MOBILE APP DEVELOPMENT WITH JQUERY MOBILE

Dr. Christelle Scharff

Pace University

cscharff@pace.edu

Mobile browsers

- Different types of mobile browsers
  - Focus navigation (highlight of the selected area), cursor navigation (simulation of a cursor), touch navigation, multi-touch navigation (gestures)
- Zoom
  - Basic zoom (font size only), smart zoom (images and pages as a whole)
- Reflow engines
  - Reflowing the pages to a one-column scrollable
- Multi-page experience
  - How many pages can be open at the same time?
- WebKit Engine
  - Open source layout engine for web browsers that render HTML and CSS and execute JavaScript
  - Used in the current browsers (e.g., Android, iOS…)

Mobile browsers

- Pre-installed
  - Safari on iOS – WebKit-based browser
  - Android browser - WebKit-based browser
  - Chrome for Android - Launched in February 2012 http://googleblog.blogspot.com/2012/02/introducing-chrome-for-android.html
  - Internet Explorer Mobile
- User-installed
  - Firefox mobile – Appeared in 2011 http://mozilla.com/mobile
  - Opera – Downloadable for most platforms, full browser http://www.opera.com/developer/tools/mobile/
  - Opera Mini – Proxy browser that supports videos, Ajax, offline / online… http://www.opera.com/developer/tools/mini

INSTALL MOBILE BROWERS ON YOUR PHONE

There are more mobile browsers than you think!

INSTALL THE OPERA MOBILE EMULATOR

http://www.opera.com/developer/mobile-emulator
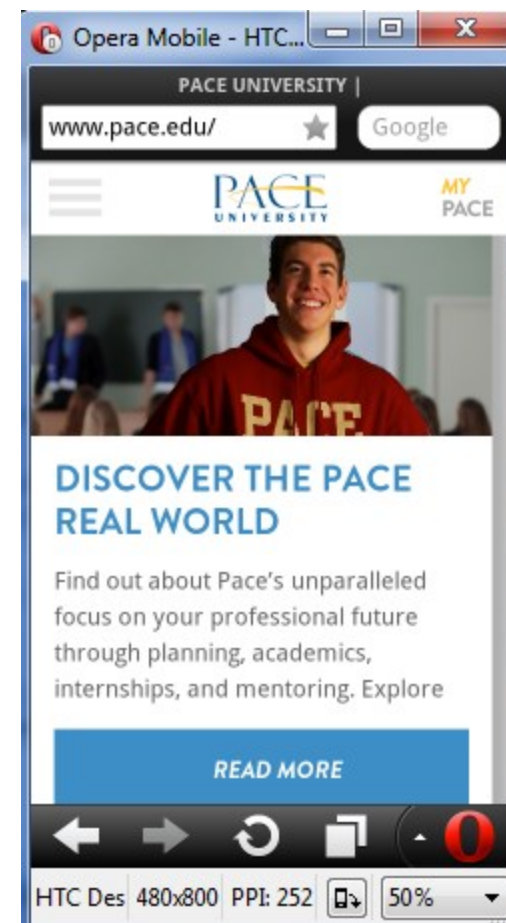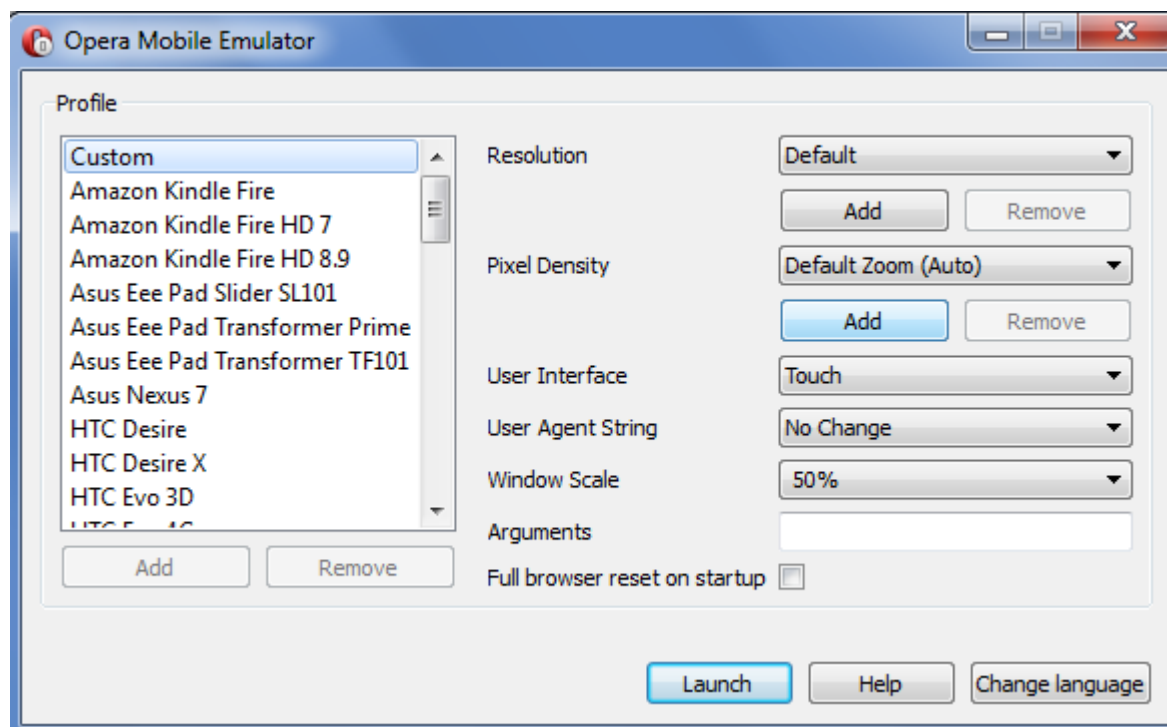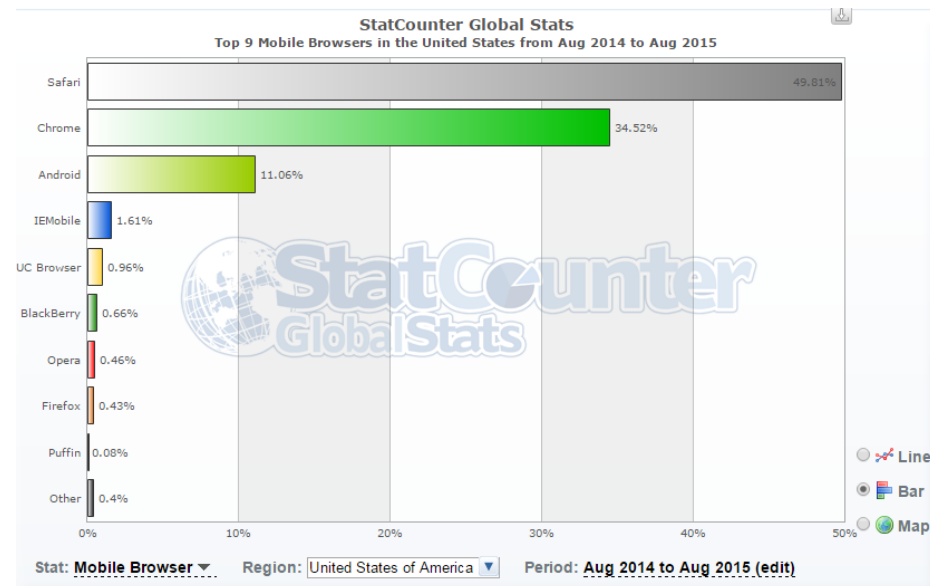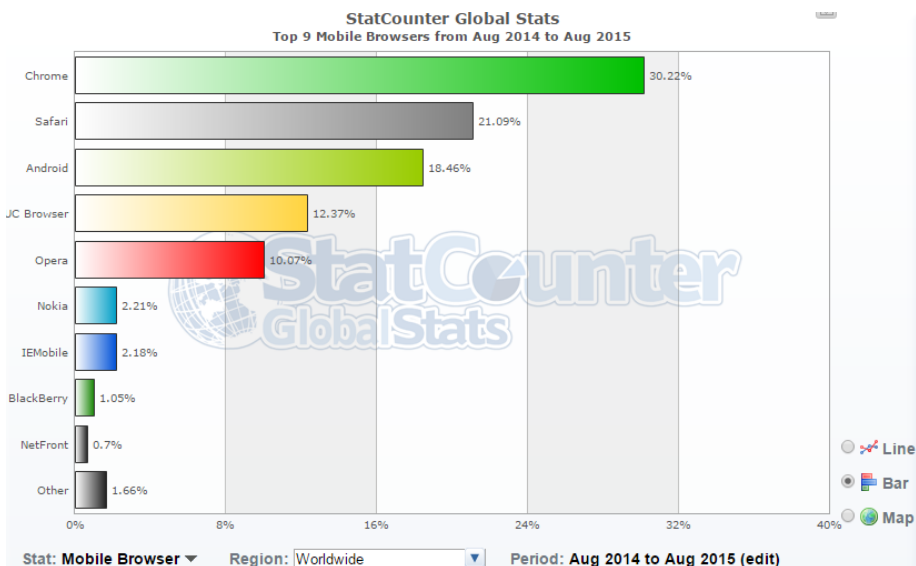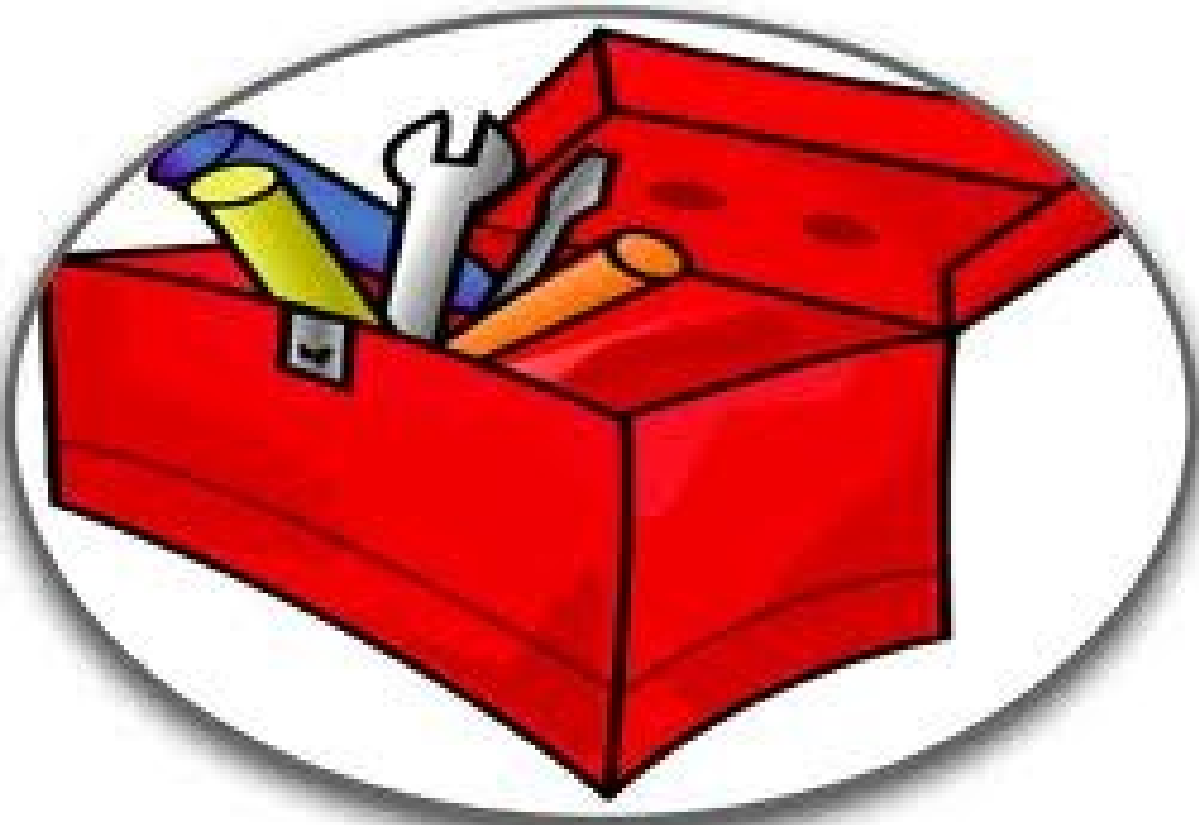
WHAT MOBILE BROWSERS ARE SUBSCRIBERS USING IN THE US AND GLOBALLY?

Mobile browsers - statistics

- What mobile browsers are people using in different parts of the world?
- http://gs.statcounter.com

StatCounter Global Stats
Top 9 Mobile Browsers from Aug 2014 to Aug 2015

Browser	Percentage
Chrome	30.22%
Safari	21.09%
Android	18.46%
UC Browser	12.37%
Opera	10.07%
Nokia	2.21%
IEMobile	2.18%
BlackBerry	1.05%
NetFront	0.7%
Other	1.66%

Stat: **Mobile Browser** ▼ Region: Worldwide ▼ Period: **Aug 2014 to Aug 2015 (edit)**

StatCounter Global Stats
Top 9 Mobile Browsers in the United States from Aug 2014 to Aug 2015

Browser	Percentage
Safari	49.81%
Chrome	34.52%
Android	11.06%
IEMobile	1.61%
UC Browser	0.96%
BlackBerry	0.66%
Opera	0.46%
Firefox	0.43%
Puffin	0.08%
Other	0.4%

Stat: **Mobile Browser** ▼ Region: United States of America ▼ Period: **Aug 2014 to Aug 2015 (edit)**

Toolbox

Toolbox

- Editor
  - Notepad++, SublimeText or other
- Browsers
  - Google Chrome
  - Opera mobile emulator
  - Mobile browsers on your phone
- File transfer
  - Filezilla (or equivalent)
- Git and GitHub
  - http://git-scm.com and http://github.com
- Documentation
  - http://jquerymobile.com and http://stackoverflow.com/
- Java
  - http://java.sun.com/javase/downloads/index.jsp
- Android SDK
  - Android SDK (with Android Studio) http://developer.android.com

What is HTML5?

- HTML5 is s a core technology markup language of the Internet used for structuring and presenting content for the World Wide Web on all platforms
  - Desktops, phones, TVs…
- HTML5 is mobile (optimized)
  - Phones and tablets
  - Size of UI components
- HTML5 is open
  - HTML is already known by lots of people
  - Soon a standard of W3C (World Wide Web Consortium)
- HTML5 is capable
  - Networking, contacts, online / offline, input, videos and geolocation capabilities
- HTML5 is flexible
  - Content (HTML)
  - Style (CSS)
  - Logic (JavaScript)

HTML in one slide

- HTML = Hyper Text Markup Language
- Language based on tags and rendered by a browser
- Files with html extension
- index.html is the entry file in a web site
- Skeleton of an HTML page

```
<html>
  <head>
    <title>
    …
    </title>
  </head>
  <body>
  ..
  </body>
</html>
```

Open the tag

Close the tag

Html – cheat sheet
http://bit.ly/tZpQL

Tags

<p> … </p> - paragraph
 … - italic
 … - bold
<h1> … </h1> - level of title (from 1 to 6)
<img src …> - image
<a> … - link

 - blank line
 - list
   …
   …

<div> … </div>

CREATE AN HTML FILE AND OPEN IT IN GOOGLE CHROME

PUT THE FILE ON THE SERVER AND OPEN IT IN A MOBILE DEVICE

E.g., http://webpage.pace.edu

CSS in one slide

Margin
Border
Padding
Content

- CSS = Cascading Style Sheets
- For the visual presentation of an HTML document (text color, size, style, layout, gradients, opacity etc)
- Files with css extension
- Integrate CSS:
  - `<style type="text/css">`
    `    body {color:red;}`
    `</style>`
  - OR
  - `<link rel="stylesheet" href="style.css" type="text/css">`

Inline

External file

- Based on applying rules on specific elements (selectors). Rules assign values to properties
- Example 1: `body {color:red; font-style:italic;}` CSS – cheat sheet
- Example 2: http://bit.ly/O0fMmZ

```
<h1 class="loud">Hi!</h1>
<p id="low">How are you?</p>
<ul>
  <li class="loud">Pizza</li>
  <li>Soda</li>
</ul>
```

```
Class:
.loud {font-style: bold;}

Id:
#low{font-style:italic;}
(ids are unique)
```

CREATE AN HTML FILE AND A CSS FILE TO STYLE IT

JavaScript in one slide

- JavaScript is a scripting language that permits to make pages more interactive for users
- Examples:
  - Form validation
  - Show and hide elements
  - Database interactions
  - Animations

JavaScript – cheat sheet
http://bit.ly/ivbzJ

- Files with js extension
- Integrate JavaScript:

```
<script type="text/javascript" charset="utf-8">
</script>
```

Inline

- OR

External file

```
<script type="text/javascript" src="file.js"></script>
```

Example

```
<script type="text/javascript" charset="utf-8">
            function showAlert(){
                 alert("Hello");
            }
```
- `</script>`

```
<button type="button" onclick="showAlert()">
    Click me!
</button>
```

JQUERY MOBILE

What is jQuery mobile?

- http://jquerymobile.com
- To help designers and developers create mobile web experiences easily
- Separation of HTML, CSS and JavaScript
- To create unified user experiences across popular platforms
- Based on HTML5 and a powerful theme mechanism
- Lightweight code built with progressive enhancement
  - Taking advantage of features detected within the browser
- Plugins available (e.g., maps and RSS feeds)
- Code can be packaged in a native app
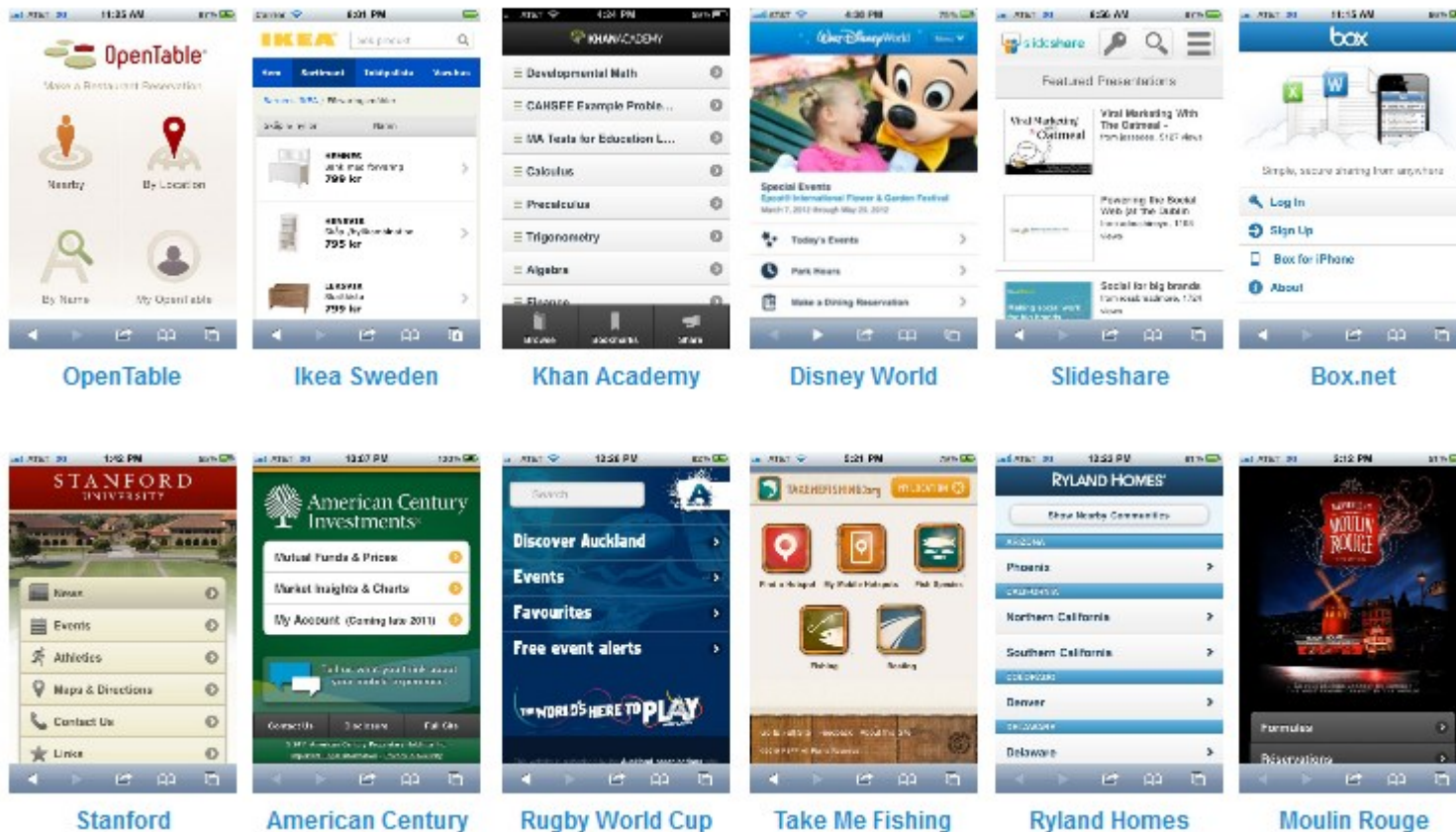- Sponsorship from Adobe, Mozilla Corporation, etc.
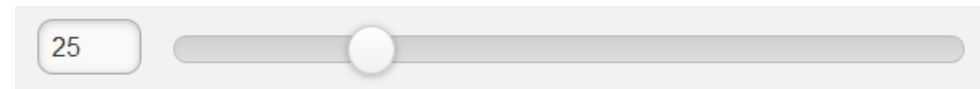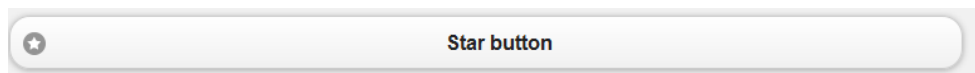
25

Slider: 0

Browser support

- Browsers

  - **A-grade** Full jQuery Mobile Support
  - **B-grade** Almost full support, no AJAX navigation
  - **C-grade** Non-enhanced HTML experience

- Browsers' support
- https://jquerymobile.com/browser-support/1.4/

jQuery mobile in the real world

OpenTable   Ikea Sweden   Khan Academy   Disney World   Slideshare   Box.net

Stanford   American Century   Rugby World Cup   Take Me Fishing   Ryland Homes   Moulin Rouge

jQuery Mobile Widgets
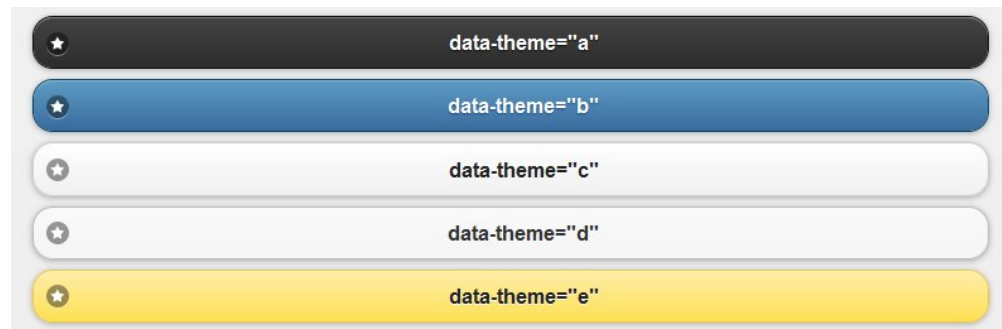
Anatomy of a page

```
<!DOCTYPE html>
<html>
<head>
    <title>Sample0 - Skeleton</title>
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <link rel="stylesheet" href="http://code.jquery.com/mobile/1.4.3/jquery.mobile-1.4.3.min.css" />
    <script src="http://code.jquery.com/jquery-1.11.1.min.js"></script>
    <script src="http://code.jquery.com/mobile/1.4.3/jquery.mobile-1.4.3.min.js"></script>
</head>


<body>
    <div data-role="page">
                <div data-role="header">
                    <h1>Header</h1>
                </div>

                <div data-role="content">
                    <p>Body</p>
                </div>

                <div data-role="footer">
                    <h5>Footer</h5>
                </div>
    </div>
</body>
</html>
```

Viewport
CSS
JavaScript

Header

Content

Footer

Sample0 - Skeleton

file:///C:/

Header
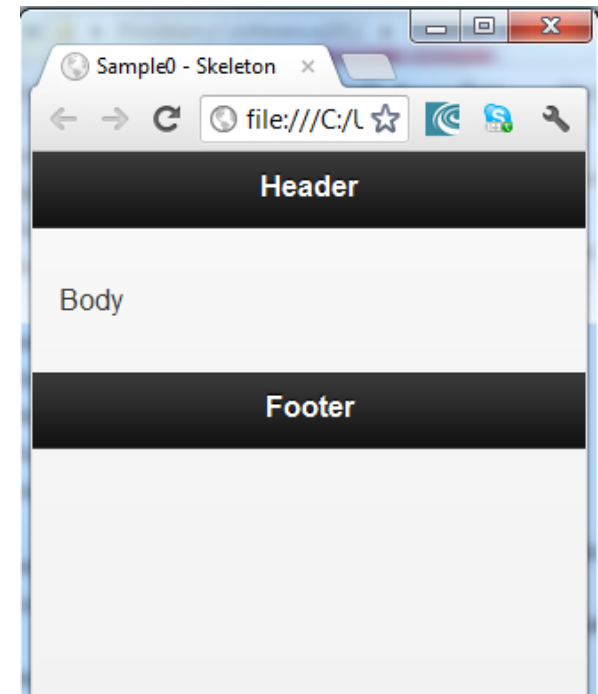
Body

Footer

CREATE YOUR FIRST JQUERY MOBILE PAGE AND OPEN IT IN GOOGLE CHROME AND THEN IN A MOBILE DEVICE

Data roles

- Markup elements can have roles (`data-role`)
- They add semantics to the document
- They permit also to add attributes to tags while maintaining valid documents
- They are implicit contracts between the framework and the developers
- `data-role` **include** `page, header, content, footer, navbar, button, controlgroup, collapsible, collapsible-set, fieldcontain, listview, dialog, slider, nojs`
- http://api.jquerymobile.com/data-attribute/

Data attributes

- Each UI component has data attributes associated to it
- Data attributes (`data-*`) permit to initialize and configure widgets
- http://api.jquerymobile.com/data-attribute/

Button

```
<a href="#" data-role="button">Click me!</a>
```
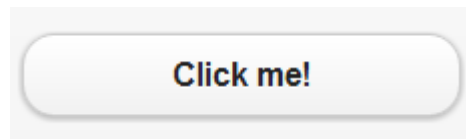
Button with an icon

```
<a href="#" data-role="button" data-
icon="arrow-u">Click me!</a>
```

data-corners	**true** | false
data-icon	home | delete | plus | arrow-u | arrow-d | check | gear | grid | star | custom | arrow-r | arrow-l | minus | refresh | forward | back | alert | info | search
data-iconpos	**left** | right | top | bottom | notext
data-iconshadow	**true** | false
data-inline	true | **false**
data-mini	true | **false** - Compact sized version
data-shadow	**true** | false
data-theme	swatch letter (a-z)

Click me!

Icons
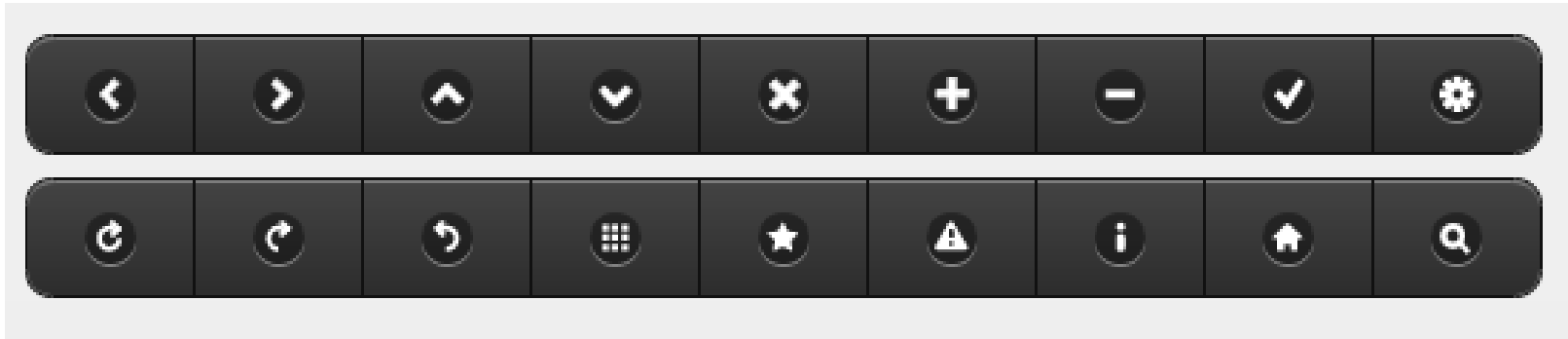
Listview

```
<ul data-role="listview">
    <li><a href="#">NYC</a></li>
    <li><a href="#">Boston</a></li>
    <li><a href="#">San Francisco</a></li>
</ul>
```
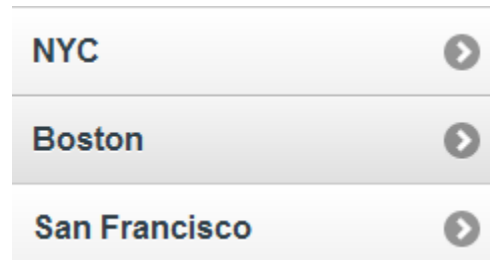
Listview

```
<ul data-role="listview" data-inset="true" data-filter="true">
    <li><a href="#">NYC</a></li>
    <li><a href="#">Boston</a></li>
    <li><a href="#">San Francisco</a></li>
</ul>
```
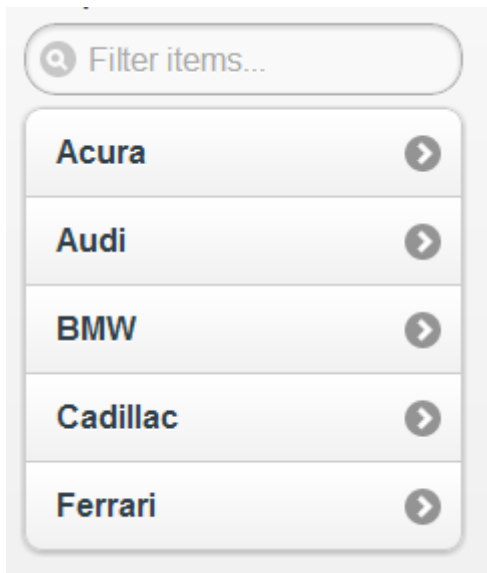

data-autodividers
data-count-theme
data-divider-theme
data-filter
data-filter-placeholde
data-filter-theme
data-header-theme
data-inset
data-split-icon

data-split-theme
data-theme

Themes

- Introduced with the `data-theme` attribute and the letters a, b, c and d…
- Can be customized using ThemeRoller
  - http://jquerymobile.com
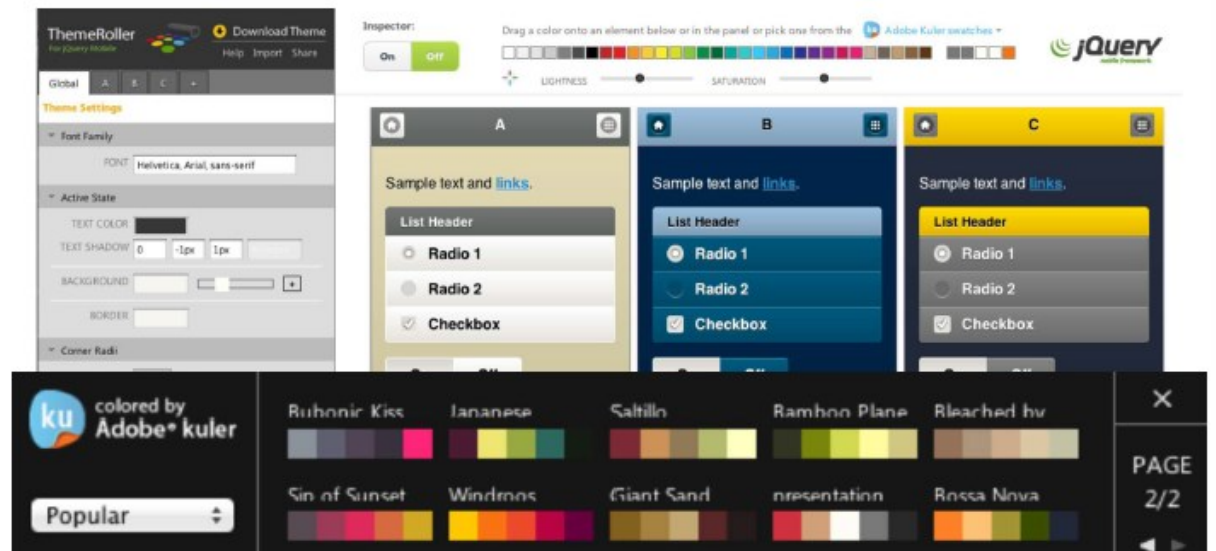
Multiple pages navigation

Pages have unique ids

```
<body>
    <div data-role="page" id="page1" data-theme="a">   ...

    <div data-role="page" id="page2" data-theme="b">   ...
</body>
```

Going to a particular page:

```
<a href="#page2" data-icon="back">Two</a>
```

Navigation

```
<a href="page.html">Here</a>
<a href="page.html" data-rel="dialog">Here</a>
<a href="page.html" data-role="button">Here</a>
<a href="page.html" data-transition="flip">Here</a>
```

Your files need to be on a server

slide

slideup

slidedown

pop

fade

flip

Tabs

- A navbar widget is available with up to 5 tabs
- It is placed within the header or the footer
- It is defined using the data-role `navbar` and an unordered list (`<ul>` … `</ul>`)

```
<div data-id="navig" data-role="navbar">
    <ul>
        <li><a href="#page1" class="ui-btn-active ui-state-persist"
            data-icon="home">One</a></li>
        <li><a href="#page2" data-icon="back">Two</a></li>
    </ul>
</div>
```

- To initialize the state of the tab and restore it each time you come back to the page, use `class= "ui-btn-active ui-state-persist"`
- `data-id` permits to fix the navigation bar outside a transition and create a persistent navigation bar

Collapsibles

- Collapsibles are defined using the data-role `collapsible` container
- They are composed of a header (using `h1` to `h6`) and then any HTML code
- `data-collapsed` permits to set the state of the collapsible to close (`true`) or open (`false`)

```
<div data-role="collapsible" data-mini="true">
    <h3>Section 1</h3>
    <p>Hello appearing</p>
</div>
```
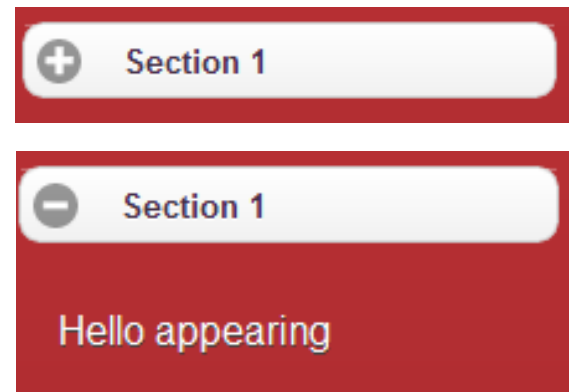
Collapsible sets (Accordion)

- Collapsible sets permit to group widgets and make them behave like an accordion (so only one section can be open at a time)

```html
<div data-role="collapsible-set">
    <div data-role="collapsible" data-collapsed="false">
        <h3>Section 1</h3>
        <p>I'm the collapsible set content for section B.</p>
    </div>

    <div data-role="collapsible">
        <h3>Section 2</h3>
        <p>I'm the collapsible set content for section B.</p>
    </div>

    <div data-role="collapsible">
        <h3>Section 3</h3>
        <p>I'm the collapsible set content for section B.</p>
    </div>
</div>
```

Forms

- Forms are wrapped into a form tag with attributes action and method

```
<form action="form.php" method="post or get">

...

    <input type="submit" name="mysubmit"
    value="Submit" />

</form>
```

- Forms are composed of different UI components introduced by labels

```
<label for="nameid">Name:</label>
<input type="text" name="name" id="nameid" required />
```

Forms

- All the UI elements of a form are contained in a `fieldset` to present the elements conveniently on the screen

```
<fieldset>

…

</fieldset>
```

- To improve the look-and-feel of a form each pair (label, UI component) should be in a `div` tag with data-role called `fieldcontain`

```
<div data-role="fieldcontain">
        <label for="nameid">Name:</label>
        <input type="text" name="name" id="nameid" required />
</div>
```

Text inputs

```
<div data-role="fieldcontain">
        <label for="nameid">Name:</label>
        <input type="text" name="name" id="nameid" required />
</div>
```

- The type of the text can be:
  - `text, password, email, tel, url, search, number, date, datetime, time, datetime-local, month, week`
- To require a value, use the `required` attribute
- To provide a value by default, use the `placeholder` attribute

```
<div data-role="fieldcontain">
        <label for="ageid">Age:</label>
        <input type="number" name="agename" id="ageid" required placeholder="21" />
</div>
```

SHOWCASE OF THE DIFFERENT UI ELEMENTS

Emails, SMS and phone calls

```html
<div data-role="content">
    <p>Email</p>
    <p>
    <a href="mailto:test@gmail.com">Send email1</a>
    </p>
    <p>
    <a href="mailto:test@gmail.com?subject=test&body=test">Send email2</a>
    </p>

    <p>SMS</p>
    <p>
    <a href="sms:">Send sms1</a>
    </p>
    <p>
    <a href="sms:+1800000000?body=test">Send sms2</a>
    </p>

    <p>Phone call</p>
    <a href="tel:+1800000000">Call us</a>
</div>
```

Panels

- Panels are defined using *data-role*
- *data-position* defines the position of the panel – left or right
- *data-display* determines the way the panel will be displayed - reveal, overlay or push

```html
<div data-role="panel" id="myPanel">
  <h2>Menu...</h2>
  <p>Menu 1</p>
  <p>Menu 2</p>
  <p>Menu 3</p>
</div>
```

Panels

- To open a panel, the reference points on the panel

```html
<div data-role="header">
  <h1>Standard Page Header</h1>
  <a href="#myPanel" data-role="button" data-icon="bars">Open panel</a>
</div>
```

- To close a panel, one clicks on the same element that opened the panel

```html
<div data-role="panel" id="myPanel">
  <h2>Menu...</h2>
  <p>Menu 1</p>
  <p>Menu 2</p>
  <p>Menu 3</p>
  <a href="#pageone" data-rel="close"
  class="ui-btn ui-btn-inline ui-shadow ui-corner-all ui-btn-a ui-icon-delete ui-btn-icon-left">
  Close panel
  </a>
</div>
```

Adding scripts to a page

For adding JavaScript to the
page
Waits for the HTML to load

```
<script>
$(document).ready(function(){
    // your programming
});
</script>
```

For event management

```
<meta name="viewport" content="width=device-width, initial-scale=1">
<link rel="stylesheet" href="jquery.mobile-1.1.1.min.css" />
<script src="jquery-1.7.1.min.js"></script>
<script>
$(document).bind("mobileinit", function(){
 $.mobile.listview.prototype.options.filterPlaceholder = "Affiner la recherche ... ";
  });
</script>
<script src="jquery.mobile-1.1.0.min.js"></script>
```

$('#selector').bind('event',myData, functionName)

Removing elements from a page

```
<script type="text/javascript">

    $(document).ready(function (){

        $('ul[data-role="listview"]').find('li').click(function()
            {
                $(this).remove();
            });
    });

</script>
<body>
    <div data-role="page">
        <div data-role="header">
            <h1>Suppression d'un élément d'une liste</h1>
        </div>
        <div data-role="content">
            <ul data-role="listview" data-inset="true" data-filter="true"
                data-filter-placeholder="Rechercher votre équipe....">
                <li data-role="list-divider">MBour</li>
                <li><a href="#">Atlantic</a></li>
                <li><a href="#">Chades</a></li>
                <li><a href="#">Dexele</a></li>
                <li data-role="list-divider">Thiès</li>
                <li><a href="#">Botafogo</a></li>
                <li><a href="#">Carre bi</a></li>
                <li><a href="#">Grand Thiès</a></li>
            </ul>
        </div>
        <div data-role="footer">
            <h5>SenMobile</h5>
        </div>
    </div>
</body>
```
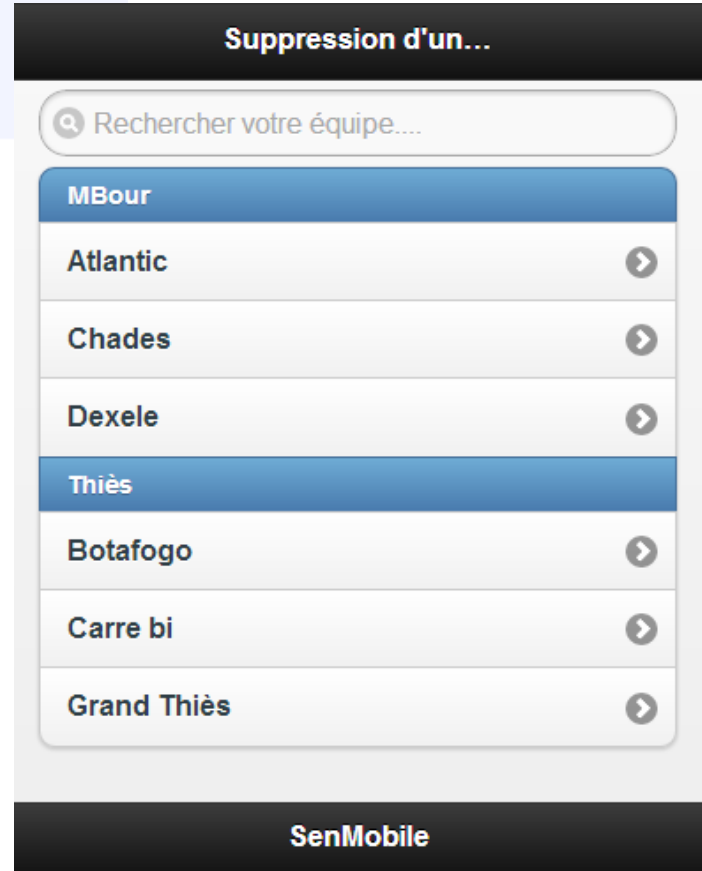
Suppression d'un...

🔍 Rechercher votre équipe....

MBour

Atlantic ❯

Chades ❯

Dexele ❯

Thiès

Botafogo ❯

Carre bi ❯

Grand Thiès ❯

SenMobile

Maps - Configurations

- We need a plugin to use maps and interact with them in jQuery Mobile
  - Google maps v3 plugin for jQuery and jQuery Mobile
  - http://code.google.com/p/jquery-ui-map/
- In the head of the HTML document we add the required scripts

```
<link rel="stylesheet"
    href="http://code.jquery.com/mobile/1.1.0/jquery.mobile-1.1.0.min.css" />
<script src="http://maps.google.com/maps/api/js?sensor=true"
    type="text/javascript"></script>
<script src="http://code.jquery.com/jquery-1.7.2.min.js"></script>
<script
    src="http://code.jquery.com/mobile/1.1.0/jquery.mobile-1.1.0.min.js"></script>
<script src="js/ui/jquery.ui.map.js" type="text/javascript"></script>
```

- We are ready to go!

References

- http://jquerymobile.com
- http://demos.jquerymobile.com/1.4.3/
- http://cordova.apache.org/
- http://svn.codespot.com/a/eclipselabs.org/mobile-web-development-with-phonegap/tags/r1.2/download
- http://www.mobiledevelopersolutions.com/home/start/twominutetutorials/tmt0