



# Strategies for Building Mobile Apps Using ArcGIS API for JavaScript

Kelly Hutchins, Lloyd Heberlie

Technical Workshop

# Welcome

- **Introductions**
- **Expectations**
- **Agenda**

# Why are we here?





# Mobile resources in the API

Kelly Hutchins

# Mobile resources in the API

ArcGIS for Developers ▾ FEATURES PLANS

## ArcGIS API for JavaScript

Tutorials Concepts API Reference S

- < Hide Table of Contents
- Build your first application
- Use an ArcGIS.com webmap
- Mobile-specific application**
- Directions widget
- Geocoder widget
- Labeling features client-side
- Write a class
- Create a re-usable widget
- Sharing maps with secure layers

ArcGIS for Developers ▾ FEATURES PLANS

## ArcGIS API for JavaScript

Tutorials **Concepts** API Reference

- < Hide Table of Contents
- ArcGIS JavaScript API Overview
- What's New in Version 3.10
- > About the API
- > Getting Started
- > Working with the API
- ▾ **Mobile**
  - Getting Started Mobile Tutorial
  - Viewport Settings
  - Feature Detection and Browser Sniffing
  - Device Orientation
  - Geolocation
  - Frameworks
  - References

ArcGIS for Developers ▾ FEATURES PLANS DOCS

## ArcGIS API for JavaScript

Tutorials Concepts API Reference **Samples**

- < Hide Table of Contents
- Samples Overview
- > Latest Samples
- > Analytics
- > Directions and Routing
- > Dynamic Layers
- > Editing
- > Geocoding
- > Graphics
- > HTML5
- > Image Layers
- > Map
- > Maps from ArcGIS.com
- ▾ **Mobile**
  - Attribute editing - mobile
  - Compass
  - Mobile ArcGIS.com
  - Shake gesture recognition
  - Soil details - mobile
  - Tilt gesture

Demonstration

# ArcGIS for Developers website

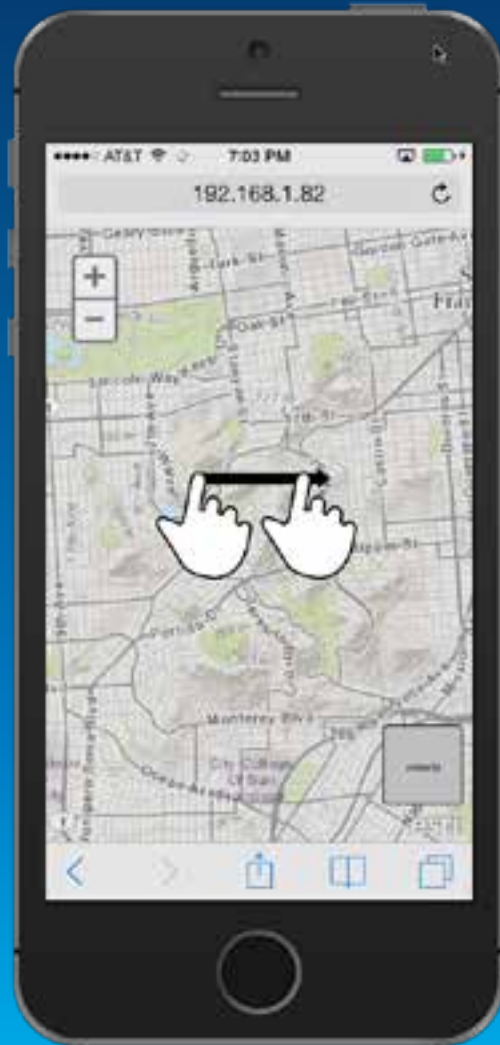
Kelly Hutchins



# Designing for mobile

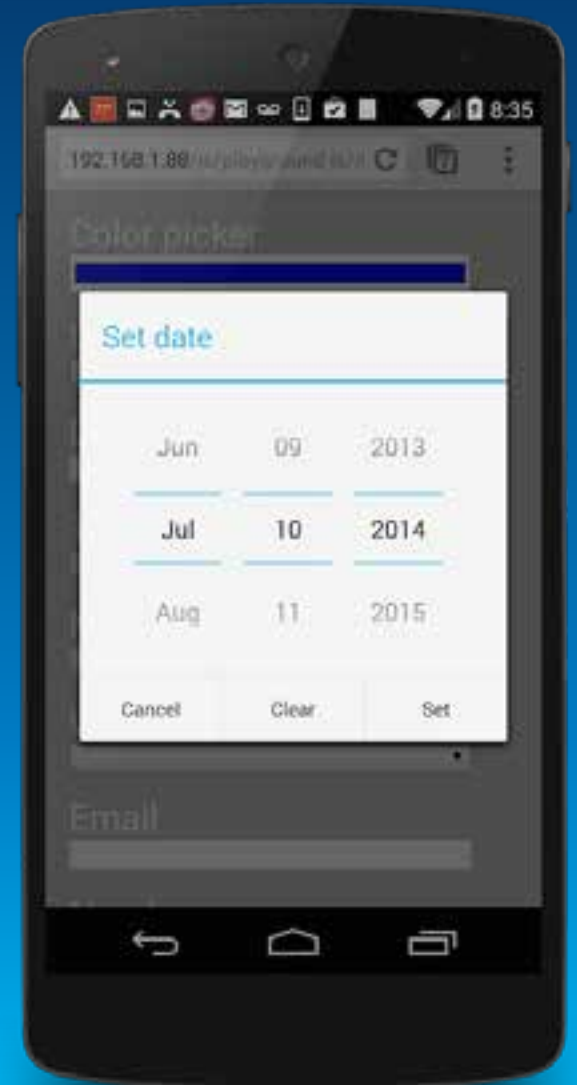
Lloyd Heberlie

# Touch aware map

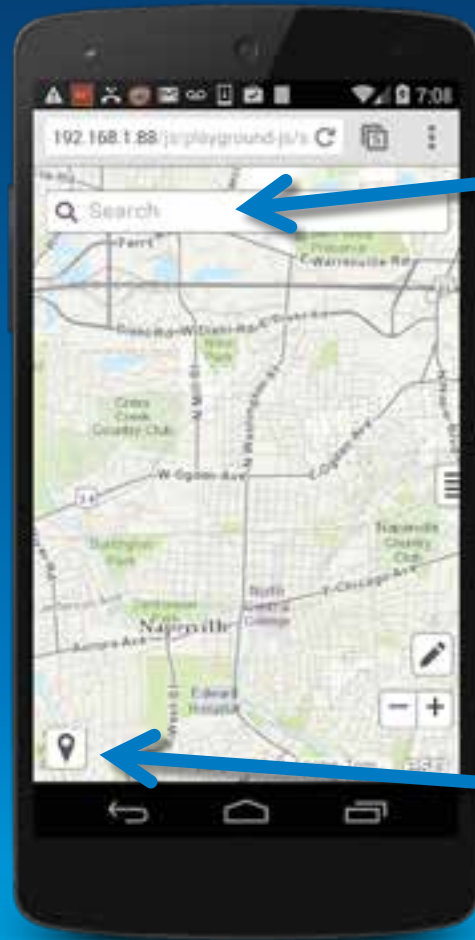




# HTML 5 input types



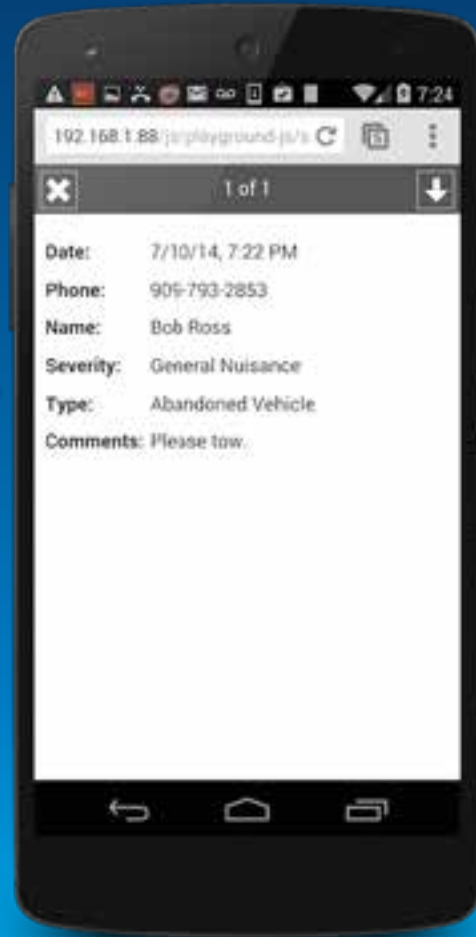
# Geocoder, HomeButton



**esri/dijit/Geocoder**

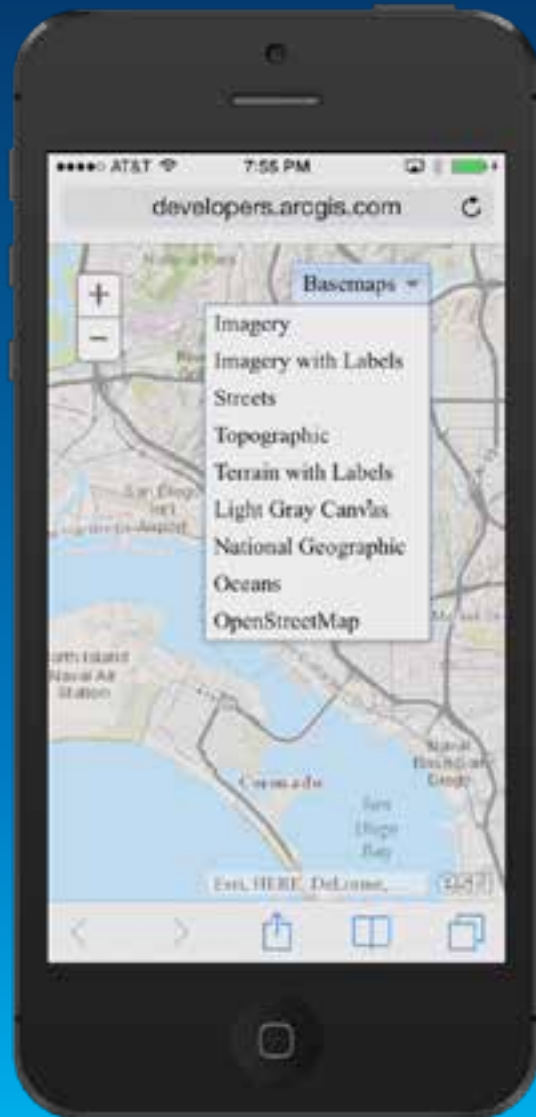
**esri/dijit/HomeButton**

# Popup Mobile



**esri/dijit/PopupMobile**

# Basemap Gallery



esri/dijit/BasemapGallery

## ArcGIS API for JavaScript

Tutorials

Concepts

API Reference

Samples

Forum

- < Hide Table of Contents
- Samples Overview
- > Latest Samples
- > Analytics
- > Directions and Routing
- > Dynamic Layers
- > Editing
- > Geocoding
- > Graphics
- > HTMLS
- > Image Layers
- > Map
- > Maps from ArcGIS.com
- > Mobile

### Toggle multiple ArcGIS Online services

- [View live sample](#)
- [Download as a zip file](#)
- [Explore in the sandbox](#)



### Description

This sample shows how you can use buttons to switch between different layers in a map. All the layers in this map happen to be [ArcGISTiledMapServiceLayers](#) from ArcGIS Online. The BasemapGallery widget, introduced at version 2.1 of the ArcGIS JavaScript API simplifies the process of toggling the display of ArcGIS Online basemaps. In this sample a menu item is created for each basemap in the gallery. Since `showArcGISBasemaps` is set to `true`, the gallery contains basemaps from ArcGIS Online.

```
basemapGallery = new esri.dijit.BasemapGallery({
  showArcGISBasemaps: true,
  map: map
});
```

# Basemap Toggle



esri/dijit/BasemapToggle

## ArcGIS API for JavaScript

Tutorials

Concepts

API Reference

Samples

Forum

- < Hide Table of Contents
- Samples Overview
- > Latest Samples
- > Analytics
- > Directions and Routing
- > Dynamic Layers
- > Editing
- > Geocoding
- > Graphics
- > HTML5
- > Image Layers

### Basemap Toggle

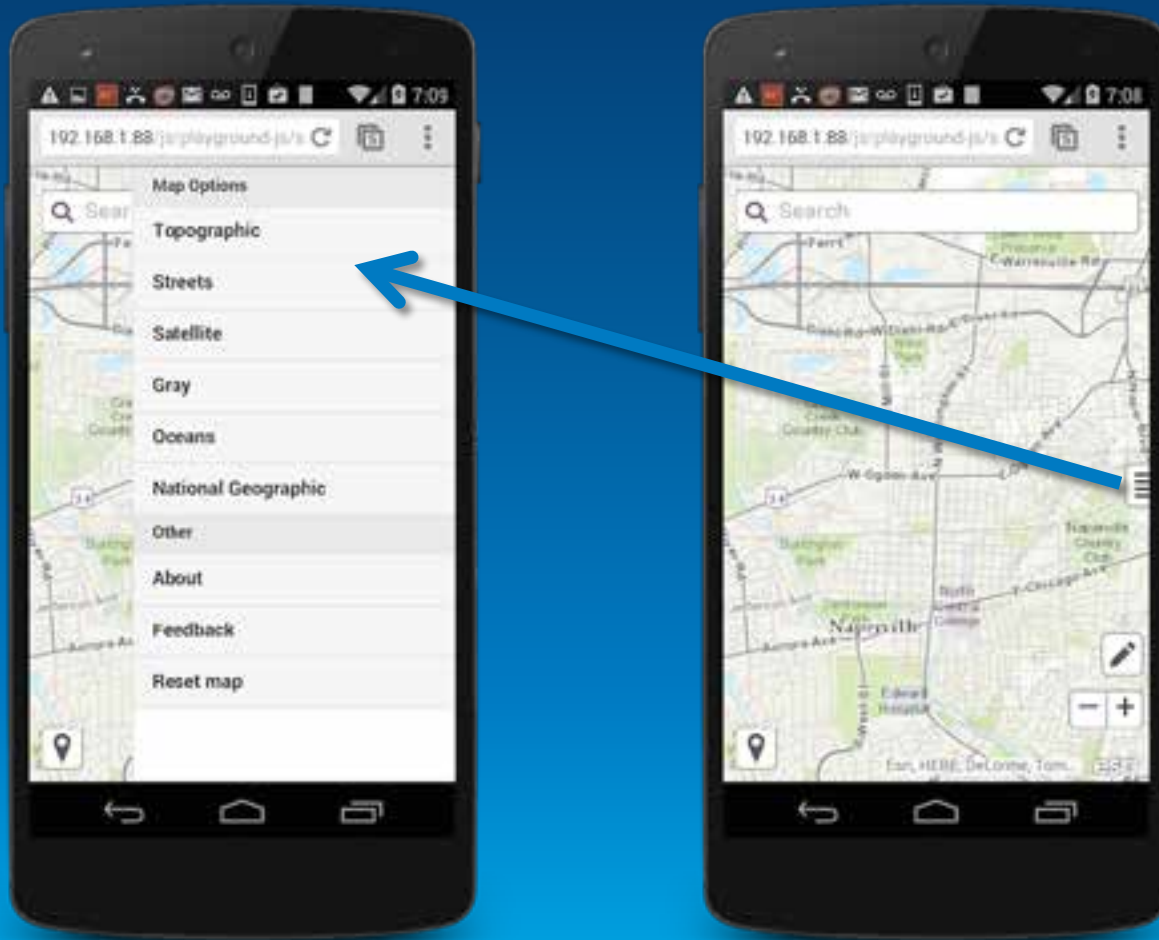
- [View live sample](#)
- [Download as a zip file](#)
- [Explore in the sandbox](#)



### Description

Toggle between basemaps using the BasemapToggle widget. When creating the widget define a basemap that users will be able to switch to from the current basemap. Note: At version 3.7 the widget does not work with maps created from web maps using createMap.

# Custom components



**Custom basemap switcher**

Demonstration

# Designing for mobile

Lloyd Heberlie



# Productivity and code management

Kelly Hutchins



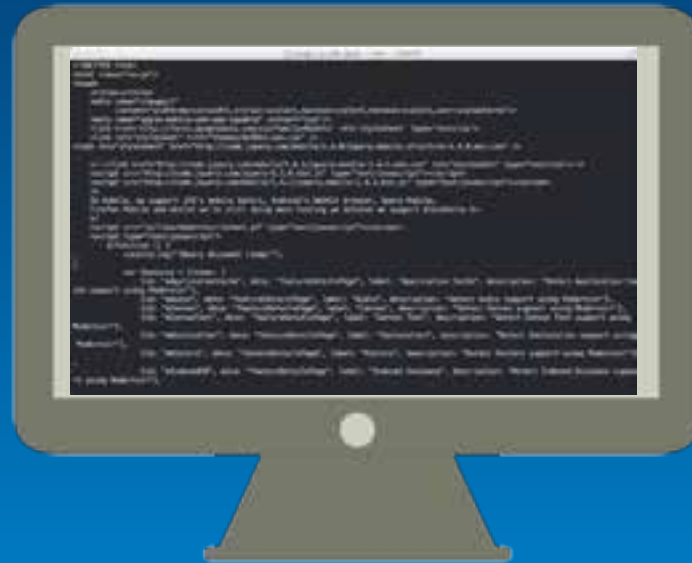
# Setup a developer machine



web server



Source Control



Code quality and verification



# Code formatting and management

```
21 <style>
22   html, body {width: 100%;height: 100%;}
23
24   label {font-size: 1.5em;color: #ffffff;li
25
26   input {width: 80%;
27   }
28
29   input:invalid {color: #ff0000;
30   }
31
32   form {white-space: pre-wrap;
33   }
34
35 </style>
```

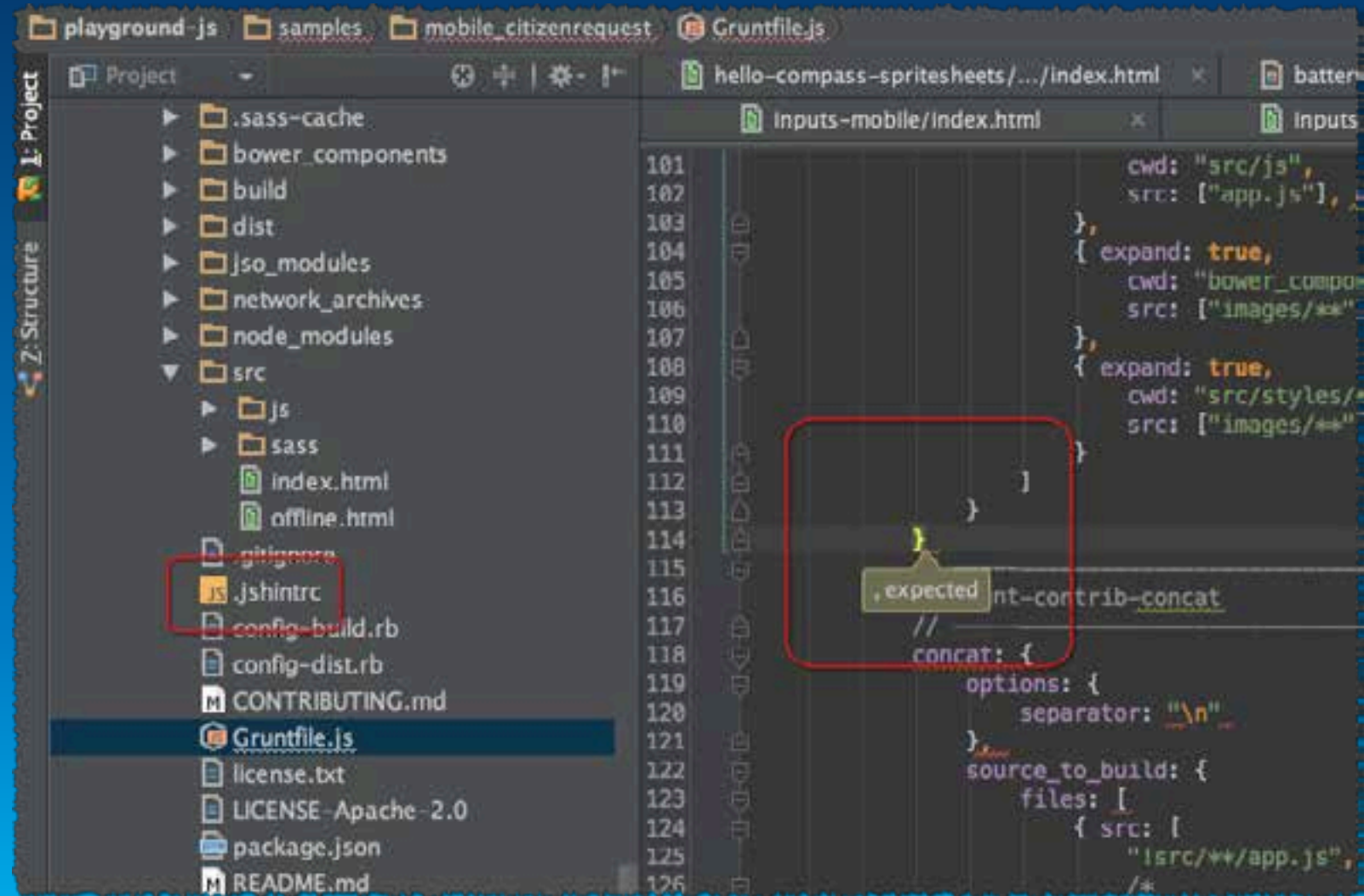
```
21 <style>
22   html, body {
23     width: 100%;
24     height: 100%;
25   }
26
27   label {
28     font-size: 1.5em;
29     color: #ffffff;
30     line-height: 1.0em;
31     vertical-align: middle;
32   }
33
34   input {
35     width: 80%;
36   }
37
38   input:invalid {
39     color: #ff0000;
40   }
41
42   form {
43     white-space: pre-wrap;
44   }
45
46 </style>
```

# Automation and continuous integration



# Code validation

- JSLint
- JSHint



# CSS preprocessors



Demonstration

# Productivity and code management

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# Debugging and testing for mobile

Kelly Hutchins

# Emulators / Simulators

Opera Mobile Emulator



iOS Simulator \*



Windows Phone Emulator \*



Android Emulator

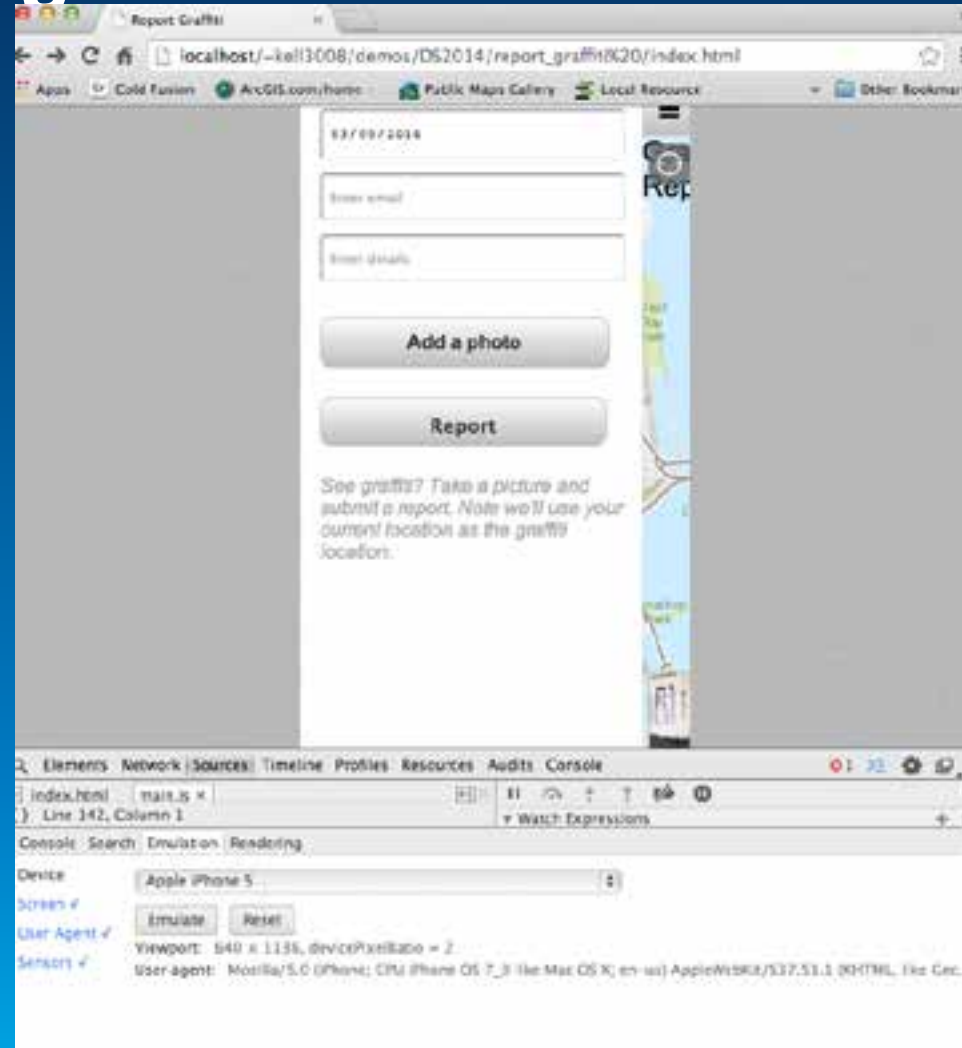




# Physical devices



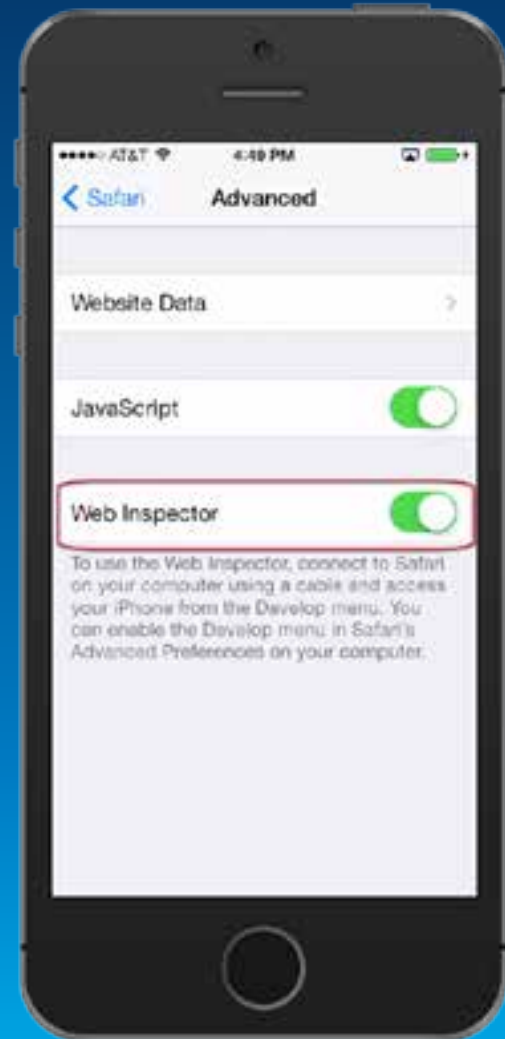
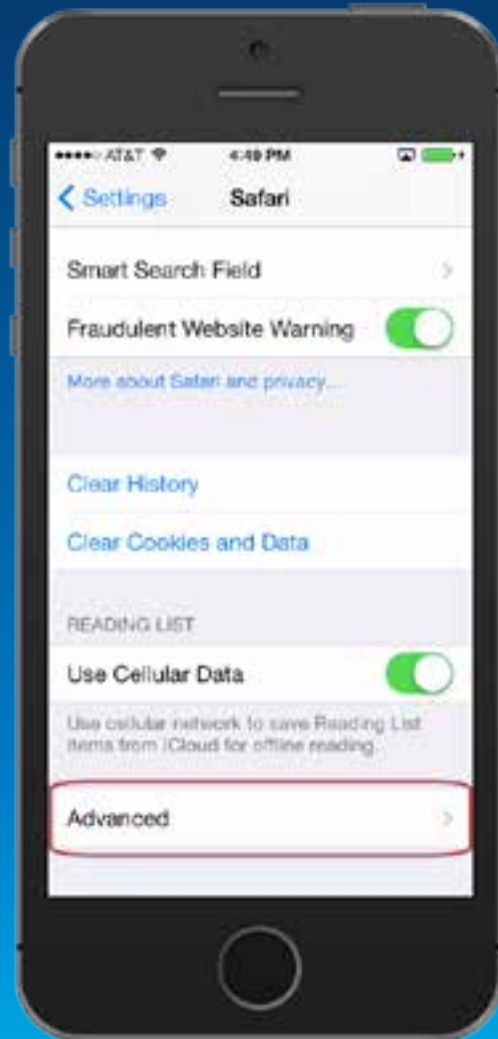
# Browser based testing



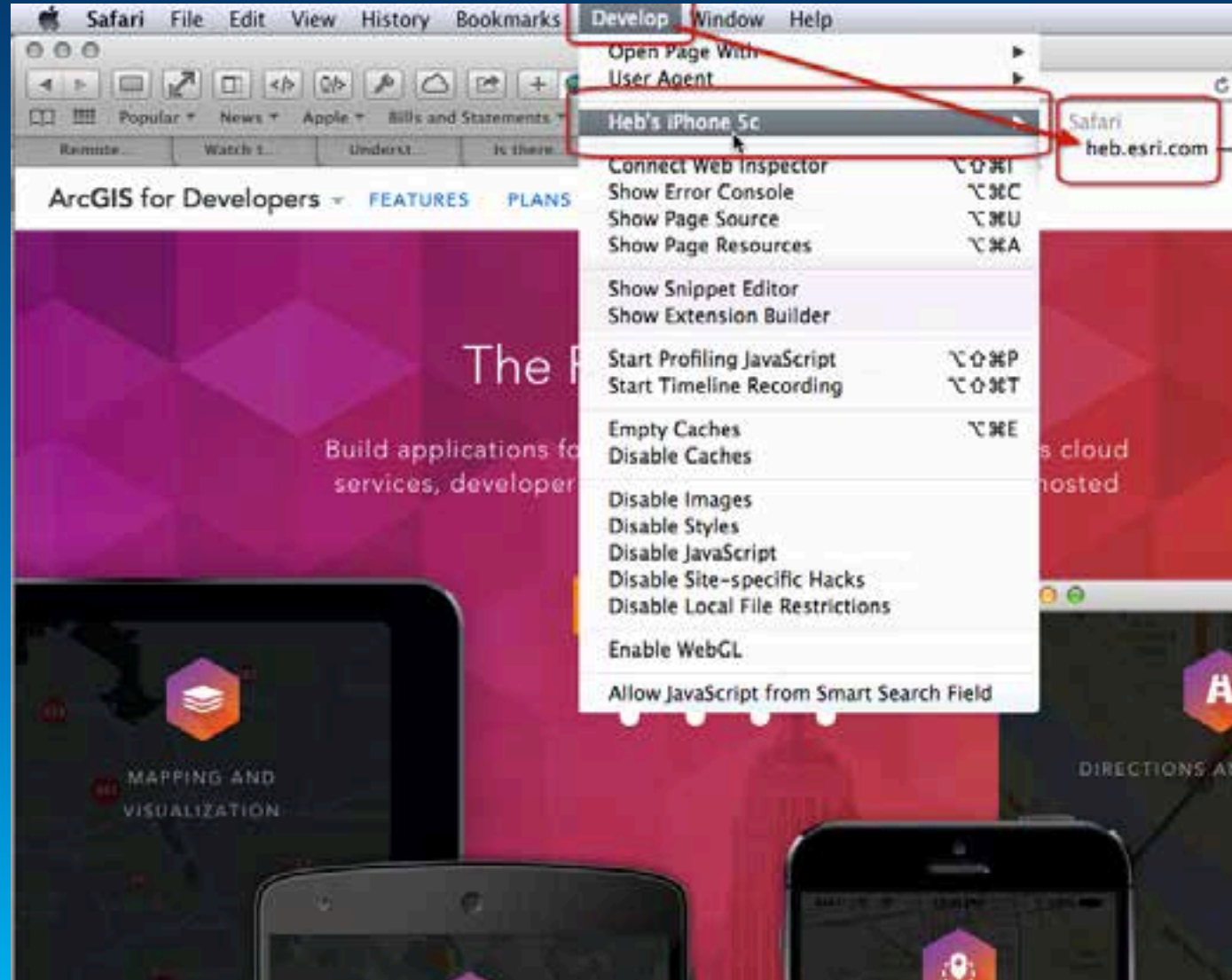
# Remote debugging

- Safari Web Inspector Remote
- Google Chrome remote debugging
- Adobe Edge Inspect
  - Synchronized screen capture, device details
  - Node.js (weinre local)
- Web Inspector Remote (weinre)

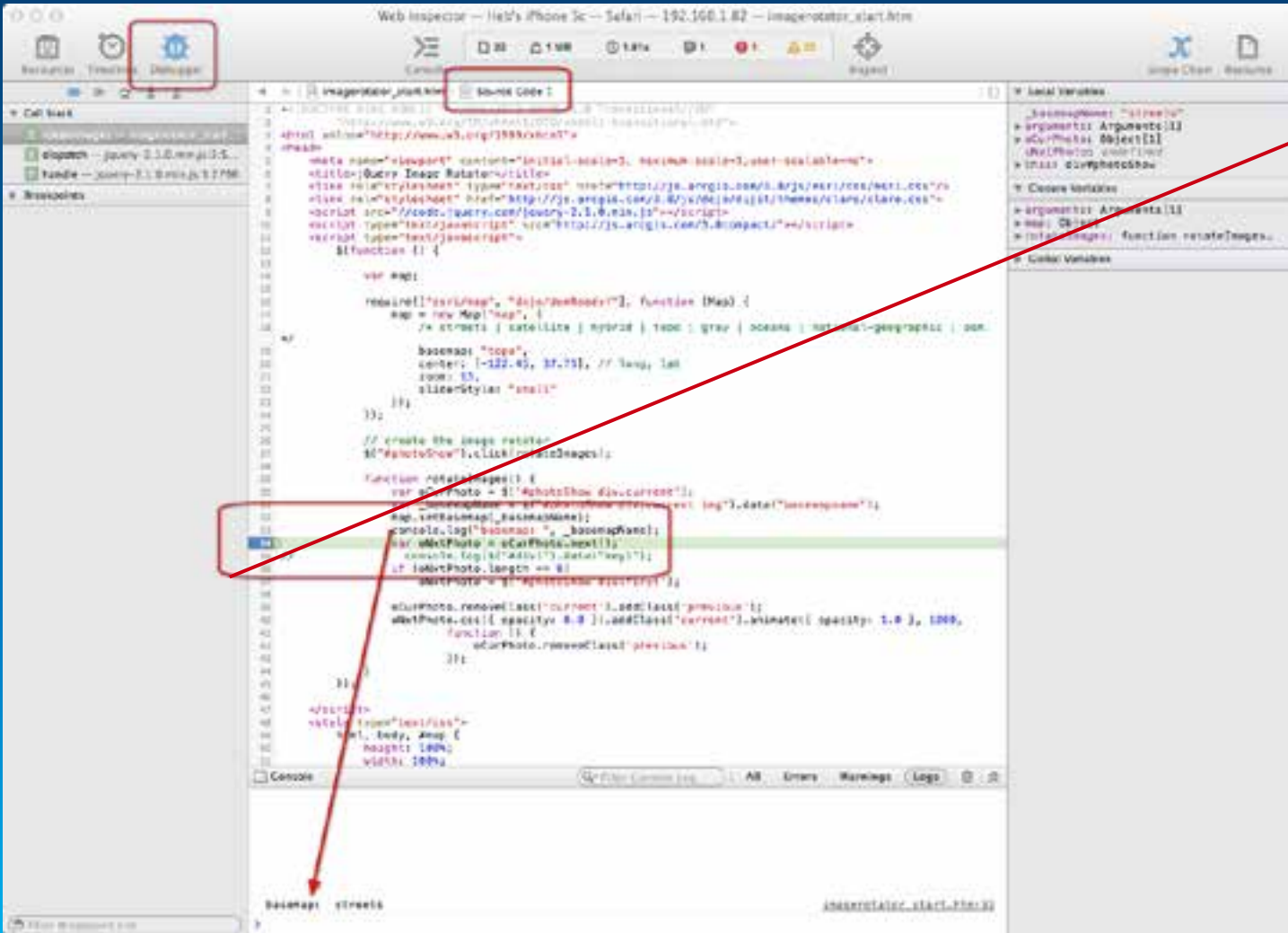
# Enable Safari remote web inspection



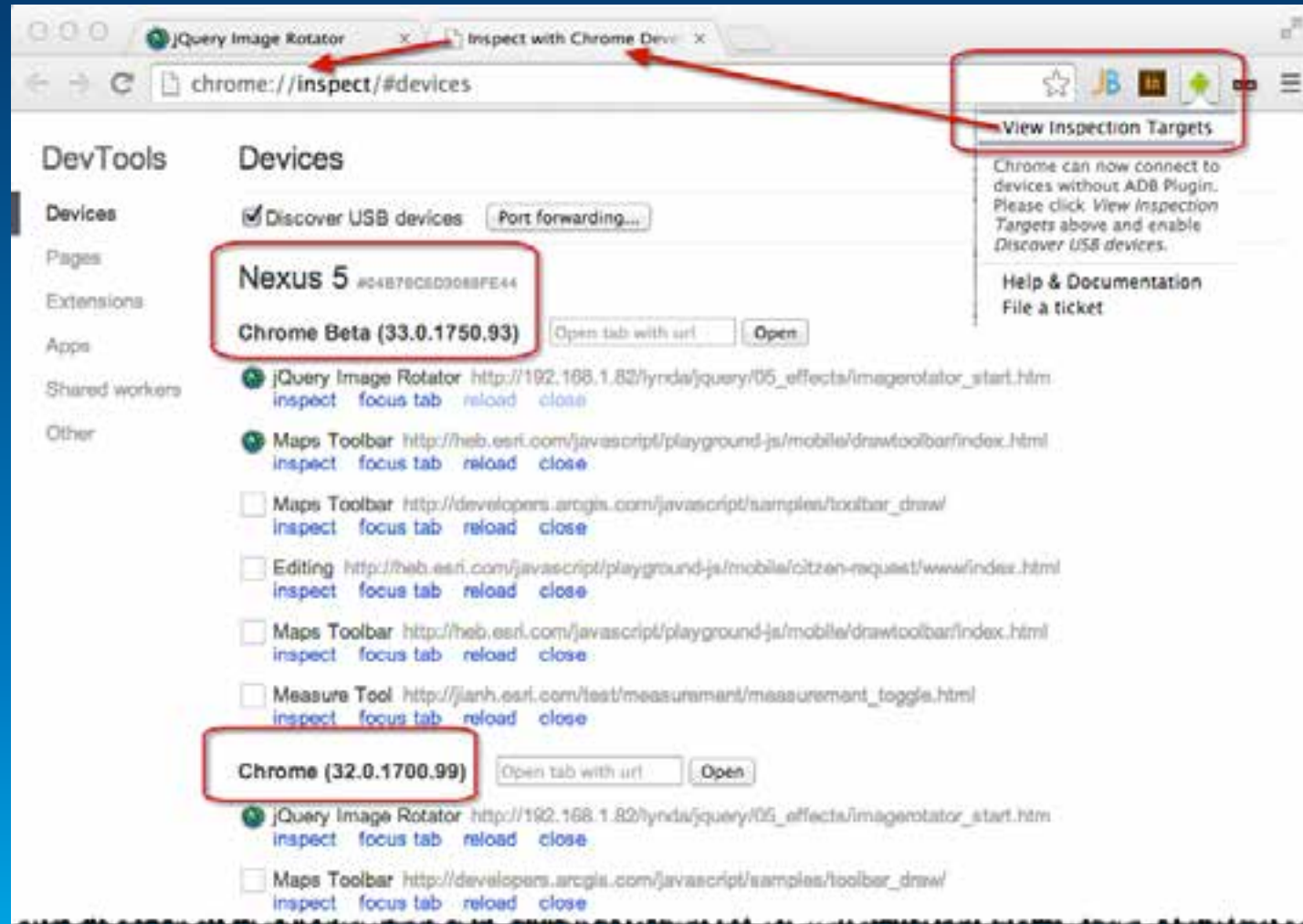
# Safari remote debugging



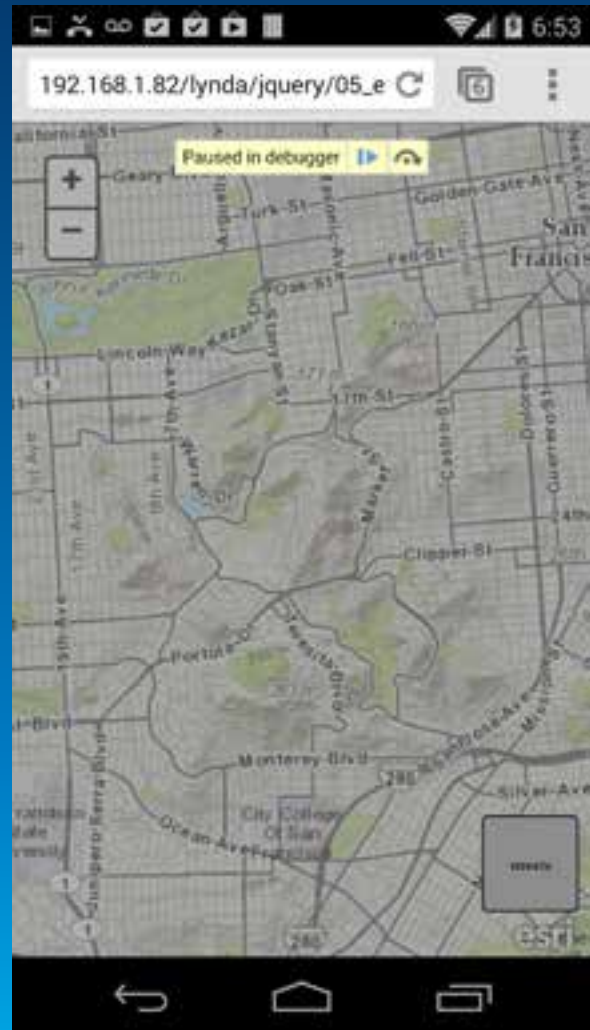
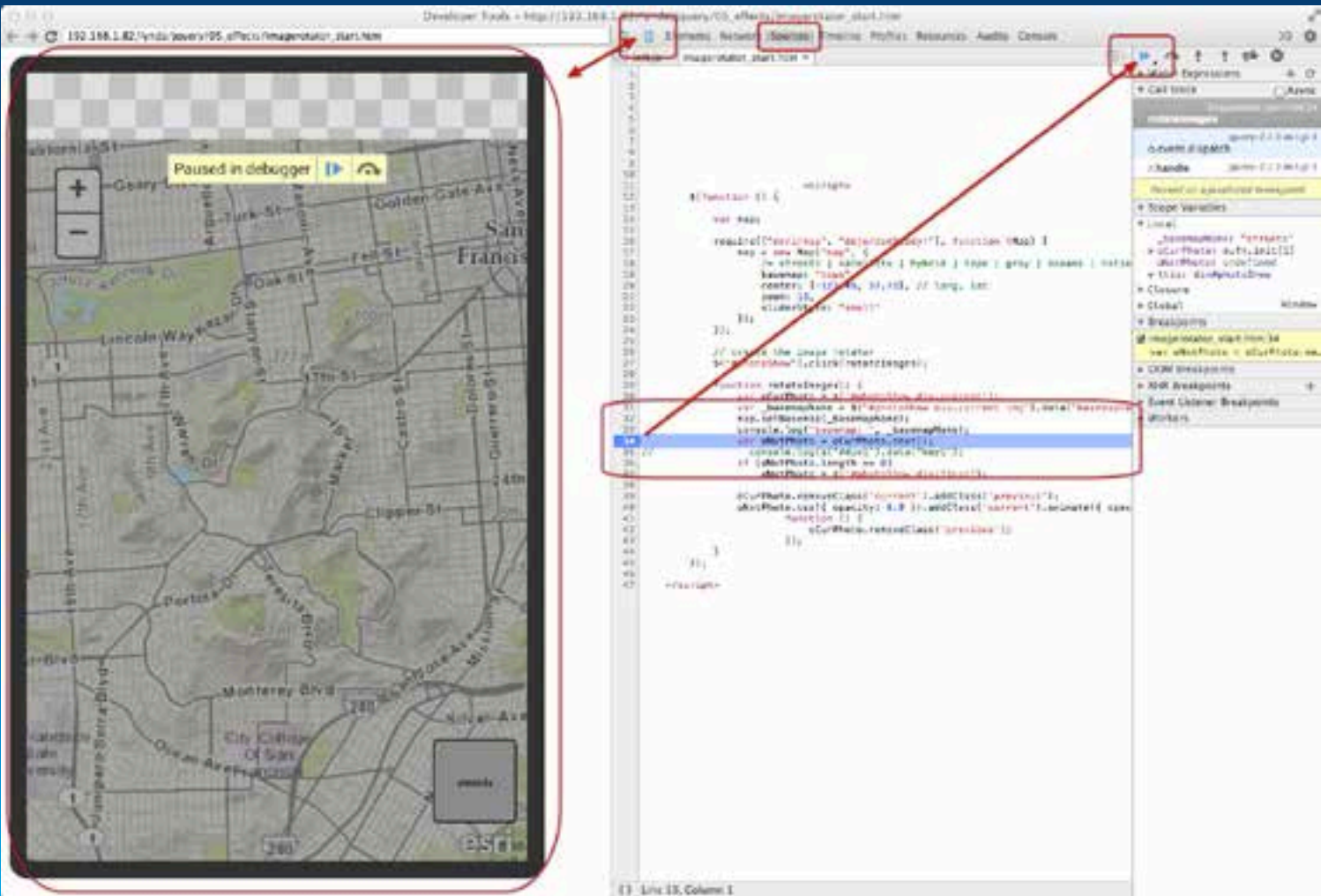
# Safari remote debugging



# Chrome remote debugging

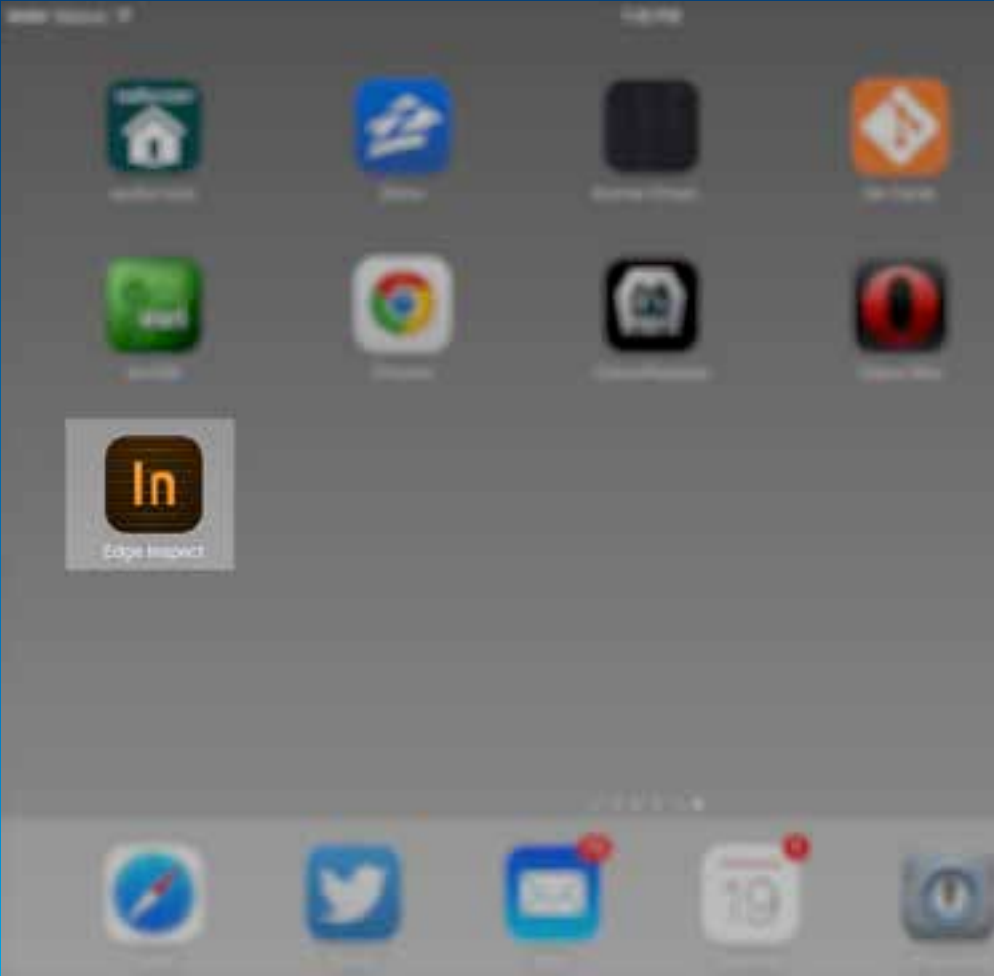


# Chrome remote debugging

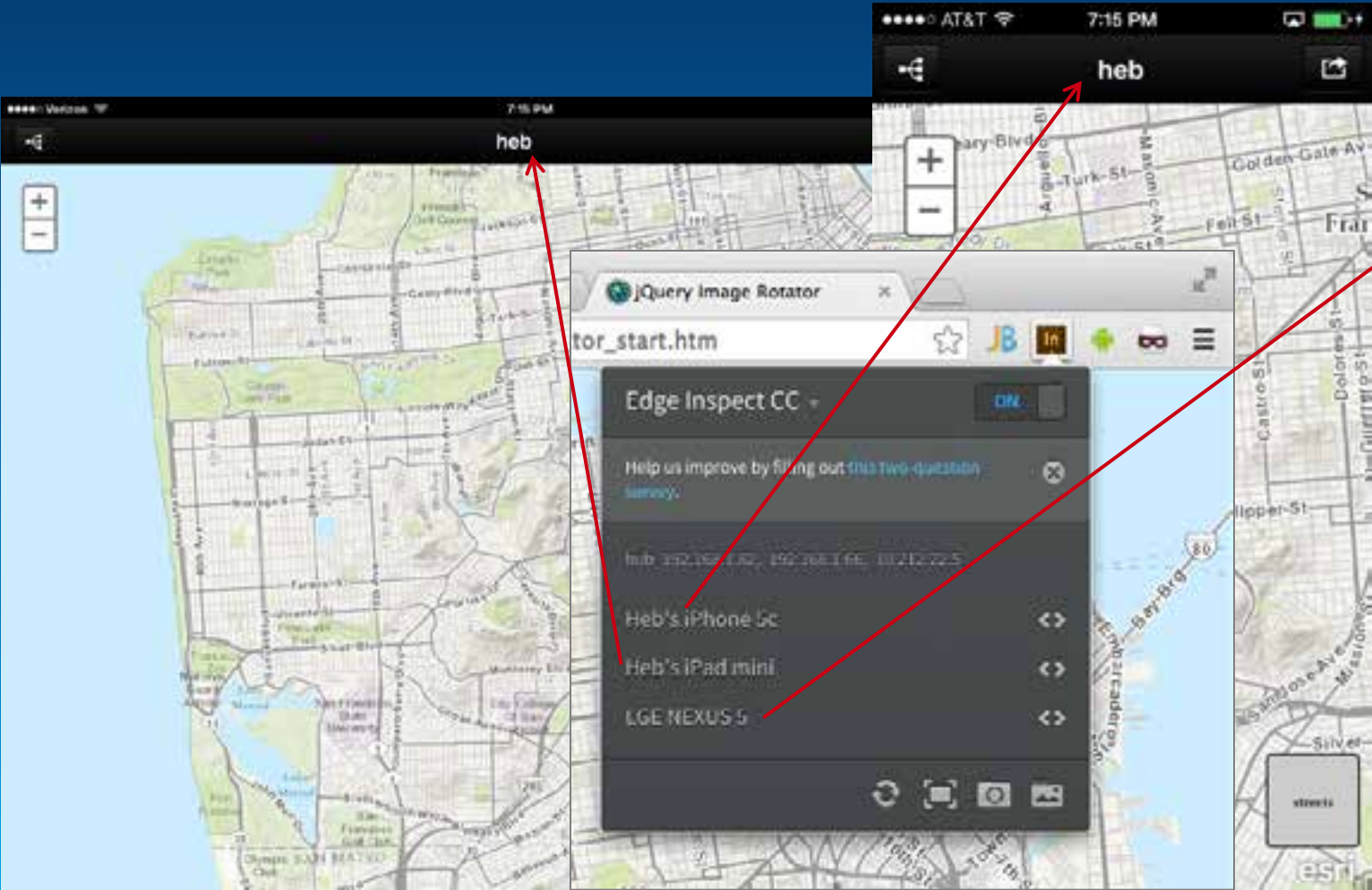




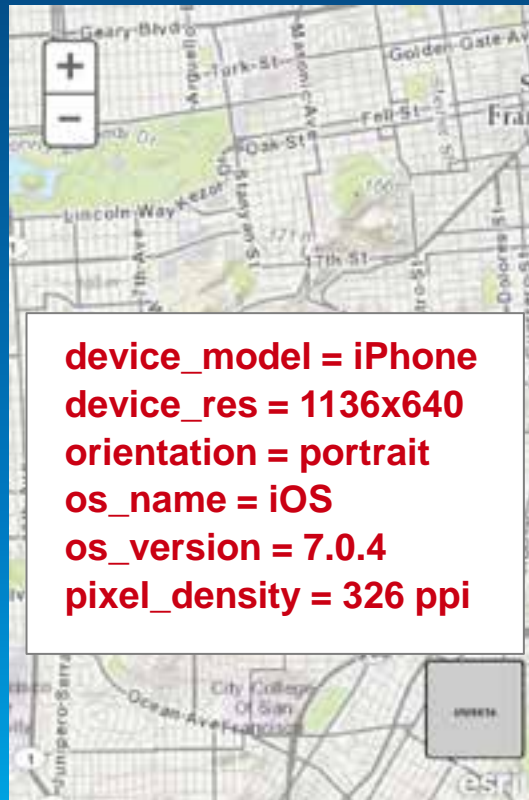
# Adobe Edge Inspect



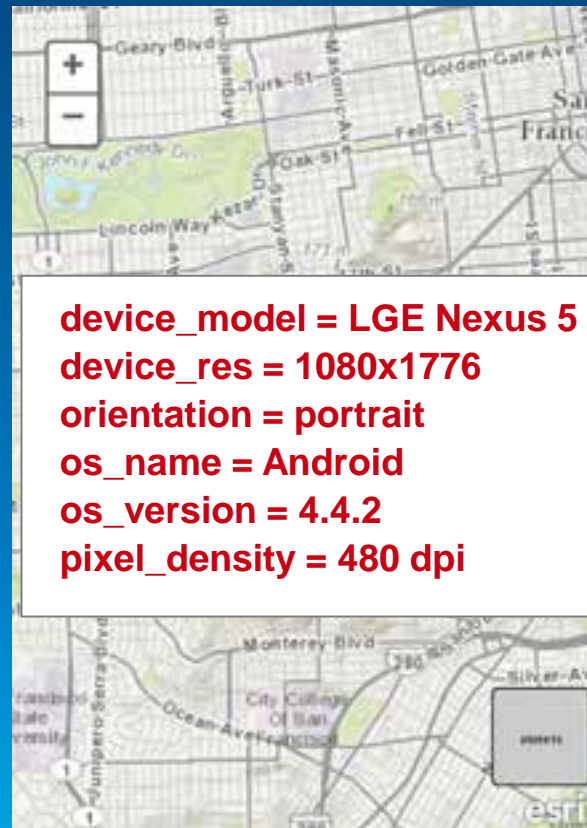
# Adobe Edge Inspect



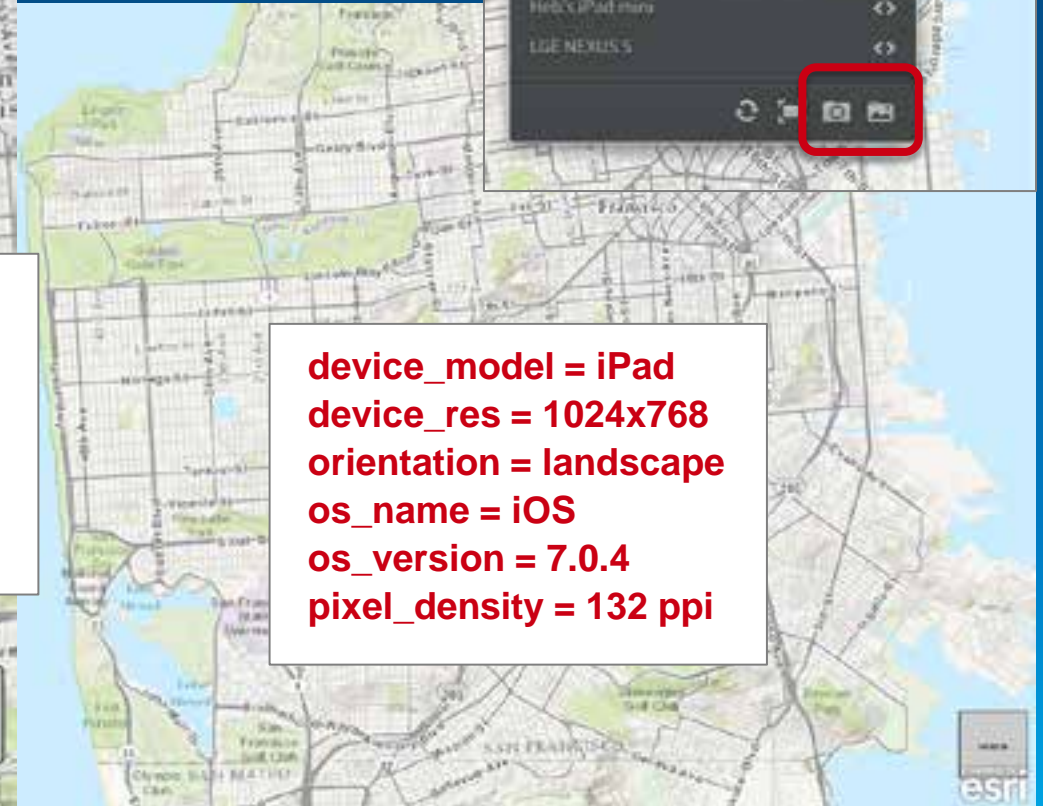
# Adobe Edge Inspect



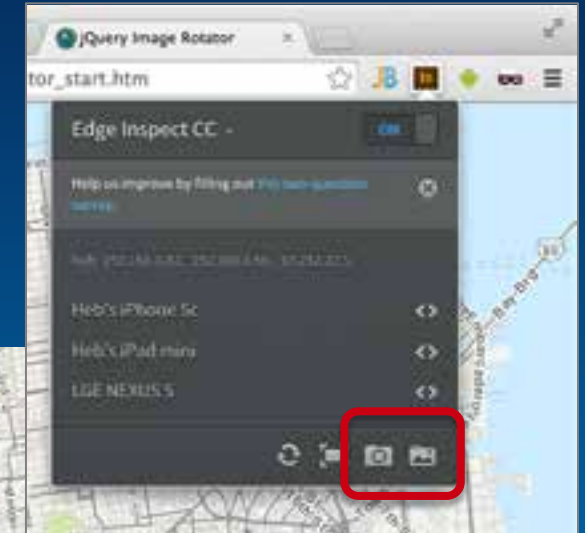
**device\_model = iPhone**  
**device\_res = 1136x640**  
**orientation = portrait**  
**os\_name = iOS**  
**os\_version = 7.0.4**  
**pixel\_density = 326 ppi**



**device\_model = LGE Nexus 5**  
**device\_res = 1080x1776**  
**orientation = portrait**  
**os\_name = Android**  
**os\_version = 4.4.2**  
**pixel\_density = 480 dpi**



**device\_model = iPad**  
**device\_res = 1024x768**  
**orientation = landscape**  
**os\_name = iOS**  
**os\_version = 7.0.4**  
**pixel\_density = 132 ppi**



Demonstration

# Debugging mobile

Lloyd Heberlie



# Optimizing for mobile

Lloyd Heberlie

# HTML manifest

The image shows a development environment with a project structure on the left and a manifest file in the center. Below the IDE is a browser's developer console showing the application cache loading process.

**Project Structure:**

- playground-js
- samples
  - ags\_layer\_infotemplate
  - ags\_traffic
  - framework\_query
  - framework\_querybasemap
  - map\_twodynamic
  - mobile-starter
  - mobile\_citizenrequest
    - .sass-cache
    - bower\_components
    - build
    - dist
      - js
      - styles
      - index.html
      - manifest.appcache

**manifest.appcache Content:**

```
1 CACHE MANIFEST
2 # This manifest was generated by grunt-manifest HTML5 Cache Manifest Generator
3 # Time: Fri Jul 11 2014 11:00:08 GMT-0500 (CDT)
4 # application-boilerplate - v0.0.1 - 2014-07-11
5 # Copyright (c) 2014 Licensed
6
7 CACHE:
8 #%20application-boilerplate,%20version:%200.0.1
9 #%20ArcGIS%20API%20for%20JavaScript%20files
10 # Contents from the HTTP Archive file.
11 http://js.arcgis.com/3.10compact/js/dojo/dijit/themes/claro/claro.css
12 http://js.arcgis.com/3.10compact/js/esri/css/esri.css
13 http://musial.esri.com/esrijs/samples/mobile_citizenrequest/styles/application-styles.min.css
14 http://musial.esri.com/esrijs/samples/mobile_citizenrequest/js/application-library.min.js
15 http://js.arcgis.com/3.10compact/init.js
16 http://js.arcgis.com/3.10compact/js/esri/nls/jsapi_en-us.js
17 http://js.arcgis.com/3.10compact/js/esri/tasks/QueryTask.js
18 http://js.arcgis.com/3.10compact/js/esri/tasks/RelationshipQuery.js
19 http://js.arcgis.com/3.10compact/js/esri/tasks/StatisticDefinition.js
20 http://js.arcgis.com/3.10compact/js/dojo/dojox/gfx/svg.js
21 http://musial.esri.com/esrijs/samples/mobile_citizenrequest/styles/images/ajax-loader.gif
```

**Developer Console:**

Developer Tools - http://heb.esri.com/js/playground-js/samples/mobile\_citizenrequest/dist/

Elements Network Sources Timeline Profiles Resources Audits Console

<top frame> Preserve log

The value "1.0:" for key "maximum-scale" was truncated to its numeric prefix.

Creating Application Cache with manifest http://heb.esri.com/js/playground-js/samples/mobile\_citizenrequest/dist/manifest.appcache

Application Cache Checking event

Application Cache Downloading event

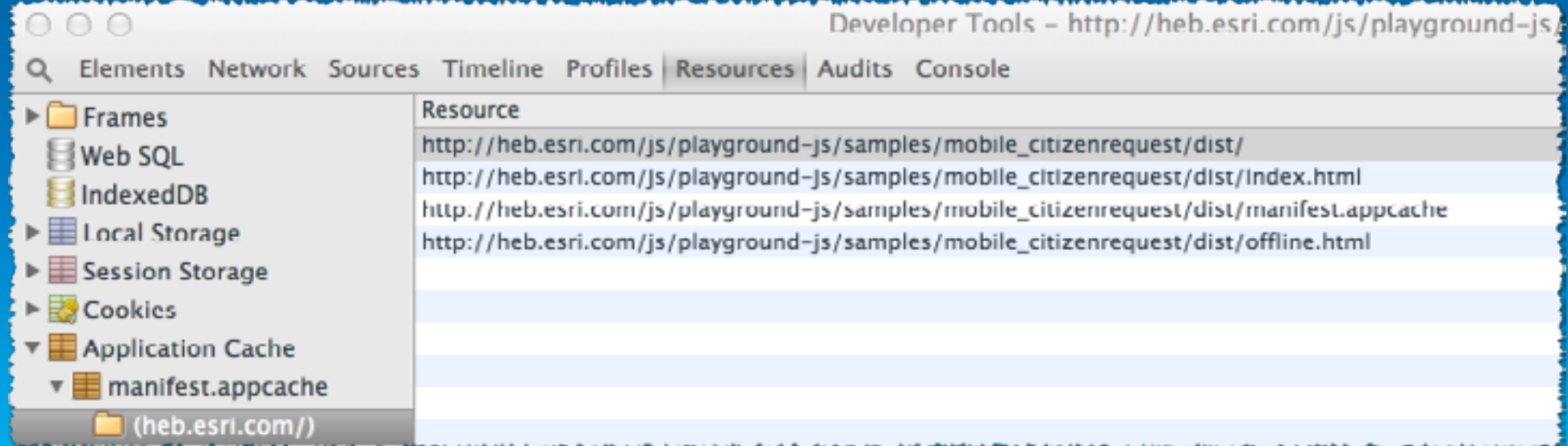
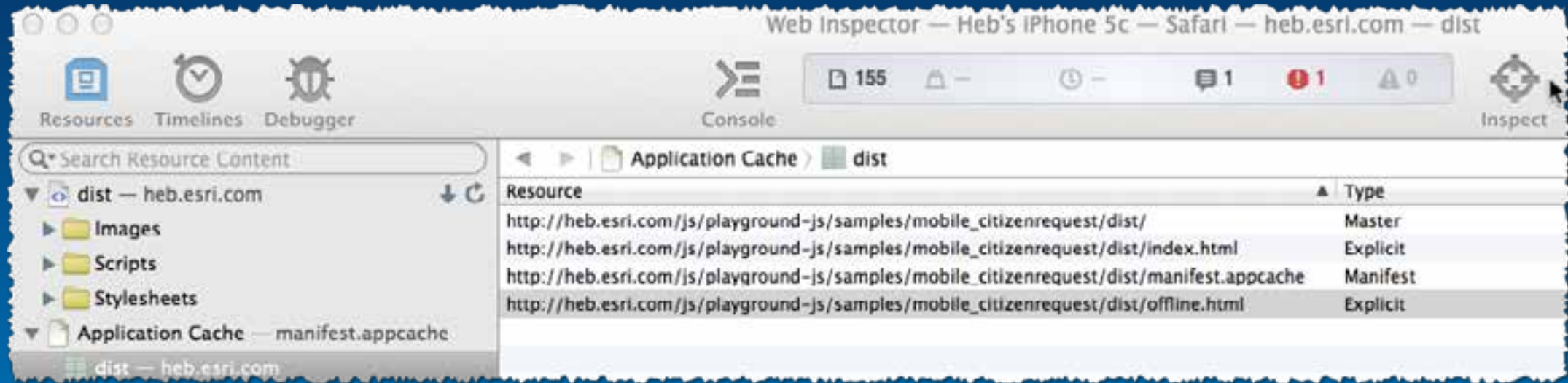
Application Cache Progress event (0 of 152) http://js.arcgis.com/3.10compact/js/dojo/dijit/typematic.js

Application Cache Progress event (1 of 152) http://js.arcgis.com/3.10compact/js/dojo/dijit/form/ToggleButton.js

Application Cache Progress event (2 of 152) http://js.arcgis.com/3.10compact/js/dojo/dijit/themes/claro/claro.css

Application Cache Progress event (3 of 152) http://js.arcgis.com/3.10compact/js/esri/layers/SnapshotMode.js

# HTML manifest on device

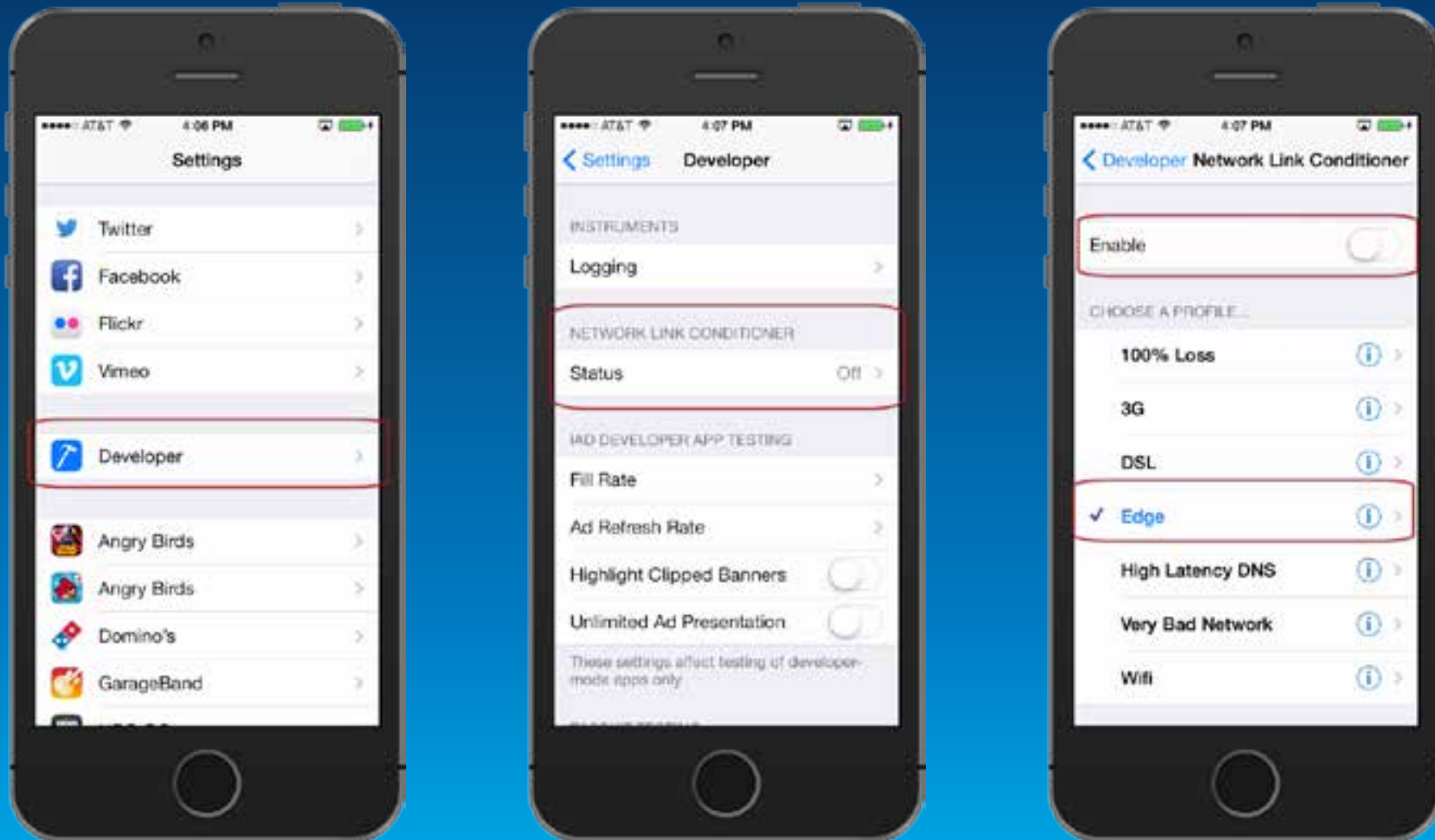


# File compression and caching headers

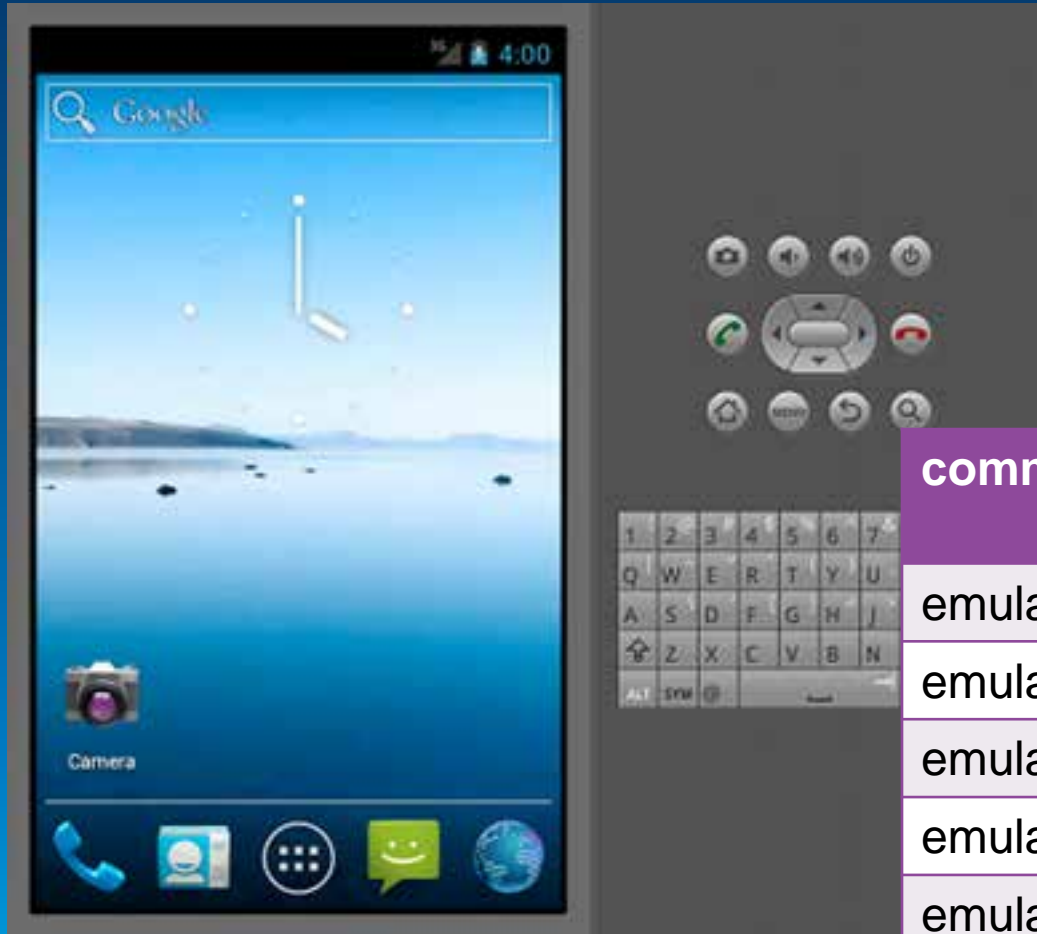


# Dealing with high density resolution

# iOS network simulation



# Android network speed emulation



command	Option	<speed> kilobits/sec
emulator	-netspeed	<named value>
emulator	-netspeed	<num> (both)
emulator	-netspeed	<up>:<down>
emulator	-netspeed	gsm
emulator	-netspeed	14.4 80
emulator	-netspeed	40.0

# Other network simulation options

- **Fiddler (Windows)**
- **Charles Network Debugging proxy**
- **Network Link Conditioner (Mac OS)**
- **Dummynet**

# Additional resources

- **Esri resources**
- **Esri resource proxy**

# Thank you...

- Please fill out the session survey:

**First Offering ID (Tuesday): 1255**

**Second Offering ID (Thursday): 1366**

**Online – [www.esri.com/ucsessionsurveys](http://www.esri.com/ucsessionsurveys)**

**Paper – pick up and put in drop box**



Understanding our world.

