Getting Started with 3D in the ArcGIS API for JavaScript

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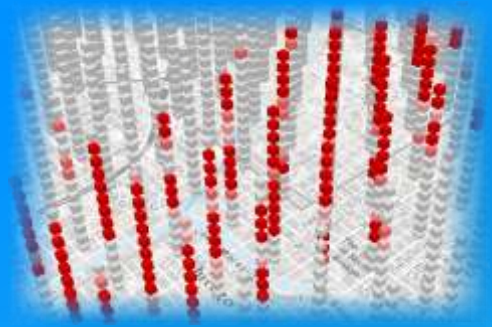
2018 **Esri DEV**Summit **Conference** | Palm Springs, CA

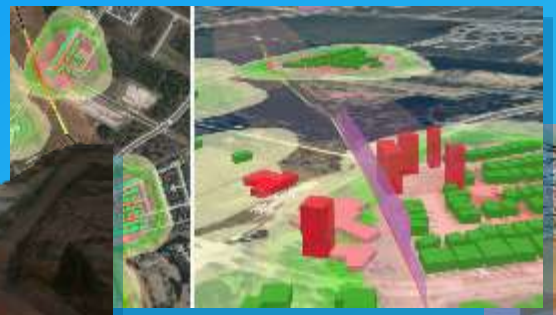
3D GIS across industries



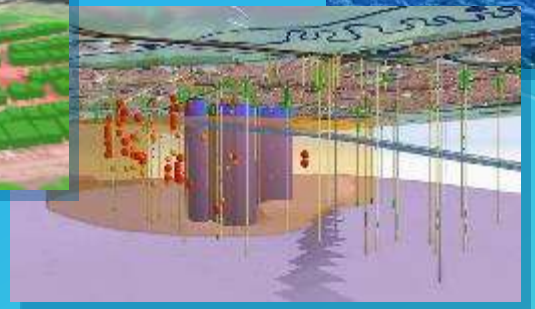
Scientific Visualization

Mining

Developing Energy resources



Transportation

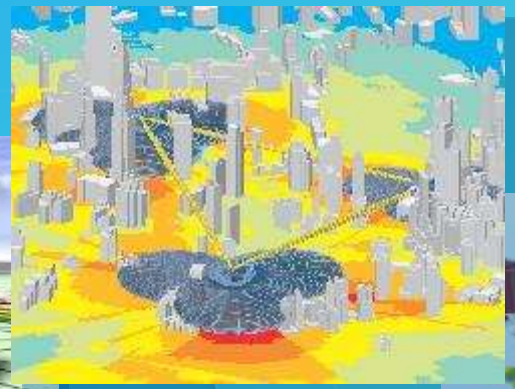


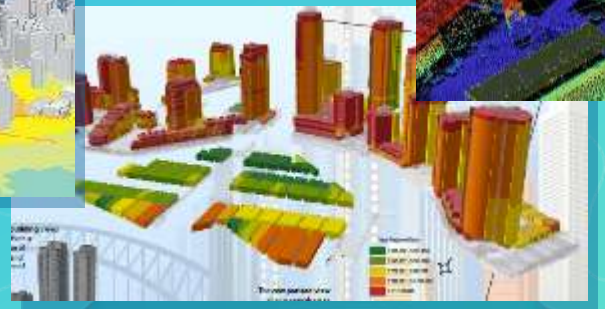
Environmental assessment

City monitoring and planning

Facilities Management

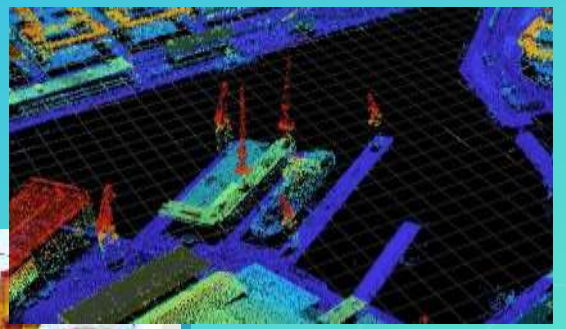
Utilities and Telecommunications





Land Management

Infrastructure



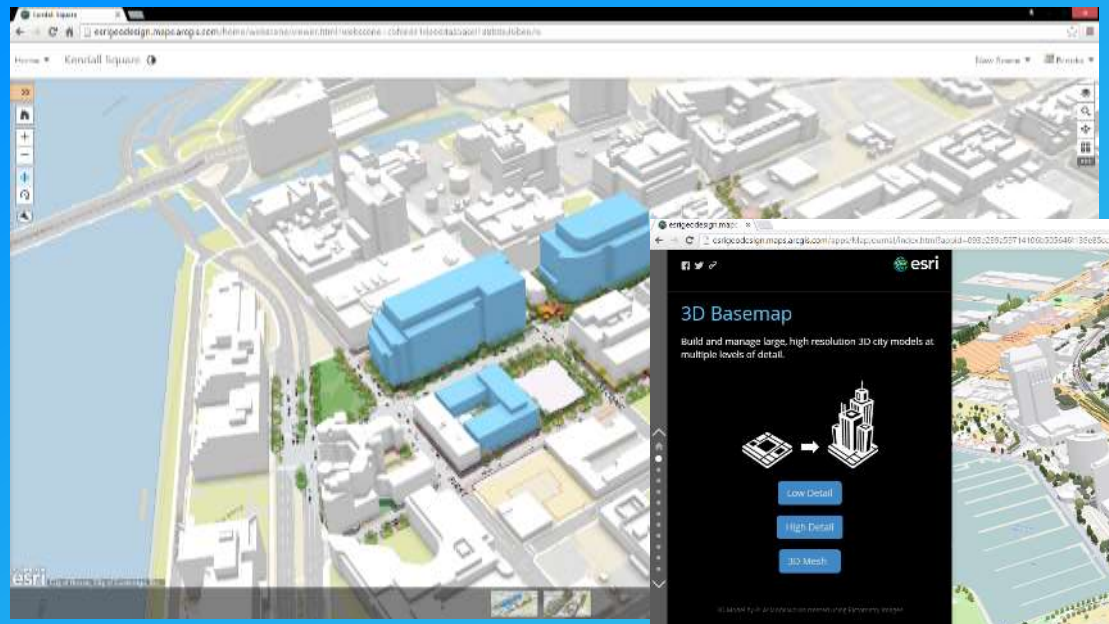
Introduction

3D in the Browser with the ArcGIS Platform

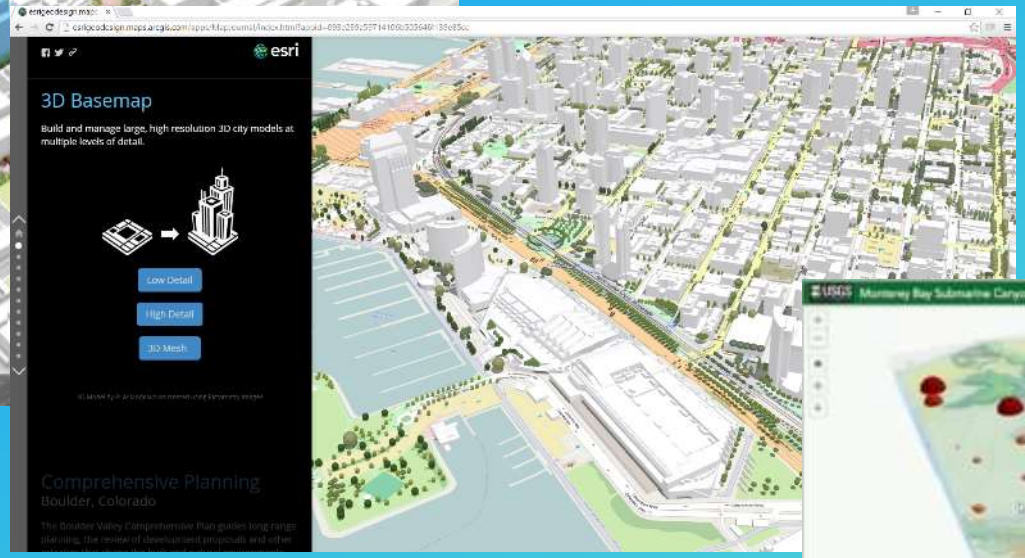
The ArcGIS 3D Platform

A System for Managing and Applying Geographic Information

Esri Provides out-of-the-box 3D Web Apps



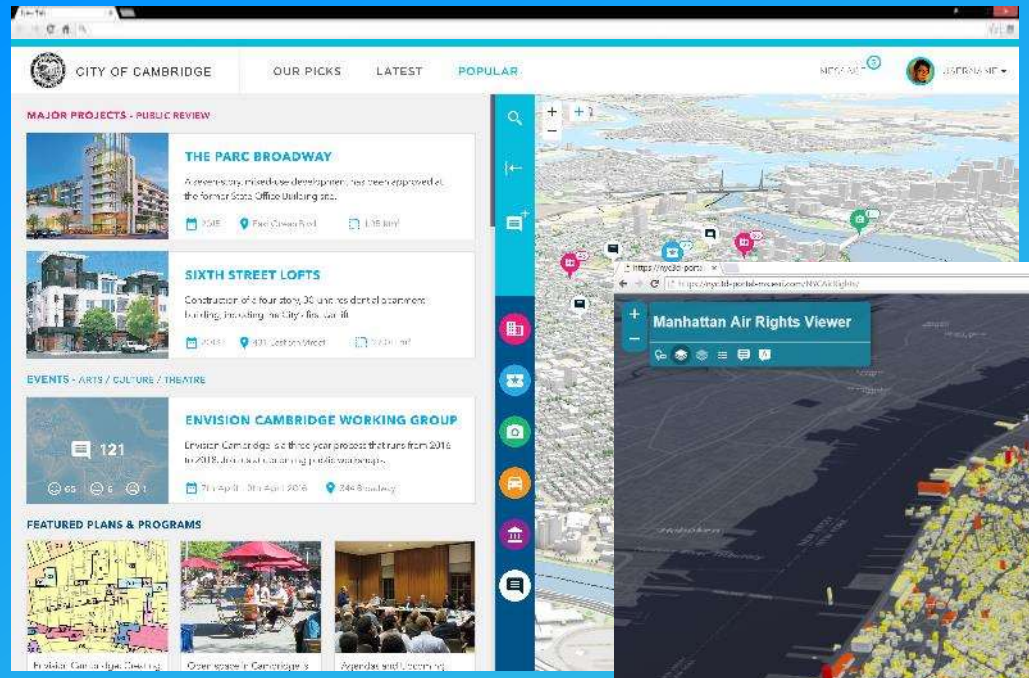
Scene Viewer



Story Maps

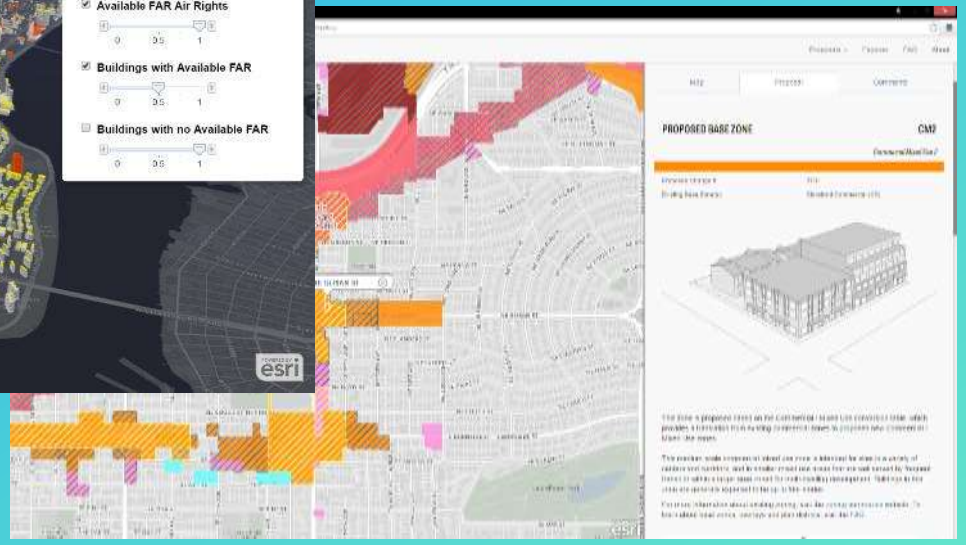
Web AppBuilder …

Build Your Own custom 3D Web Apps



Add news/social feeds,

filter/reporting functionality,

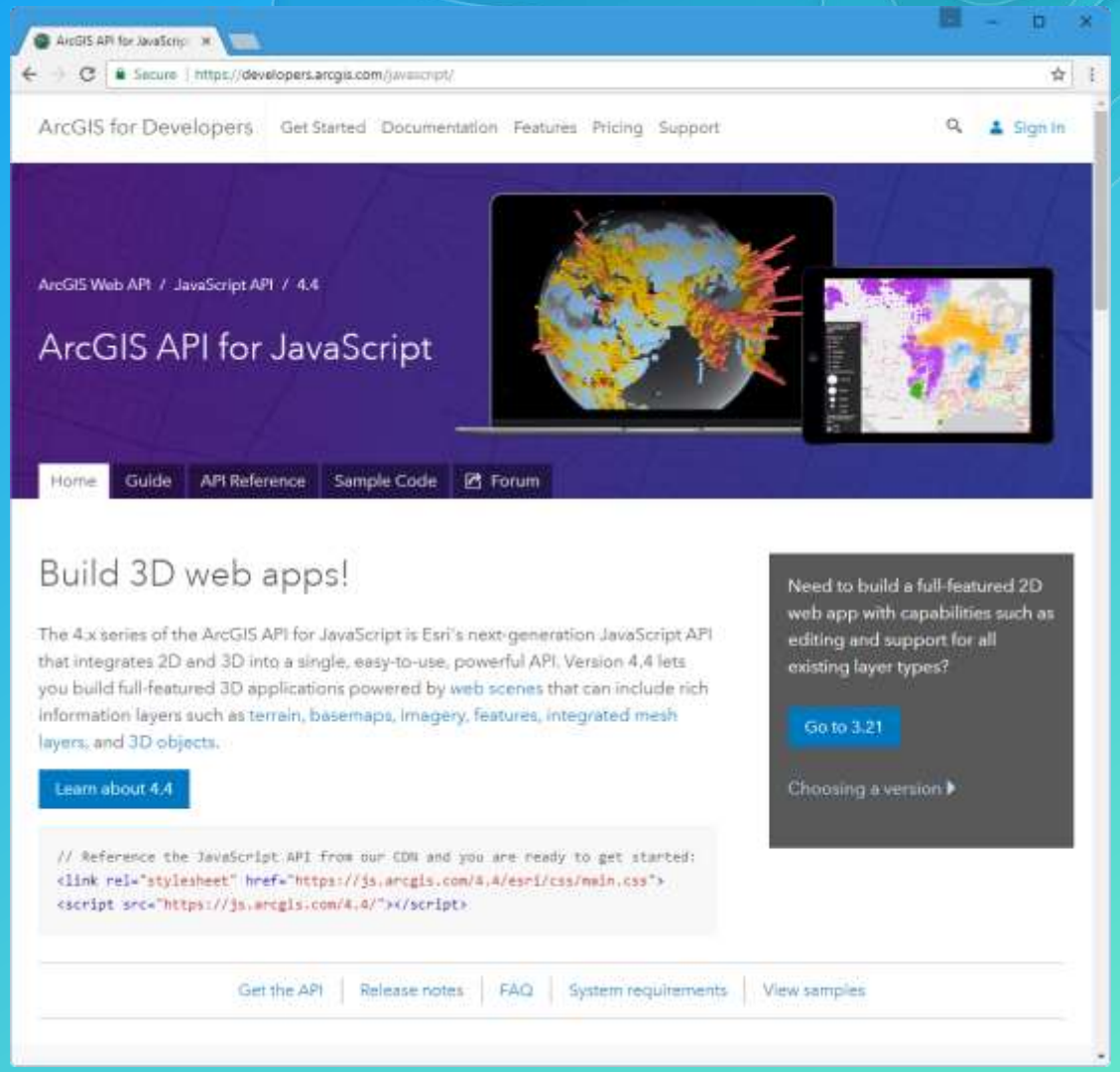


custom UI elements, etc …

The ArcGIS API for JavaScript

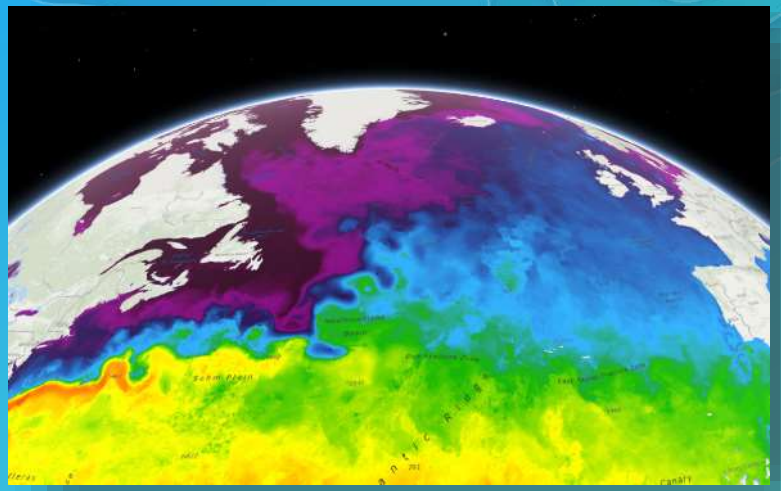
- Provides visual mapping component & widgets
- Support for many different layer types (data sources)
- Integration with ArcGIS platform (security, sign-in, premium services, …)

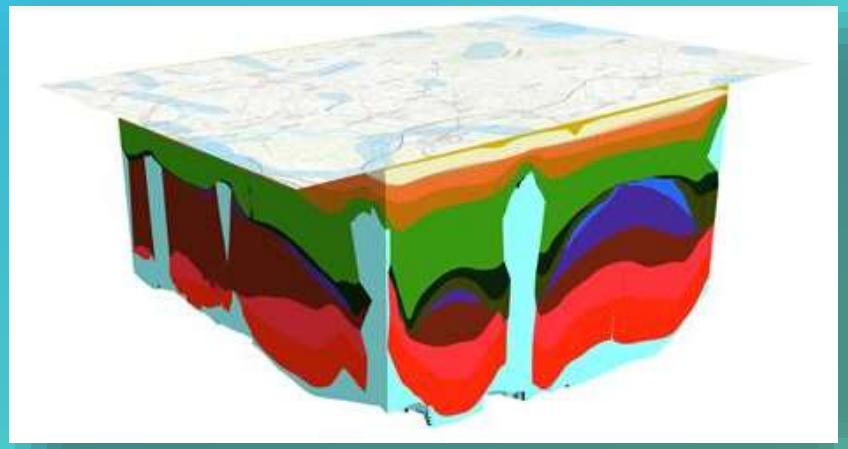
- Get it today
  - Hosted build https://js.arcgis.com/4.6
  - Doc/samples https://developers.arcgis.com/javascript



Introducing 3D

- Data
  - 2D tiles, maps, elevation, features
  - Scene layers (open i3s format)
    - 3D Objects, Integrated Meshes, Point Clouds
- 3D concepts
  - Local & global scenes
  - Ground surface with elevation
  - Camera, light and shadows
- Requirements
  - Modern web browser w/ WebGL (IE11+)
  - Modern hardware w/ Graphics Card





Modern, simple API

- **Properties**
  https://developers.arcgis.com/javascript/latest/guide/working-with-props/index.html
  - read/write properties directly
  - set all properties via constructors
  - watch properties, instead of events

```
// Creates a new Map with a 'streets' basemap
var map = new Map({
  basemap: 'streets'
});

// Read the basemap property
console.log("Basemap title: ", map.basemap.title);
```

- **Promises**
  https://developers.arcgis.com/javascript/latest/guide/working-with-promises/index.html
  - for handling asynchronous tasks, e.g. network
  - states: *pending*, *resolved*, or *rejected*

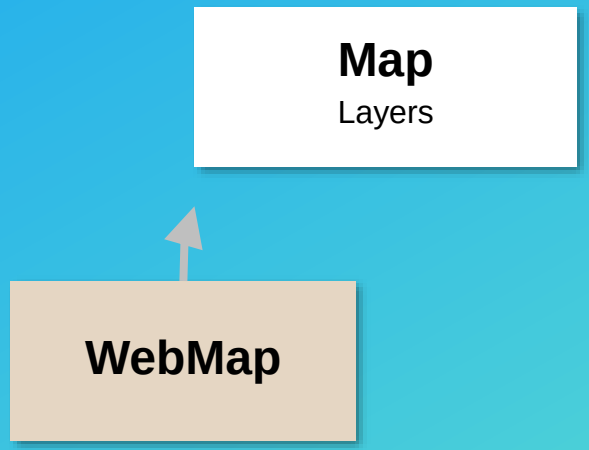
```
someAsyncFunction().then(function(resolvedVal){
  // This is called when the promise resolves
  console.log(resolvedVal);
}, function(error){
  // This function is called when the promise is rejected
  console.error(error);
});
```

- Autocasting, Loadable, JSON, Typescript, …

ArcGIS API for JavaScript

Build 3D web apps!

3.x architecture



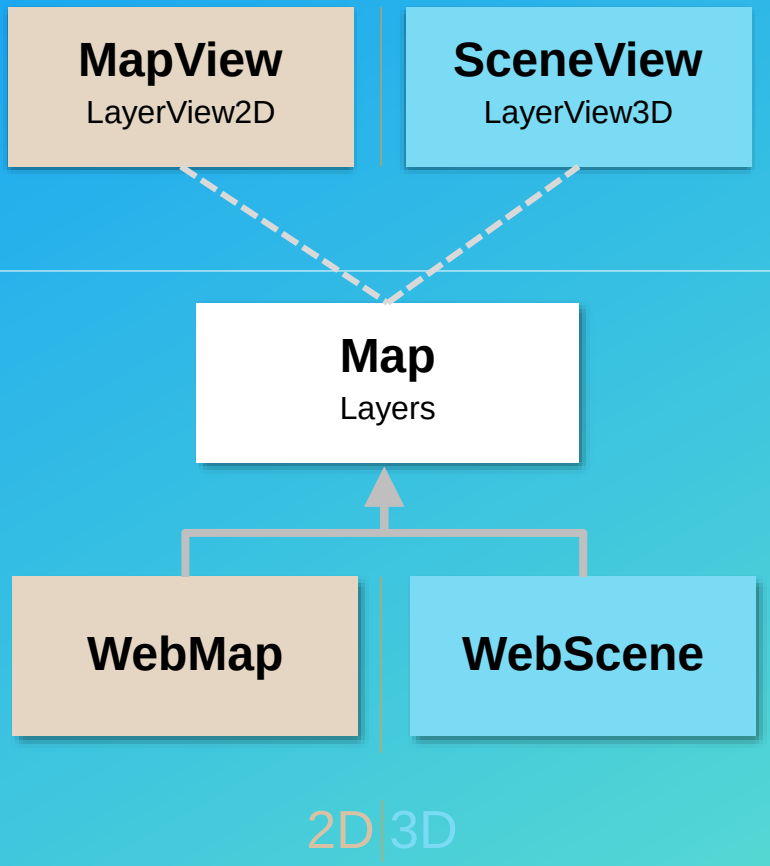
4.x architecture

Renders and interacts with the model

View

Model

Describes the content of the map/scene



4.x architecture – 3D

Renders and interacts with the model

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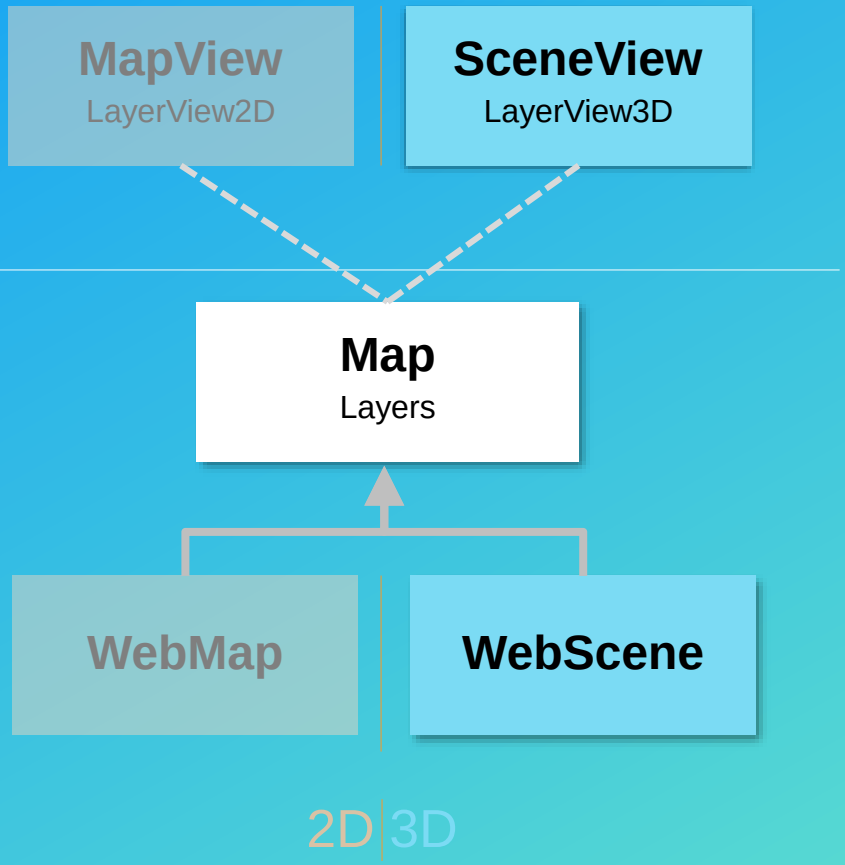


API Concepts

What's new

What's new in 4.7

- Mobile support
  - iOS → iPhone 8, iPad Pro (Safari browser)
  - Android → Samsung S8, Samsung Tab S3 (Chrome browser)
  - More devices in the future

→ Works in modern phones and tables
  - Hardware Requirements
    - 2+ GB of RAM (4 GB recommended)
    - Good GPU

What's new in 4.7

- **3D Area Measurement tool**

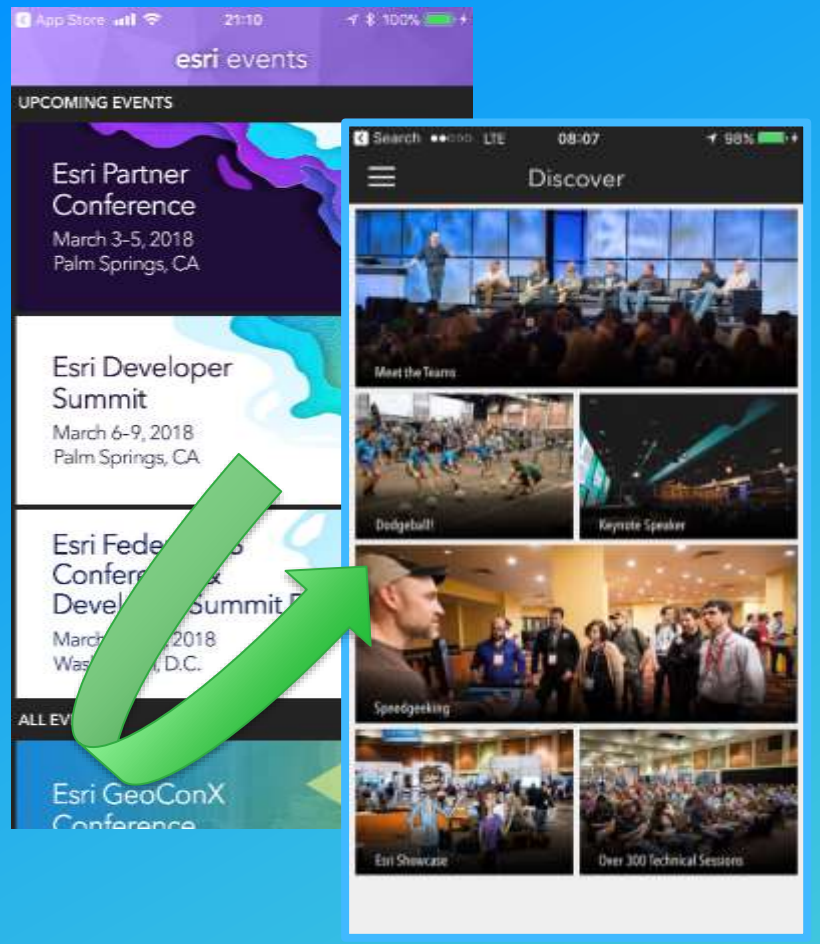
- **Edge Rendering**
  - Session: 3D Visualization with the ArcGIS API for JavaScript
  - Thursday, March 08 | 10:30 am - 11:30 am | Smoketree A-E

- **Mesh Geometry API**
  - Session: Advanced 3D Features in the ArcGIS API for JavaScript
  - Thursday, March 08 | 5:30 pm - 6:30 pm | Smoketree A-E

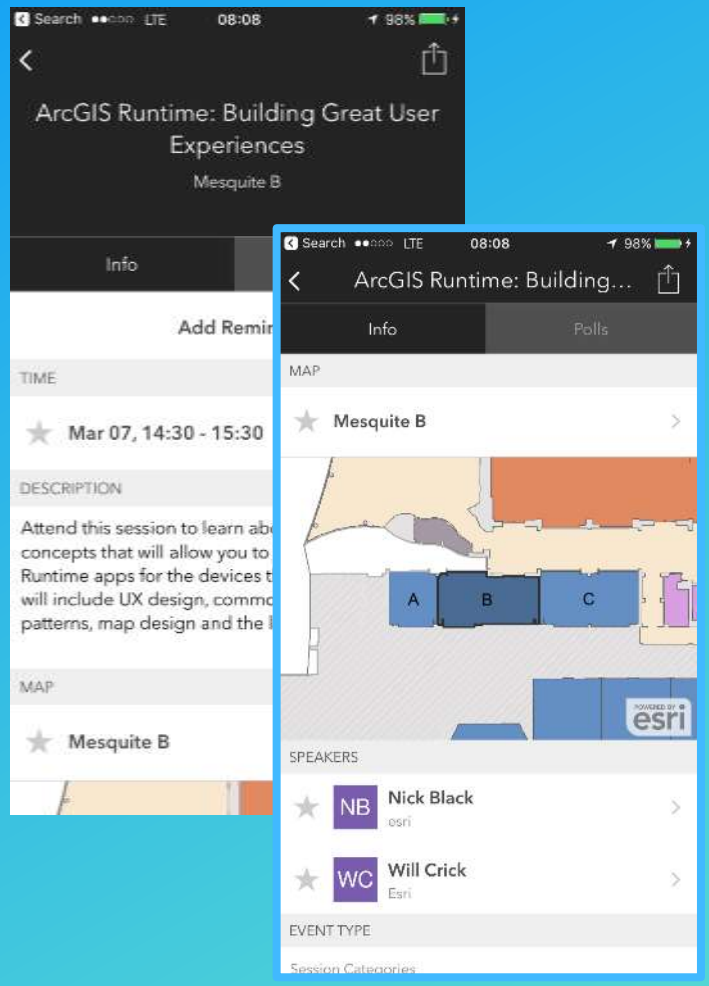
Thank you

Please Take Our Survey!

Download the Esri Events app and find your event

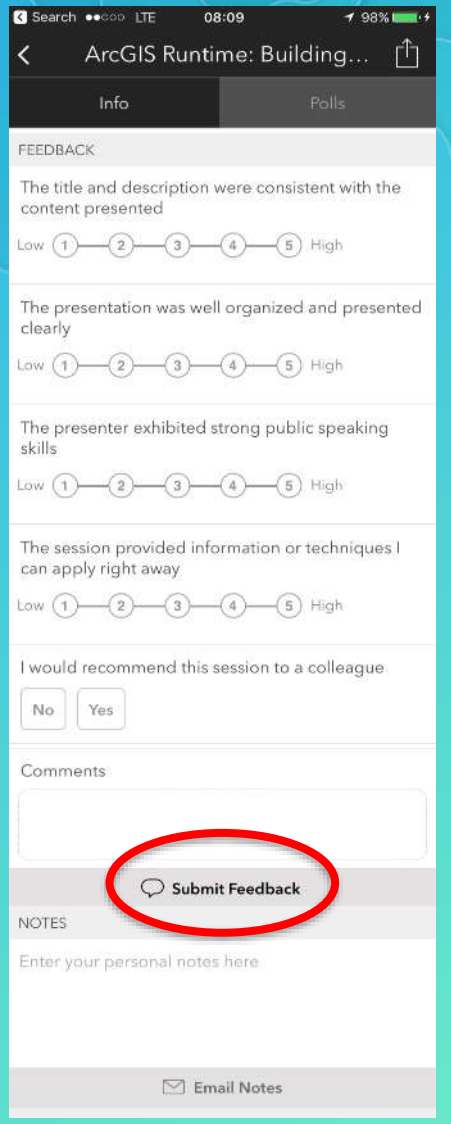


Select the session you attended



Scroll down to the "Feedback" section

Complete Answers, add a Comment, and Select "Submit"



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