



# ArcGIS Runtime SDK for iOS/macOS: Building Apps

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# Agenda

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

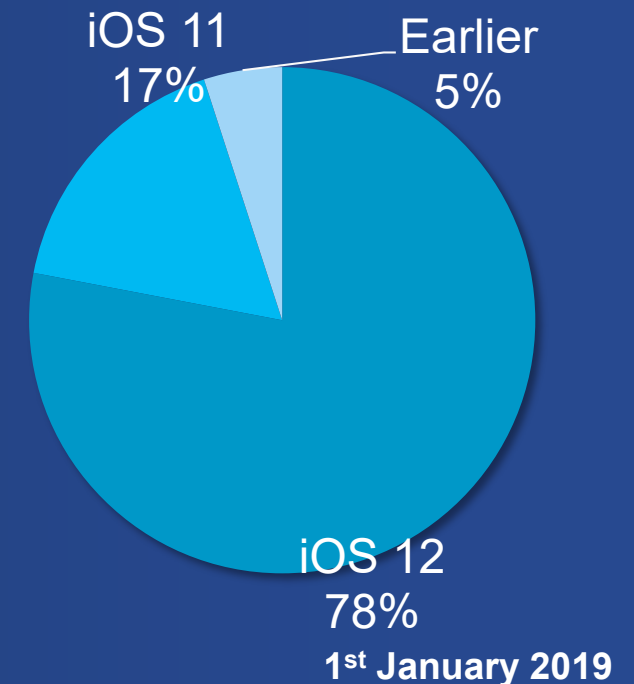


# Getting Started

Tools and resources

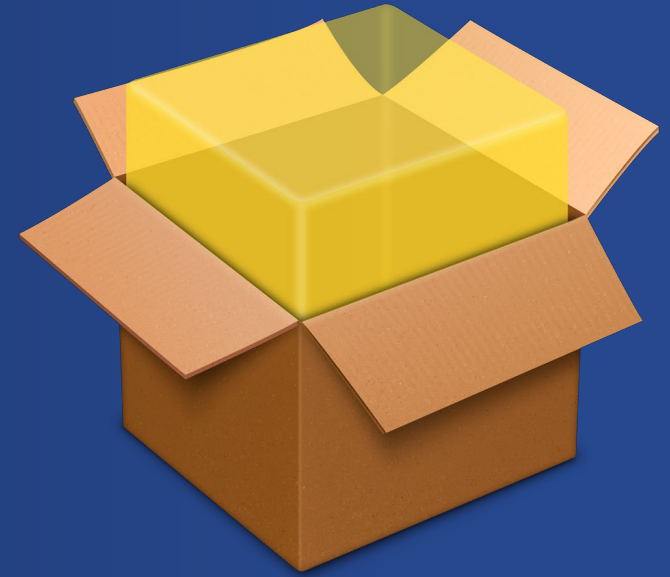
## You'll need...

- A Mac (macOS 10.12.6 or later)
- Xcode 10 and 9 (free from the Mac App Store)
- Apple Developer Account (free)
- Esri Developer Account (free)
  - (or an ArcGIS Online account)
- ArcGIS Runtime:
  - iOS 12, 11, 10 SDK
  - macOS Mojave (10.14), High Sierra (10.13) and Sierra (10.12)
  - Swift and/or Objective-C



# Installation

- Download install package
  - Dynamic and static frameworks
  - 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 deprecating OpenGL and OpenGL ES with the releases of macOS 10.14 and iOS 12 (warning)
  - Good news – ESRI working to adopt Metal
  - Migrate to Metal version of ArcGIS Runtime SDK when it's available
  - <https://community.esri.com/community/developers/native-app-developers/arcgis-runtime-sdk-for-ios/blog/2018/06/18/the-arcgis-runtime-opengl-and-metal>
- 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>




ArcGIS for Developers

Dashboard + Get Started Documentation Pricing Support

Nicholas geeknixa


# A complete mapping and analytics platform for developers

[View Dashboard](#) [Start Building Your App](#)




## High performance

Fast GPU accelerated drawing and client side analytics.




## Easy to use

Integrate maps and geocoding into your app in just a few lines of code.













## Private and secure

Host your data and apps securely in the cloud or behind your firewall.



## Affordable pricing

Start for free and pay as you go for additional services.



# Getting Started

Demo

[developers.arcgis.com](https://developers.arcgis.com)



# Core Workflows



# View Maps and Scenes

## Map

Operational Layers

Basemap

## Mapview



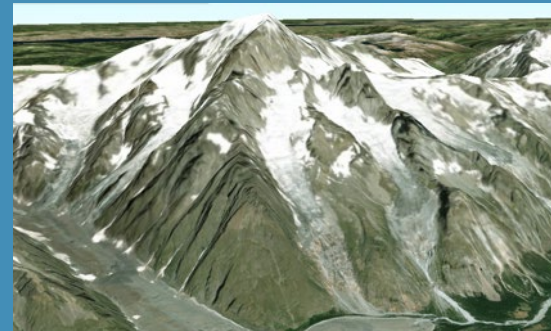
## Scene

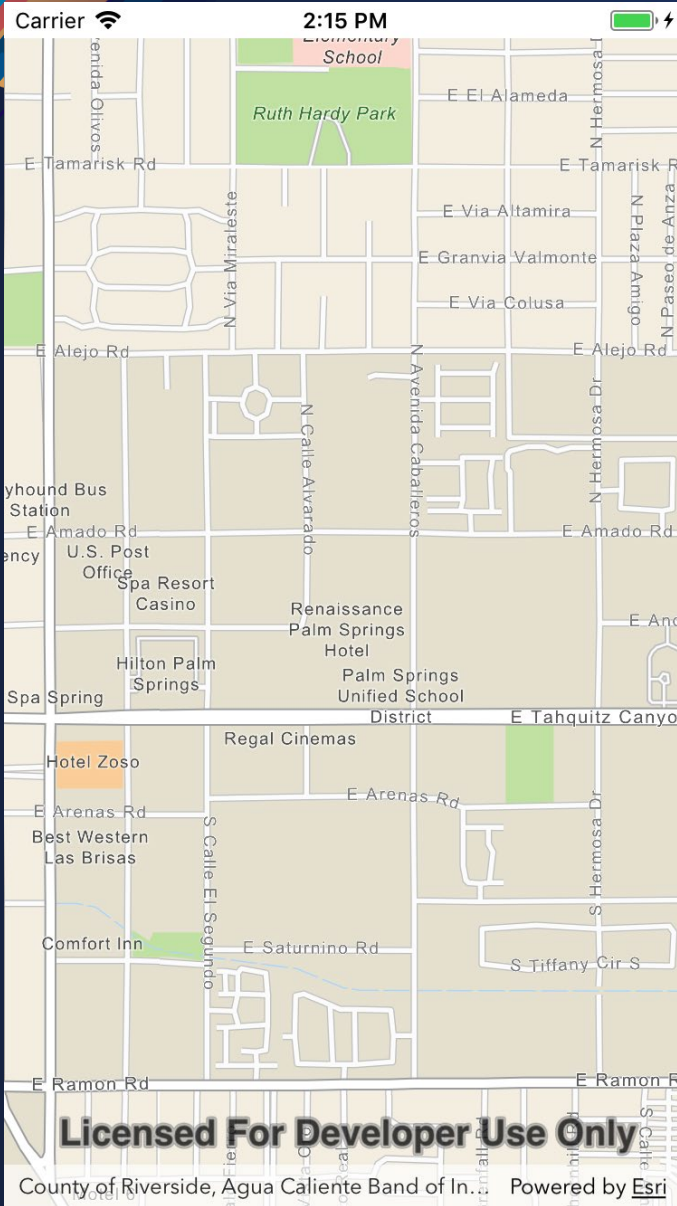
Operational Layers

Basemap

Surface

## Sceneview






# Hello World

Add a map, and geocode

# Hello World review...

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

# Task Pattern

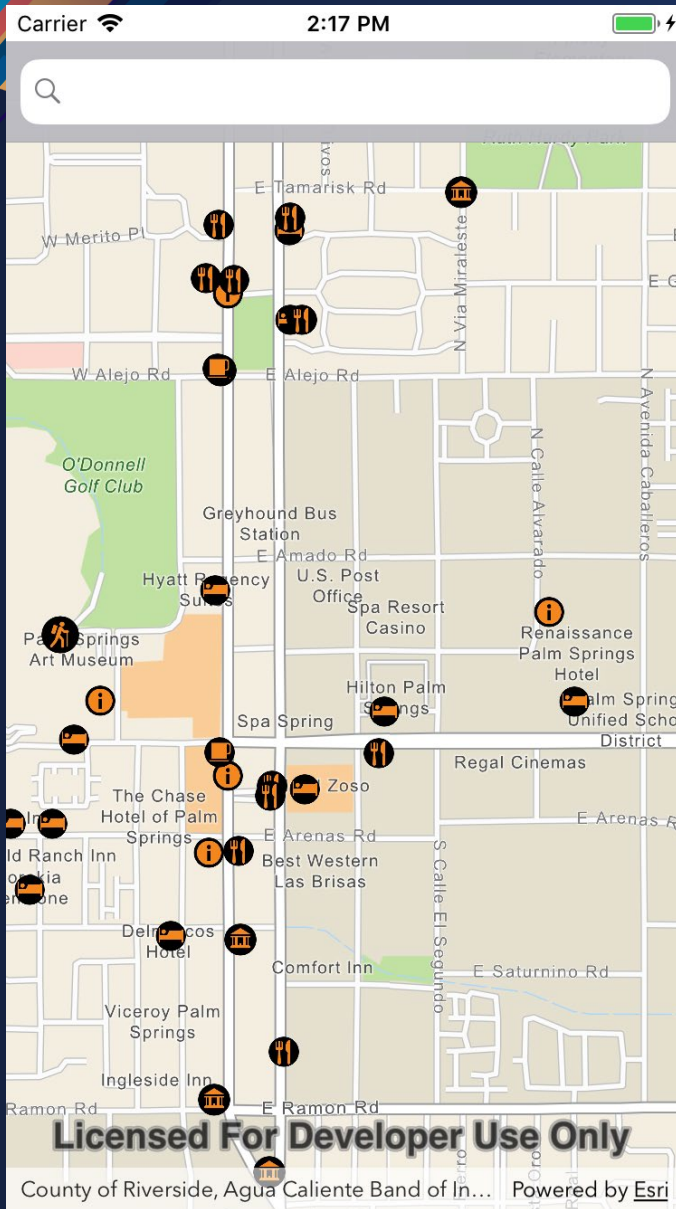
- Create with URL
  - geocoder, route solver, etc.
- Action with params
  - callback block
- Inspect for errors
- Work with results

```
locator.geocode(withSearchText: searchText) { (results, error) in
```

## Tips and Information !!

- Task and Job patterns and documentation
- Loadable Resources
- Use `AGSLoadObjects()` to wait for a few things to load



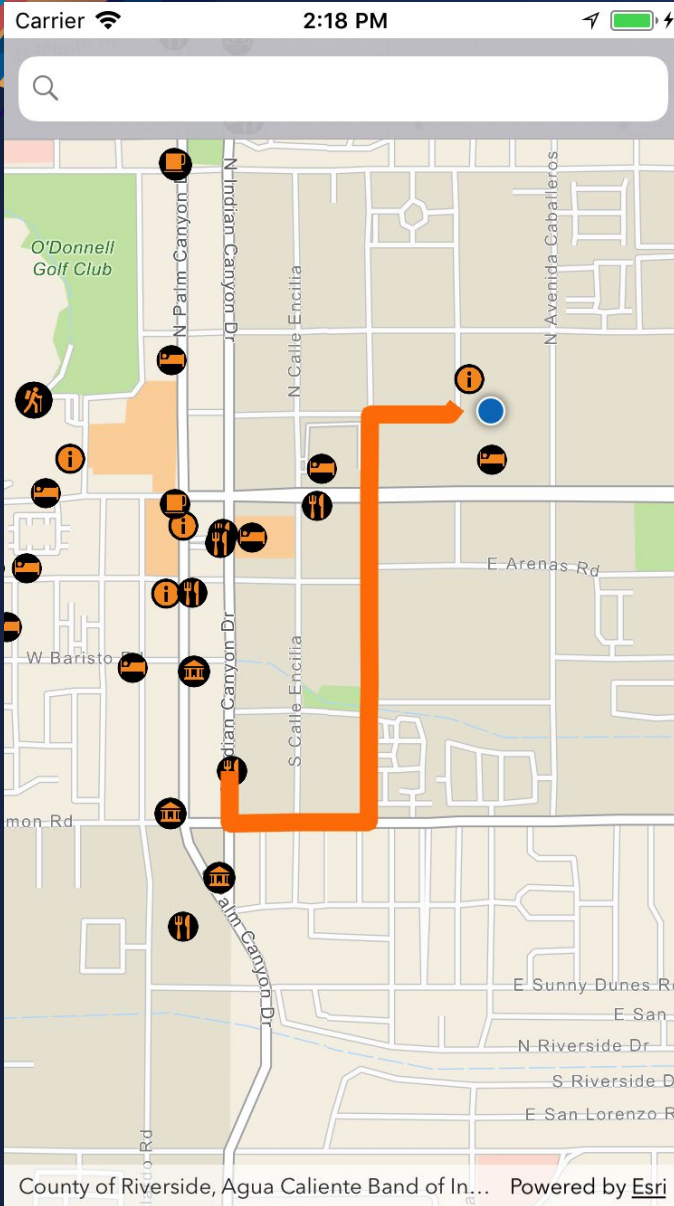


# Hello World++

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 !!

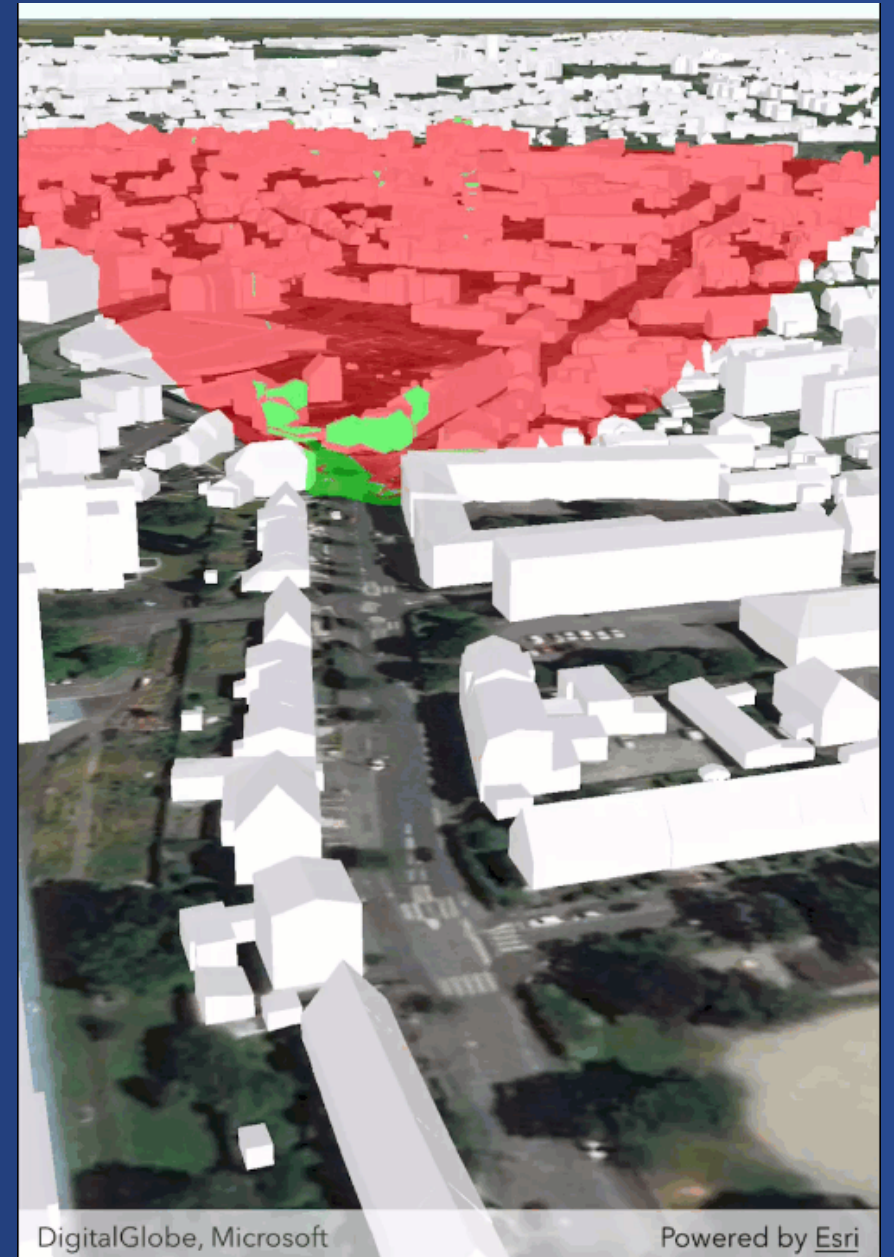
- Use AGSGPXLocationDataSource if you want to test your app against recorded GPX tracks
  - [https://developers.arcgis.com/ios/latest/api-reference/interface\\_a\\_g\\_s\\_g\\_p\\_x\\_location\\_data\\_source.html](https://developers.arcgis.com/ios/latest/api-reference/interface_a_g_s_g_p_x_location_data_source.html)



3 more things...

## #1: 3D scenes and analysis

- iOS and macOS have 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
- iOS Simulator on Mac is bad for OpenGL
  - 3D apps in the simulator are not good



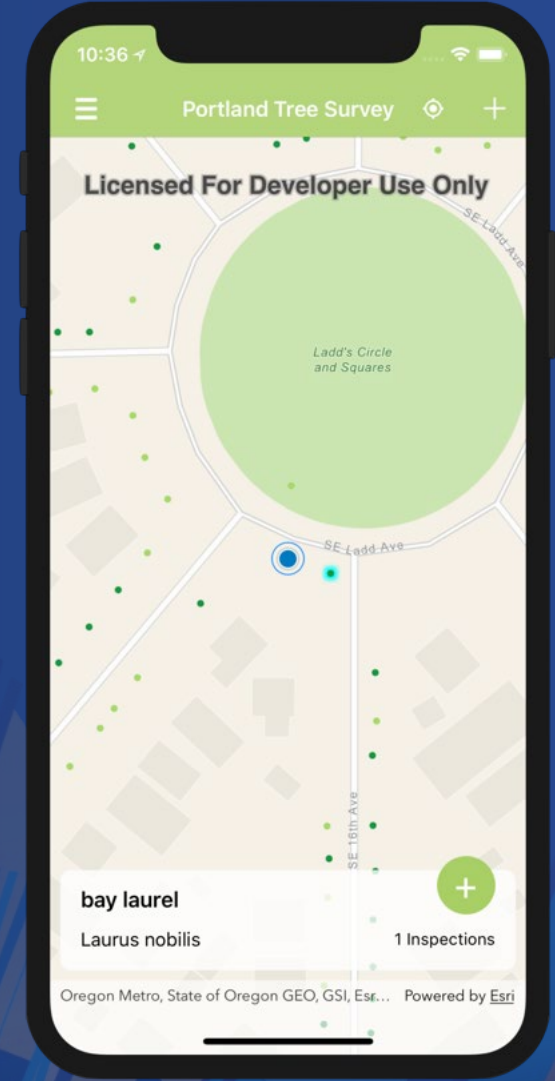
DigitalGlobe, Microsoft

Powered by Esri


## #2: Example Apps

- More than just samples
- 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: Toolkits



### #3: Test in the real world

- Test with real people
  - Test on actual devices
  - Test in the field with real network conditions
- 



# Summary

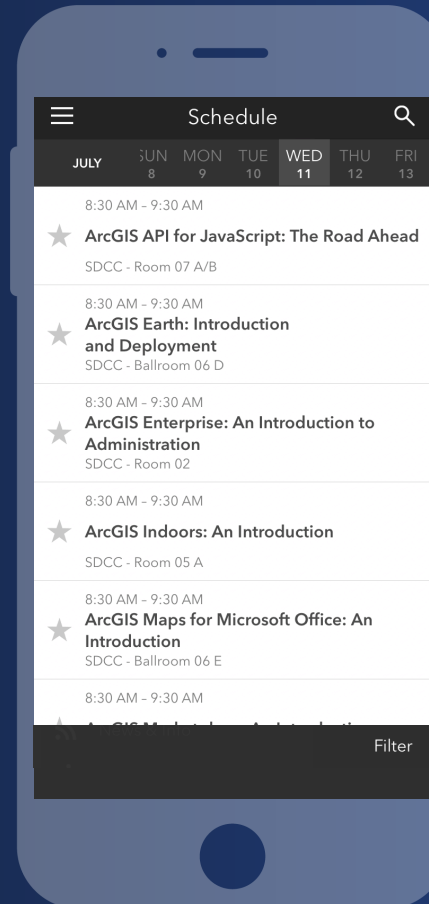
- Resources at [developers.arcgis.com](https://developers.arcgis.com)
- Core Workflows
  - Map and MapView
  - Display features and graphics
  - Geocoding & Routing (Task Pattern)
  - Location Display
  - MapView interaction
  - Geometry Builders
  - Callouts

# Please Take Our Survey on the App

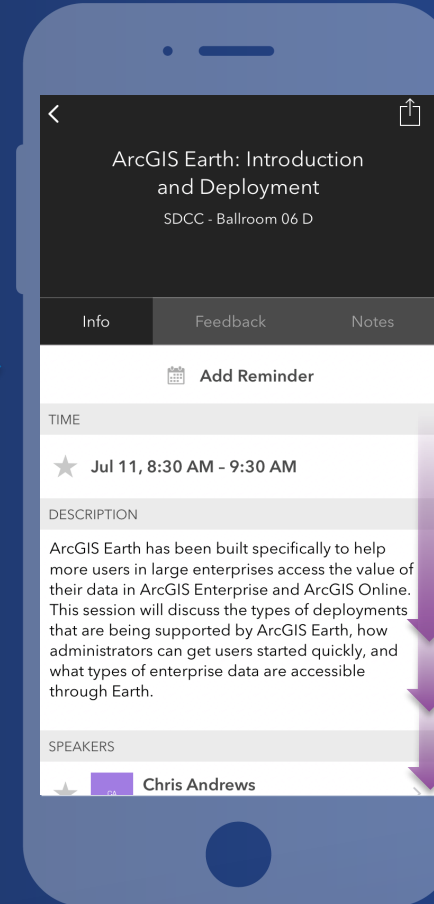
Download the Esri Events app and find your event



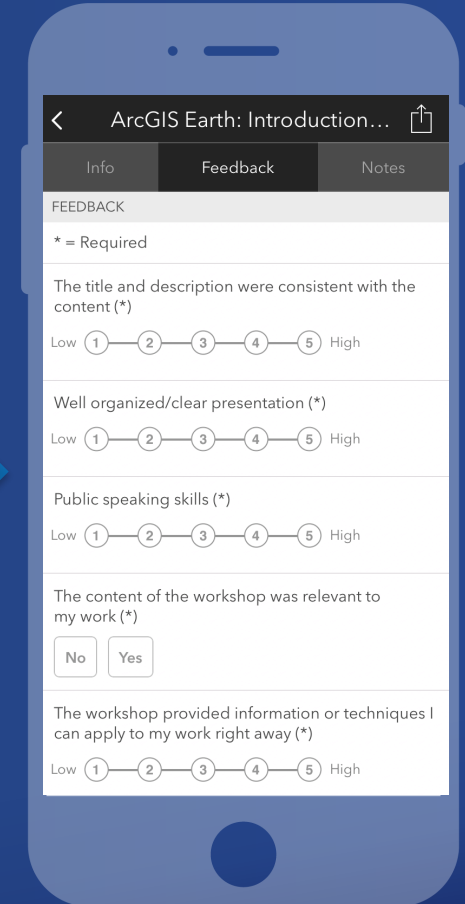
Select the session you attended



Scroll down to find the feedback section



Complete answers and select "Submit"





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