



Building Native Apps with ArcGIS API for JavaScript Using PhoneGap and jQuery

Andy Gup, Lloyd Heberlie

Demo Theater

Agenda

- **Intro to PhoneGap**
- **Esri PhoneGap Quickstart**
- **Putting it all together**
- **Native build environment**
- **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

Basic PhoneGap app

Lloyd Heberlie

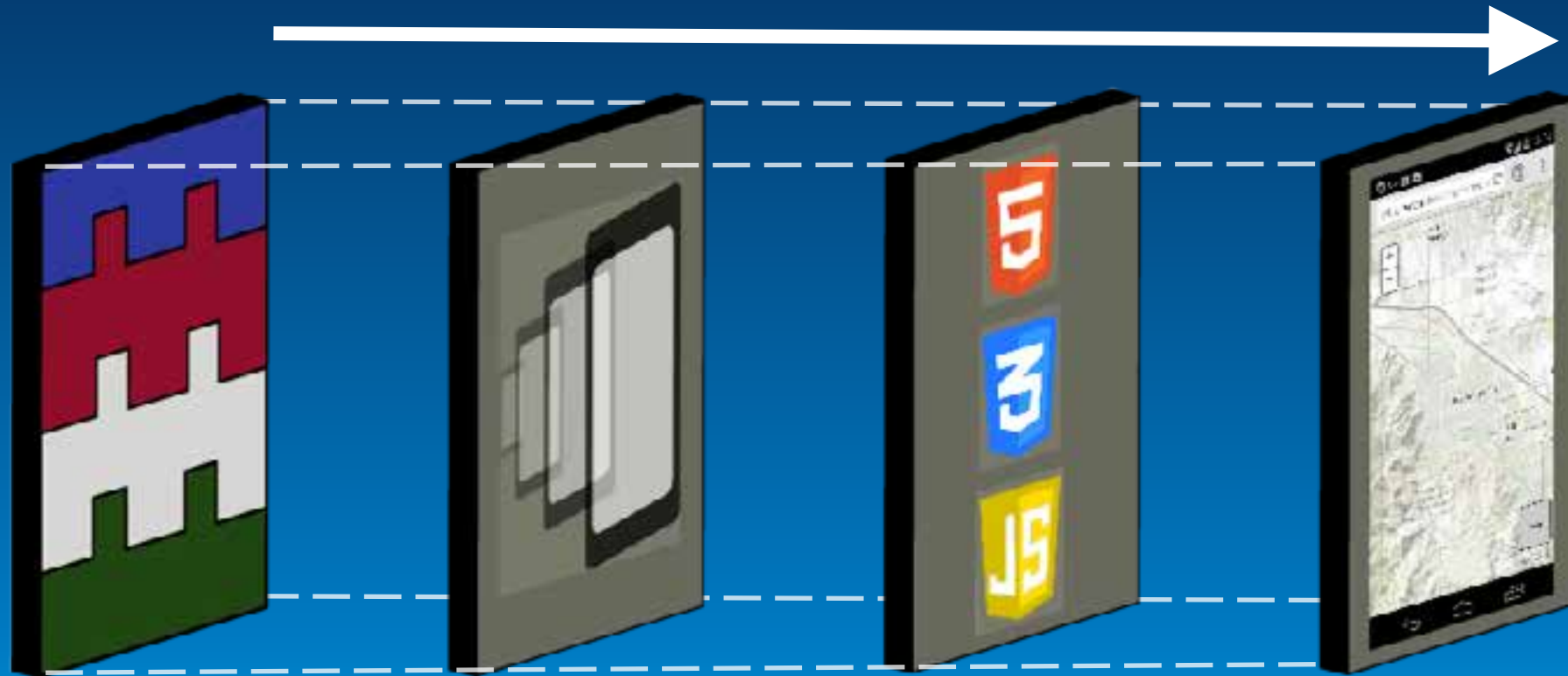
What is PhoneGap?

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



PhoneGap

PhoneGap architecture



PhoneGap
Plugins

PhoneGap

Application
Code

Native
App

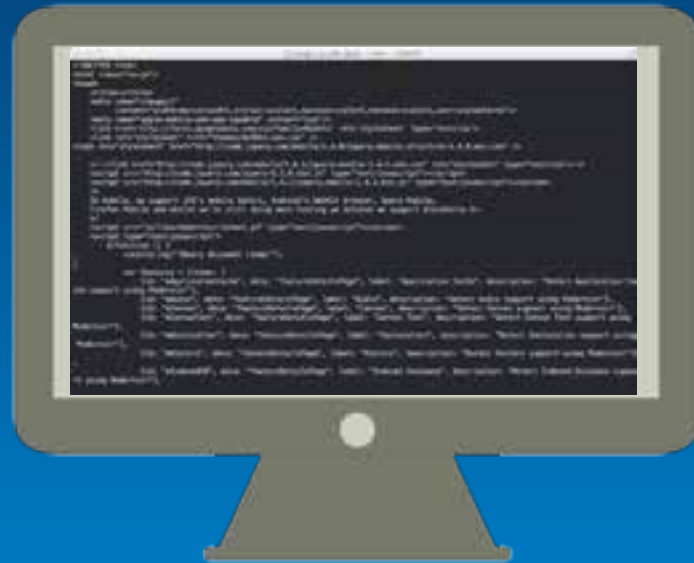
Setup a developer machine



web server



Source Control



Code quality and verification

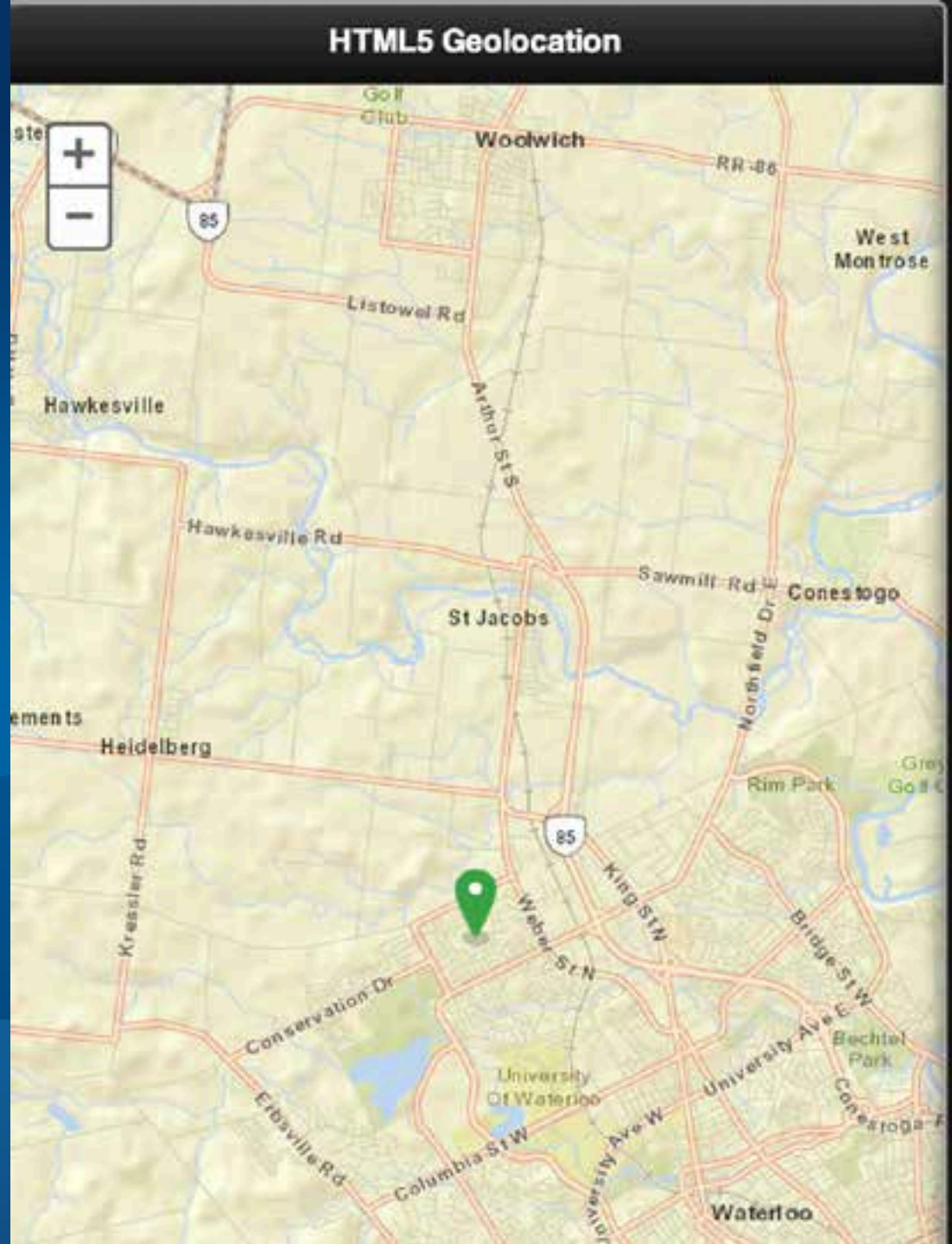


Demonstration

PhoneGap Quickstart

Lloyd Heberlie

Debugging





Putting it all together PhoneGap, jQuery and ArcGIS API for JavaScript

Andy Gup

Single Page view

Set up page structure

Apply CSS, roles and themes

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

<https://github.com/Esri/jquery-mobile-map-js>

Single Page Map - HTML

```
<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>
```

Single Page Map - HTML

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</div>
```

Single Page Map - CSS

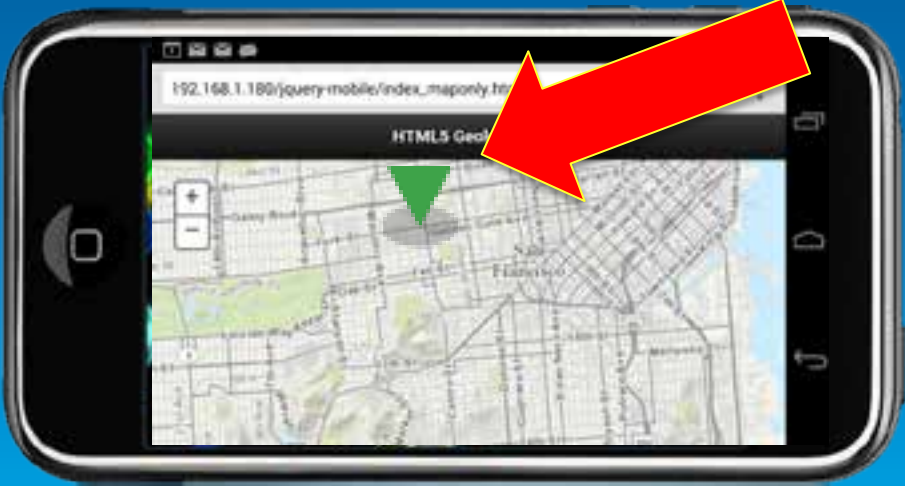
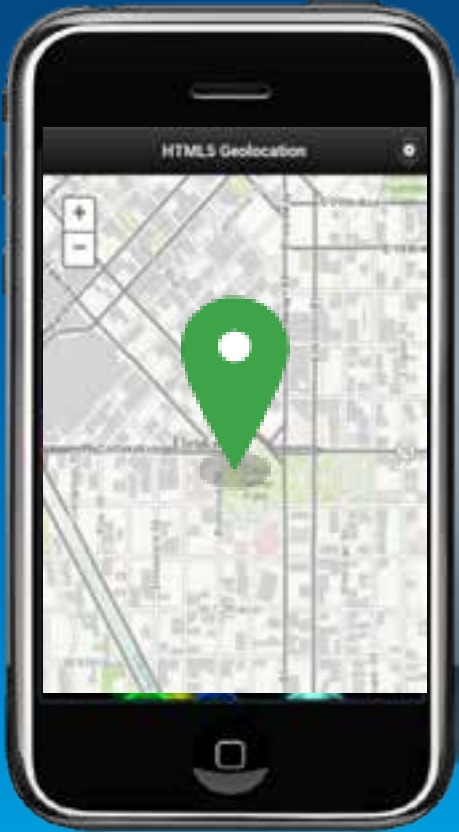
```
html, body, div[data-role = "page"] {
    height: 100%;
    width: 100%;
    margin: 0px;
    padding: 0px;
    overflow: hidden !important;
}
.ui-header {
    margin: 0px !important;
    padding: 0px !important;
    float: left;
}
.ui-content {
    height: 100%;
    width: 100%;
    margin: 0px;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

Demonstration

Single page app

Andy Gup

Auto-recenter after orientation change



jQuery Helper library

Recentering on device rotation

Multiple view mapping apps

```
var helper = new jQueryHelper(map);
```

<https://github.com/Esri/jquery-mobile-map-js>

Auto-recenter after orientation change

```
//Listen for map load event
map.on("load",init);

function init(){
  try{
    helper = new jQueryHelper(map);
    helper.setCenterPt(x,y,4326);
  }
  catch(err) {
    console.log("jQueryHelper " + err.message);
  }

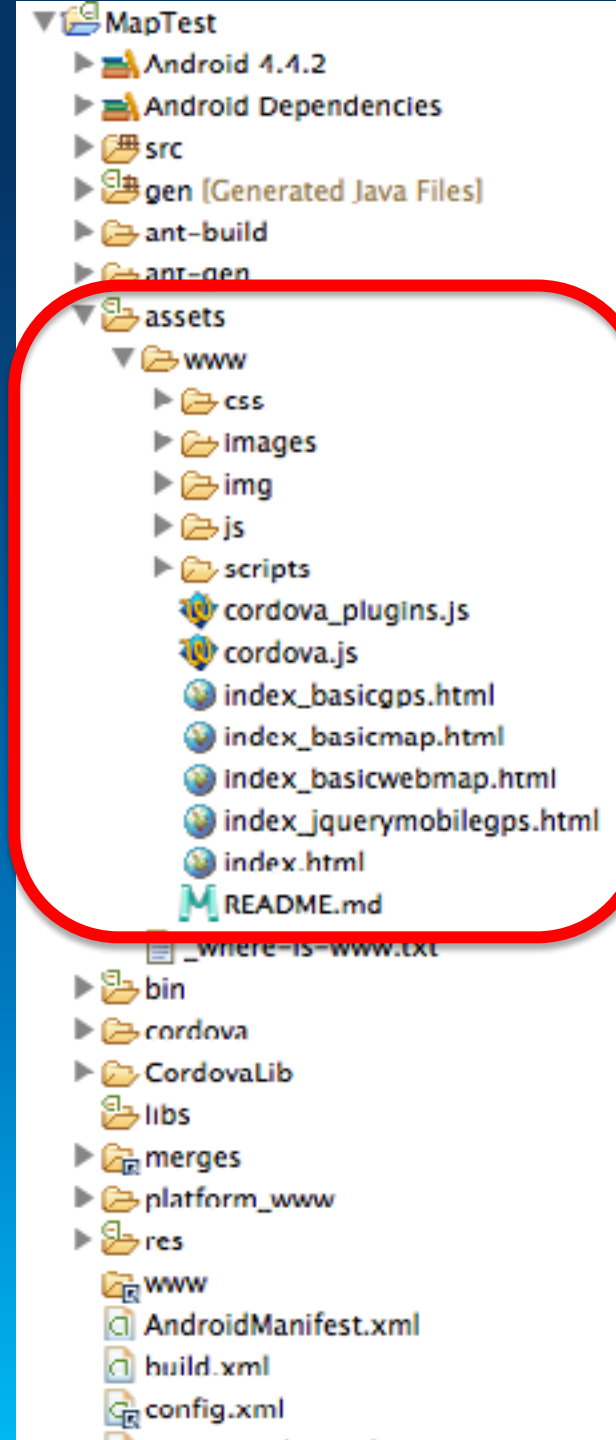
  //Some browsers don't show full height after onLoad
  map.reposition();
  map.resize();
}
```



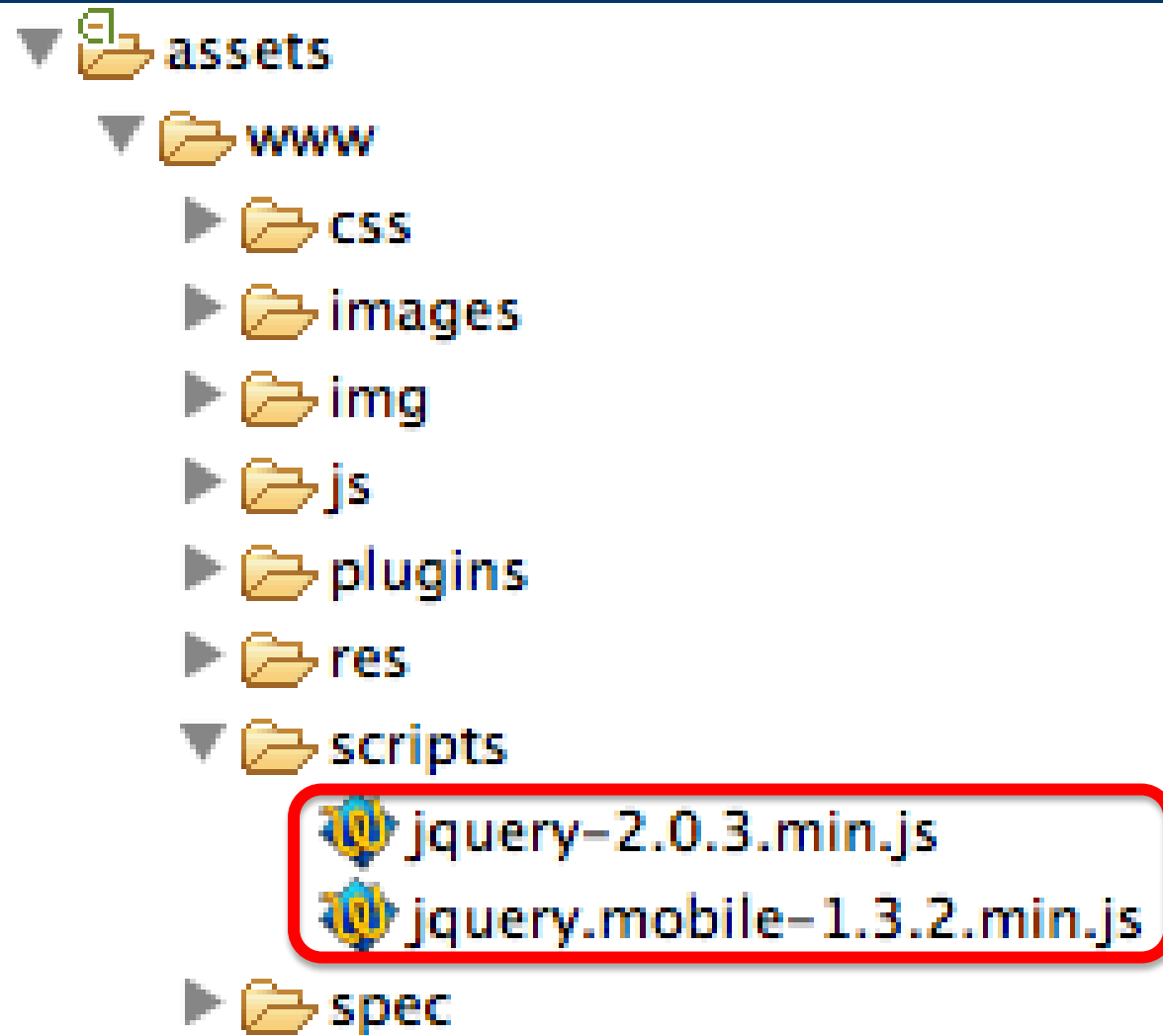
A quick look: Android native build environment



assets/www/



Host JS libs locally (if possible)



Set PhoneGap config.xml

```
<?xml version='1.0' encoding='utf-8'?>
<!-- look under /res/xml/config.xml for the active file -->
<widget id="com.esri.sample.quickstart.phonegap" version="0.1.0"
  xmlns="http://www.w3.org/ns/widgets" xmlns:cdv="http://cordova.apache.org/ns/1.0">
  <name>QuickStartCordova</name>
  <description>
    A sample Apache Cordova application that responds to the deviceready event.
  </description>
  <author email="agup@esri.com" href="http://developers.arcgis.com">
    Esri Developer Evangelism team
  </author>
  <content src="index.html" />
  <access origin="*" />
  <preference name="fullscreen" value="false" />
  <preference name="webviewbounce" value="true" />
  <feature name="Geolocation">
    <param name="android-package" value="org.apache.cordova.geolocation.GeoBroker" />
  </feature>
</widget>
```




Native wrapper

```
package com.esri.sample.quickstart.phonegap;

import android.os.Bundle;

public class QuickStartCordova extends CordovaActivity
{
    @Override
    public void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        super.init();

        // NOTICE: Set by <content src="index.html" /> in config.xml
        super.loadUrl(Config.getStartUrl());
        //super.loadUrl("file:///android_asset/www/index_basicwebmap.html");
    }
}
```



Demonstration

Putting it all together

Andy Gup

GPS Best Practices - Android

```
$ cordova plugin add org.apache.cordova.device-motion  
$ cordova plugin add org.apache.cordova.device-orientation  
$ cordova plugin add org.apache.cordova.geolocation
```

GPS Best Practices - Android

app/res/xml/config.xml

```
<plugin name="Geolocation" value="org.apache.cordova.GeoBroker" />
```

app/AndroidManifest.xml

```
<uses-permission android:name="android.permission.ACCESS_COARSE_LOCATION" />  
<uses-permission android:name="android.permission.ACCESS_FINE_LOCATION" />  
<uses-permission android:name="android.permission.ACCESS_LOCATION_EXTRA_COMMANDS" />
```

GPS Best Practices - iOS

config.xml

```
<plugin name="Geolocation" value="CDVLocation" />
```

GPS Best Practices – Windows Phone

Properties/WPAppManifest.xml

```
<Capabilities>  
  <Capability Name="ID_CAP_LOCATION" />  
</Capabilities>
```

Geolocation API – same as always!

```
var mapLoaded = false;
navigator.geolocation.watchPosition(
  locationSuccess,
  locationError,
  {setHighAccuracy:true}
);

map.on("load",function(evt){
  mapLoaded = true;
});

function locationSuccess(evt){
  if(mapLoaded){ . . .}
}
```

Requirements for offline?

App usage in areas of intermittent or no internet

**Ability to reload or restart app in areas of intermittent
or no connectivity**

Lightweight cross-browser functionality

[Github.com/esri/Offline-editor-js](https://github.com/esri/Offline-editor-js)

Offline JS Use Cases

- Viewing simple maps
- Lightweight data collection
 - VGI
 - Simple editing
- Devices
 - laptop
 - smartphone / tablet

Need a full featured, robust offline solution?

ArcGIS Runtimes for iOS, Android, Qt and .NET!

Includes integrated support for offline editing and synchronization.

Also fully supports related tables, sub-types, domains and much more.

Offline Demo – trailyelper



Questions?

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Understanding our world.