

Esri Developer Summit

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ArcGIS API for JavaScript

Building native apps using PhoneGap

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Agenda

- Using PhoneGap
- Esri PhoneGap Quickstart
- jQuery overview
- Putting it all together
- Additional information

Why PhoneGap?

- Mobile cross-browser access to these and more:
- SDCard
- Camera
- Accelerometer
- Contacts
- Battery status
- Ability to put JavaScript app in Google Play, App Store and Windows Phone Store

Demonstration

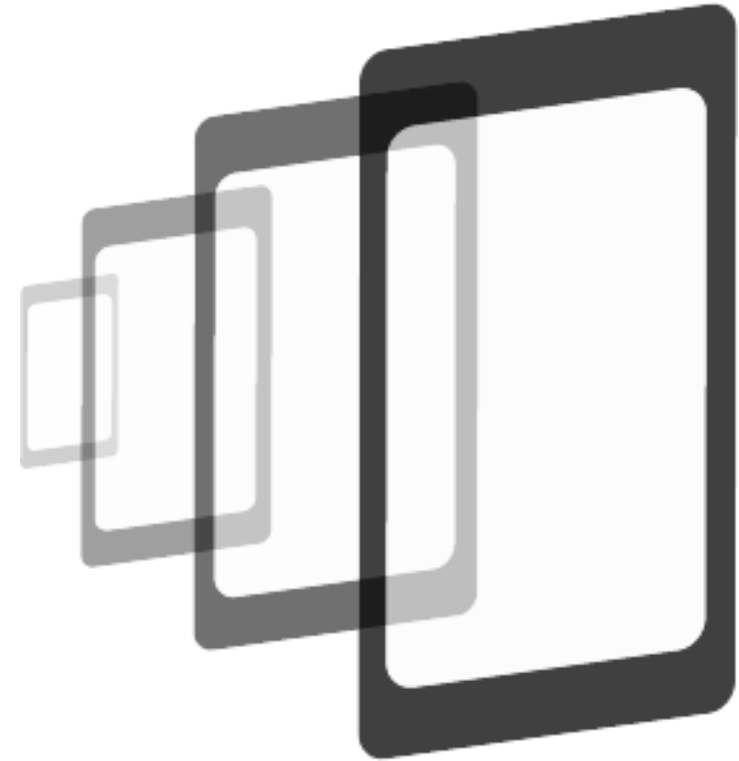
Using PhoneGap

Lloyd Heberlie

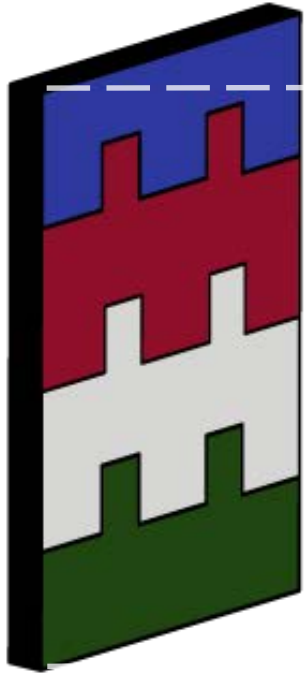


What is PhoneGap?

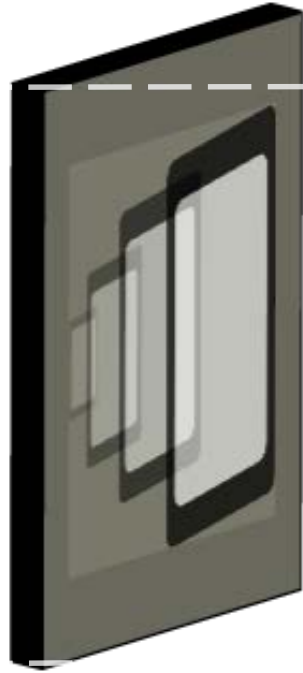
- Application container technology
- Core engine is 100% open source
- Web view container, plus JS API
- HTML5, CSS3, JS = Native App



PhoneGap architecture



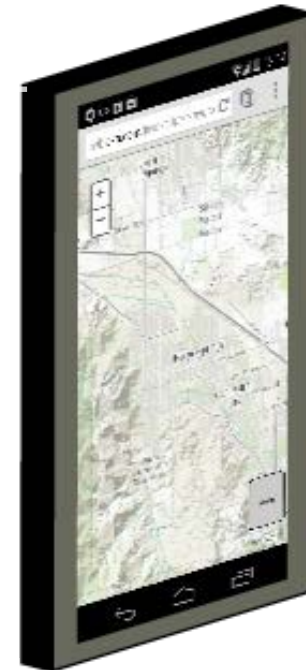
PhoneGap
Plugins



PhoneGap

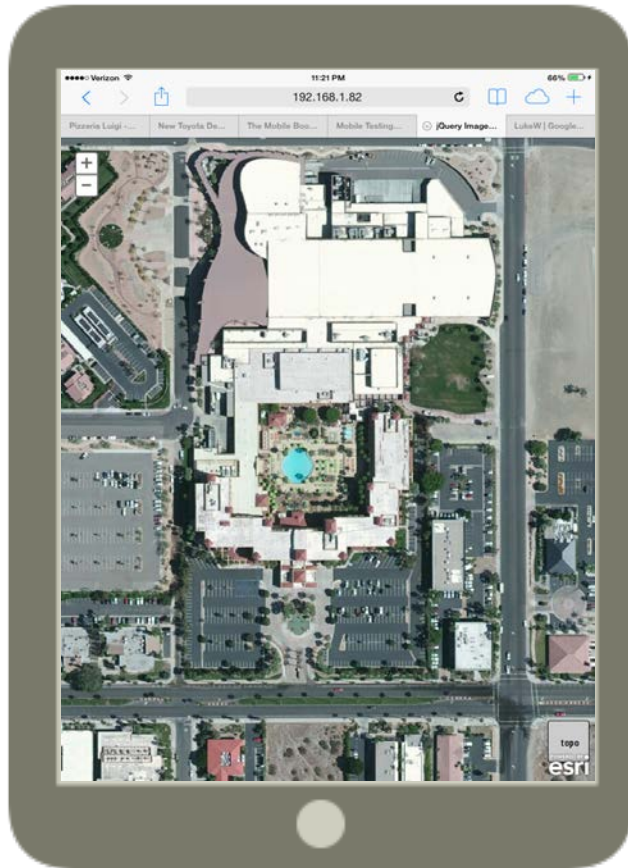


Application
Code

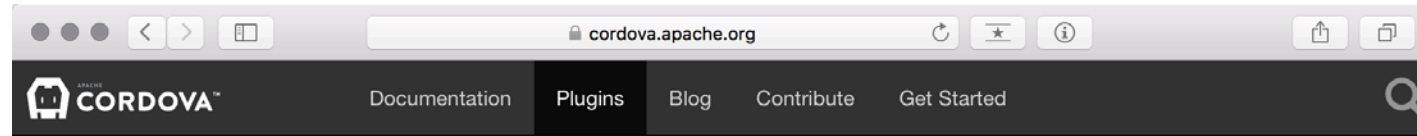


Native
App

PhoneGap Plugins



PhoneGap Plugin options



Cordova Plugins



What is a Cordova plugin?

A plugin is a bit of add-on code that provides JavaScript interface to native components. They allow your app to use native device capabilities beyond what is available to pure web apps.

[+ Contribute Plugins](#)

[Plugin Help](#)

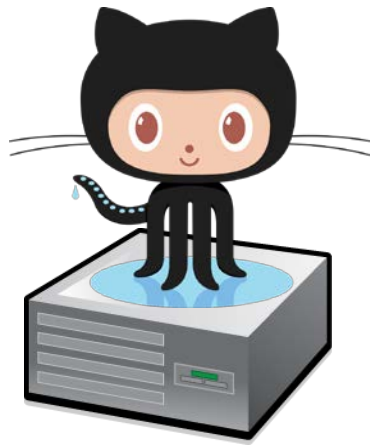
Must Support Platform(s):

Android	iOS	Windows	Blackberry
Ubuntu	Firefox OS	Fire OS	WP8
Browser			

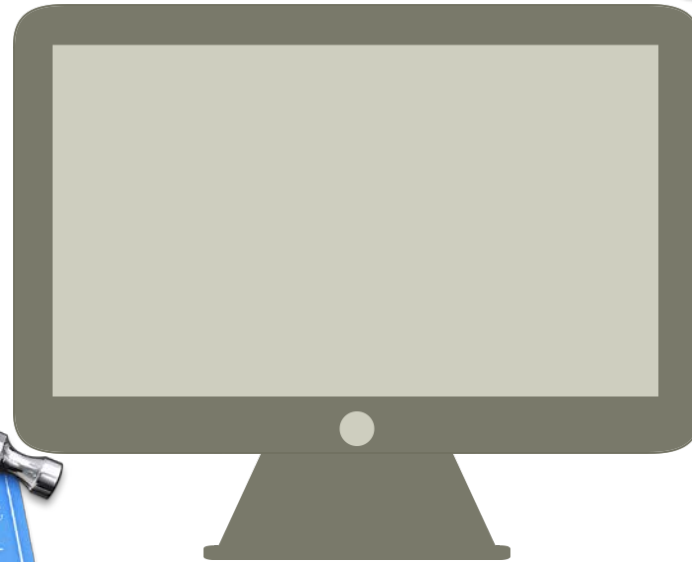
1054 result(s) found

Sort: Quality ▾

Setup a developer machine



Preparing for PhoneGap



 **Developer Program**



Installing Apache Cordova

```
heb:~ lheberlie$ npm install cordova -g
```



Check version of Apache Cordova

```
hebert@hebertlie$ cordova --version  
6.0.0  
hebert@hebertlie$
```

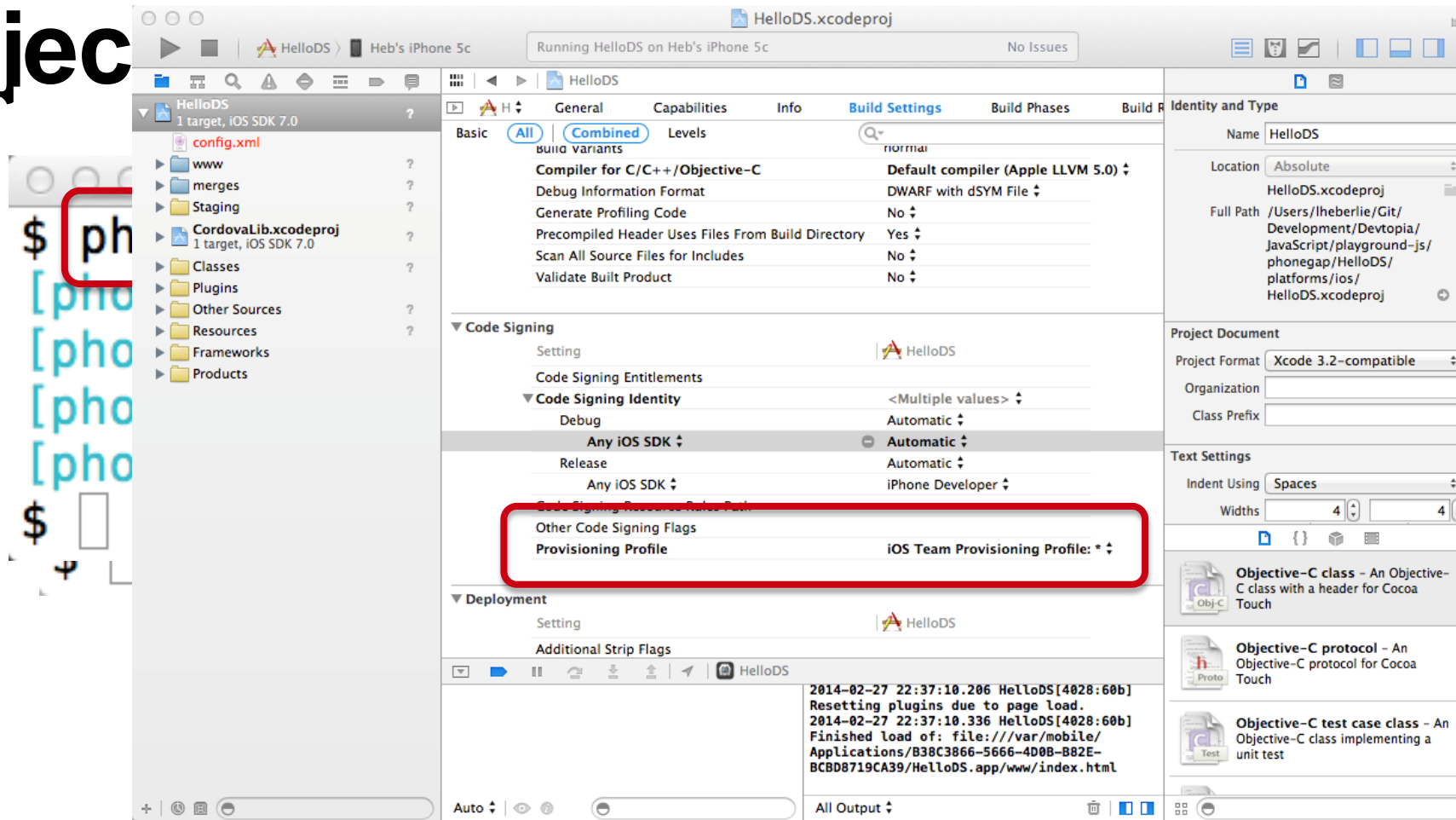


Updating Apache Cordova

```
heb:~ lheberlies npm update cordova -g
```



Creating your first PhoneGap CLI project



Demonstration

PhoneGap Quickstart

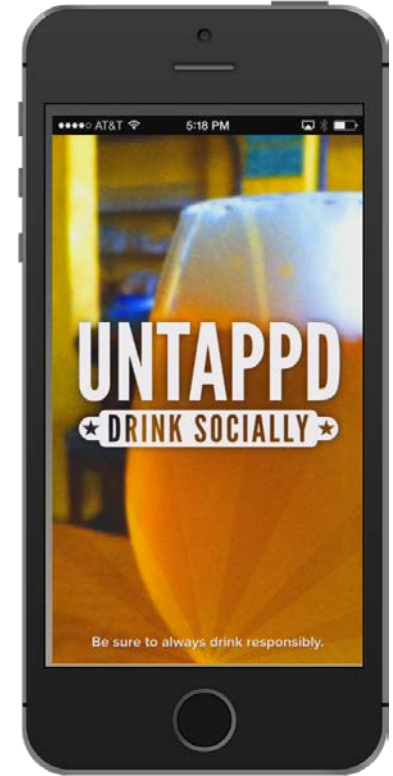
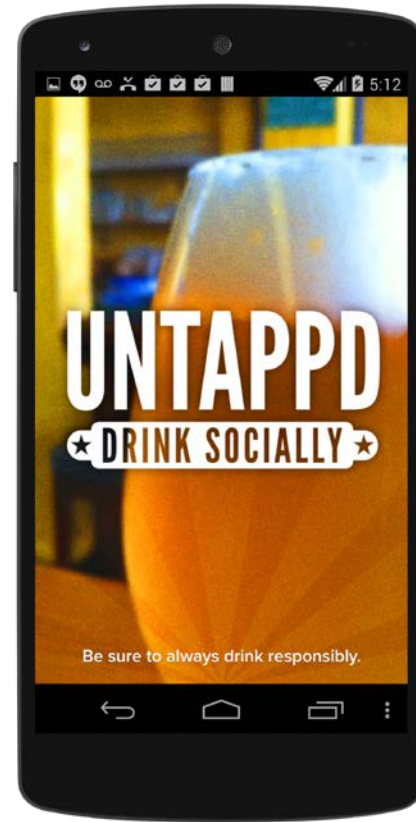
Lloyd Heberlie



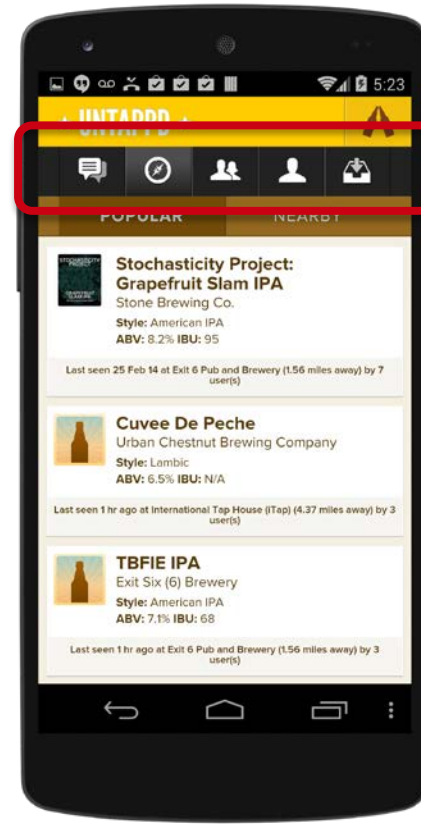
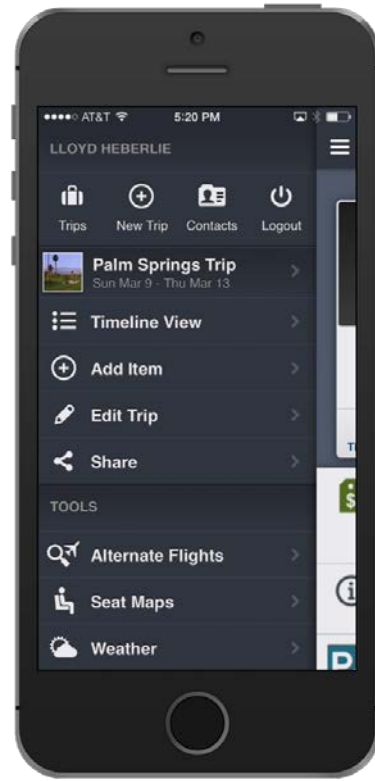
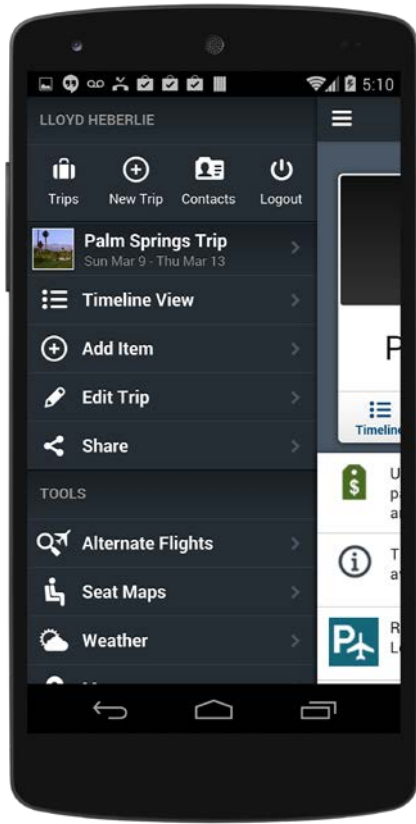
PhoneGap Apps



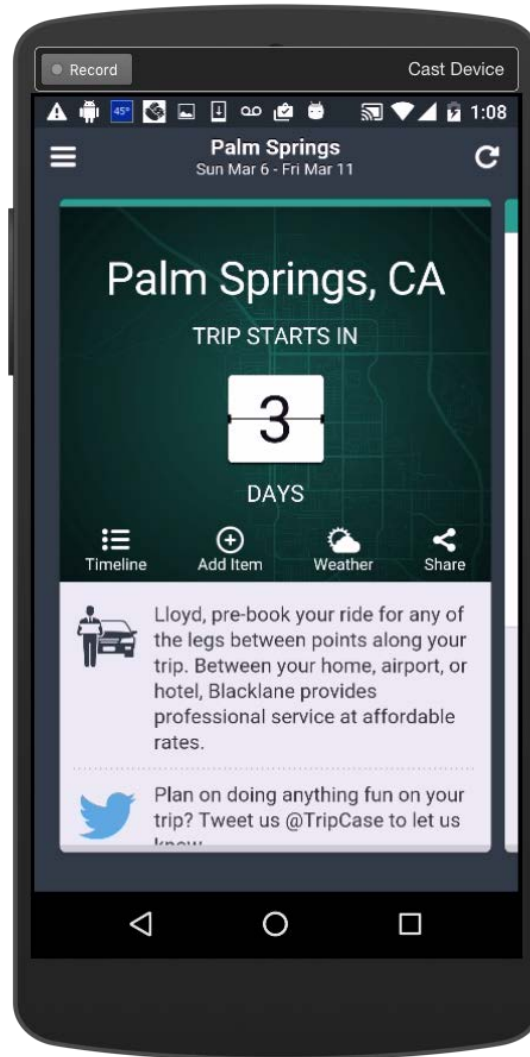
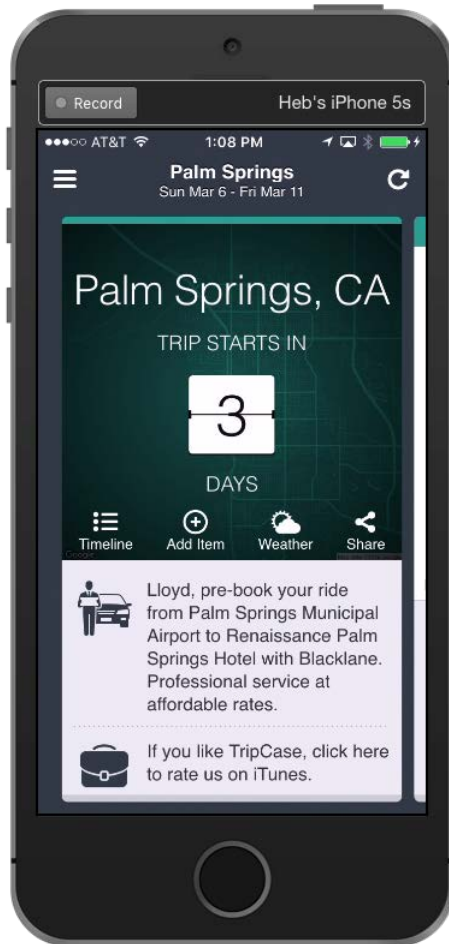
Featured Apps



Featured Apps: Tripcase, Untappd



Universal Example





jQuery overview

Lloyd Heberlie



data-attributes

Listview

OL or UL with `data-role="listview"`

data-autodividers	true false
data-count-theme	swatch letter (a-z)
data-divider-theme	swatch letter (a-z)
data-filter	true false
data-filter-placeholder	string
data-filter-theme	swatch letter (a-z)
data-header-theme	swatch letter (a-z)
data-icon	home delete plus forward back ale
data-inset	true false

```
206 <div id="page-main" data-role="page">
207   <div data-role="header" data-position="fixed">
208     <h1>Feature Detection</h1>
209   </div>
210   <div data-role="content">
211     <ul id="featureDetectionListView" data-role="listview">
212       <!-- This content is auto generated -->
213     </ul>
214   </div>
215 </div>
```

Selections and filtering

```
7 <script type="text/javascript">
8   $("document").ready(function() {
9     $("p:last").css("border", "3px solid red");
10
11    $(".a").css("border", "3px solid green");
12
13    $("#list1").css("border", "3px solid yellow");
14
15    $("p.b").css("border", "3px solid orange");
16  });
17 </script>
```

```
24 <body>
25   <ul id="list1">
26     <li class="a">item 1</li>
27     <li class="a">item 2</li>
28     <li class="b">item 3</li>
29     <li class="b">item 4</li>
30   </ul>
31
32   <p class="a">This is paragraph 1</p>
33
34   <p>This is paragraph 2</p>
35
36   <p class="b">This is paragraph 3</p>
37
38   <p>This is paragraph 4</p>
39
40
41 </body>
```

Events

```
77 $("#featureDetectionListView li").on("click", function (evt) {  
78     var featureTest = evt.currentTarget.id;  
79     console.log("clicked it", featureTest);
```

```
▼ <ul id="featureDetectionListView" data-role="listview"  
listview">  
<!-- This content is auto generated -->  
▶ <li id="mApplicationCache" class="ui-first-child">...</li>  
▶ <li id="mAudio">...</li>  
▶ <li id="mCanvas">...</li>  
▶ <li id="mCanvasText">...</li>  
▼ <li id="mGeolocation">  
▼ <a href="#page-feature-details" class="ui-btn ui-bt  
right ui-icon-carat-r">  
<h3>Geolocation</h3>  
<p>Detect Geolocation support using Modernizr</p>  
::after  
</a>  
</li>
```


Dynamic content

```
53     $.each(featuresArr, function (key, val) {
54         featureDetectionDict[val.id] = val;
55         var pageData = val;
56         var end = featuresArr.length - 1;
57         var htmlString = "";
58         switch (key) {
59             case 0:
60                 htmlString = "<li id='" + pageData.id + "' c
61                 break;
62             case end:
63                 htmlString = "<li id='" + pageData.id + "'
64                 break;
65             default:
66                 htmlString = "<li id='" + pageData.id + "' >
67         }
68         featureItemsArr.push($(htmlString));
69     });
70     $("#featureDetectionListView").append(featureItemsArr);
```

jQuery Mobile page lifecycle

ne custom setup before jQueryMo

```
( "#pageMain) "pagebeforecreate"  
( "#pageMain) "pagecreate" event  
( "#pageMain) "pageinit" event  
( "#pageMain) "pagebeforeshow" e  
( "#pageMain) "pageshow" event
```

```
( "#pageSettings) "pagebeforecreate"  
( "#pageSettings) "pagecreate" event  
( "#pageSettings) "pageinit" event
```

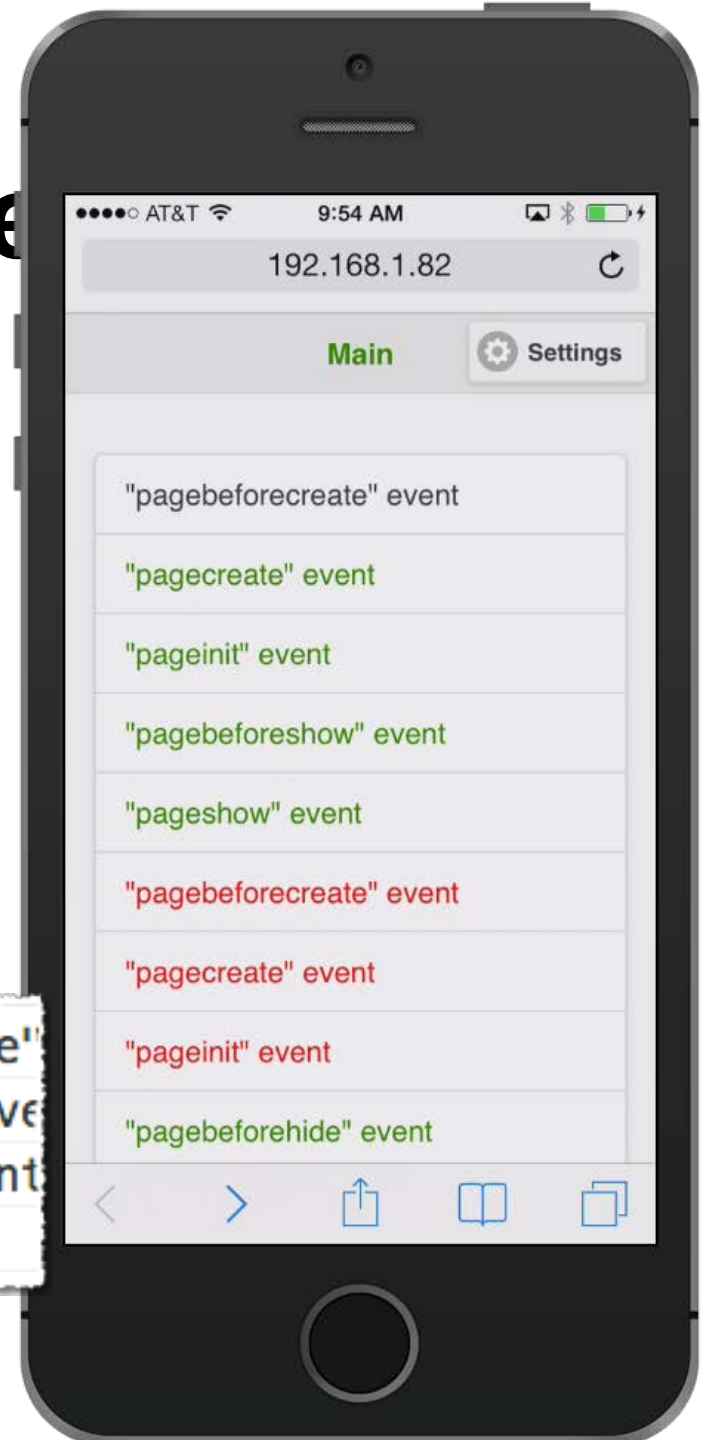
```
( "#pageMain) "pagebeforehide" event
```

```
( "#pageSettings) "pagebeforeshow" e
```

```
( "#pageMain) "pagehide" event
```

```
( "#pageSettings) "pageshow" event
```

```
( "#pageSettings) "pagebeforehide"  
( "#pageSettings) "pagebeforeshow" eve  
( "#pageSettings) "pagehide" event  
( "#pageSettings) "pageshow" event
```



Putting it all together

Andy Gup

Cordova Life Cycle Events

`deviceready`

`pause`

`resume`

<https://cordova.apache.org/docs/en/latest/cordova/events/events.html>

deviceready

```
document.addEventListener("deviceready", onDeviceReady, false);
```

```
function onDeviceReady() {  
    // Now safe to use device APIs  
}
```

```
document.addEventListener("deviceready", onDeviceReady, false);
```

```
function onDeviceReady() {  
    // Run your mapping code here  
    require(["esri/map", "dojo/domReady!"],  
        function(Map) {  
  
            // Create map  
            var map = new Map("mapDiv", {  
                basemap: "dark-gray",  
                center: [-98.58, 39.82],  
                zoom: 3  
            });  
  
            map.on("load", function(evt) {  
                console.log("Map loaded");  
            })  
        }  
    );  
}
```

pause and resume

```
document.addEventListener("pause", onPause, false);
```

```
function onPause() {  
    // Handle the app being placed in background  
}
```

```
document.addEventListener("resume", onResume, false);
```

```
function onResume() {  
    // Handle the app becoming active again  
}
```

UX Frameworks + Maps

Some coding considerations:

Do view transitions cache pages?

Does map get re-created after transition?

Map widgets work portrait & landscape?

Gracefully handle loss of internet?

UX Frameworks



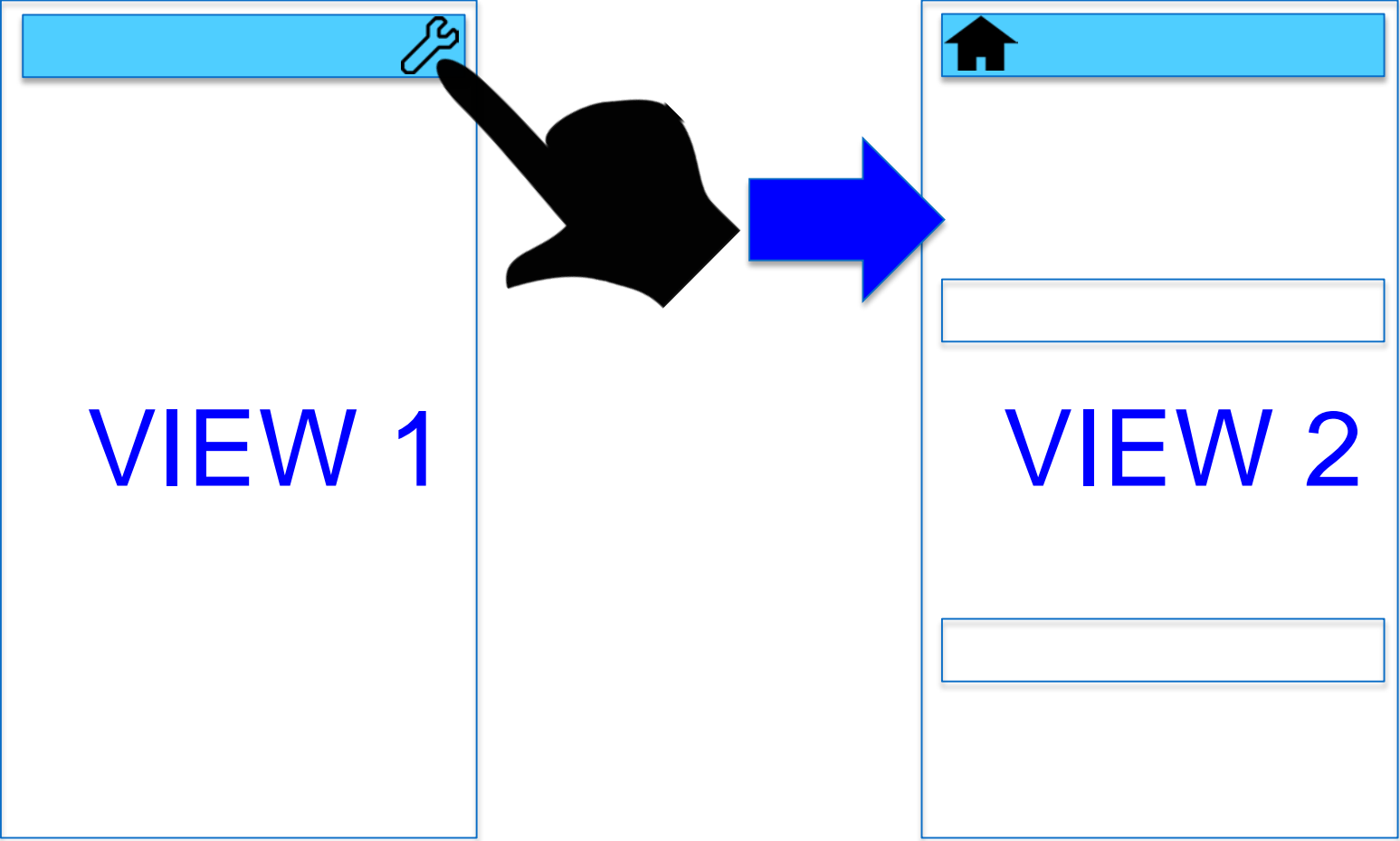
View-based approach

Single page, single view

Single page, multi-view

Multi-page





View-based approach

Similar to...

material design for Android

human interface for iOS

Compatibility with Google Play and AppStore





v1.4.5 is over a year old

v1.5 beta is coming (many changes)

v1.5 shares jQuery UI core

blog.jquerymobile.com

quickstart-map-phonegap

- <https://github.com/Esri/quickstart-map-phonegap>

jQuery – Single page map app

```
<div data-role="page" id="home">  
  //Header  
  <div data-theme="a" data-role="header"  
    data-position="fixed">  
    <h3>HTML5 Geolocation</h3>  
  </div>  
  //Map  
  <div data-role="content">  
    <div id="mapDiv"></div>  
  </div>  
</div>
```

jQuery – Single page map app

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  </div>  
</div>
```


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<div data-role="page" id="home">
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    <h3>HTML5 Geolocation</h3>
  </div>
  //Map
  <div data-role="content">
    <div id="mapDiv"></div>
  </div>
</div>
```

Single page map CSS

```
html, body, div[data-role = "page"] {
    height: 100%;
    width: 100%;
    margin: 0px;
    padding: 0px;
    overflow: hidden !important;
}
.ui-header {
    margin: 0px !important;
    padding: 0px !important;
    float: left;
}
.ui-content {
    height: 100%;
    width: 100%;
    margin: 0px;
    padding: 0px;
}
#mapDiv {
    position: absolute;
    background-color: #EEEEDD;
    height: 100%;
    width: 100%;
    padding: 0px;
    z-index: 0;
    left: 0px;
}
```



Uses AngularJS and node

Demo ionicframework.com

Geolocation with PhoneGap

HTML Geolocation API - same coding pattern

Approximate location

Still always requires user opt-in

Or, use a plugin

Geolocation with PhoneGap

Can allow for passive location

Does not increase accuracy

Does not speed up acquisitions times

Outdoors – turn off WiFi!

github.com/Esri/html5-geolocation-tool-js

Geolocation Native Plugins

<https://cordova.apache.org/plugins/?q=geolocation>

Android-only:

<https://www.npmjs.com/package/cordova-plugin-advanced-geolocation>

Performance

Performance

Using CDN vs Hosting files locally

- Hosted Locally – load much faster

Cross-browser issues? Consider [Cross Walk](#)

Native vs JavaScript

Still using a browser

Plugins run native code

Browser performance versus device performance

Security

Content Security Policy (CSP)

Reduces the risk of XSS

```
<head>  
  <meta http-equiv="Content-Security-Policy"  
        content="  
          default-src 'self'  
            http://js.arcgis.com  
            http://server.arcgisonline.com;  
            http://services.arcgisonline.com  
          img-src 'self'  
            http://js.arcgis.com  
            http://services.arcgisonline.com  
            http://server.arcgisonline.com data:;  
          style-src 'self' http://js.arcgis.com 'unsafe-inline';  
          script-src 'self' http://js.arcgis.com 'unsafe-eval'">
```

**Policy
Directives**

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