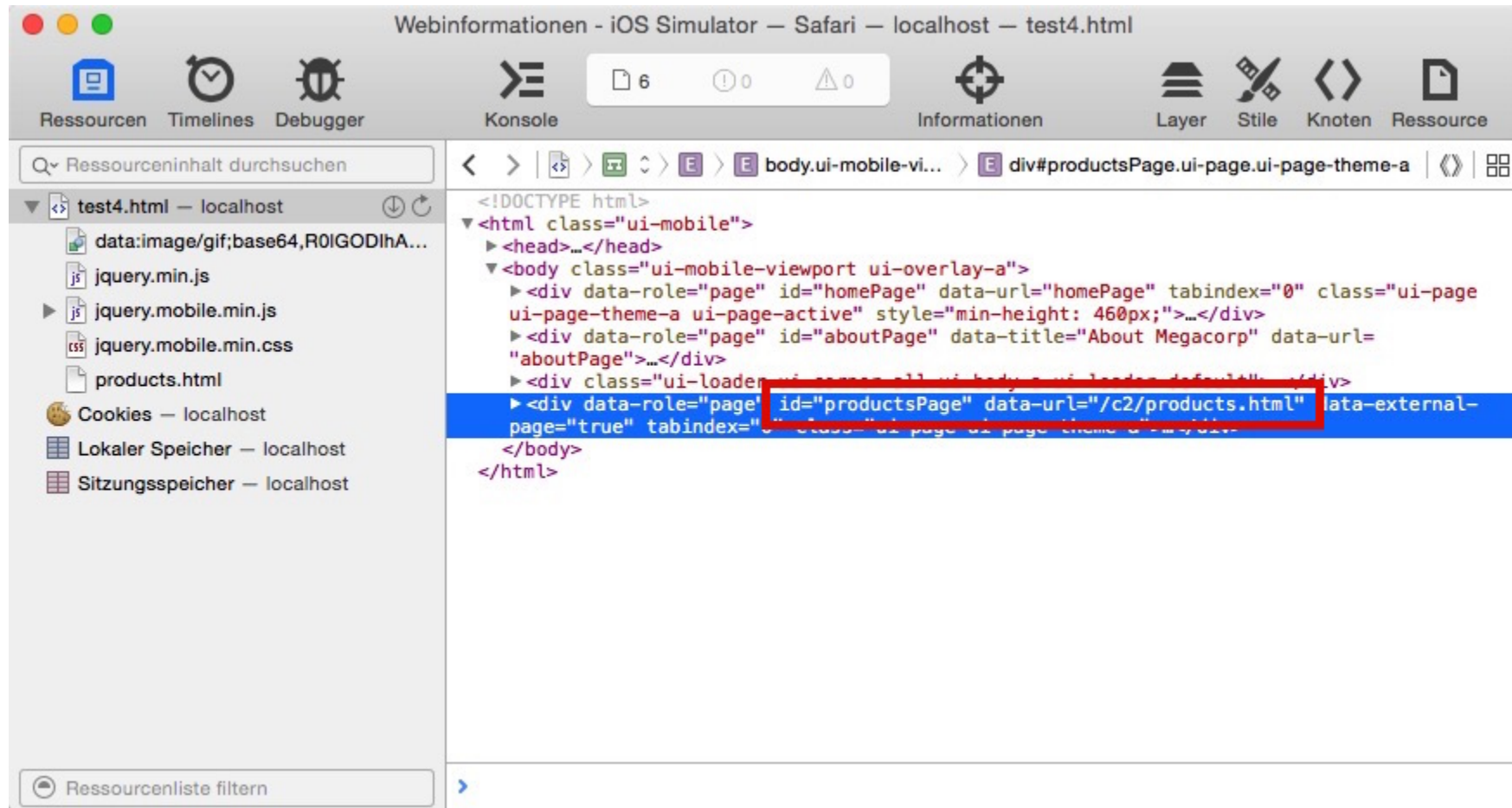
---

```
<p>  
  Find out about our wonderful  
  <a href="products.html" data-prefetch="true">products</a>.  
</p>
```

---

↓ developer tools ↓

# PREFETCHING CONTENT



# CHANGING PAGE TRANSITIONS

- Page transition can be changed with `data-transition`
- Possible values are  
fade|flip|flow|pop|slide|slidedown|slidefade|turn|none
- Default is `fade`
- Back button automatically results in a reverse transition
- Transition can be reversed with  
`data-direction="reverse"`

---

```
<p><a href="products.html" data-transition="pop">products</a></p>
```

**ENHANCING PAGES**

# HEADERS

- Defined by using a div with the appropriate role
- Buttons are added by creating links in the header
- The first link will be to the left, the second to the right
- links are automatically turned into buttons

---

```
<div data-role="header">  
  <a href="index.html">Home</a>  
  <h1>My Header</h1>  
  <a href="contact.html">Contact</a>  
</div>
```

↓ preview ↓

iOS Simulator - iPhone 5s - iPhone 5...

Carrier

9:10 PM



localhost



Home

My Header

Contact





# ICONS

- Buttons in jQuery Mobile can have an icon
- Use the `data-icon` attribute or an icon class, e.g. `ui-icon-home`
- By default SVG icons are used, PNG icons if SVG is not supported
- [List of icons](#)

---

```
<div data-role="header">  
  <a href="index.html" data-icon="home">Home</a>  
  <h1>My Header</h1>  
  <a href="contact.html" data-icon="info">Contact</a>  
</div>
```

---

↓ preview ↓



# STYLING BUTTONS

- It is often preferred to style elements with classes, e.g.,
  - `data-role="button" → class="ui-btn"`
  - `data-theme="a" → class="ui-btn-a"`
  - `data-mini="true" → class="ui-mini"`
  - `data-icon="home" → class="ui-icon-home"`
  - `data-iconpos="right" → class="ui-btn-icon-right"`

# BACK BUTTONS

- Added with `data-add-back-btn` attribute set to `true`
- Button text can be changed with `data-back-btn-text`
- A link with `data-rel` set to `back` can also be used

---

```
<div data-role="page" id="subpage">
  <div data-role="header" data-add-back-btn="true">
    <h1>Sub Page</h1>
  </div>
  <div class="ui-content" role="main">
    <p>
      <a href="" data-rel="back">Go back...</a>
    </p>
  </div>
</div>
```

# FOOTERS

- Defined by using a `div` with the appropriate role
- Buttons in the footer are lined up from the left
- To enhance the look of the footer use class `ui-bar`

---

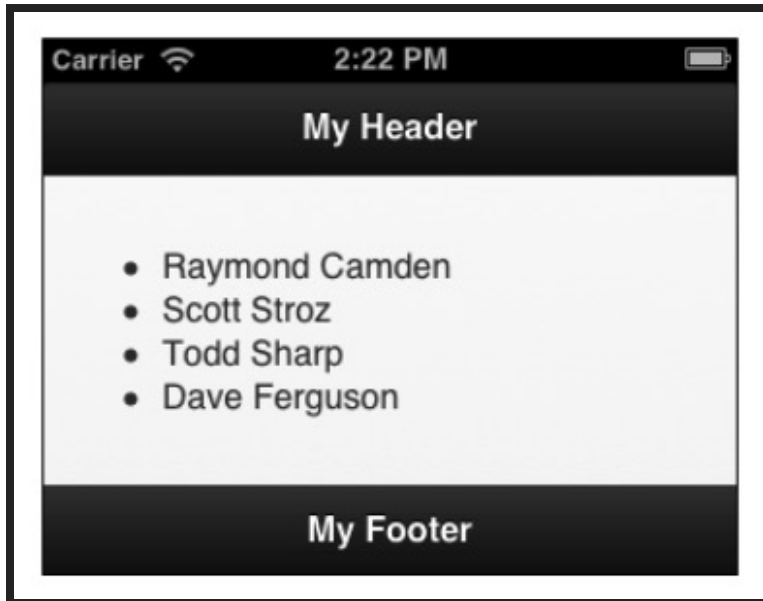
```
<div data-role="footer" class="ui-bar">  
  <a href="credits.html">Credits</a>  
  <a href="contact.html">Contact</a>  
</div>
```

---

# VARIANTS

- Fixed Header and Footer
- Full-Screen Headers and Footers
  - Header and footer appear and disappear with clicks
  - Can be used to show photos full-screen
- Navigation Bars
  - Full-screen-wide bars that hold buttons
  - Persisting Navigation Bars

# A SIMPLE LIST



- Header, footer and content area
- A simple u1 in content area

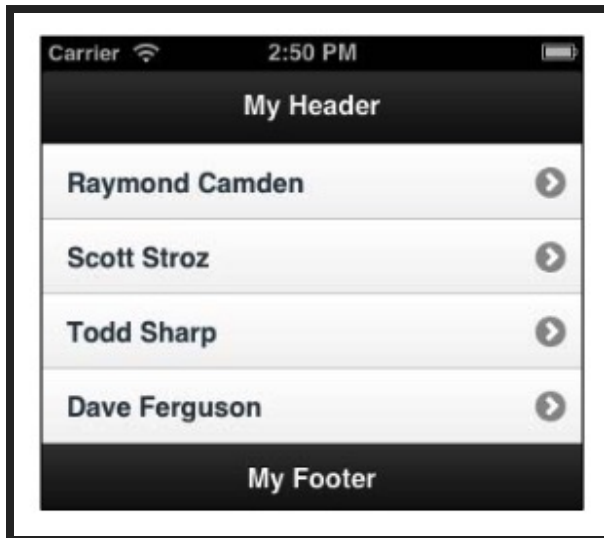
# AN ENHANCED LIST



- Changed to  
`<ul data-role="listview">`



# A LIST OF LINKS



- List items are links:

```
<li><a href="...">...</a></li>
```

# OTHER LIST FEATURES

- Inset Lists
- List dividers
- Autodividers
- Lists with count bubbles
- Thumbnails and icons
- Split button lists
- Search filter

Listview Demos

**EXAMPLE HOTEL WEBSITE**

# HOTEL WEBSITE FEATURES

First version should include:

- Contact information
- Map of the hotel location
- Room types available
- A way to get to the real website

# HOTEL HOMEPAGE

---

```
<div data-role="page">
  <div data-role="header"><h1>Camden Hotel</h1></div>
  <div class="ui-content" role="main">
    <p>Welcome ...</p>
    <ul data-role="listview" data-inset="true">
      <li><a href="find.html">Find Us</a></li>
      ...
    </ul>
  </div>
  <div data-role="footer">
    <h4>&copy; Camden Hotel 2012</h4>
  </div>
</div>
```

---

# FINDING THE HOTEL

- Just a couple of paragraphs
- One contains a static Google Map image

---

```

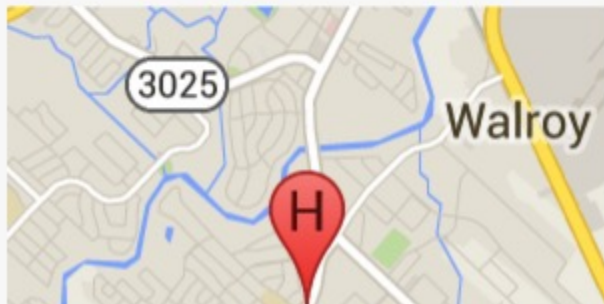
```

↓ preview ↓

## Find Us

The Camden Hotel is located in beautiful downtown Lafayette, LA. Home of the Ragin Cajuns, good food, good music, and all around good times, the Camden Hotel is smack dab in the middle of one of the most interesting cities in America!

400 Kaliste Saloom  
Lafayette, LA  
70508



# LISTING THE HOTEL ROOMS

- The rooms page is simply a list of the rooms
- The room detail page is only an image
- Headers can be hidden because of the data-fullscreen attribute

---

```
<div data-role="page" data-fullscreen="true">
  <div data-role="header" data-position="fixed">
    <h1>Emperor Suite</h1>
  </div>
  <div class="ui-content" role="main">
    
  </div>
  <div data-role="footer" data-position="fixed">...</div>
</div>
```

↓ preview ↓



iOS Simulator - iPhone 5s - iPhone 5...

Carrier

10:34 PM



localhost

## Emperor Suite



© Camden Hotel 2012



iOS Simulator - iPhone 5s - iPhone 5...

Carrier

10:35 PM



localhost



# CONTACTING THE HOTEL

Phone and mailto links to open phone or mail app

---

```
<div class="ui-content" role="main">
  <p>
    <b>Phone:</b> <a href="tel:555-555-5555">555-555-5555</a><br/>
    <b>Email:</b> <a href="mailto:people@camdenhotel.fake">...</a>
  </p>
</div>
```

---

# **FORMS AND OTHER ELEMENTS**

# FORMS

- Forms in jQuery Mobile submit their data via Ajax
- Form fields are automatically enhanced for mobile devices
- Labels and fields are wrapped in a div with class `ui-field-contain`

# A SIMPLE FORM

```
<div class="ui-content" role="main">
  <form action="echo.cgi" method="post">
    <div class="ui-field-contain">
      <label for="name">Name:</label>
      <input type="text" name="name" id="name" value="" />
    </div>
    ...
    <div class="ui-field-contain">
      <input type="submit" name="submit" value="Send" />
    </div>
  </form>
</div>
```

↓ preview ↓



# TEXTAREA

- Textarea grows with additional text to avoid scrolling



Carrier 3:25 PM

**Form Demo**

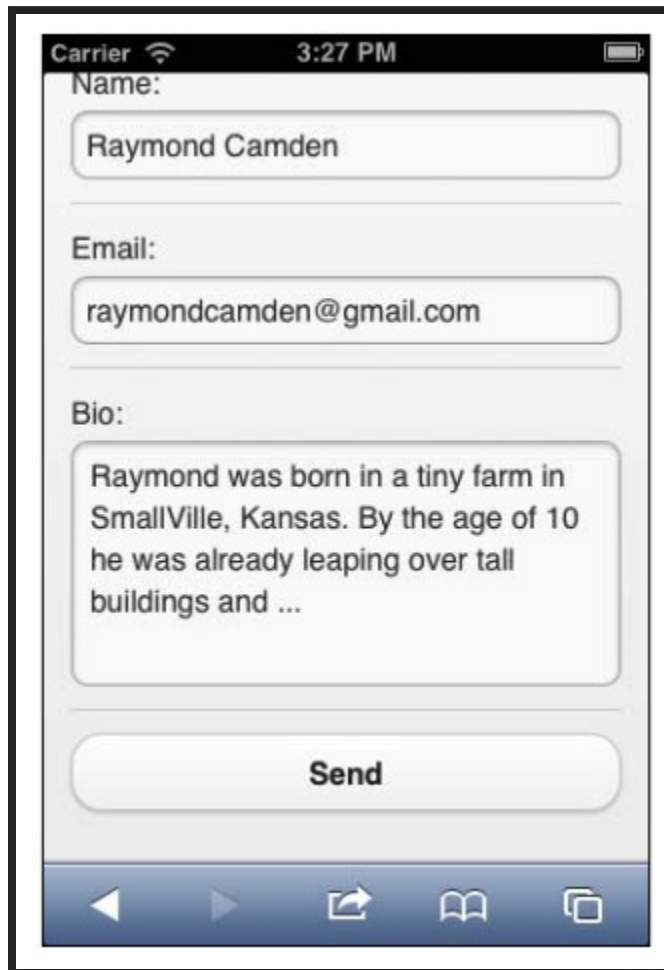
Name:

Email:

Bio:

**Send**

This screenshot shows a mobile application interface with a black header bar containing the text 'Form Demo'. Below the header, there are three input fields labeled 'Name:', 'Email:', and 'Bio:'. The 'Name' and 'Email' fields are single-line text boxes, while the 'Bio' field is a multi-line text area. At the bottom of the form is a large, rounded rectangular button labeled 'Send'. The bottom of the screen features a standard iOS-style navigation bar with five icons: a back arrow, a forward arrow, a share icon, a book icon, and a copy icon.



Carrier 3:27 PM

Name:

Raymond Camden

Email:

raymondcamden@gmail.com

Bio:

Raymond was born in a tiny farm in SmallVille, Kansas. By the age of 10 he was already leaping over tall buildings and ...

**Send**

This screenshot shows the same mobile application interface as the previous one, but with the input fields filled with data. The 'Name' field contains 'Raymond Camden', the 'Email' field contains 'raymondcamden@gmail.com', and the 'Bio' field contains a paragraph of text: 'Raymond was born in a tiny farm in SmallVille, Kansas. By the age of 10 he was already leaping over tall buildings and ...'. The 'Send' button remains at the bottom of the form, and the navigation bar is still present at the very bottom.

# ENHANCED FORM ELEMENTS

- Radio Buttons and Checkboxes `type="radio | checkbox"`
- Select Menus `<select...>`
- Search fields: input with `type="search"`
- Flip toggle fields: select with `data-role="flipswitch"`
- Slider fields: input with `type="range"`
- Range slider: div with `data-role="rangeslider"`
- Smaller form fields: input with `data-mini="true"`
- Disable enhancement: input with `data-role="none"`



# DIALOGS

- Small windows that cover an existing page
- Typically provide a short message or question
- Typically include a button to dismiss the dialog
- Created by adding `data-dialog="true"` to a page
- Clicking the X button will hide the dialog
- Any link within the page will also close the dialog
- A Cancel button can be added with `data-rel="back"`

# LAYOUT WITH GRIDS

- Set the class to `ui-grid-a` to get a two-column grid
- Use b, c, d instead of a for 3, 4, or 5 columns
- The blocks in the grid use classes `ui-block-a` and so on

```
<div class="ui-grid-a">  
  <div class="ui-block-a">Left</div>  
  <div class="ui-block-b">Right</div>  
</div>
```

---

## OTHER FEATURES

- Collapsible Content
- Popups
- Responsive Tables
- Panels

# JAVASCRIPT API

# CONFIGURATION

- jQuery Mobile applies many markup enhancements as soon as it loads
- This is long before the `document.ready` event fires
- To change configuration settings, use the `mobileinit` event
- Load your script before jQuery Mobile

```
$( document ).on( "mobileinit", function() {  
    $.extend( $.mobile , {  
        foo: bar  
    });  
});
```

## Configuring Defaults

# CONFIGURATION

- To set options for a widget you can change its prototype
- The value is a selector
- Example: `input` elements with class `boring` should not be enhanced

---

```
$(document).on("mobileinit", function() {  
    $.mobile.page.prototype.options.keepNative = "input.boring";  
});
```

---

# PAGECONTAINER WIDGET

- Manages a collection of pages
- Method `getActivePage()` to get the active page
- Method `change( to, options )` to change the active page

---

```
var active = $("body").pagecontainer("getActivePage");  
$("body").pagecontainer("change", "confirm.html", { role: "dialog" });
```

---

# WIDGETS

- jQuery Mobile converts HTML before the page is displayed
- Dynamic changes to a page are not enhanced automatically
- To make a new list a listview, call the `listview()` method
- New buttons can be enhanced by calling the `button()` method on them

```
var ul = [ "<ul data-role='listview' data-inset='true' id='theList'>",  
          "<li>Item One</li>",  
          "<li>Item Two</li>",  
          "</ul>" ].join('');  
$("#contentDiv").append(ul);  
("#theList").listview();
```

---



# WIDGETS

When a listview is changed, it has to be refreshed

```
$ul.listview('refresh');
```

## Widgets API

# EVENTS: USER EVENTS

- tap, taphold
- swipe, swipeleft, swiperight
- scrollstart, scrollstop
- orientationchange
- vclick, vmousedown, vmouseup, vmousemove, vmousecancel

jQuery Mobbil API: Events

# EVENTS: PAGECONTAINER EVENTS

- beforechange, change, changefailed
- beforeload, load, loadfailed
- beforeshow, show, beforehide, hide
- beforetransition, transition
- create
- remove

Pagecontainer Widget

# EVENTS: PAGE EVENTS

- beforecreate
- create

```
// Bind an event listener to the pagecreate event  
$( ".selector" ).on( "pagecreate", function( event, ui ) {} );
```

---

## Page Widget

**THEMING**

# THEMING

- CSS framework for a consistent and touch-friendly look and feel
- A swatch is one of several colour schemes
- Single-letter designations for swatches are used
- The default jQuery Mobile theme has two swatches:
  - The "a" swatch is a neutral, gray swatch
  - The "b" swatch has a darker color scheme

# THEMEROLLER

- Allows to create any number of swatches for a custom theme
- Default theme can be imported

<http://themeroller.jquerymobile.com>

# **OTHER MOBILE WEB FRAMEWORKS**



# SENCHA TOUCH

- "The leading cross-platform mobile web application framework"
- Over 50 built-in UI components and native looking themes
- Adaptive Layouts, Animations, and Smooth Scrolling
- Backend Agnostic Data Package
- Commercial Licence or GPLv3

<https://www.sencha.com/products/touch/>

# JQT

- "Create powerful mobile apps with just HTML, CSS, and Zepto.js"
- Aka jQTouch
- Zepto/jQuery plugin for mobile web development
- Sass-based Theming
- Open Source

<http://jqtjs.com>

# FRAMEWORK7

- "Full Featured HTML Framework For Building iOS & Android Apps"
- iOS & Android native look and feel
- Free and open source

<http://www.idangero.us/framework7>

# IONIC

- "Build mobile apps faster with the web technologies you know and love"
- Mobile-optimized HTML, CSS and JS components, gestures, and tools
- Built to perform and behave great on the latest mobile devices
- Utilizes Angular

<http://ionicframework.com>

# ONSEN UI

- "The Answer to Cordova UI Development"
- Javascript and CSS frameworks for HTML5, PhoneGap & Cordova apps
- Large selection of Web-based UI components
- Responsive layout support for smartphones and tablets
- Inspired by Web Components
- Utilizes Angular

<http://s.onsen.io>

# QOOXDOO

- "A universal JavaScript framework"
- Create mobile apps that run on all major mobile platforms
- No need to write HTML

<http://qooxdoo.org>

# JO

- "The simple open source app framework for HTML5"
- Eventually abandoned, no updates in two years

<http://joapp.com>

# SOURCES



# SOURCES

- jQuery Mobile: Up and Running, Maximiliano Firtman, O'Reilly, 2012
- jQuery Mobile Web Development Essentials, Second Edition, Raymond Camden and Andy Matthews, Packt Publishing, 2013
- jQuery Mobile Website: [jquerymobile.com](http://jquerymobile.com)

