

Building Mobile Apps with ArcGIS Runtime

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ESRI EUROPEAN DEVELOPER SUMMIT

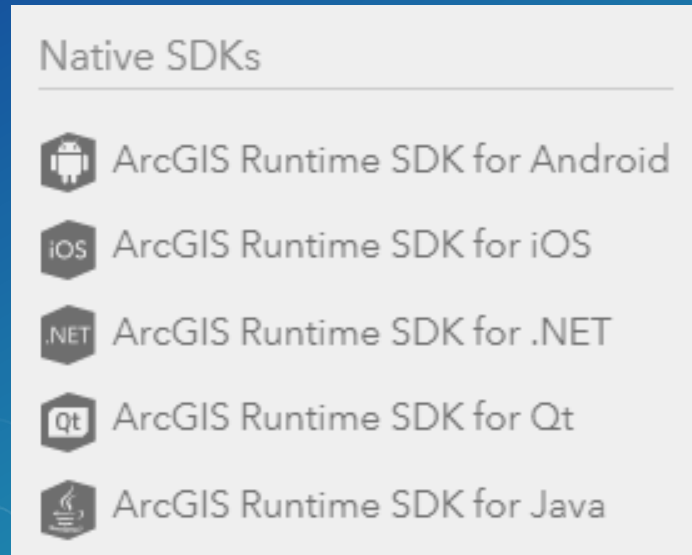


Building Mobile Apps with ArcGIS Runtime

- **What is ArcGIS Runtime?**
- **Why write a native application?**
- **Where to get started.**
- **Which SDK to use?**
- **Basic development concepts for 2D and 3D apps**
- **Showing your current location**
- **Online and offline data**
- **Licensing your app**

What is ArcGIS Runtime?

- A set of SDKs for embedding mapping and GIS functionality into your own native applications.

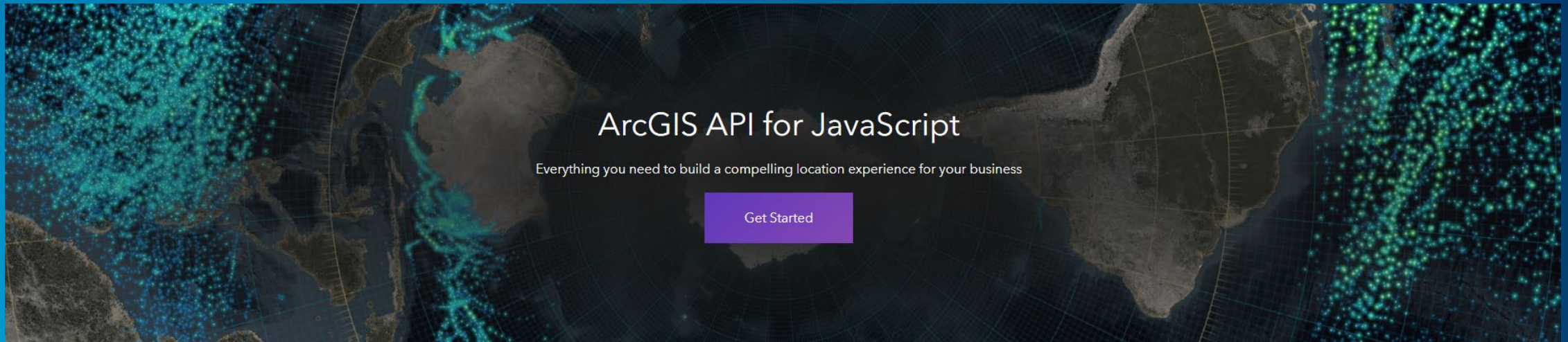


- Used for ArcGIS Collector for example

What can you do with ArcGIS Runtime

- A client to the ArcGIS platform
- 2D and 3D visualization
- Routing
- Geocoding
- Analysis (viewshed or LOS)
- Viewing and editing data
 - ArcGIS data
 - OGC (WFS, WMTS, WMS)
 - Base maps
 - Raster and vector formats (shapefiles and GeoPackage)
 - Your own temporary data

Why write a native application?



- **Web apps are great too!**
- **Run in a web browser on your mobile device.**
- **Network loss = app loss!**
- **Runtime Apps can work offline.**


Where to get started.

<https://developers.arcgis.com>

ArcGIS for Developers Get Started Documentation Features Pricing Resources 🔍 Sign In


A complete mapping and analytics platform for developers

[Sign Up for Free →](#) [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.

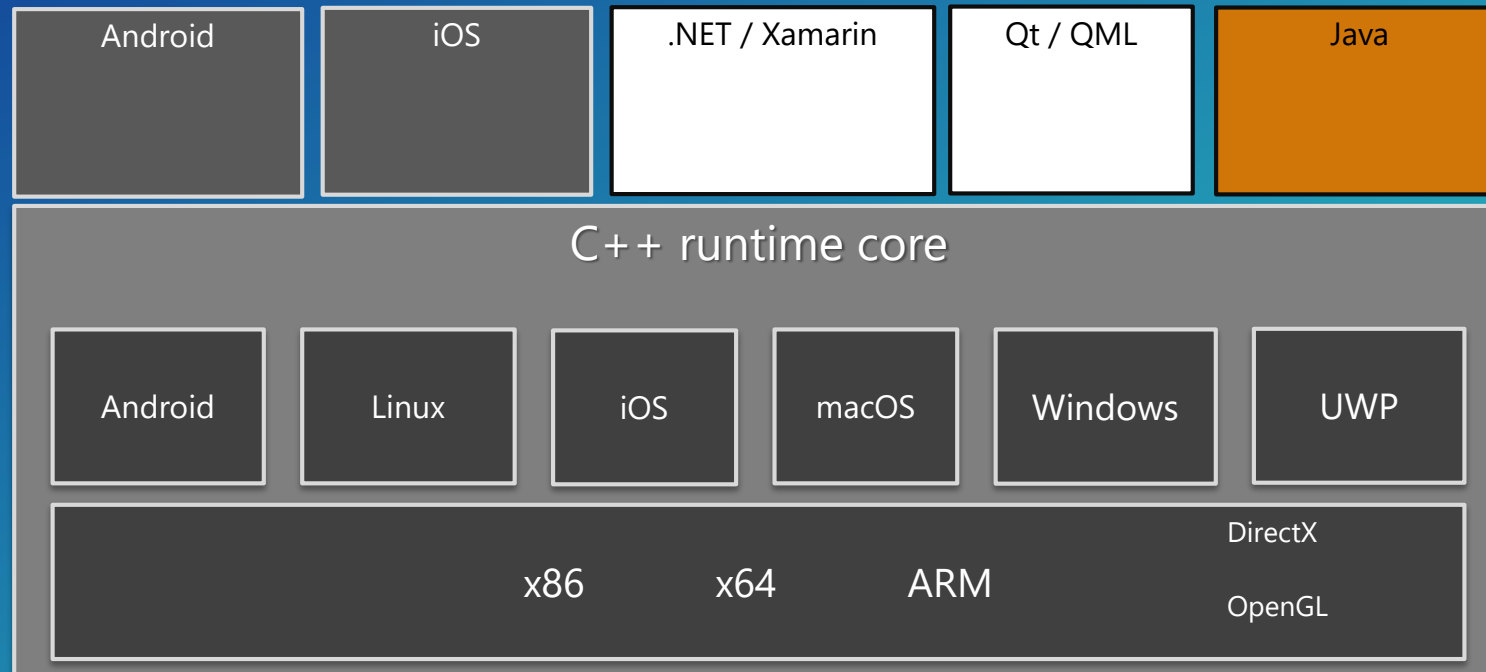


Affordable pricing

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

Which SDK?

- Is one better than the others?
- Where will you deploy your apps?
- What are your in-house development skills?
- Consider cross platform options.



Use an app builder – Don't write any code!

- App Studio
- Uses the Qt QML SDK
- Wizards / designers to make apps
- No code to write
- Cloud make
- Can edit projects with Qt Builder
- Attend session on Wednesday

AppStudio for
ArcGIS: Developing
Cross-Platform Native
Apps

11:00 a.m. – 11:45 a.m.

📍 Salon Heine I and II



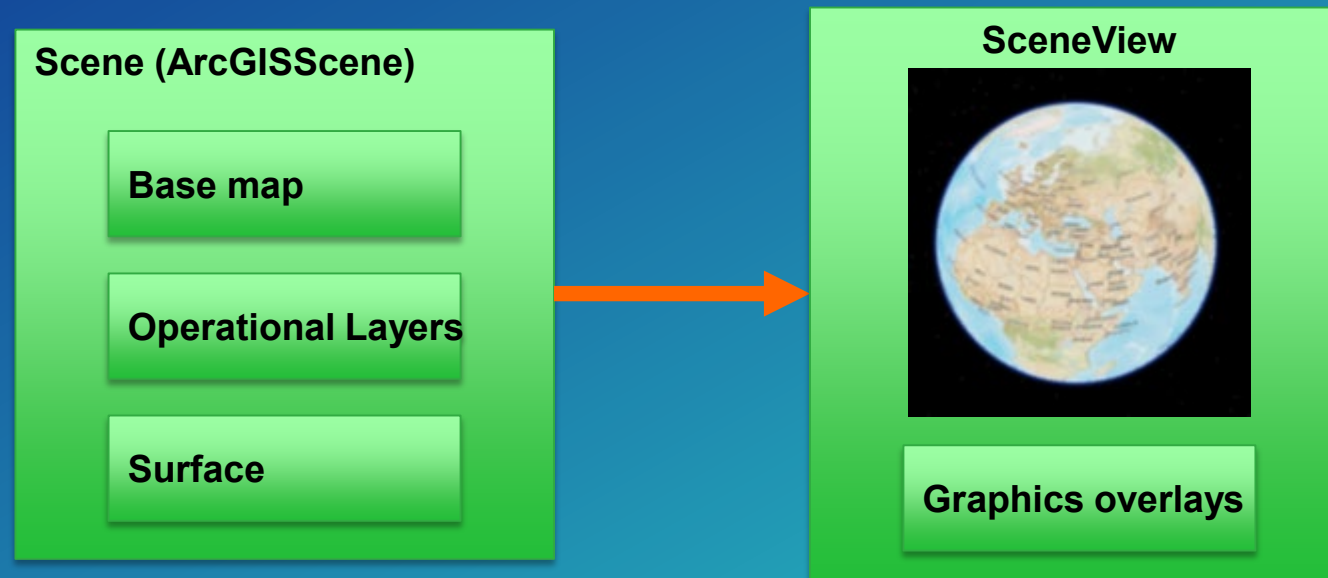
How do I get started?

Writing 2D applications



How do I get started?

Writing 3D applications



3D sessions on Tuesday morning

ArcGIS Runtime
SDKs: Building 3D
Applications

10:00 a.m. – 10:45 a.m.

📍 Salon Humboldt

ArcGIS Runtime
SDKs: Using
Augmented Reality
(AR)

11:00 a.m. – 11:45 a.m.

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Showing your current location : Location Display

- Part of the MapView
- Displays a dot on a map at your location
- Uses internal sensors (GPS, Compass)
- Various auto-pan modes
 - Navigation
 - Compass navigation
 - Recentre

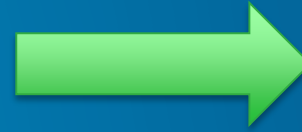


Using the LocationDisplay

```
// Get the MapView from layout and set a map with the BasemapType Imagery
mMapView = (MapView) findViewById(R.id.mapView);
ArcGISMap mMap = new ArcGISMap(Basemap.createImagery());
mMapView.setMap(mMap);

// get the MapView's LocationDisplay
mLocationDisplay = mMapView.getLocationDisplay();
```

```
// Start Location Display
if (!mLocationDisplay.isStarted())
    mLocationDisplay.startAsync();
break;
```



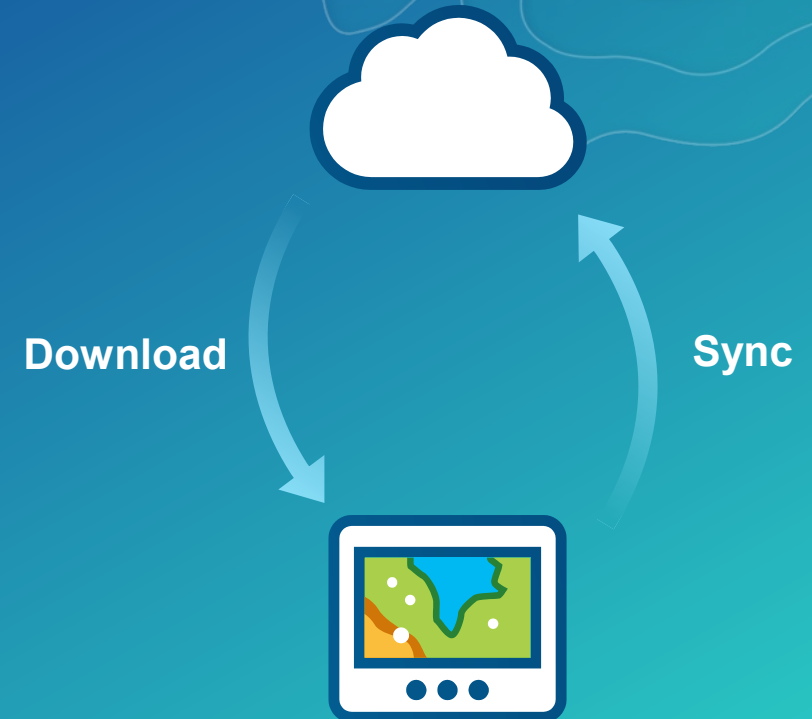
LocationDisplay Modes

```
// Start Compass Mode  
// This mode is better suited for waypoint navigation when the user is walking.  
mLocationDisplay.setAutoPanMode(LocationDisplay.AutoPanMode.COMPASS_NAVIGATION);
```



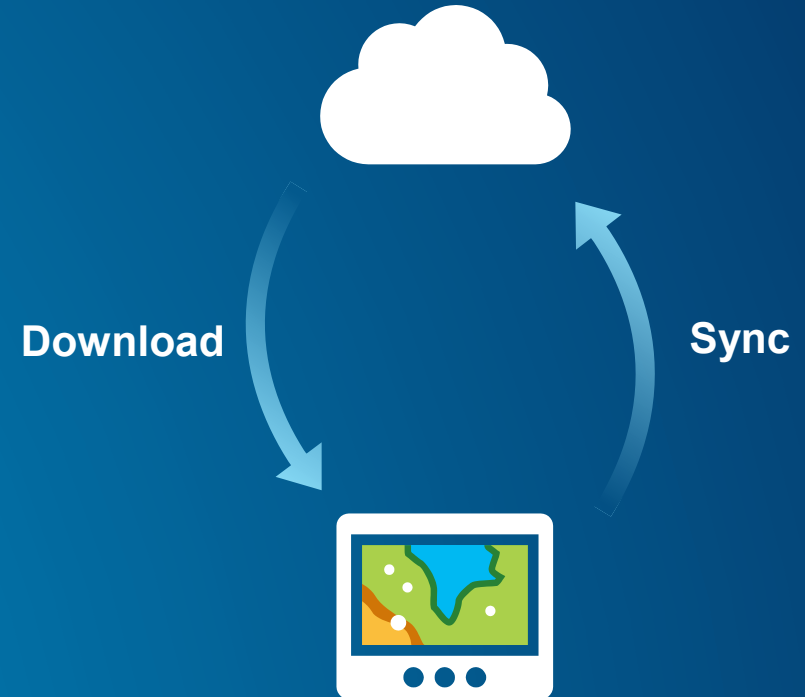
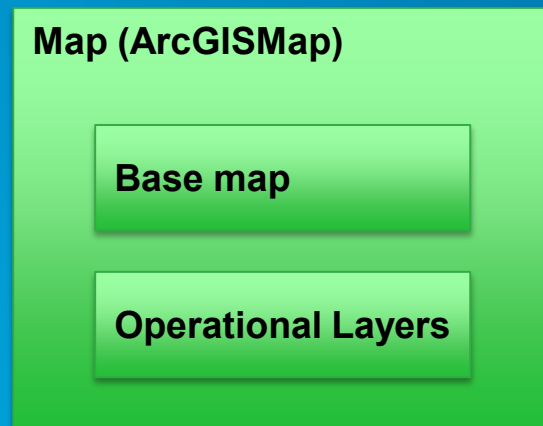
Offline data and capabilities

- Offline viewing and editing of data.
 - Routing
 - Geocoding
 - Offline basemaps
 - Offline data
- API methods to take maps offline



Offline data considerations

- Your data will reside in a webmap
- Authored in ArcGIS Pro or ArcGIS Online
- Map will consist of
 - Basemap
 - Operational Layers



Enable your webmap for offline use

- Open your webmap -> Settings

Offline

Enabling offline mode allows this map to be downloaded and used in locations where there may be no internet connectivity. When offline mode is enabled, a user can download the map in apps that support offline workflows. [Learn how.](#)

Enable offline mode ☒

[Advanced Options](#)

Map Areas

While not required, it is recommended that you create map areas ahead of time to package data for specific areas you expect to be used offline. Using map areas makes taking maps offline easier and faster.

Available map areas: 5

[Manage Areas](#)

[Save](#) [Cancel](#)

Basemap considerations

- **Choose your basemap carefully:**
 - **Traditional raster basemaps are big, very big!**
 - Multiple Levels of Detail for large areas can my many TB of data!
 - Limited storage on mobile devices
 - **Vector basemaps as much smaller**
 - Even country sized areas = Gigabtes
 - Easily fitting onto mobile device
 - Labels rotate with the map
- **Ensure you choose a basemap which can be exported.**
- **Consider sharing basemaps with other offline packages**

Operational data considerations (Feature Services)

- Configure for offline

Feature Layer (hosted)

SaveCancel

Editing

☒ Enable editing.
This layer is shared with everyone. Enabling editing means everyone can edit it. If that isn't your intent, create a view of this layer that allows editing. [Learn more.](#)

☐ Keep track of created and updated features.

☐ Keep track of who created and last updated features.

☒ Enable Sync (disconnected editing with synchronization).

• Who can edit features?
Share the layer to specific groups of people, the organization or publicly via the Share button on the Overview tab. This layer is currently shared with: Everyone (public)

• What kind of editing is allowed?

☒ Add, update, and delete features

☐ Add and update features

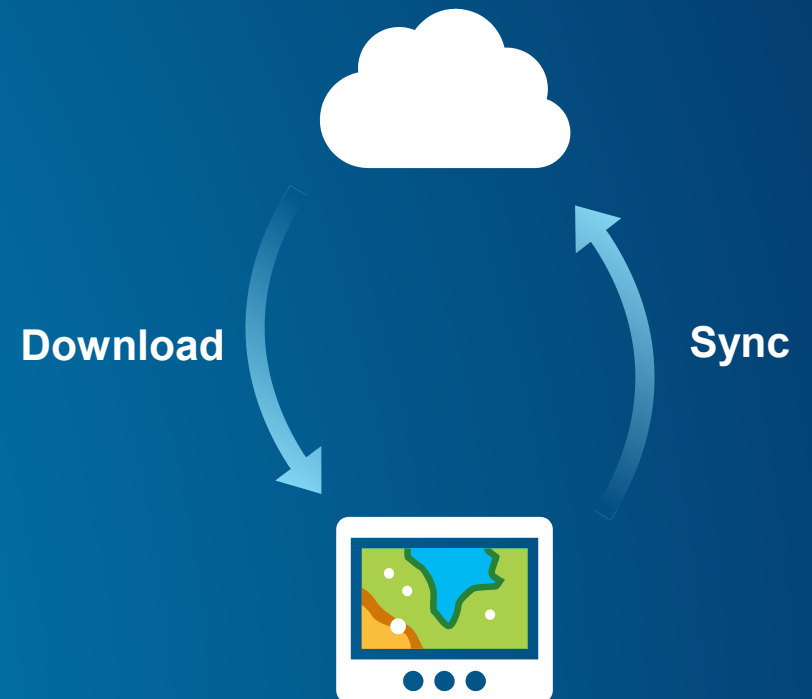
☐ Add features

☐ Update features

☐ Update attributes only

Operational data considerations (Feature Services)

- Other factors causing large downloads
 - Feature attachments – do you need them?
 - Related tables – all related data needed?
 - Do you need all data - apply definition expression filters?
 - Can download schema only



Tuesday afternoon for offline sessions!

ArcGIS Runtime
SDKs: Editing Your
Data Online and
Offline

1:00 p.m. – 1:45 p.m.

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ArcGIS Runtime
SDKs: Working With
Your Maps Online
and Offline

2:00 p.m. – 2:45 p.m.

📍 Salon Humboldt

Designing ArcGIS
Solutions for Offline
Use

3:00 p.m. – 3:45 p.m.

📍 Salon Heine I and II

License your application

- Choose a license level:
 - Lite
 - Basic
 - Standard
 - Advanced
- See <https://developers.arcgis.com/java/latest/guide/license-your-app.htm>
- Choose license method
 - Named user
 - License key

Summary

- Choose a Runtime SDK
- Writing 2D and 3D applications
- Displaying your location
- Offline
- Licensing

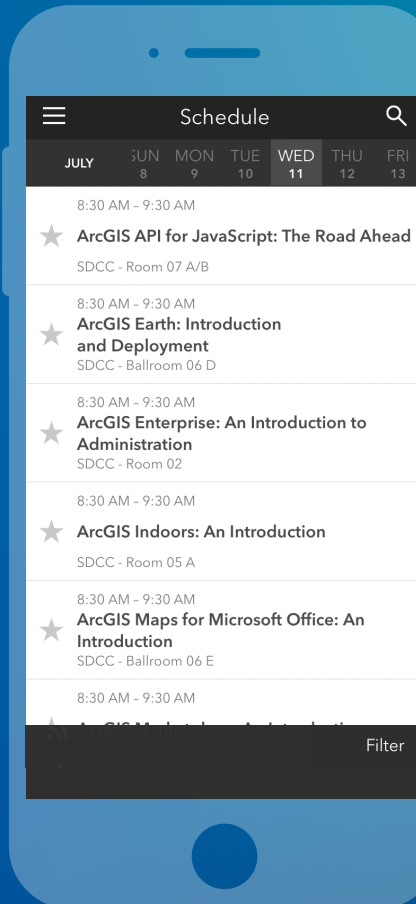
Questions?

Please Take Our Survey on the App

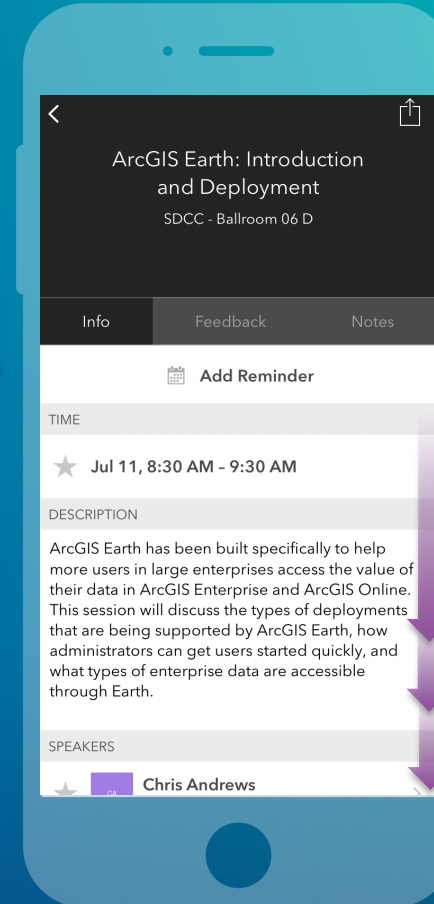
Download the Esri Events app and find your event



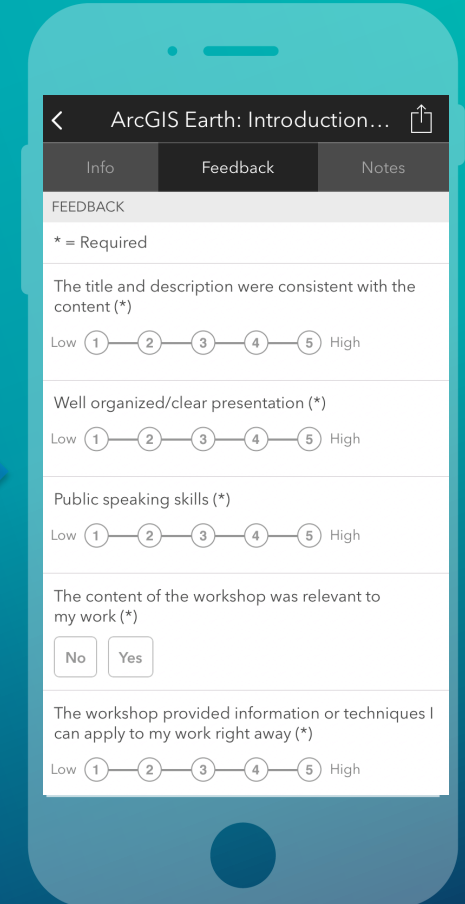
Select the session you attended



Scroll down to find the feedback section



Complete answers and select "Submit"





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