

# Esri's Location Services for Developers

Courtney Yatteau

John Foster

Kevin Gonzago

*2023 ESRI USER CONFERENCE*





# About this session

The background of the slide is a deep purple. It features several thick, flowing, wavy lines in shades of blue and orange that sweep across the right side of the image. In the lower-left and central areas, there is a faint, textured map of Europe, rendered in a slightly darker shade of purple, which appears to be part of the overall design or a subtle watermark.

# About this session

- For software developers
- Intermediate level
- Developing apps or planning to:
  - using ArcGIS Platform, ArcGIS Online, ArcGIS Enterprise
  - using Esri's location services



# About the presenters

The background of the slide is a deep purple. It features several thick, flowing, wavy lines in shades of blue and orange that sweep across the right side of the image. In the lower-left and central areas, there is a faint, textured map of Europe, rendered in a slightly darker shade of purple, which appears to be part of the overall design or a subtle watermark.



# Courtney Yatteau

Developer Advocate, Esri Inc.



[c\\_yatteau](#)



[c\\_yatteau](#)



[cyatteau](#)



[courtneyyatteau](#)





# Kevin Gonzago

Product Engineer, DevEx



[GitHub/kgonzago](https://github.com/kgonzago)



[LinkedIn/kevin-gonzago](https://www.linkedin.com/in/kevin-gonzago)





# John Foster

Developer, Esri



[GitHub/jf990](https://github.com/jf990)



[LinkedIn](https://www.linkedin.com/in/jf990)



[Twitter/GeoPlay9](https://twitter.com/GeoPlay9)

# Location services

for developers building apps



# Location services

## Ready to use:

- Basemaps and layers
- Geocoding
- Places
- Routing
- GeoEnrichment
- Spatial analysis

## Data hosting:

- Feature services
- Vector tiles
- Map tiles

<https://developers.arcgis.com/documentation/mapping-apis-and-services/services/>

# Location services



ArcGIS Online



ArcGIS Enterprise



ArcGIS Platform



# APIs

- ArcGIS Maps SDKs: JavaScript, .NET, Swift, Kotlin, Qt, Java, Unity, Unreal
- ArcGIS API for Python
- Open-source APIs: Leaflet, MapLibre, OpenLayers, CesiumJS
- Low code/no code builders: Experience Builder, Story Maps, Instant Apps
- REST APIs

<https://developers.arcgis.com/documentation/mapping-apis-and-services/apis-and-sdks/>

# Authentication

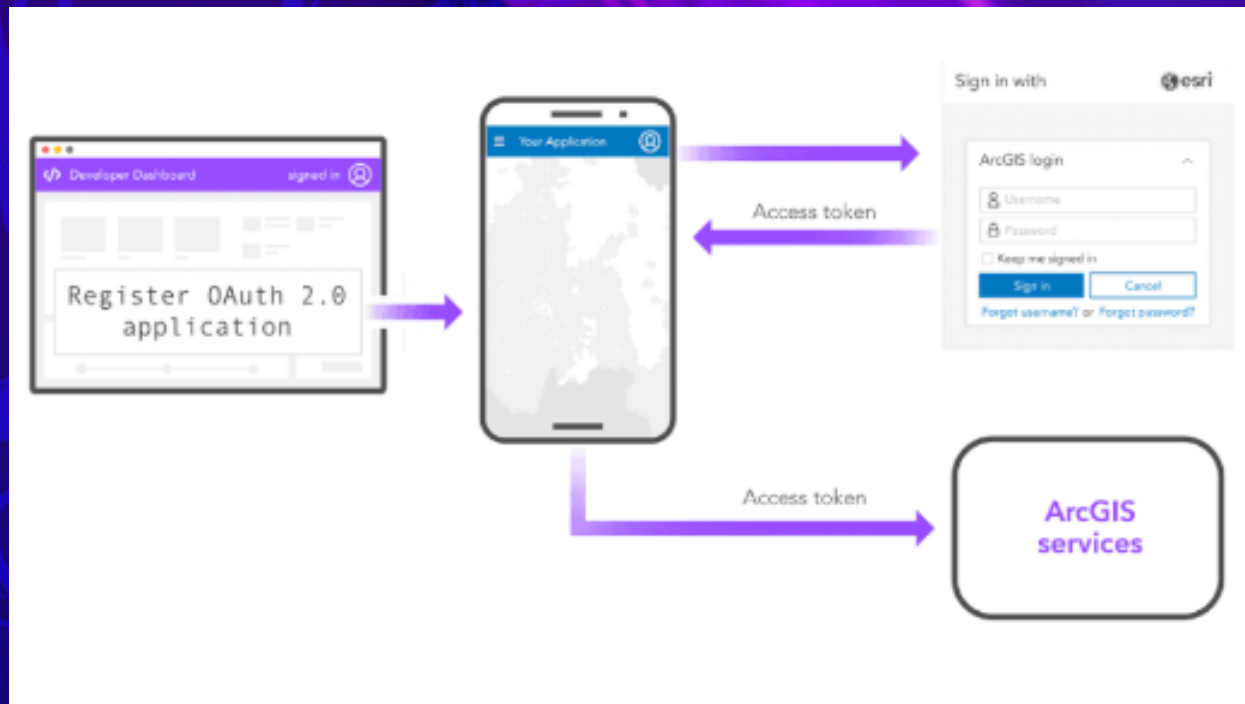
The background of the slide is a deep purple. It features several thick, flowing, wavy lines in shades of blue and orange that sweep across the right side of the image. In the lower-left and central areas, there is a faint, textured map of Europe, rendered in a slightly darker shade of purple, which appears to be part of the overall design or a subtle watermark.



# Authentication

- ArcGIS identity (aka “named user” aka OAuth 2.0)
- Application credentials
- API keys

<https://developers.arcgis.com/documentation/mapping-apis-and-services/security/>



# Authentication

## Demo



# Basemaps and layers

The background of the slide is a deep purple. It features several thick, flowing, wavy lines in shades of blue and orange that sweep across the right side of the image. Faintly visible in the background is a map of Europe, with the landmasses appearing in a slightly lighter shade of purple than the background.

# Basemaps and layers

- 2D maps
- 3D scenes
- Data layers
- Graphics
- Custom styles
- Living Atlas

<https://developers.arcgis.com/documentation/mapping-apis-and-services/maps/>





# Basemaps

Demo

# Geocoding

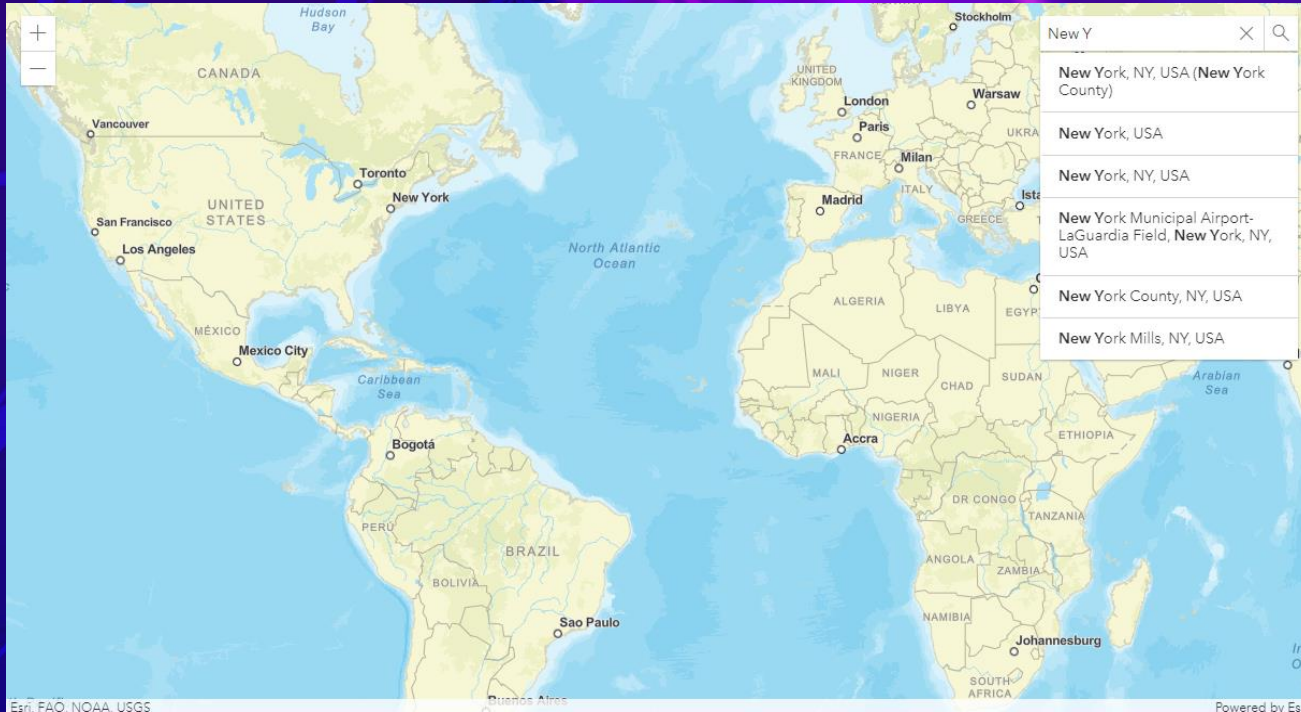




# Geocoding

- Addresses
- Auto-suggest
- Reverse geocode
- Batch geocode

<https://developers.arcgis.com/documentation/mapping-apis-and-services/geocoding/>



# Geocoding

## Autosuggest Demo



# Places



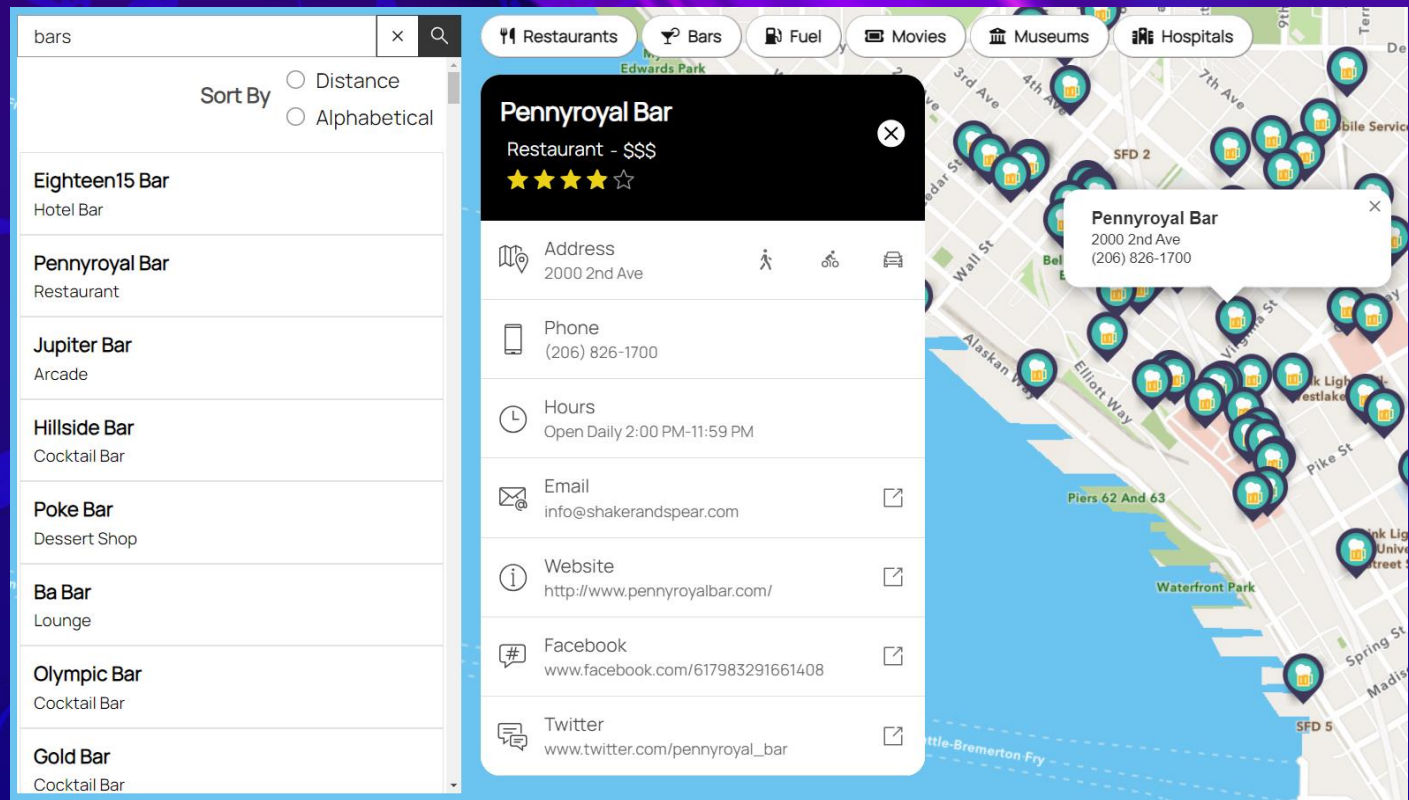
# Places\*\*

- Points of interest
- Categories
- Place details
- Search nearby
- Search extent

\*\* ArcGIS Platform only

<https://developers.arcgis.com/documentation/mapping-apis-and-services/places/>





# Places

## Demo

# Routing

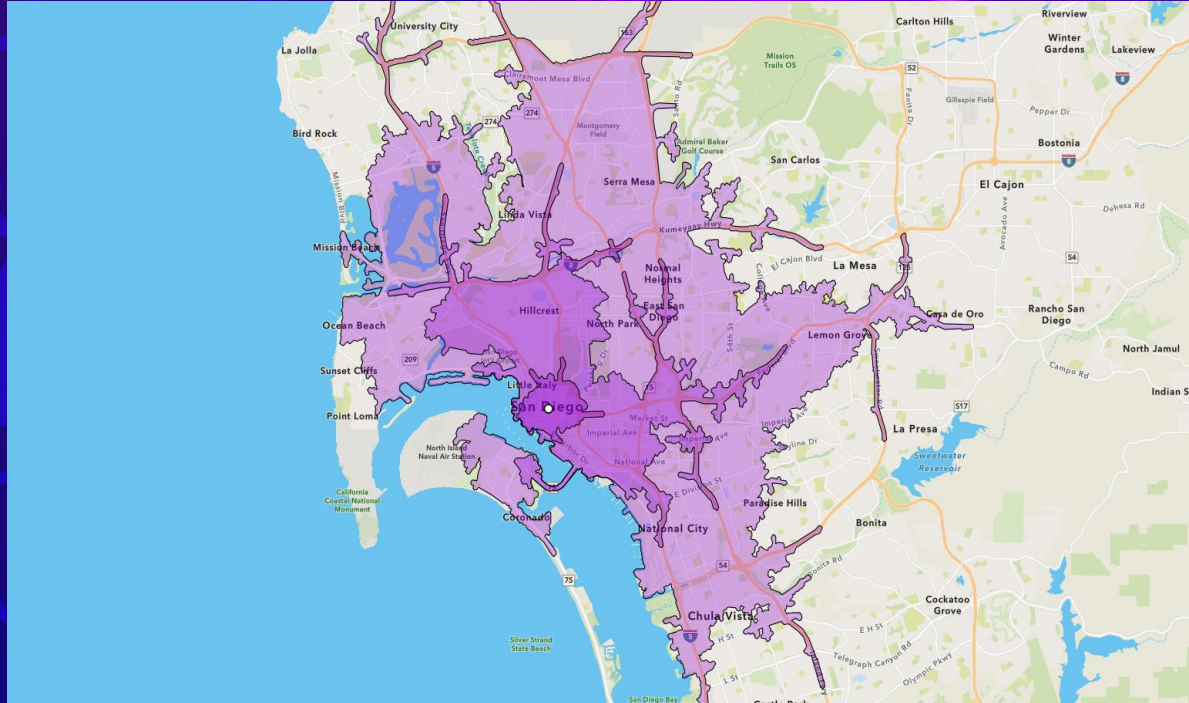




# Routing

- Simple, optimized
- Closest facility
- Service area
- Fleet
- Travel cost matrix
- Location allocation

<https://developers.arcgis.com/documentation/mapping-apis-and-services/routing/>



# Routing

## Demo



# GeoEnrichment

The background of the slide is a deep purple. It features several thick, flowing, wavy lines in shades of blue and orange that sweep across the right side of the image. Faintly visible in the background is a map of Europe, with the landmasses appearing in a slightly lighter shade of purple than the surrounding ocean.

# GeoEnrichment

- Demographics, business intelligence
- Study area
- Variables and collections
- Reports

<https://developers.arcgis.com/documentation/mapping-apis-and-services/demographics/>



```

M X
> [App] > [enrichParams]
//
const enrichUrl =
  "https://geoenrich.arcgis.com/arcgis/rest/services/World/geoenrichmentservice/";

const enrichParams =
  `${enrichUrl}?studyAreas=[{address:{text:"${theAddress}"}}]&f=json&token=${ap

const geoEnrich = async (coords) => {
  let res = await fetch(enrichParams);
  let result = await res.json();
  setRes(result.results[0].value.FeatureSet[0].features[0].attributes);
  setLocation(coords);
  showMap();
};

const setRes = (attributes) => {
  Keyboard.dismiss();
  setSubTitle("1 mile search stats for: ");
  setAddress(theAddress);
  setTotalPop("Total Population: " + attributes.TOTPOP);
  setTotalHH("Total # of Households: " + attributes.TOTHH);
  setAvgHHSZ("Average Household Size: " + attributes.AVGHHSZ);
  setMalePop("Total Male Population: " + attributes.TOTMALES);
  setFemalePop("Total Female Population: " + attributes.TOTFEMALES);
};

```



# GeoEnrichment

## Demo

# Spatial analysis

The background of the slide is a deep purple. It features several thick, flowing, wavy lines in shades of blue and orange that sweep across the right side of the image. Faintly visible in the background is a map of Europe, with the landmasses appearing in a slightly lighter shade of purple than the background.



# Spatial analysis

- Geometry analysis
- Visual analysis
- **Feature analysis\*\***

\*\* Not available in ArcGIS Platform

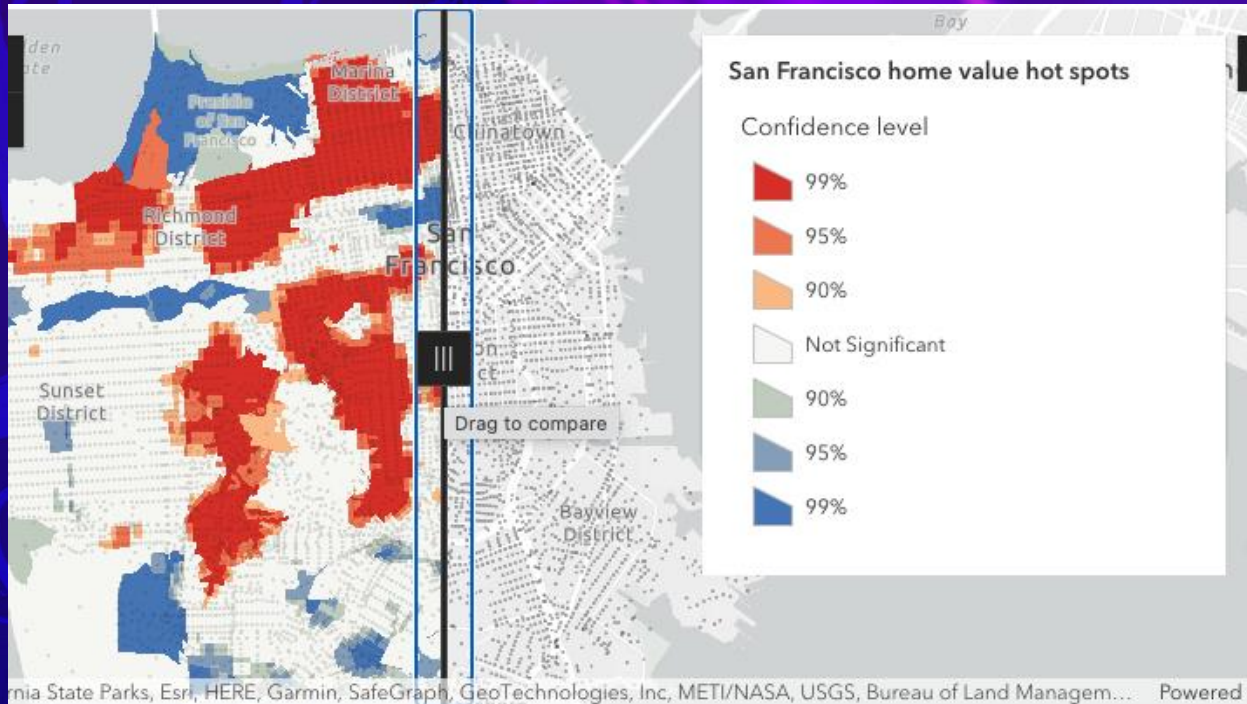
<https://developers.arcgis.com/documentation/mapping-apis-and-services/spatial-analysis/>

# Spatial analysis

1. Provide data (features, attributes)
2. Choose operation: find features, merge or overlay, calculate statistics, or find patterns and relationships
3. Visualize results

<https://developers.arcgis.com/documentation/mapping-apis-and-services/spatial-analysis/>





# Spatial analysis

Demo

# Data hosting

The background is a solid purple color. On the right side, there are several glowing, curved streaks in shades of orange and blue, resembling light trails or data paths. In the lower right corner, there is a faint, stylized map of Europe, with the landmasses in a slightly darker shade of purple and the surrounding areas in a lighter shade.

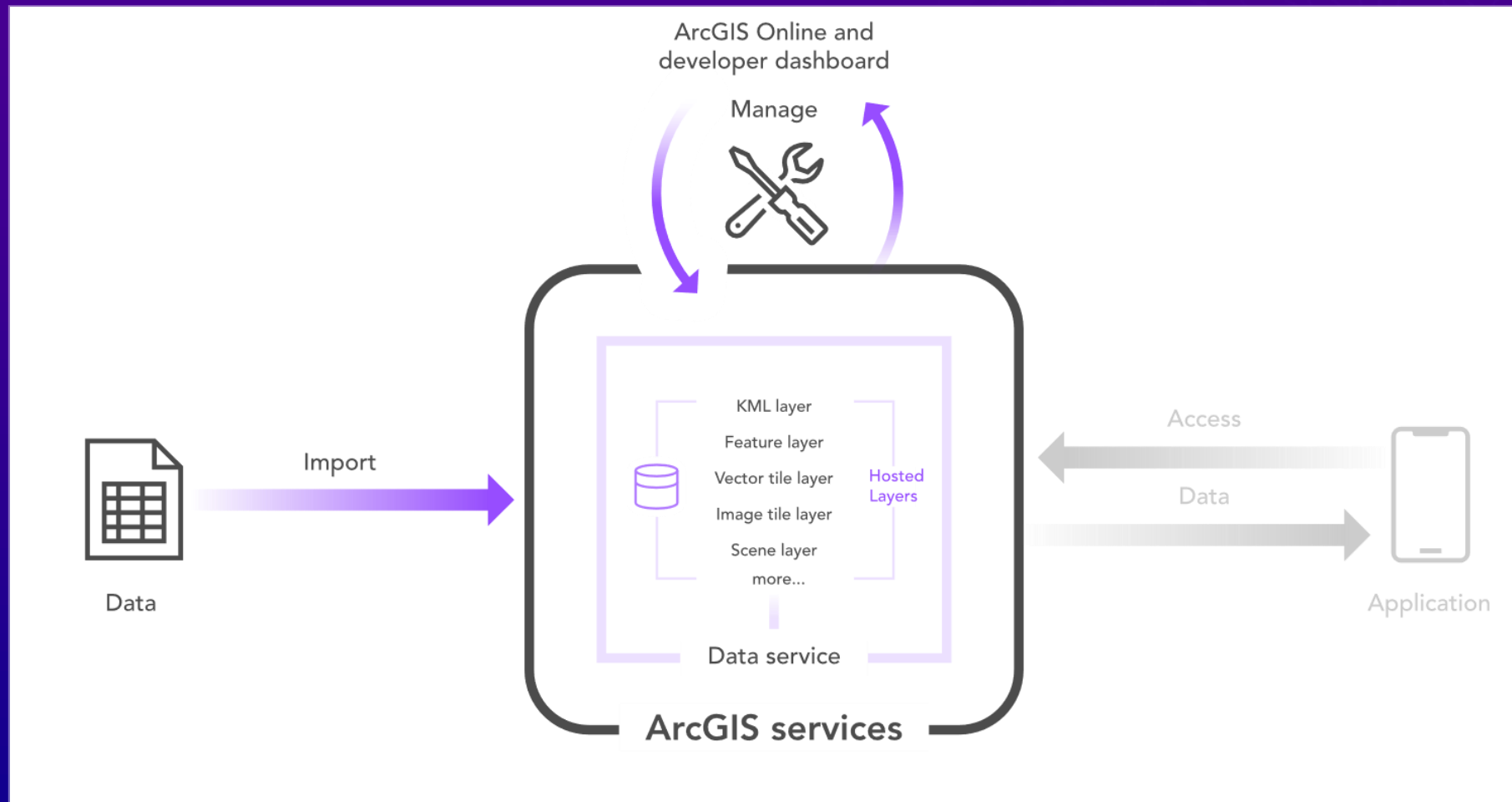


# Data hosting

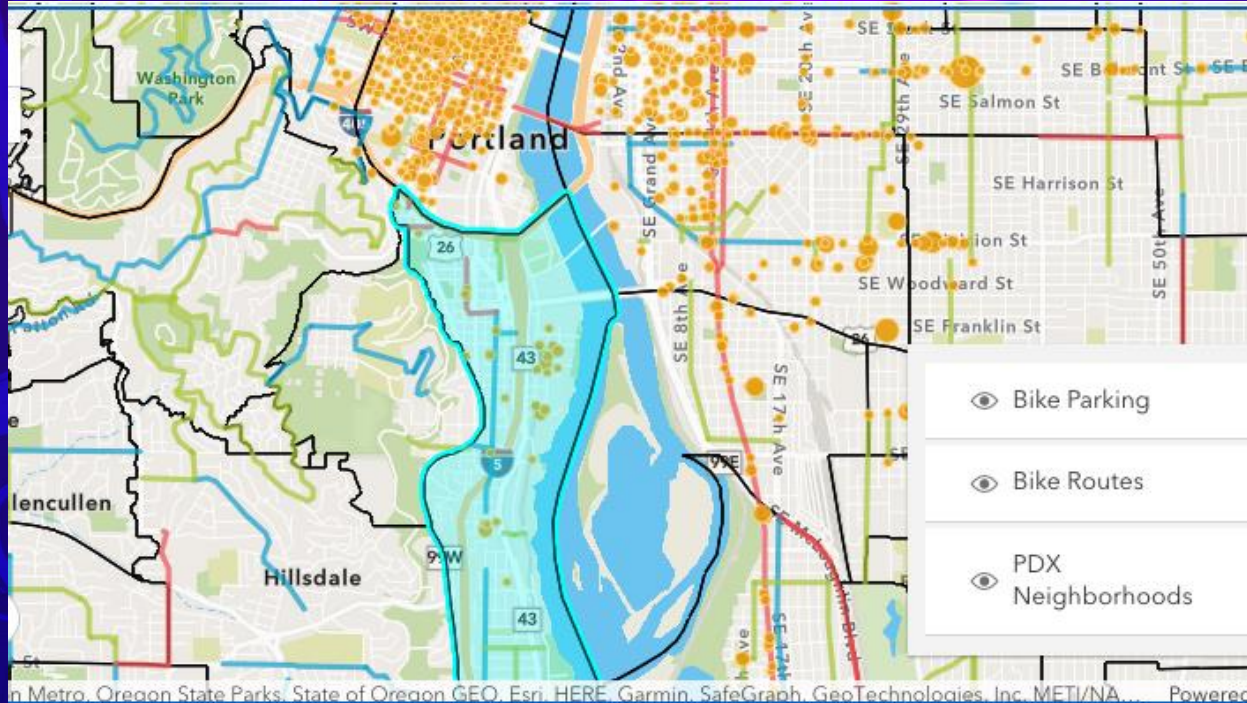
- Bring your own data
- Data management
- Feature services
- Publishing

<https://developers.arcgis.com/documentation/mapping-apis-and-services/data-hosting/>

# Data hosting







# Data hosting

Demo

# Questions

The background of the slide is a deep purple. It features several thick, flowing, wavy lines in shades of blue and orange that sweep across the right side of the image. In the lower-left and central areas, there is a faint, textured map of Europe, rendered in a slightly darker shade of purple, which appears to be part of the overall design or a subtle watermark.



# Summary

The background of the slide is a deep purple. It features several thick, flowing, wavy lines in shades of blue and orange that sweep across the right side of the image. In the lower-left and central areas, there is a faint, textured map of Europe, rendered in a slightly darker shade of purple, which appears to be part of the overall design or a subtle watermark.

# Location services

- Basemaps and layers
- Geocoding
- Places
- Routing
- GeoEnrichment
- Spatial analysis
- Data hosting

<https://developers.arcgis.com/documentation/mapping-apis-and-services/services/>

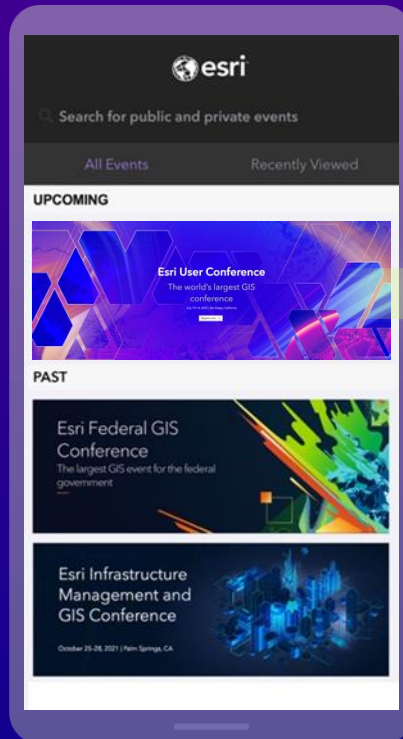


# Resources

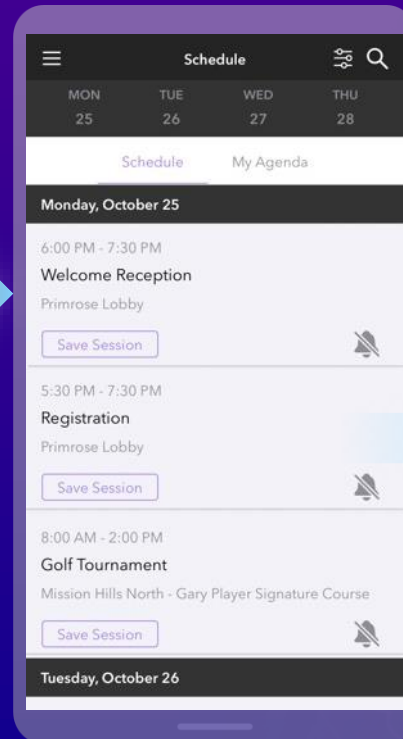
- Find us at the Expo – ArcGIS Developer's island
- **Developer Day:** Wednesday, 8:30 to 5:00, Room 7AB
- [developers.arcgis.com](http://developers.arcgis.com)
- [community.esri.com](http://community.esri.com) – Developers
- [youtube.com/@EsriDevs](http://youtube.com/@EsriDevs)
- [mediaspace.esri.com](http://mediaspace.esri.com)
- Demo Theater: **Using Open Source Mapping Libraries with ArcGIS Location Services**
  - Thursday 2:30 PM - 3:15 PM – Demo Theater 13

# Please Share Your Feedback in the App

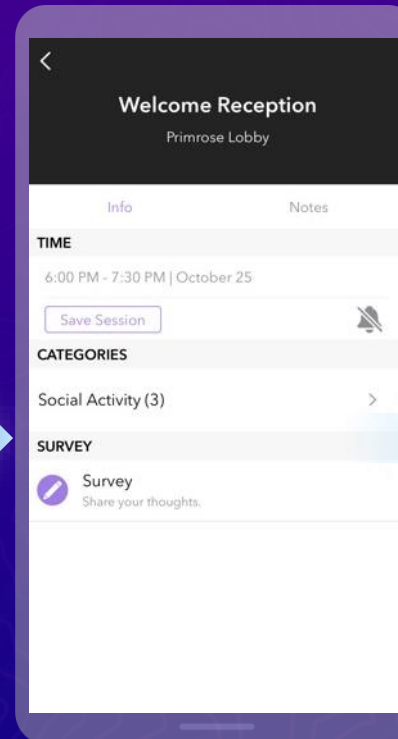
Download the Esri Events app and find your event



Select the session you attended



Scroll down to "Survey"



Log in to access the survey

