

Introduction to the **Mobile Web Framework**

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Overview

1. The Mobile Landscape
2. Approaching Mobile
3. A Web-based Solution
4. Principles and Strategies
5. Framework Semantics & Tools

The Mobile Landscape

is pervasive, growing and evolving.

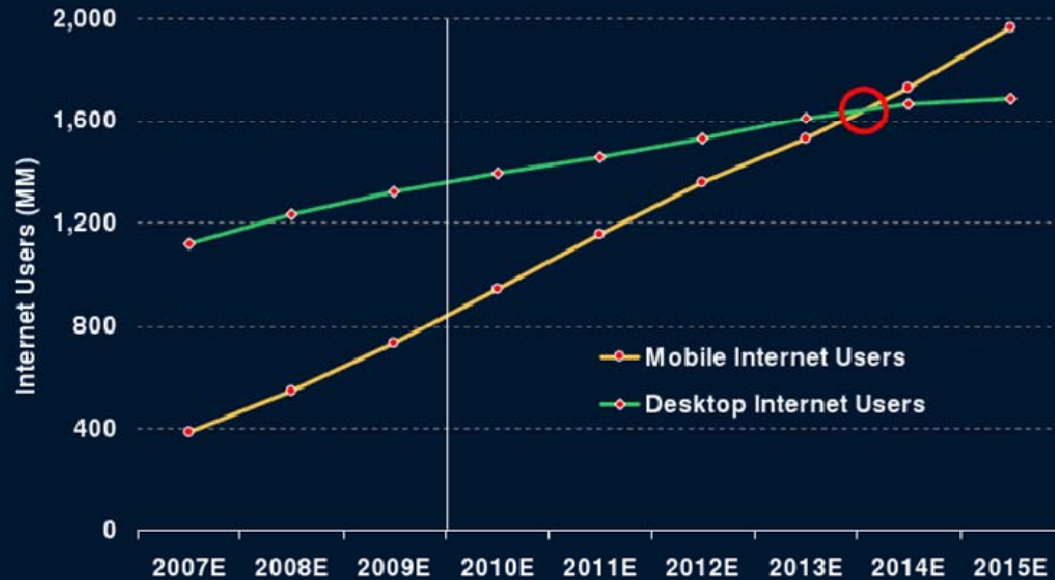
Growth in Mobile

- Mobile is soon to overtake the desktop.
- In higher education:
 - Currently, over 60% of students have an internet-capable device.
 - Within a year, over 75% of students will have an internet-capable mobile device.
- “Students are more likely to remember their cell phone than their wallet.”

Growth in Mobile

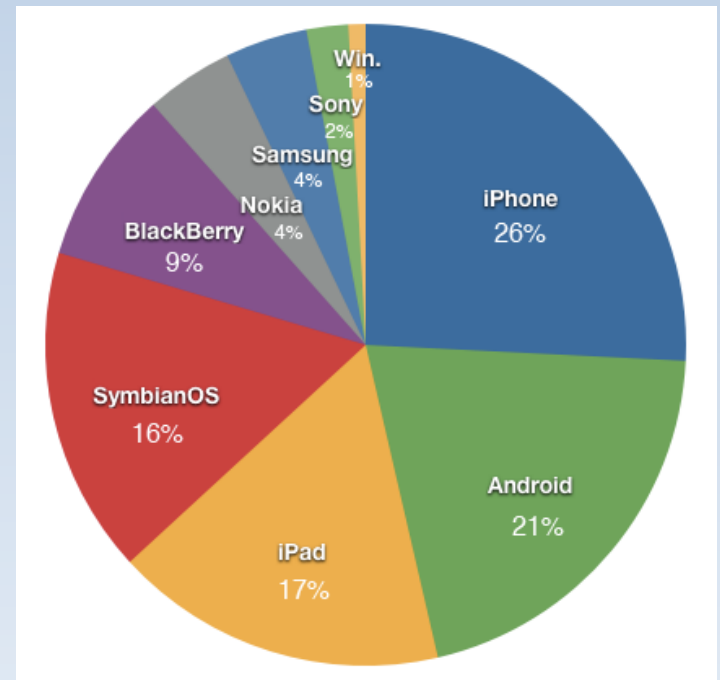
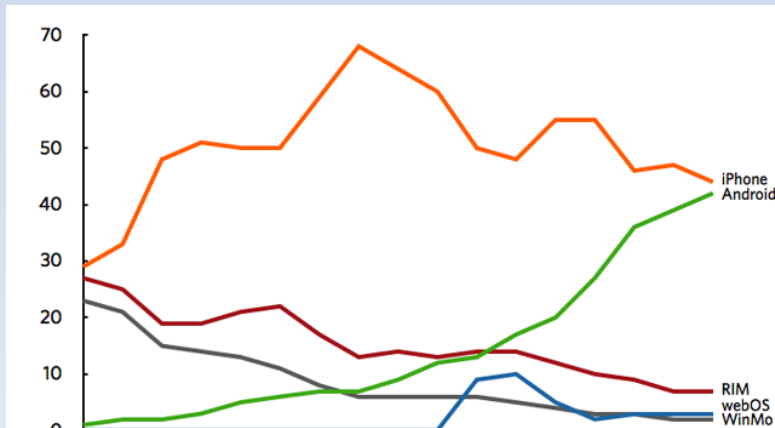
Mobile Users > Desktop Internet Users
Within 5 Years

Global Mobile vs. Desktop Internet User Projection, 2007 – 2015E



Proliferation of Devices

- **Diverse, rapidly changing** landscape:
 - Devices
 - Operating systems
 - Browsers



Approaching Mobile

Two Contrasting Approaches

Why Not Already Mobile?

- **A lack of resources or experience**
 - Which platform do we develop for first?
 - Where can I find developers for each platform?
 - How can we keep up with new platforms?
- **Not a priority**
 - Doesn't our website already work on mobile?
 - Why does it warrant the time and cost?

Goals of a Mobile Strategy

1. Deliver rich mobile content
2. Reduce the cost to mobilize
3. Minimize maintenance costs
4. Avoid the hassle of “keeping up”

The Native Platform

- Rich set of features
- Centralized distribution platforms
- Device-specific development
- Varied paradigms and architectures
- Rise and fall of native platforms
- Manual updates

The Web Platform

- Single established platform
- Existing paradigms and architecture
- Automatic updates
- Mixed support between devices
- New and evolving API
- No central distribution platform

A Web-based Solution

with the *Mobile Web Framework*

Motivations for Web

- **Simplifies** mobile development process
 - Standard web technologies
- **Reduces costs** for development
 - Don't have to develop for each device separately
- **Compatible** with all web-capable devices
 - New devices don't require new code

Motivations for Web

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But how do we deal with its limiting factors?

Challenges with the Web

- Two major issues:
 - **Mixed support** between devices
 - **New & evolving API** for the HTML 5 technologies

Challenges with the Web

- **Mixed support** between devices
 - A fully compatible markup standard
 - Allow each device the best possible experience
 - No device-by-device planning
- **New & evolving API** for HTML 5 technologies

Challenges with the Web

- **Mixed support** between devices
 - A fully compatible markup standard
 - Allow each device the best possible experience
 - No device-by-device planning
- **New & evolving API** for HTML 5 technologies
 - Devices that can use it, should use it
 - Create support where possible but not available

How Can We Do This?

How Can We Do This?

A Framework!

No, but really...

How Can We Do This?

- **Markup standard**
 - Semantic HTML classes and ids
- **Dynamic libraries**
 - CSS & Javascript catered to a visitor's device
 - APIs & scripts for advanced features
- **Native containers**
 - Extend to support unsupported features
 - Make available on app stores

Where Can This Work?

- The **minimum requirements**:
 - XHTML MP 1.0 (subset of HTML 4.01)
 - WCSS (subset of CSS 2.1)
 - 120 x 120 screen
 - JPG and GIF support
 - 256 colors
- No WAP, but **practically all modern devices**

Going a Step Further

- Approach is conducive to **federation**
- One **central framework installation**
 - One unit can manage the framework
 - Changes need to be made in only one place
 - Enables maintenance of a central identity
- **Distributed applications** leverage it
 - Language and platform independence
 - Data stays with the data holder

Principles and Strategies

of the Mobile Web Framework

Principles

- Device agnostic
- Graceful degradation
- Platform independent
- Federated architecture
- Unified presence
- Modern web standards

One Code, Many Devices



- Works on any device with a web browser.
- Markup-driven with semantic entities.


One Code, Many Devices

UCLA Campus Tour

Bruin Walk

Ackerman

[Next >>](#)



[Next >>](#)

Inside Ackerman Union are restaurants offering everything from burgers to a variety of ethnic foods. Ackerman also houses a ballroom, arcade, candy store, portrait studio, and ATMs.

Go to Next Location


Go to Previous Location

Back to Tour Locations

UCLA Campus Tour

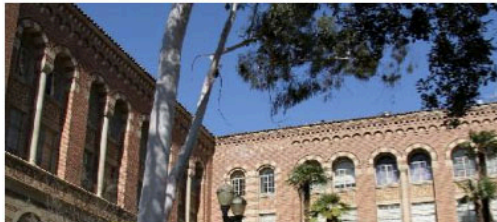
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Moore



UCLA Campus Tour

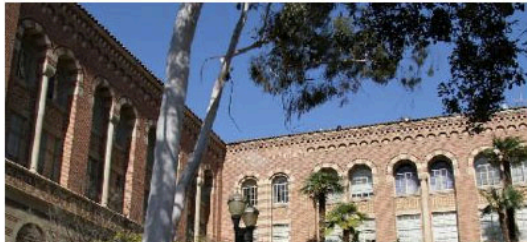
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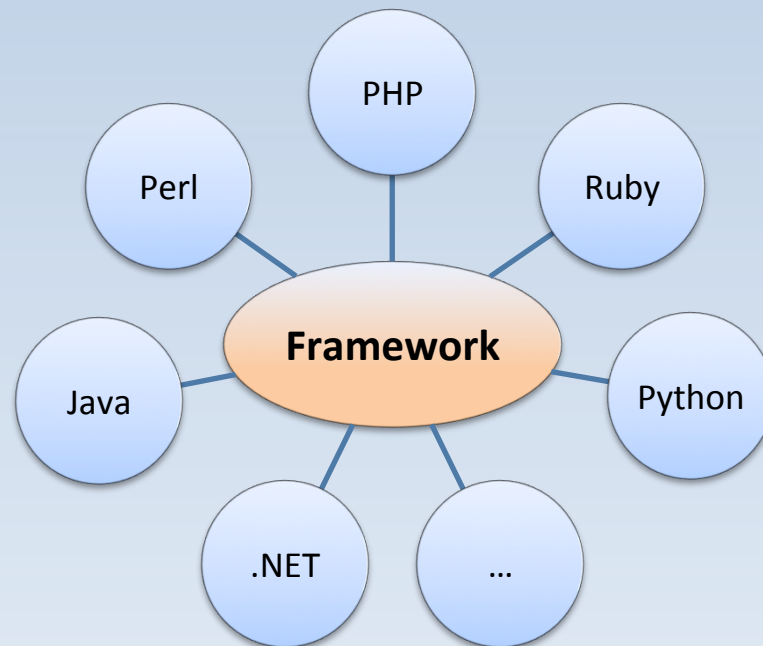
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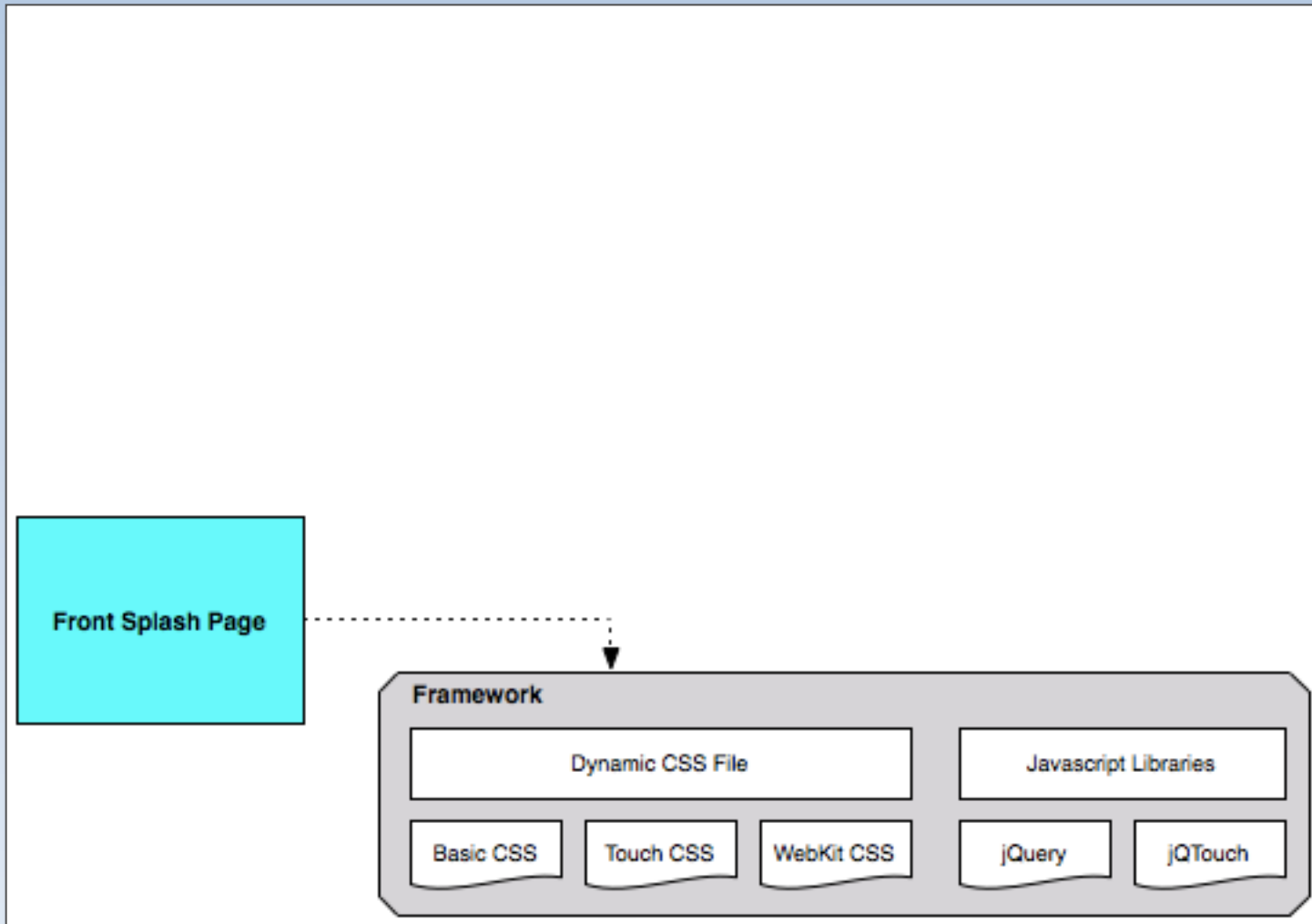


One Framework, Many Apps

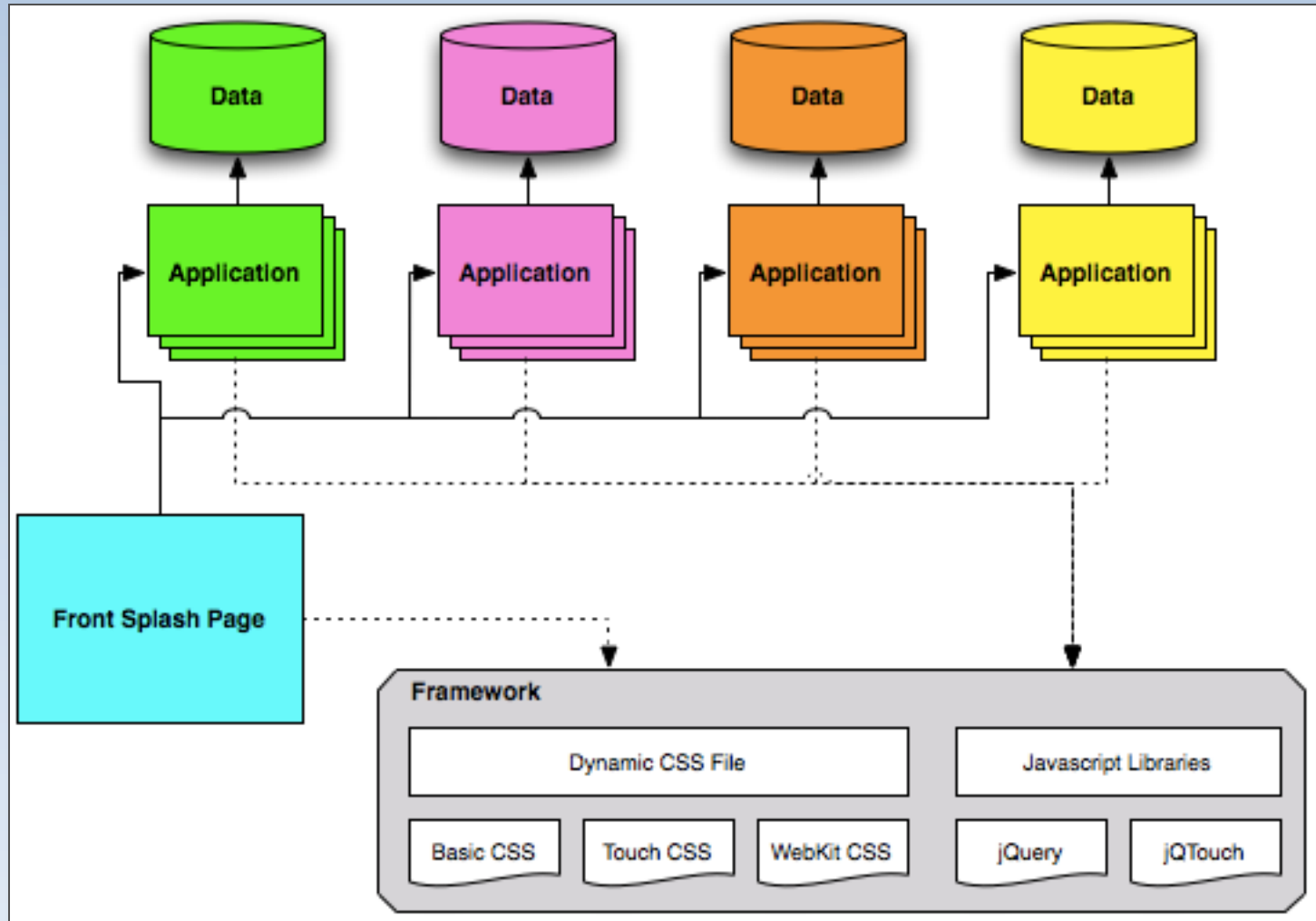
- Built on browser-side technologies
- Supports all languages & environments



One Framework, Many Apps



One Framework, Many Apps



Strategy

- Application uses semantic HTML entities
- MWF determines best presentation
- MWF accounts for support or lack thereof
- Three basic device classification tiers
- Deeper device awareness available

Getting Started

- Create a page with these two tags in HEAD:

```
<link rel="stylesheet" type="text/css"  
      href="http://m.berkeley.edu/assets/css.php">
```

```
<script type="text/javascript"  
      src="http://m.berkeley.edu/assets/js.php"></script>
```

- Start using the MWF!
 - All HTML classes & JS core are always available
 - Additional libraries available on demand
 - Some special assets like compressors

But Really, What's Going On?

- An app has a page with the MWF handlers
- When a user visits the page,
 - the user's browser requests `css.php` and `js.php`
 - the MWF gathers telemetry on the device
 - the MWF classifies device and generates CSS/JS
 - the page is rendered from generated CSS/JS
- Process is transparent to the app – it uses CSS classes without concern for the device

Demo

The Framework in Action

Framework Semantics & Tools

to enable and empower a mobile developer

Framework Components

- Base CSS Handler

```
<link rel="stylesheet"  
      href="http://m.berkeley.edu/assets/css.php">
```

- Base Javascript Handler

```
<script type="text/javascript"  
      src="http://m.berkeley.edu/assets/js.php">  
</script>
```

Semantic Entities - Header

- A full-width page header

```
<h1 id="header">  
  <a href="http://m.berkeley.edu">  
      
  </a>  
  <span>{HEADER_TEXT}</span>  
</h1>
```

Berkeley Directory

Semantic Entities - Footer

- A full-width page footer

```
<div id="footer">  
  <p>{COPYRIGHT_MESSAGE}<br>  
    <a href="{HELP_PAGE_URL}">Help</a> |  
    <a href="{FULL_SITE_URL}">View Full Site</a>  
  </p>  
</div>
```

University of California © 2011 UC Regents
[Help](#) | [View Full Site](#)

Semantic Entities – Menu

- A full-width navigation menu

```
<div class="menu-full">  
  <h1>{MENU_HEADING}</h1>  
  <ol>  
    <li><a href="{LINK1_URL}">{LINK1_TEXT}</a></li>  
    <li><a href="{LINK1_URL}">{LINK1_URL}</a></li>  
  </ol>  
</div>
```



Semantic Entities – Content

- A full-width multi-purpose content area

```
<div class="content-full">  
  <h1>{CONTENT_HEADING}</h1>  
  <p>{TEXT_CONTENT}</p>  
</div>
```

Presentation Abstract

Divided into three sections, this session shall showcase many Mobile Web Framework features including (1) semantic entities and Javascript libraries available to content providers, (2) advanced use cases for content providers, and (3) deployment of the framework for service providers.

Button Entity

- A full-width button element:

```
<div class="button-full">  
  <a href="{BUTTON_URL}">  
    {BUTTON_TEXT}  
  </a>  
</div>
```



Going Further with Entities

- Entities support additional properties
 - Padded
 - Light
- Some specific properties
 - Multi-item buttons
 - Content buttons

Going Further with Entities

- A two item full-width button element:

```
<div class="button-full button-padded button-light">  
  <a href="{BUTTON1_URL}">  
    {BUTTON1_TEXT}  
  </a>  
  <a href="{BUTTON2_URL}">  
    {BUTTON2_TEXT}  
  </a>  
</div>
```

Previous

Next

Beyond the Entities

- Control display for only some classifications
 - **.not-basic**
 - **.only-basic**
 - **.not-full**
 - **.only-full**

Beyond the Entities

- Dynamically-defined body telemetry
 - **.mwf** - If the MWF was able to write classes into the body tag
 - **.mwf_mobile** - If device is regarded as mobile
 - **.mwf_notmobile** - If device is regarded as non-mobile
 - **.mwf_standard** - If device is "standard" classification.
 - **.mwf_full** - If device is "full" classification.
 - **.mwf_browser_{name}** - Browser name.
 - **.mwf_browser_{name}_{version}** - Browser name and version.
 - **.mwf_os_{name}** - Device OS name.
 - **.mwf_os_{name}_{version}** - Device OS name and version.

Javascript Libraries

- Javascript UI libraries currently available
 - Transitions
 - Touch Transitions
 - Geolocation

- Loaded on request through JS handler

```
<script type="text/javascript" src="http://m.berkeley.edu/assets/js.php?standard_libs=geolocation&full_libs=transitions+touch_transitions"></script>
```

- *More coming soon...*

Other Scripts

- Redirect mobile users to mobile site

```
<script type="text/javascript" src="http://m.berkeley.edu/assets/redirect/js.php?m={MOBILE_PATH}"></script>
```

- Compress images

```
http://m.berkeley.edu/assets/min/img.php?img={IMG_PATH}  
&force_device_width&force_device_height
```

- Minify CSS and Javascript

```
http://m.berkeley.edu/assets/min/js.php?basic={SCRIPT_1}  
&standard={SCRIPT_2}&full={SCRIPT_3}  
http://m.berkeley.edu/assets/min/css.php?basic={STYLE_1}  
&standard={STYLE_2}&full={STYLE_3}
```

Demo

Building with the Framework

And Now
a quick intermission