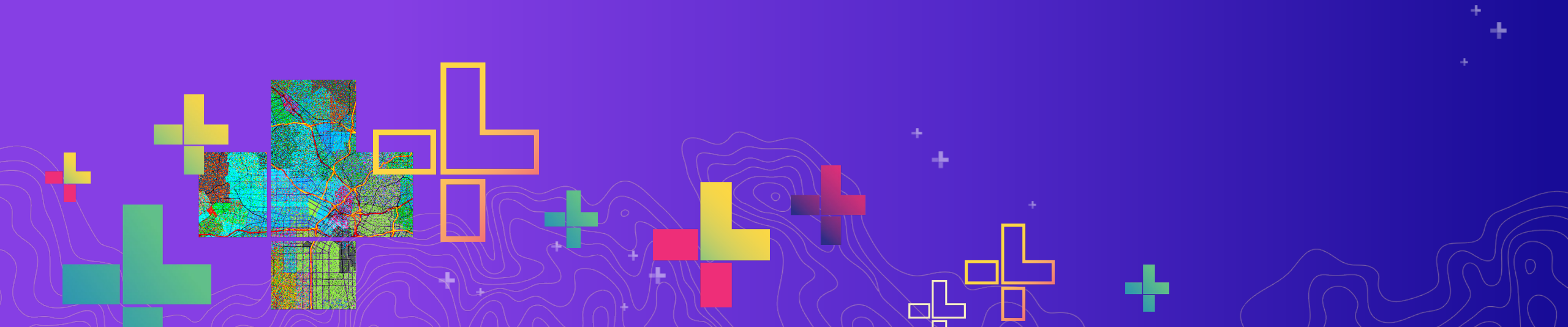# ArcGIS Runtime SDK for iOS
Building Apps

Nicholas Furness

2020 ESRI DEVELOPER SUMMIT | Palm Springs, CA

Agenda

- Getting Started
- Core Workflows
  - Map and MapView
  - Display data
  - Interact with the MapView
  - Geocoding & Routing
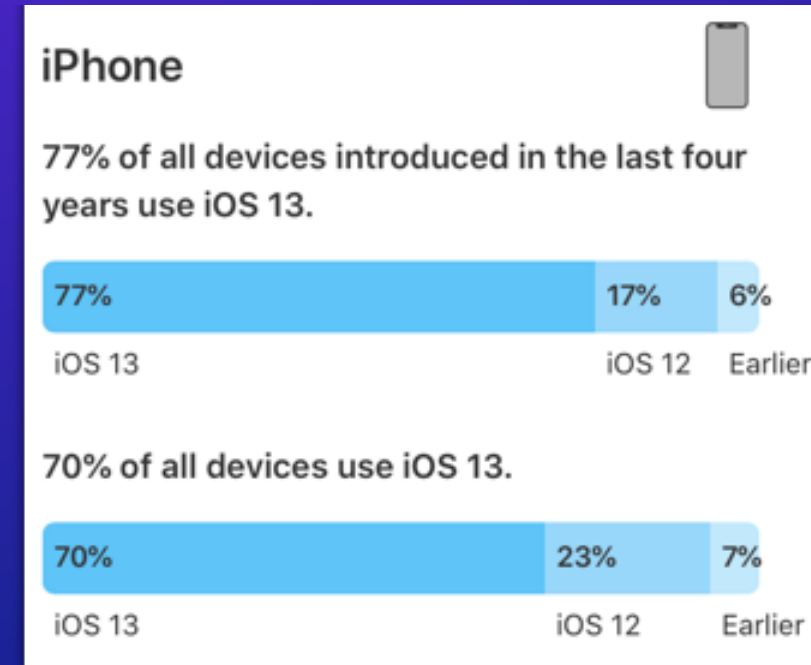 - GPS
  - Tips and Information

Getting Started

Tools and resources

You'll need…

- A Mac (macOS 10.14 or later)
- Xcode 11 or 10 (free from the Mac App Store)
- Apple Developer Account (free)
- Esri Developer Account (free)
    - (or an ArcGIS Online account)

- ArcGIS Runtime:
    - iOS 13, 12, 11
    - Swift and/or Objective-C

iPhone

77% of all devices introduced in the last four years use iOS 13.

77%	17%	6%
iOS 13	iOS 12	Earlier

70% of all devices use iOS 13.

70%	23%	7%
iOS 13	iOS 12	Earlier

Installation

- Download install package
  - Dynamic framework
  - Xcode integration – API reference
  - Basic starter samples
  - Legal material

- CocoaPods

- **TIP! -** Drag and drop Dynamic Framework into Project Target's **General>Embedded Binaries**
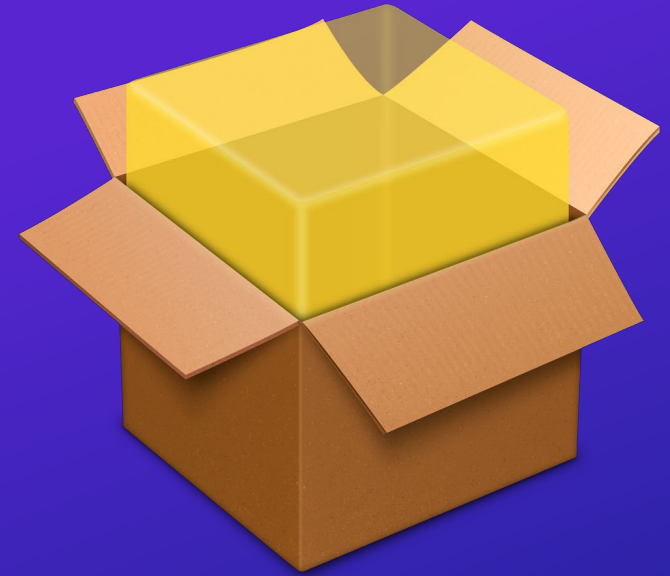
Tips and Information !!

- Apple deprecated OpenGL and OpenGL ES with the releases of macOS 10.14 and iOS 12
  - Good news – Esri is working to adopt Metal in 100.8 (April 2020)

  - Apple limitation… To use the Xcode Simulator with Runtime 100.8 onwards:
    - Develop on macOS Catalina + use Xcode 11 + simulate iOS 13
    - Otherwise: plug in a device (all devices support Metal)

Getting Started

Demo

developers.arcgis.com

Core Workflows

View Maps and Scenes

Map

- Operational Layers
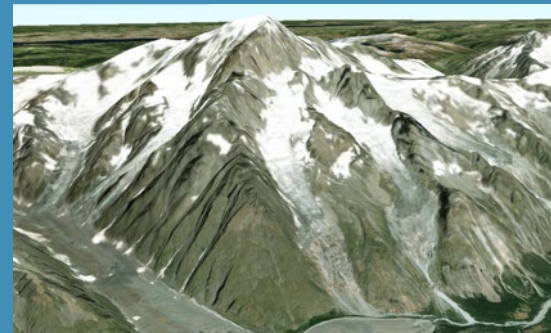- Basemap

Mapview

Scene
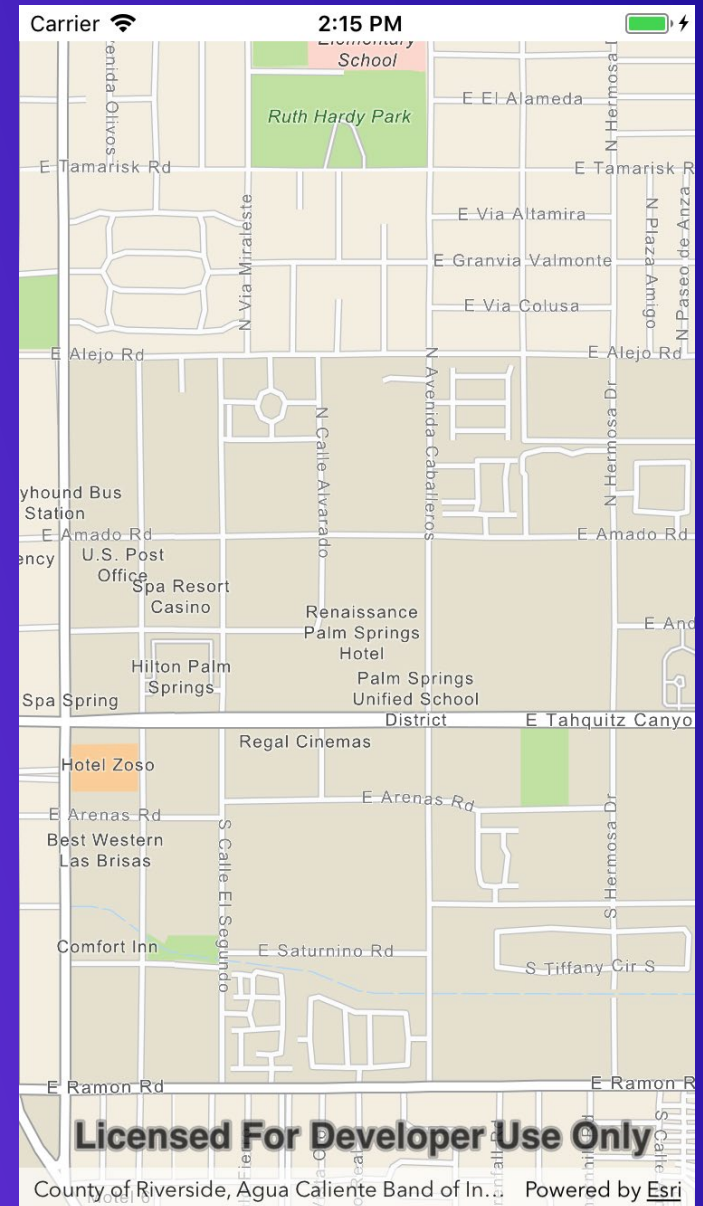
- Operational Layers
- Basemap
- Surface

Sceneview

Hello World

Add a map, and geocode

Hello World review…

- **AGSMap** + **AGSMapView**
- Working with Xcode
  - Storyboards
- Geocoding (**AGSLocatorTask**)
- Viewpoints
- Graphics Overlays and Graphics
- Symbols

Task Pattern

- Create with URL
    - geocoder, route solver, etc.
- Action with params
    - callback block
- Inspect for errors
- Work with results

```
locator.geocode(withSearchText: searchText) { (results, error) in
```
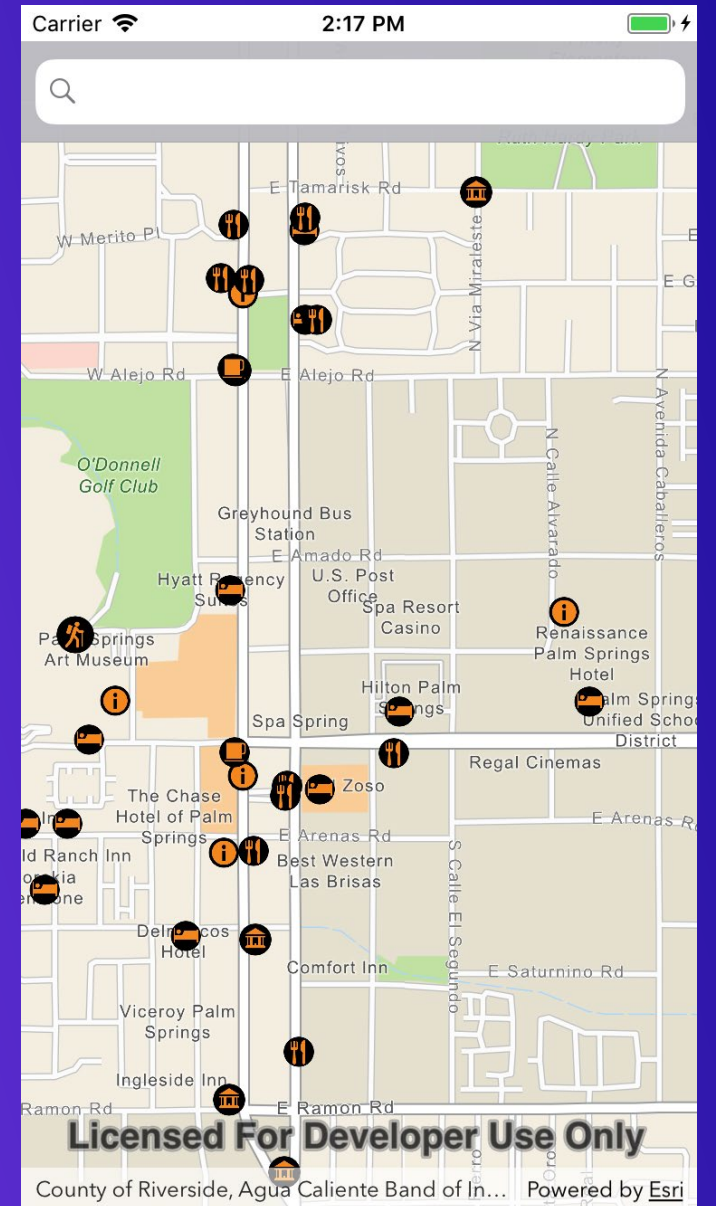
Tips and Information !!

- Task and Job patterns and documentation

- Loadable Resources

- Use **AGSLoadObjects()** to wait until multiple things have loaded

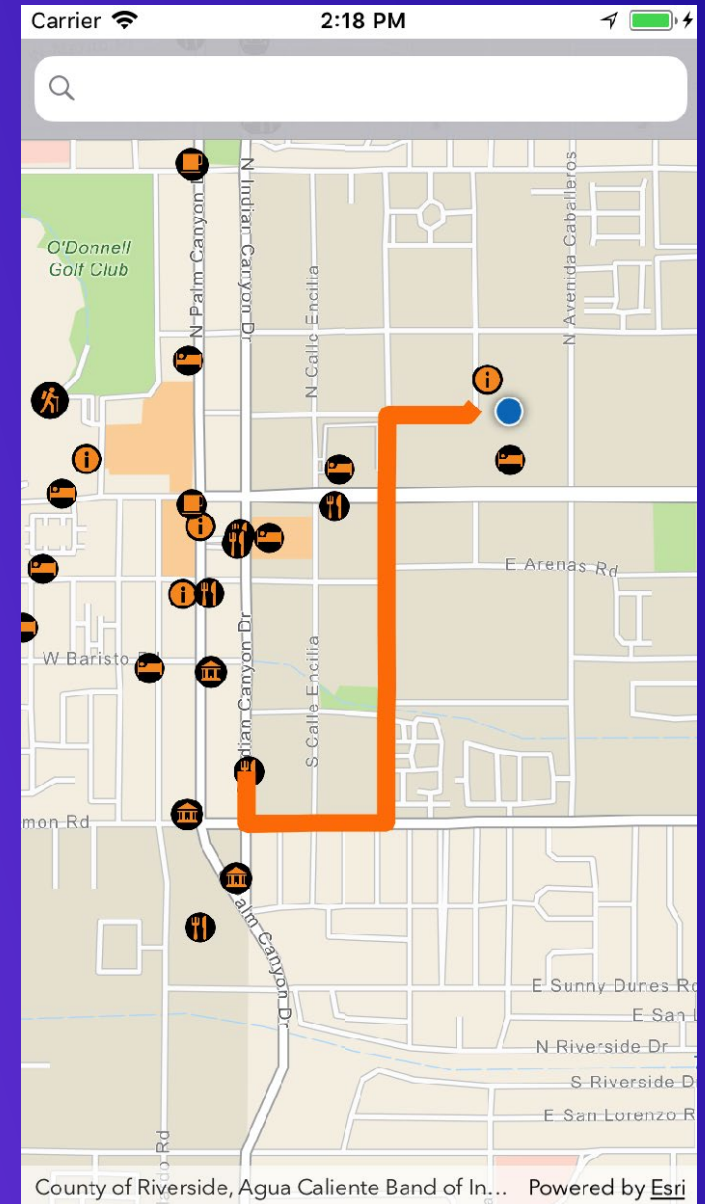# Hello World++

Add some data to your map

Hello World++ review…

- Add feature layer
    - Table to data source
    - Layer
- Map interaction (geoViewTouchDelegate)
- Read feature details
- Callouts

Getting there

You CAN get there from here

Routing review…

- Routes & Directions (**AGSRouteTask**)
  - Credentials
- Geometry builders
- Viewpoint with animation
- Renderers

Tips and Information !!

- Async things…
    - Use DispatchGroup() to wait for a number of async operations to finish. Part of Grand Central Dispatch (GCD). Make good use of GCD!

    - KVO could happen on any thread. Be sure to use DispatchQueue.main.async{} to do any UI updates from KVO…

Tips and Information !!

- Use **AGSGPXLocationDataSource** if you want to test your app against recorded GPX tracks
  - https://developers.arcgis.com/ios/latest/api-reference/interface_a_g_s_g_p_x_location_data_source.html

- What version of the SDK am I working with?
  - Extension to AGSBundle to return version of Runtime.
  - https://github.com/Esri/data-collection-ios/blob/master/data-collection/data-collection/Extensions/Foundation/Bundle%2BVersion.swift
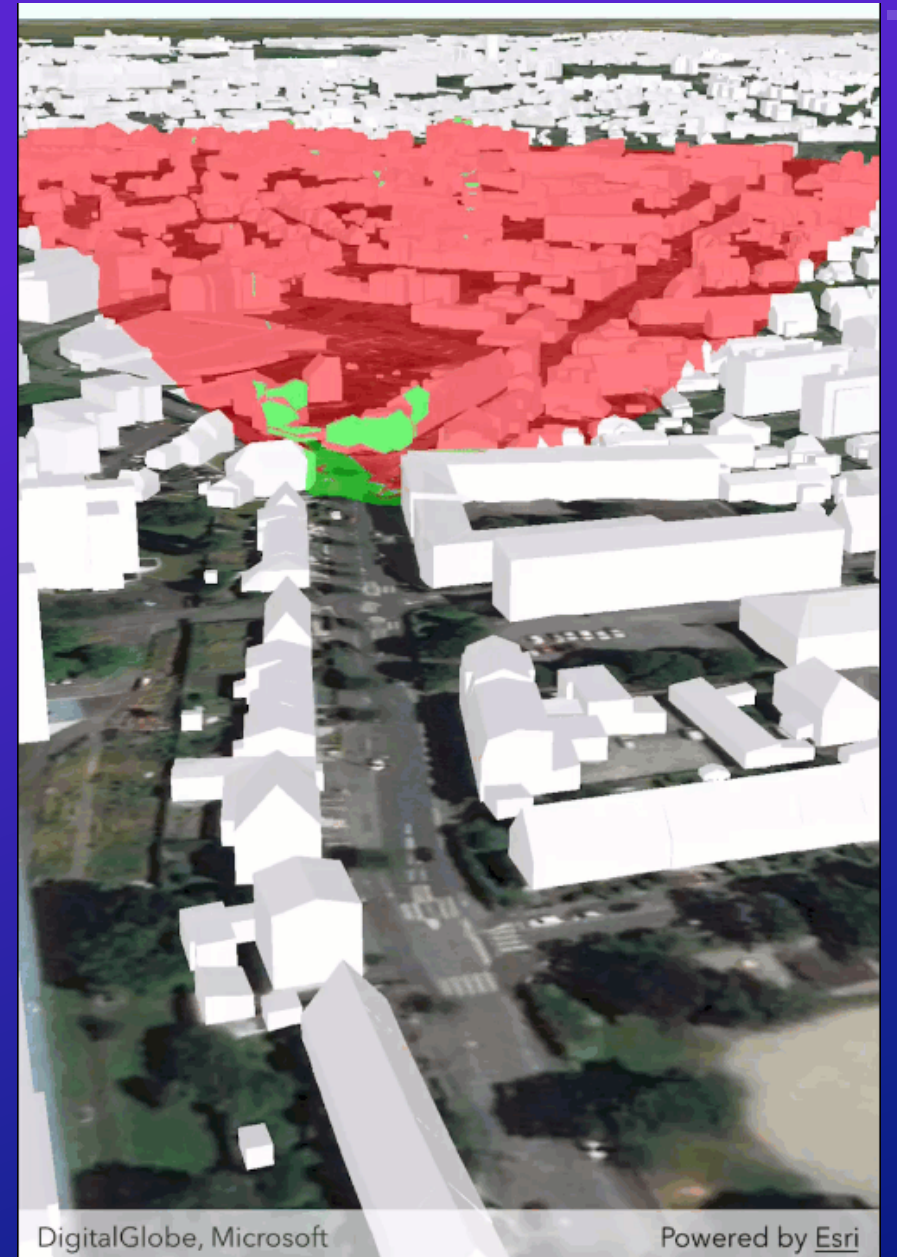
3 more things…

#1: 3D scenes and analysis

- Runtime has strong 3D support
- Check out the sample apps
- 3D Analysis
  - Line of sight
  - Viewshed
  - GPU-based – very slick
  - From a feature or a specified location
- 3D apps in the simulator are not good
  - Historic: Simulator Open GL emulation 🤢
  - All new! Xcode 11 + Catalina +
    iOS 13 + **Runtime 100.8** (Metal) 🎉
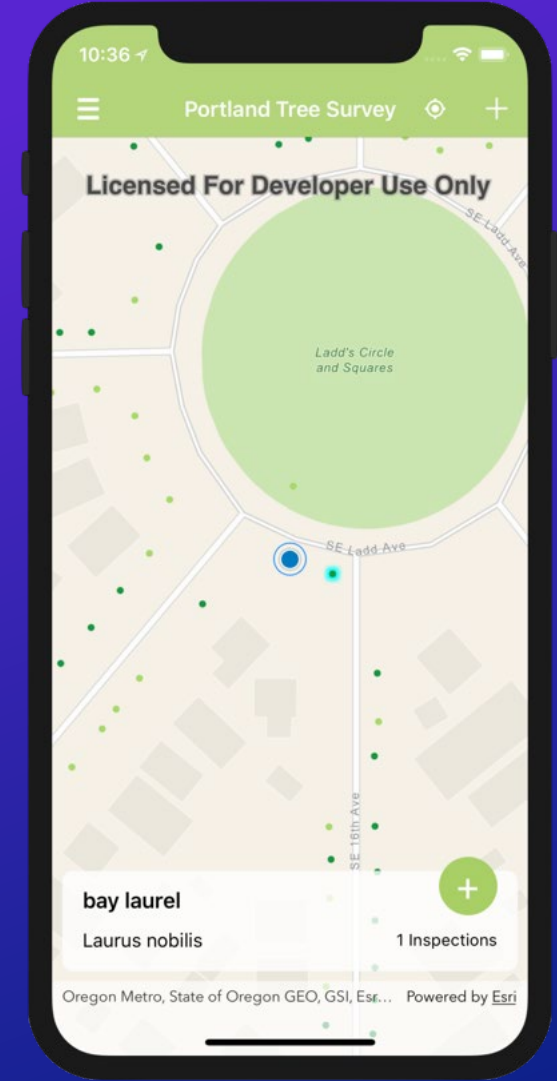

DigitalGlobe, Microsoft   Powered by Esri

#2: Open Source Apps

- Best practices for building real-world apps
- Use as the foundation for your app
- Or just steal what you want
  - https://developers.arcgis.com/example-apps/data-collection-ios/
  - https://github.com/Esri/data-collection-ios

#2.5: Toolkit

Scale Bar, Compass, Legend, AR, etc.
https://github.com/Esri/arcgis-runtime-toolkit-ios

#3: Test in the real world

- Test with real people

- Test on actual devices

- Test in the field with real network conditions

Summary

- Resources at developers.arcgis.com
- Core Workflows
  - Map and MapView
  - Display features and graphics
  - Geocoding & Routing (Task Pattern)
  - Location Display
  - MapView interaction
  - Geometry Builders
  - Callouts

Download the source for this presentation at:

https://github.com/geeknixta/arcgis-runtime-building-ios-apps