

m.grails

Mobile Development with Grails and jQuery

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solutionsfit Consulting Services

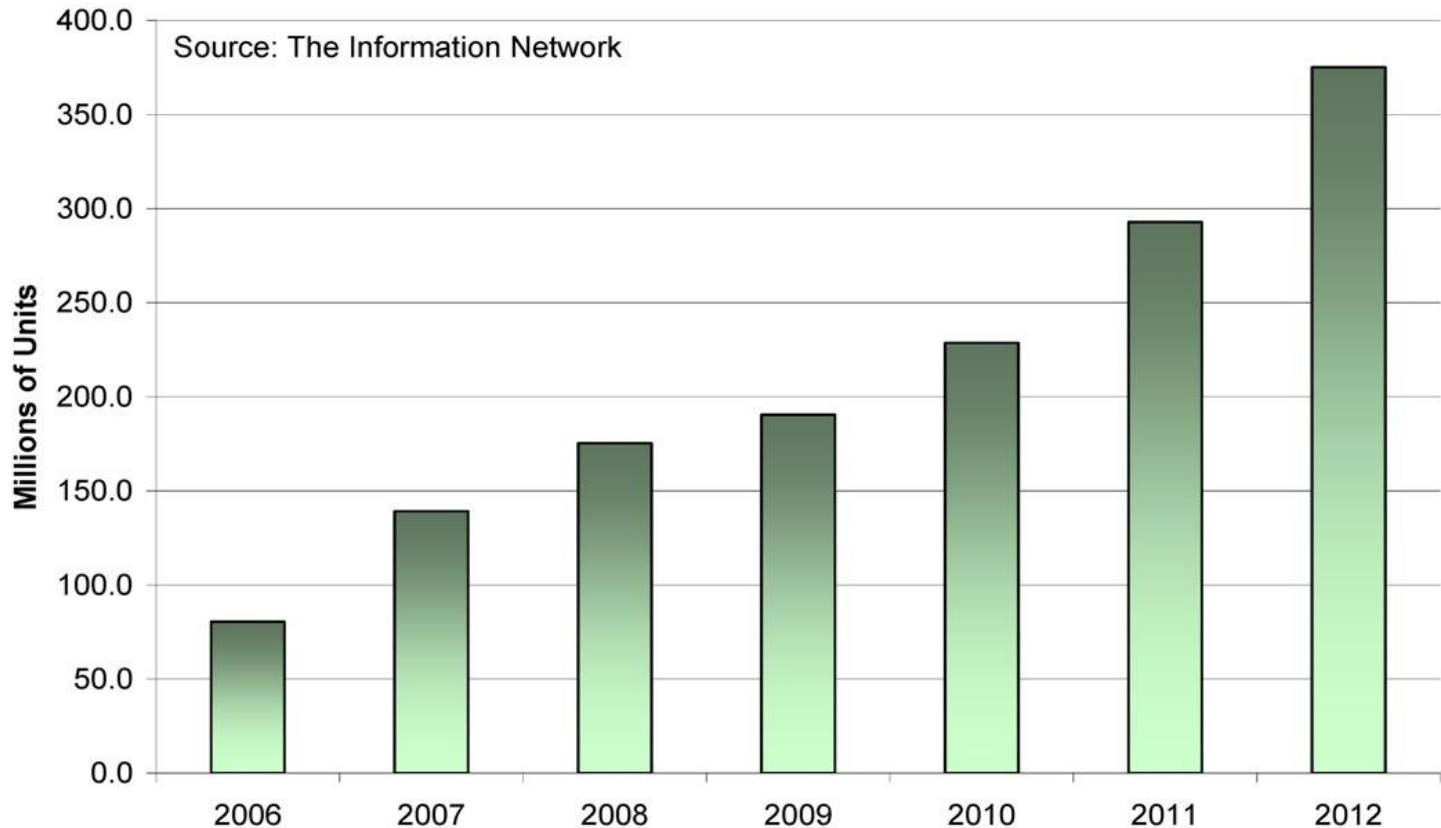
- Align business and development
- Enable IT organizations to maximize efficiency
- Develop custom software solutions
- Provide architectural guidance and insight
- Train organizations on technology and methodology

Overview

- Introduction to Mobile Development
- Mobile Development with jQuery Mobile
- Integrating jQuery Mobile with Grails

Market for Mobile Development

Smartphone Shipments



Mobile Development

- Explosive smart-phone market = strong demand
- Low supply of experienced mobile developers
- Mobile developers often specialize on a platform
- Companies want to keep costs low, leverage existing resources

Platforms to Support

- Apple iOS
- Android
- Windows Phone
- Blackberry
- Palm WebOS? Hmm... maybe not



Platform-specific App Development

- Requires a variety of skillsets
- Costly development and maintenance
- Introduces complexity (dev paradigm, services)
- No control over platform
- What about tablets?

What's a company to do?

- Similar problems to desktop software
- Is history repeating itself?
- Sure seems that way

Why Web App Development?

- Same reasons for web apps on the desktop
 - Control of execution platform
 - Simplifies versioning
 - Develop once and run everywhere
 - Internet connectivity is becoming ubiquitous
 - We can achieve similar look and feel

Web App Issues on Mobile Devices

- From the jQuery Mobile site,
 - Compared to mobile web development, the potential browser choices in desktop web development seems downright simple. In mobile development there are more engines, on more platforms, and with more active versions of the browsers.

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jQuery Mobile Compatibility Matrix

Platform	Version	Native	Opera Mobile				Opera Mini		Fennec		Ozone	Netfront	Phonegap
			8.5	8.65	9.5	10.0	4.0	5.0	1.0	1.1	0.9	4.0	0.9
iOS	v2.2.1	B										A	
	v3.1.3, v3.2	A					A					A	
	v4.0	A					A					A	
Symbian S60	v3.1, v3.2	C	C	C		B	C	B			C	C	
	v5.0	A	C	C		A	C	A					A
Symbian UIQ	v3.0, v3.1			C							C		
	v3.2				C						C		
Symbian Platform	3.0	A											
BlackBerry OS	v4.5	C					C	C					
	v4.6, v4.7	C					C	B				C	
	v5.0	B					C	A				A	
	v6.0	A						A				A	
Android	v1.5, v1.6	A										A	
	v2.1	A										A	
	v2.2	A				A		C		A		A	
Windows Mobile	v6.1	C	C	C	C	B	C	B				C	
	v6.5.1	C	C	C	A	A	C	A					
	v7.0	A				A	C	A					
webOS	1.4.1	A										A	
bada	1.0	A											
Maemo	5.0	B				B			C	B			
MeeGo	1.1	A				A				A			

jQuery Mobile Compatibility Matrix

- A-grade – Full enhanced experience with Ajax-based animated page transitions.
- B-grade – Enhanced experience except without Ajax navigation features.
- C-grade – Basic, non-enhanced HTML experience that is still functional

jQuery's Mobile Strategy

- From the jQuery Mobile site,
 - Delivering top-of-the-line JavaScript in a unified User Interface that works across the most-used smartphone web browsers and tablet form factors

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jQuery Mobile

- Built on jQuery core and HTML5 standards
- Clean, semantic HTML for device compatibility
- Simple API with little to no JavaScript needed
- Easy to integrate with virtually any technology
- Allows you focus on the advantages of web app development
- Currently in version 1.0 beta 2

jQuery Mobile Features

- Lightweight size (12k compressed)
- HTML5 markup-driven
- Progressive enhancement
- Automatic initialization (HTML5 data-* attributes)
- Accessibility (WAI-ARIA)
- Touch-based events (e.g. swipe)
- Theming framework

Minimum Page Requirements

- `<!DOCTYPE html>`
- `jquery-mobile-min.css (+ sprites)`
- `jquery-min.js`
- `jquery-mobile-min.js`
- `<div data-role="page">`

Anatomy of a Page

```
<div id="myPage" data-role="page">  
  <div data-role="header">  
    <h2>Hello World</h2>  
  </div>
```

```
  <div data-role="content">  
    <p>jQuery Mobile is great!</p>  
  </div>
```

```
  <div data-role="footer">  
    <h4>solutionsfit.com</h4>  
  </div>  
</div>
```

-  Header
-  Content
-  Footer

A Basic jQuery Mobile Page

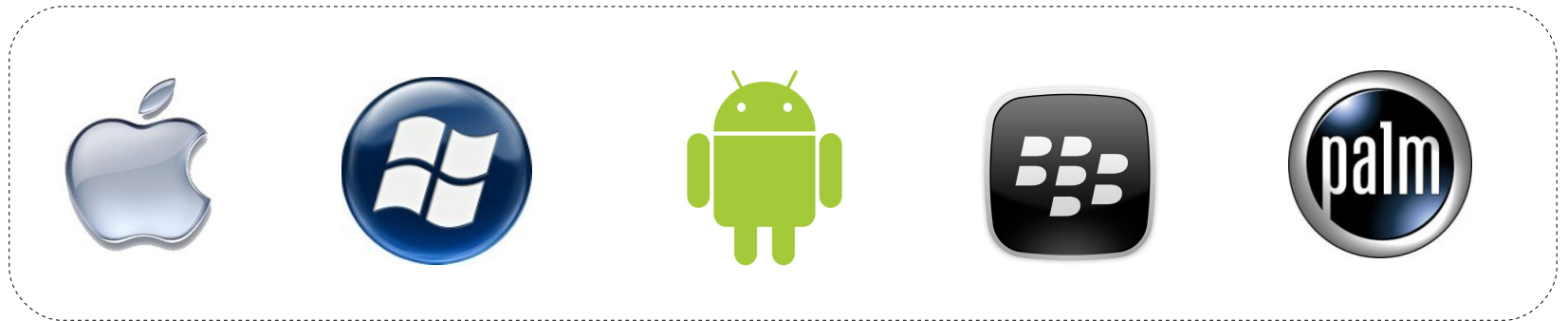
- Let's have a look at an example.



jQuery Demo Site

- Can be accessed from your mobile device (of course!)
- Demonstrates the built-in capabilities of jQuery Mobile
- <http://jquerymobile.org/demos>

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The Layout

```
<!DOCTYPE html>
<html>
  <head>
    <title><g:layoutTitle default="Grails" /></title>
    <link rel="stylesheet"
      href="${resource(dir:'css',file:'jquery-mobile-min.css')}}" />
    <g:javascript library="jquery" />
    <script type="text/javascript">
      $(document).bind("mobileinit", function() {
        $.extend($.mobile, { ajaxFormsEnabled: false });
      });
    </script>
    <g:javascript library="jquery.mobile.min" />
  </head>
  <body>
    <g:layoutBody />
  </body>
</html>
```

AJAX Links and Forms

- jQuery Mobile uses AJAX for server requests
- Response is injected into the DOM
- Presents problems for redirects
- Easiest way to solve the issue is setting:
 - `ajaxFormsEnabled = false`

The List Page

- Content

```
<div data-role="content">
  <ul data-role="listview" data-inset="true">
    <g:each in="{raceInstanceList}" status="i" var="raceInstance">
      <li>
        <h3>${fieldValue(bean: raceInstance, field: "name")}</h3>
        <p>
          ${fieldValue(bean: raceInstance, field: "description")}<br/>
          <g:formatDate format="MM/dd/yyyy" date="{raceInstance.eventDate}" />
          <br/>
          ${fieldValue(bean: raceInstance, field: "city")},
          ${fieldValue(bean: raceInstance, field: "state")}
        </p>
      </li>
    </g:each>
  </ul>
</div>
```



List Views

- Common design idiom in mobile apps and sites
- List views are commonly used for:
 - data display
 - navigation
 - result lists
 - data entry
- Great option for progressive enhancement
- All styling options can be found at:
 - <http://jquerymobile.com/demos/1.0a4.1/docs/lists/index.html>

The List Page (cont.)

- Header

```
<div id="list" data-role="page">
  <div data-role="header" data-position="inline">
    <h2> Races </h2>
    <g:link action="create" class="ui-btn-right" data-theme="b"
      data-icon="plus"> New </g:link>
  </div>

  <div data-role="content">
    <!-- ... -->
  </div>

  <div data-role="footer">
    <!-- ... -->
  </div>
</div>
```

Theme Framework

- Ships with 5 “swatches”
- Themes can be applied with:
 - style classes (e.g. ui-body-b)
 - data-theme attribute
- ThemeRoller tool to be launched with 1.0



create.gsp

```
<g:form action="save">
  <div data-role="fieldcontain">
    <div class="field">
      <label for="name">
        <g:message code="race.name.label" default="Name" />
      </label>
      <g:textField name="name" value="{raceInstance?.name}" />
    </div>
    <div class="field">
      <label for="description">
        <g:message code="race.description.label" default="Description" />
      </label>
      <g:textField name="description" value="{raceInstance?.description}" />
    </div>
    <div class="field">
      <label for="address">
        <g:message code="race.address.label" default="Address" />
      </label>
      <g:textField name="address" value="{raceInstance?.address}" />
    </div>
    ... ..
    <div class="buttons">
      <g:submitButton data-theme="b" name="create" class="save"
        value="{message(code: 'default.button.create.label',
          default: 'Create')}"/>
    </div>
  </div>
</g:form>
```



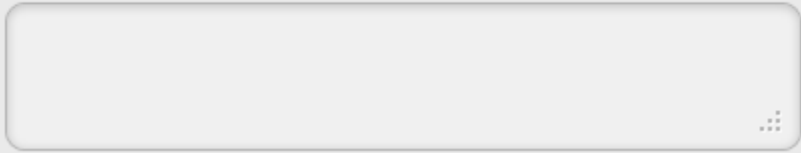
HTML5 Form Inputs

- Number
- Email
- Phone
- Range
- Search
- Etc.

jQuery Mobile Input Styling

`<textarea>` (adjustable)

Textarea:



`<input type="checkbox">`

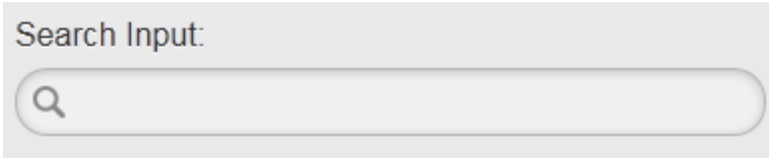
Choose as many snacks as you'd like:

<input type="checkbox"/>	Cheetos
<input type="checkbox"/>	Doritos
<input type="checkbox"/>	Fritos
<input type="checkbox"/>	Sun Chips

jQuery Mobile Input Styling (cont.)

```
<input type="search">
```

Search Input:

A screenshot of a jQuery Mobile search input field. It consists of a light gray rounded rectangle with a thin border. Inside, the text "Search Input:" is positioned at the top left. Below it is a white rounded input field with a magnifying glass icon on the left side.

```
<select data-role="slider" min="0" max="100" ...>
```

Flip switch:

A screenshot of a jQuery Mobile flip switch. It features a light gray rounded rectangle with a thin border. The text "Flip switch:" is at the top left. Below it is a white rounded rectangle containing a white circular knob on the left and the text "Off" on the right.

```
<input type="range" name="slider" ...>
```


Slider:

A screenshot of a jQuery Mobile range slider. It shows a light gray rounded rectangle with a thin border. The text "Slider:" is at the top left. Below it is a white rounded input field containing the number "0", followed by a white circular knob and a horizontal line representing the slider track.

Datepicker Component

`<input type="date" ...>`

Date Input:



The image shows a datepicker component. At the top, there is a text input field containing the date "05/31/2011". Below the input field is a calendar grid for the month of May 2011. The calendar has a header with "May 2011" and navigation arrows on either side. The days of the week are listed as Su, Mo, Tu, We, Th, Fr, Sa. The dates are arranged in a grid, with the 31st of May highlighted in blue.

Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	1	2	3	4

Datepicker Component (cont.)

- Requires some additional JS / CSS includes

```
<head>
  ... ..
  <link rel="stylesheet"
    href="{resource(dir: 'css', file: 'jquery-ui-datepicker-mobile.css')}" />
  <g:javascript library="jquery.ui.datepicker" />
  <g:javascript library="jquery.ui.datepicker.mobile" />
  ... ..
</head>
```



create.gsp (cont.)

- What about errors?

```
<g:hasErrors bean="{raceInstance}">  
  <div class="ui-body ui-body-e">  
    <g:renderErrors bean="{raceInstance}" as="list" />  
  </div>  
  <br/>  
</g:hasErrors>
```



show.gsp

- Link the list items

```
<div data-role="content">
  <ul data-role="listview" data-inset="true">
    <g:each in="{raceInstanceList}" status="i" var="raceInstance">
      <li>
        <g:link action="show" id="{raceInstance.id}">
          <h3>${fieldValue(bean: raceInstance, field: "name")}</h3>
          <p>
            ${fieldValue(bean: raceInstance, field: "description")}<br/>
            <g:formatDate format="MM/dd/yyyy" date="{raceInstance.eventDate}" />
            <br/>
            ${fieldValue(bean: raceInstance, field: "city")},
            ${fieldValue(bean: raceInstance, field: "state")}
          </p>
        </g:link>
      </li>
    </g:each>
  </ul>
</div>
```



show.gsp (cont.)

```
<div data-role="content">
  <h1><g:message code="default.show.label" args="[entityName]" /></h1>
  <div class="ui-body ui-body-d">
    <table>
      <tbody>
        <tr class="prop">
          <td valign="top" class="name">
            <g:message code="race.id.label" default="Id" />
          </td>
          <td valign="top" class="value">
            ${fieldValue(bean: raceInstance, field: "id")}
          </td>
        </tr>

        <tr class="prop">
          <td valign="top" class="name">
            <g:message code="race.name.label" default="Name" />
          </td>
          <td valign="top" class="value">
            ${fieldValue(bean: raceInstance, field: "name")}
          </td>
        </tr>
        ... ..
      </tbody>
    </table>
  </div>
```

show.gsp (cont.)

- Header

```
<div data-role="header">
  <a class="home" href="{createLink(uri: '/race/list')}" data-icon="grid"
    data-theme="b" class="ui-btn-left">List</a>
  <h2>Races</h2>
  <g:link action="edit" id="{raceInstance.id}" data-icon="gear"
    data-theme="b" class="ui-btn-right">Edit</g:link>
</div>
```

edit.gsp

- Virtually identical to the create page
- As with scaffolding, just adds hidden fields for id and version



The Delete Dialog

```

<g:each in="\${raceInstanceList}" status="i" var="raceInstance">
  <div id="race_delete_\${raceInstance.id}" data-role="dialog">
    <g:form method="post">
      <g:hiddenField name="id" value="\${raceInstance?.id}" />
      <g:hiddenField name="version" value="\${raceInstance?.version}" />

      <div data-role="header">
        <h2>Delete Race</h2>
      </div>

      <div data-role="content">
        <div class="ui-body ui-body-e">
          <h3>\${fieldValue(bean: raceInstance, field: "name")}</h3>
          <p>
            \${fieldValue(bean: raceInstance, field: "description")}<br/>
            <g:formatDate format="MM/dd/yyyy" date="\${raceInstance.eventDate}" /><br/>
            \${fieldValue(bean: raceInstance, field: "city")},
            \${fieldValue(bean: raceInstance, field: "state")}
          </p>
        </div>

        <p>Are you sure you wish to delete this entry?</p>

        <div class="ui-grid-a">
          <div class="ui-block-a">
            <g:actionSubmit class="delete" action="delete" value="Delete" data-theme="b" />
          </div>
          <div class="ui-block-b">
            <a href="#list" data-role="button" data-rel="back">Cancel</a>
          </div>
        </div>
      </div>
    </g:form>
  </div>
</g:each>

```

Links with jQuery Mobile

- Pages are requested via AJAX
- Response is injected into the DOM
- Multiple pages can be included in the response
- Hash used to link between pages in the DOM

Links with jQuery Mobile (cont.)

- ``
 - Links to the delete dialog for the first Race
- `<a data-rel="back">`
 - Links back to the previous page in the history

The Delete Dialog (cont.)

```

<div data-role="content">
  <ul data-role="listview" data-split-icon="delete" data-split-theme="b"
    data-inset="true">
    <g:each in="{raceInstanceList}" status="i" var="raceInstance">
      <li>
        <g:link action="show" id="{raceInstance.id}">
          <h3>${fieldValue(bean: raceInstance, field: "name")}</h3>
          <p>
            ${fieldValue(bean: raceInstance, field: "description")}<br/>
            <g:formatDate format="MM/dd/yyyy" date="{raceInstance.eventDate}" />
            <br/>
            ${fieldValue(bean: raceInstance, field: "city")},
            ${fieldValue(bean: raceInstance, field: "state")}
          </p>
        </g:link>

        <a href="#race_delete_{raceInstance.id}">Delete</a>
      </li>
    </g:each>
  </ul>
</div>

```



Additional Layout Elements

- Welcome to Grails page



Page Events

- tap
 - triggers after a quick, complete touch event.
- taphold
 - triggers after a held complete touch event (close to one second).
- swipe
 - triggers when a horizontal drag of 30px or more (and less than 20px vertically) occurs within 1 second duration.
- swipeleft
 - triggers when a swipe event occurred moving in the left direction.
- swiperight
 - triggers when a swipe event occurred moving in the right direction.
- orientationchange
 - triggers when a device orientation changes (by turning it vertically or horizontally).

Presentation Resources

- jQuery Mobile
 - <http://jquerymobile.com>

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