



# ArcGIS API for JavaScript: What's New

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# ArcGIS API for JavaScript

Everything you need to build a compelling location experience for your business

[Get Started](#)



## Tutorials

Use tutorials to start building an app with the ArcGIS API for JavaScript.

## Guide

Learn how to do mapping, geocoding, routing, and other spatial analytics.

Version 4.14 · December 2019 · Looking for v3.31?



[Get the API](#)



[What's new](#)

# PERFORMANCE

Faster loading. >100kb less JS  
Vector tile optimizations

3



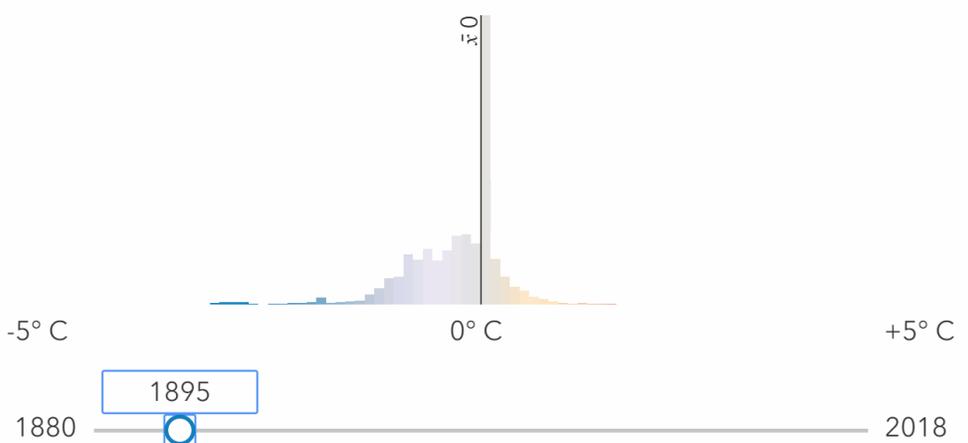
# PERFORMANCE: FEATURE LAYERS

- 30,696 zip code polygons: significantly faster load
- Faster rendering of line features
- Highly performant FeatureLayers through Feature Tiles
- Fast renderer updates → no flashing!



# Visualization

Temperature Anomaly





**DEMO**

# VECTOR TILE LAYERS

Style esri's basemaps  
Or create your own

**BETA** Newspaper << Land/pattern <<

Search Layers

- Natural
- Land
  - Land
  - Land/pattern**
  - Forest Or Park
  - Special Area Of Interest
  - Populated Places
  - Land Use
  - Transportation
  - Boundaries
  - Water
  - Buildings
  - Roads

**Visibility**

Visible

Visible Zoom Range <sup>?</sup>

0 World Buildings 18

**Appearance**

Color

Outline Color

Pattern

Opacity

**Position**

Translate <sup>?</sup>

x 0 y 0

Esri, FAO, NOAA

Powered by Esri

Esri-UK, Esri, HERE, Garmin, FAO, NOAA, USGS

Powered by Esri

DCGIS, M-NCPPQ, VITA, Esri, HERE, Garmin, F...

Powered by Esri

Esri, HERE, Garmin, METV/NASA, USGS

Powered by Esri

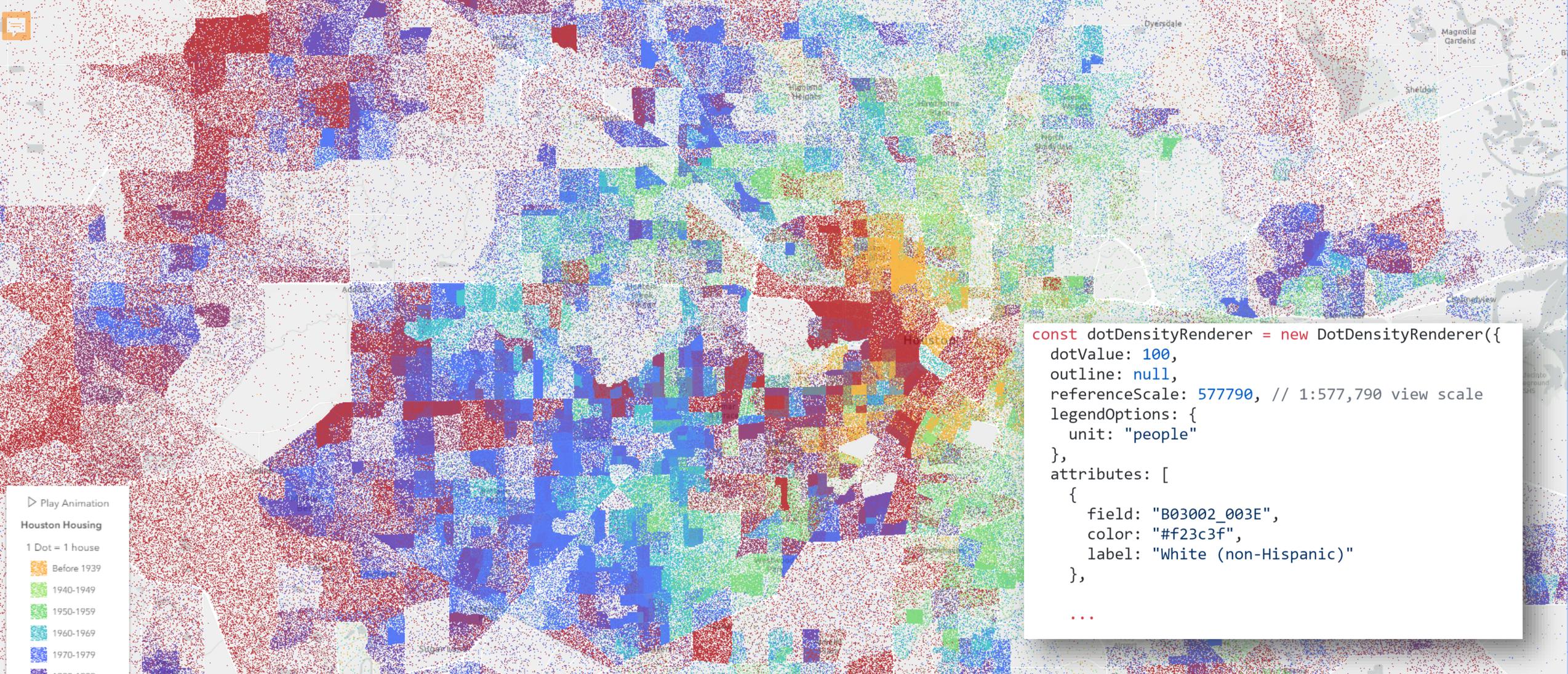
Click on any map to edit that layer

No Background | Hillshade | Imagery | Hide Minimaps

**DEMO**

# VECTOR TILE STYLE EDITOR

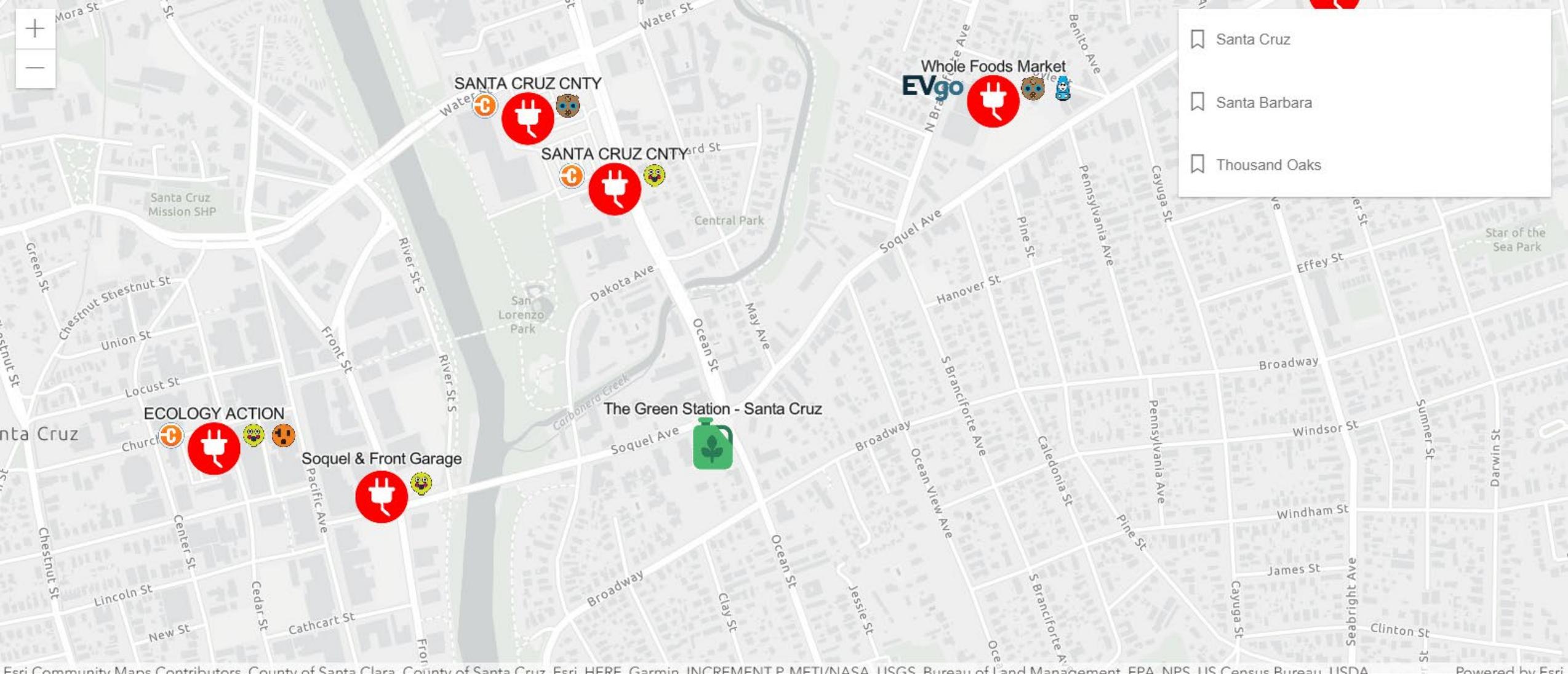
Customize vector tile maps



```
const dotDensityRenderer = new DotDensityRenderer({
  dotValue: 100,
  outline: null,
  referenceScale: 577790, // 1:577,790 view scale
  legendOptions: {
    unit: "people"
  },
  attributes: [
    {
      field: "B03002_003E",
      color: "#f23c3f",
      label: "White (non-Hispanic)"
    },
    ...
  ]
});
```

# DOT DENSITY

Randomly drawn dots to represent a field value.  
Configure how much each dot represents



# DICTIONARY RENDERER

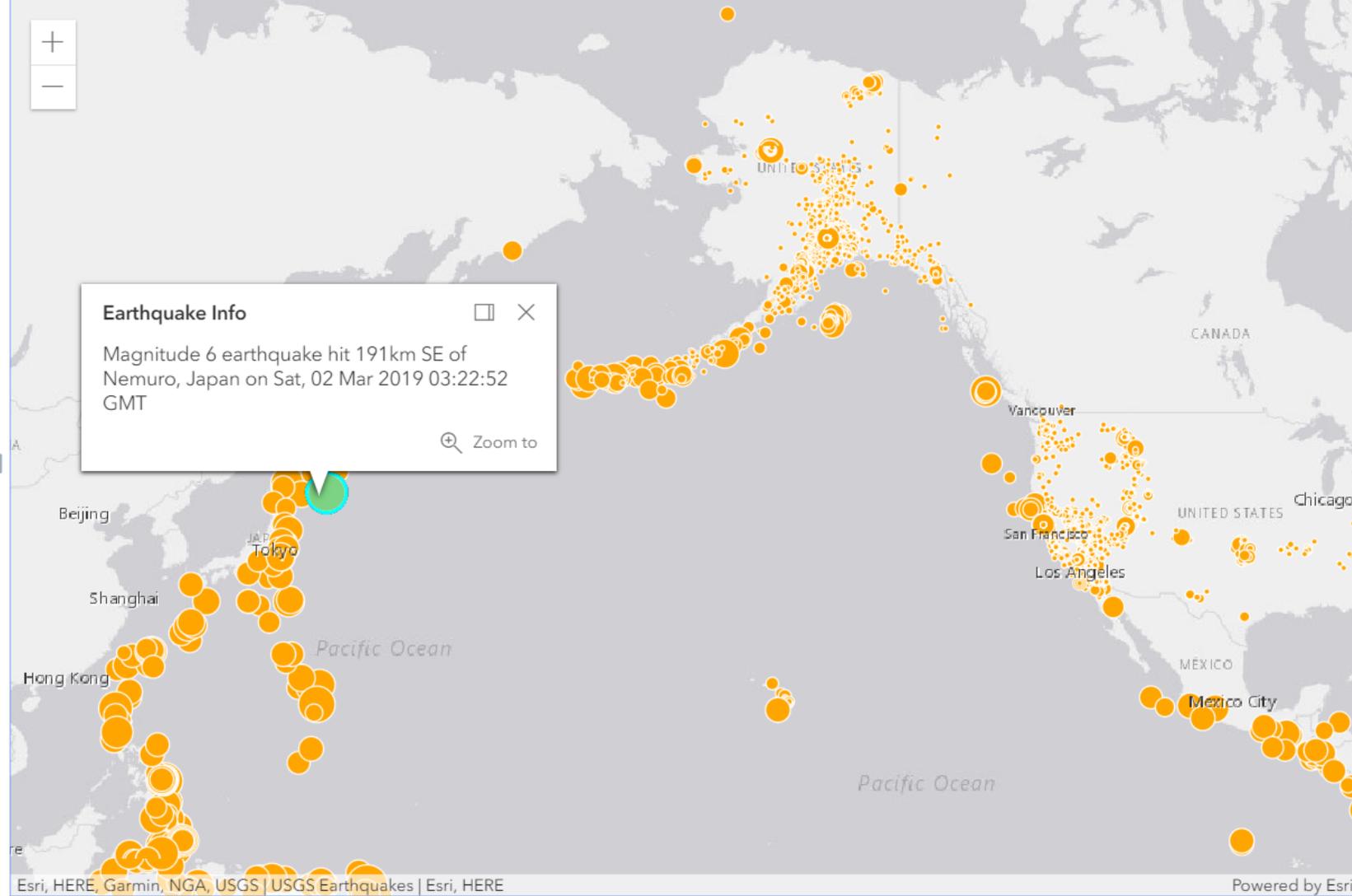
Creates vector symbols dynamically  
Created in Pro, shared as an item in Online



```

47 ▶ const template = {
48     title: "Earthquake Info",
49     content: "Magnitude {mag} {type} hit {place} on
        {time:DateString}"
50 };
51
52 ▶ const renderer = {
53     type: "simple",
54     field: "mag",
55     symbol: {
56         type: "simple-marker",
57         color: "orange",
58         outline: {
59             color: "white"
60         }
61     },
62     visualVariables: [
63     {
64         type: "size",
65         field: "mag",
66         stops: [
67         {
68             value: 2.5,
69             size: "4px"
70         },
71         {
72             value: 8,
73             size: "40px"
74         }
75         ]
76     }
77 ]
78 };
79
80 ▶ const geojsonLayer = new GeoJSONLayer({
81     url: url,
82     copyright: "USGS Earthquakes",
83     popupTemplate: template,
84     renderer: renderer //optional
85 });
86
87 ▶ const map = new Map({

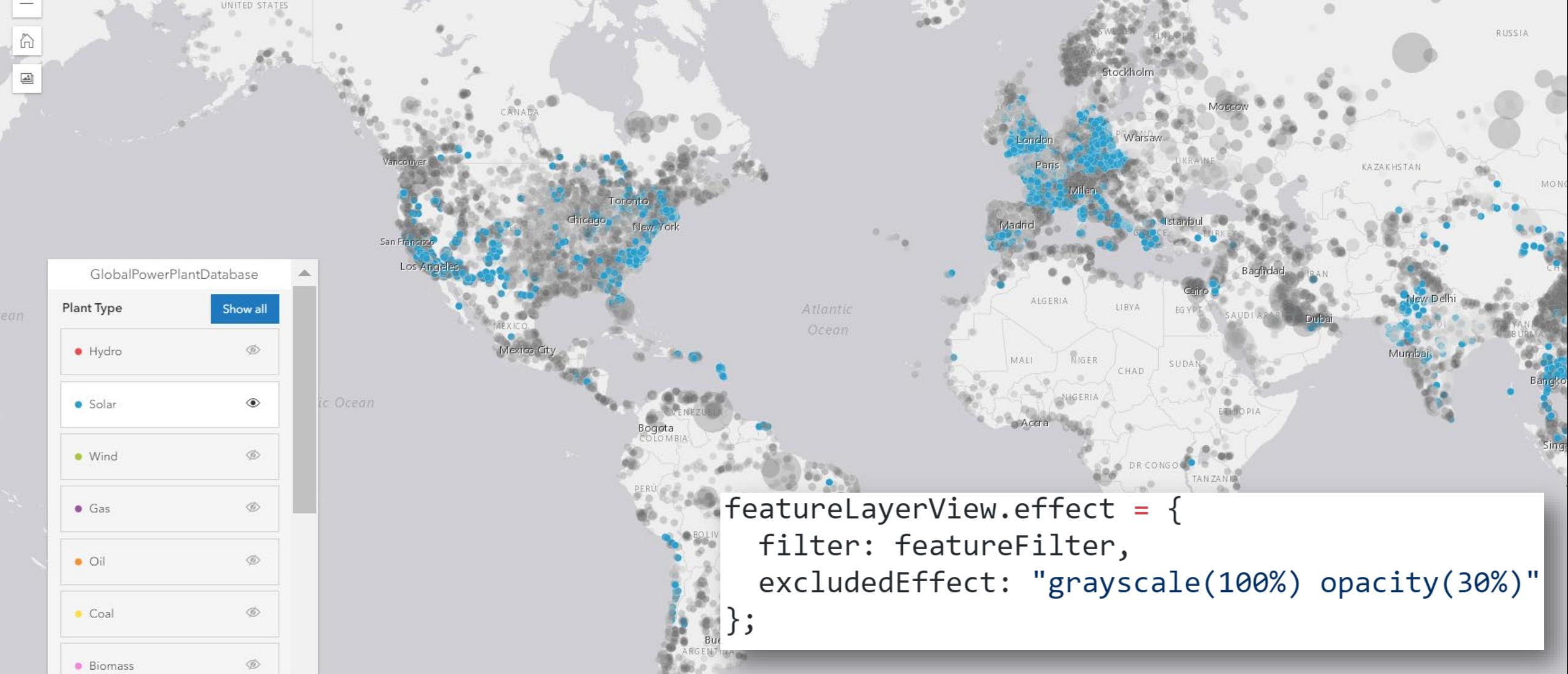
```



DEMO

# GEOJSON LAYER

Style & interact like a feature layer



**DEMO**

# FILTERING

Client-side

Decide how to style feature within filter, and outside filter.



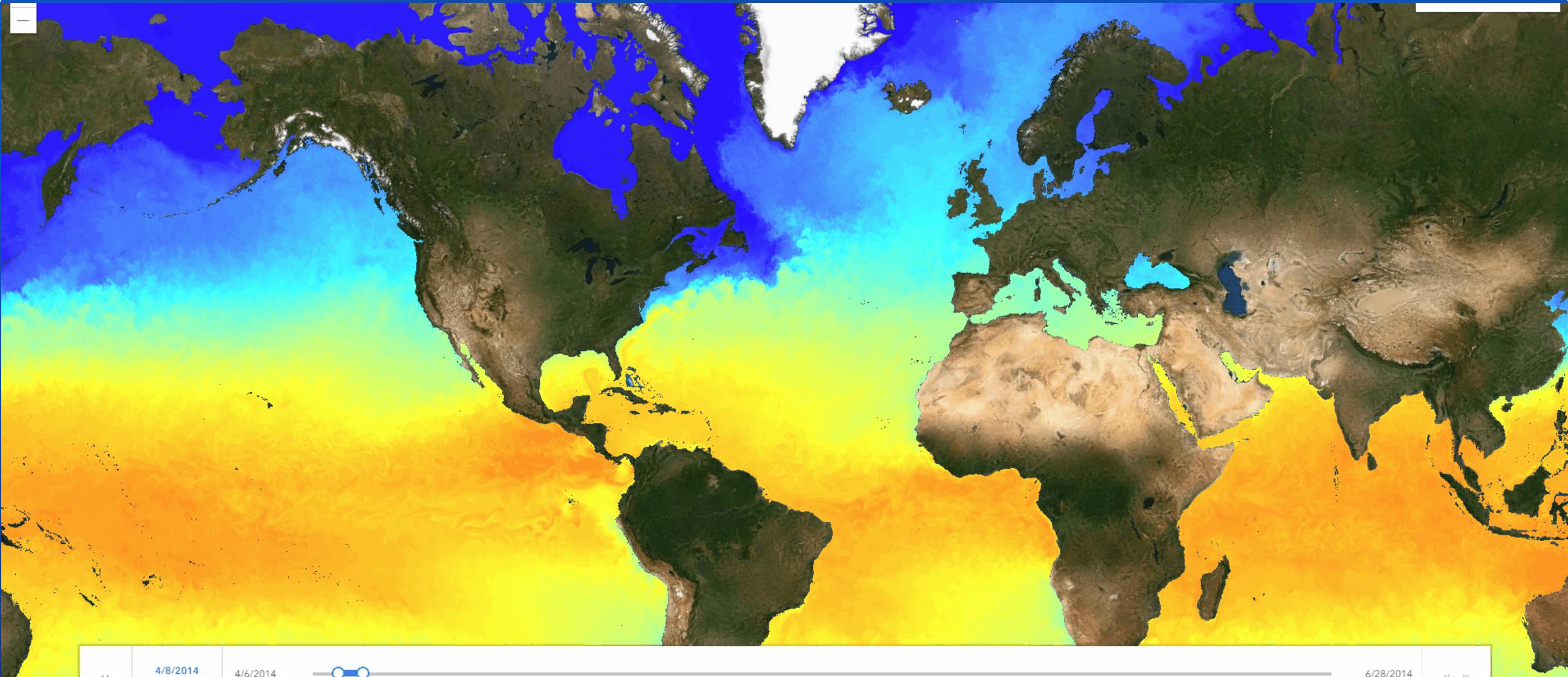
DEMO

# CLUSTERING

Client-side

Point features-only

Reduces number of features in the view



# TIME

Time aware layers and views  
Time slider widget

DEMO

# 3D CLIENT-SIDE PROCESSING

- Querying
- Filtering
- Statistics



# BUILDING SCENE LAYER

Export from BIM

Visualize & interact with buildings with detailed interiors

DEMO

SLICE

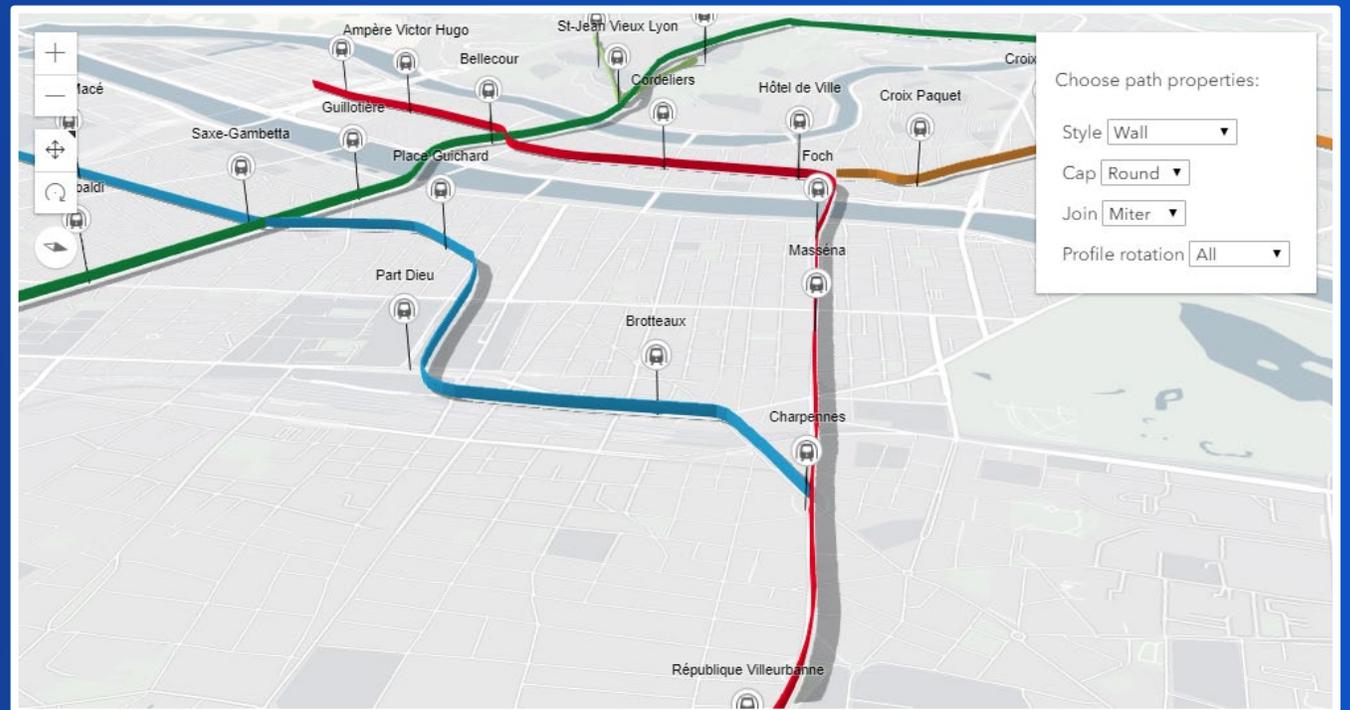


FILTER



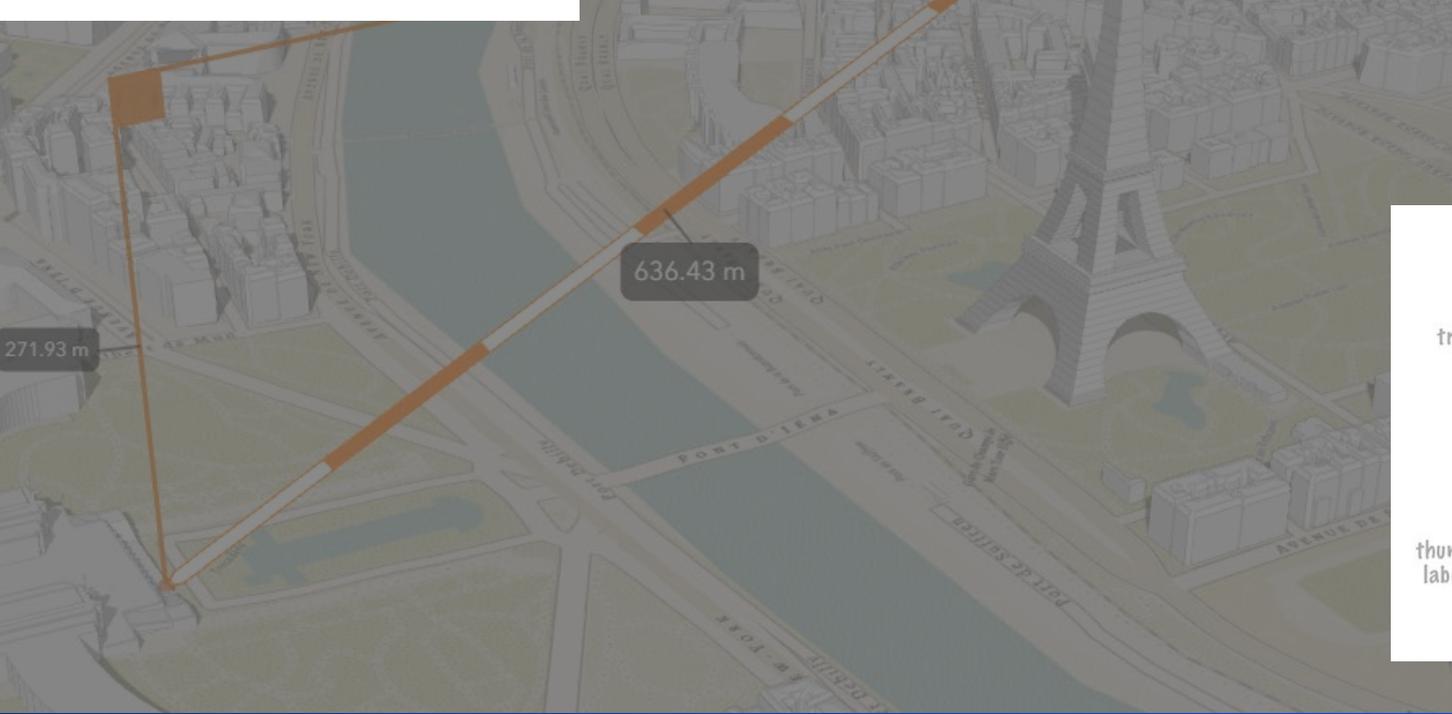
# LINE SYMBOLS

1. Round tube
2. Square tube
3. Wall
4. Strip



- Widgets
  - BasemapGallery widget
  - Bookmarks widget
  - CoordinateConversion widget
  - CoordinateConversion widget - custom formats
  - Directions widget
  - LayerList widget
  - LayerList widget with actions
  - Legend widget
  - Add a Legend to LayerList
  - Legend widget card style
  - Locate button
  - Measurement in 2D
  - Measurement in 3D
  - BuildingSceneLayer with Slice widget
  - Print widget
  - Track current location
  - Track widget simulation
  - Expand widget
  - Feature widget
  - Using the view's UI
  - Responsive widgets
  - Responsive apps using CSS
  - TimeSlider Widget

- Widgets (Advanced)
  - Create a custom widget
  - Custom Recenter widget
  - Using widgets with React
  - Using widgets with Riot
  - Custom widgets with Vue

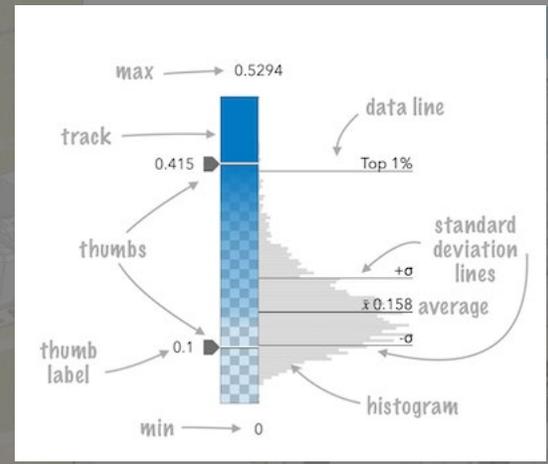


```
var editor = new Editor({
  view: view
});

view.ui.add(editor, "top-right");
```

Horizontal  
575.43 m

Vertical  
271.93 m



# BUILD YOUR UI

Collection of widgets  
Customizable  
Easy placement

# View UI

**DEMO**

Overview

Release notes

Get the API

Quick Start

> Tutorials

> Core Concepts

> Data Visualization

✓ Building your UI

View UI

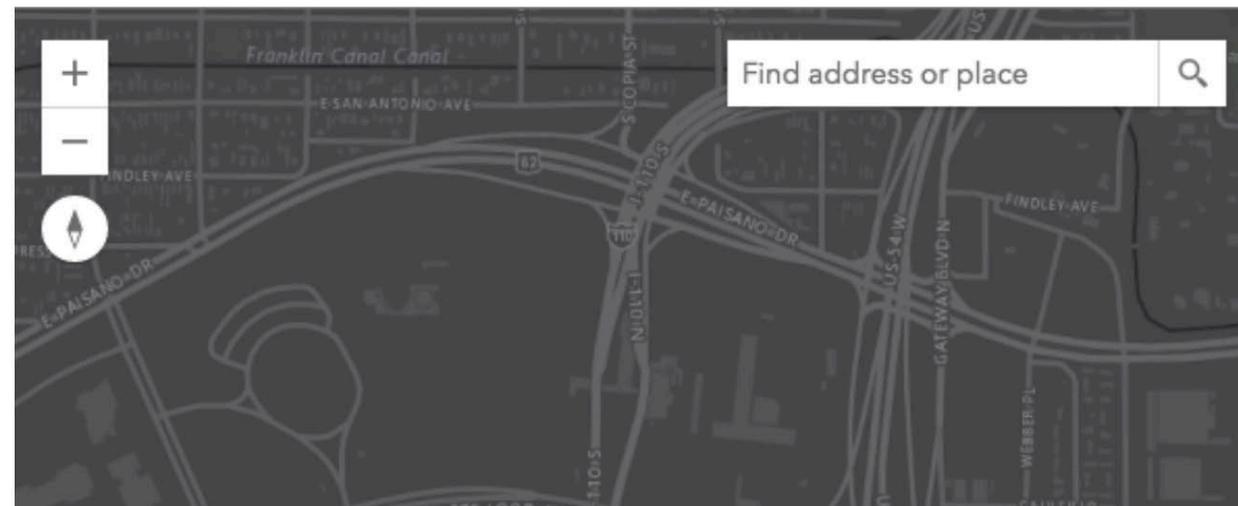
Widget Development

Styling

## View UI

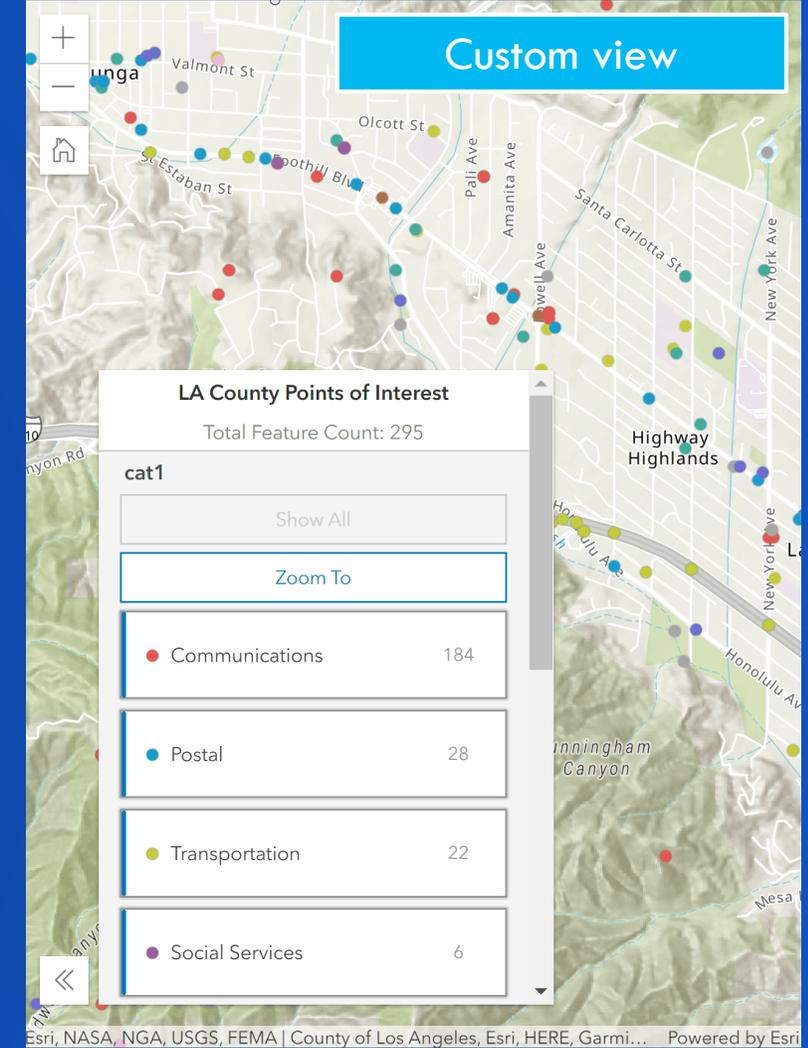
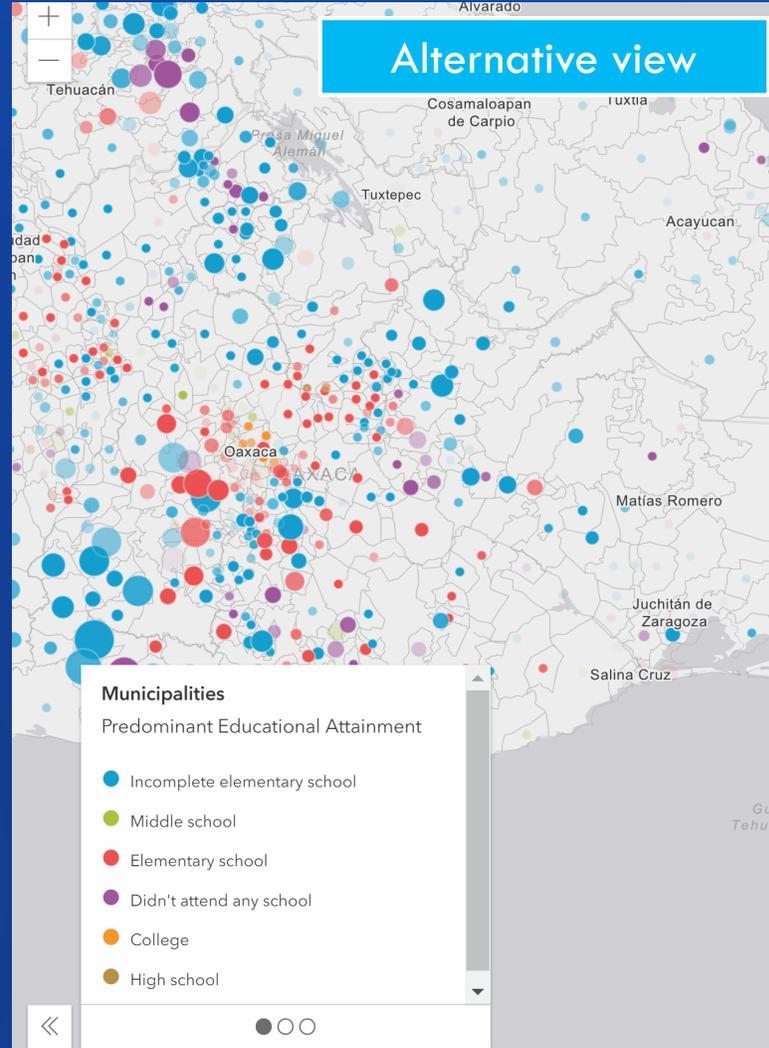
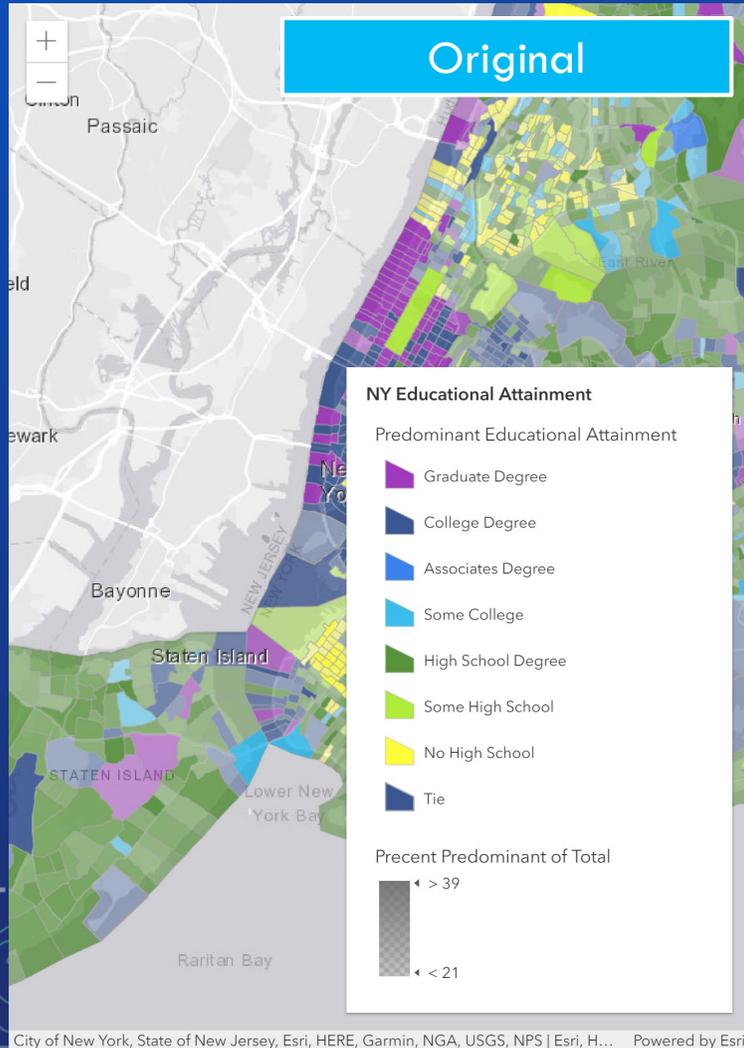
The ArcGIS API for JavaScript version 4 provides an interface for setting up simple UI layouts. [Views](#) provide a UI API that allows placing components (widgets or DOM elements) into corners.

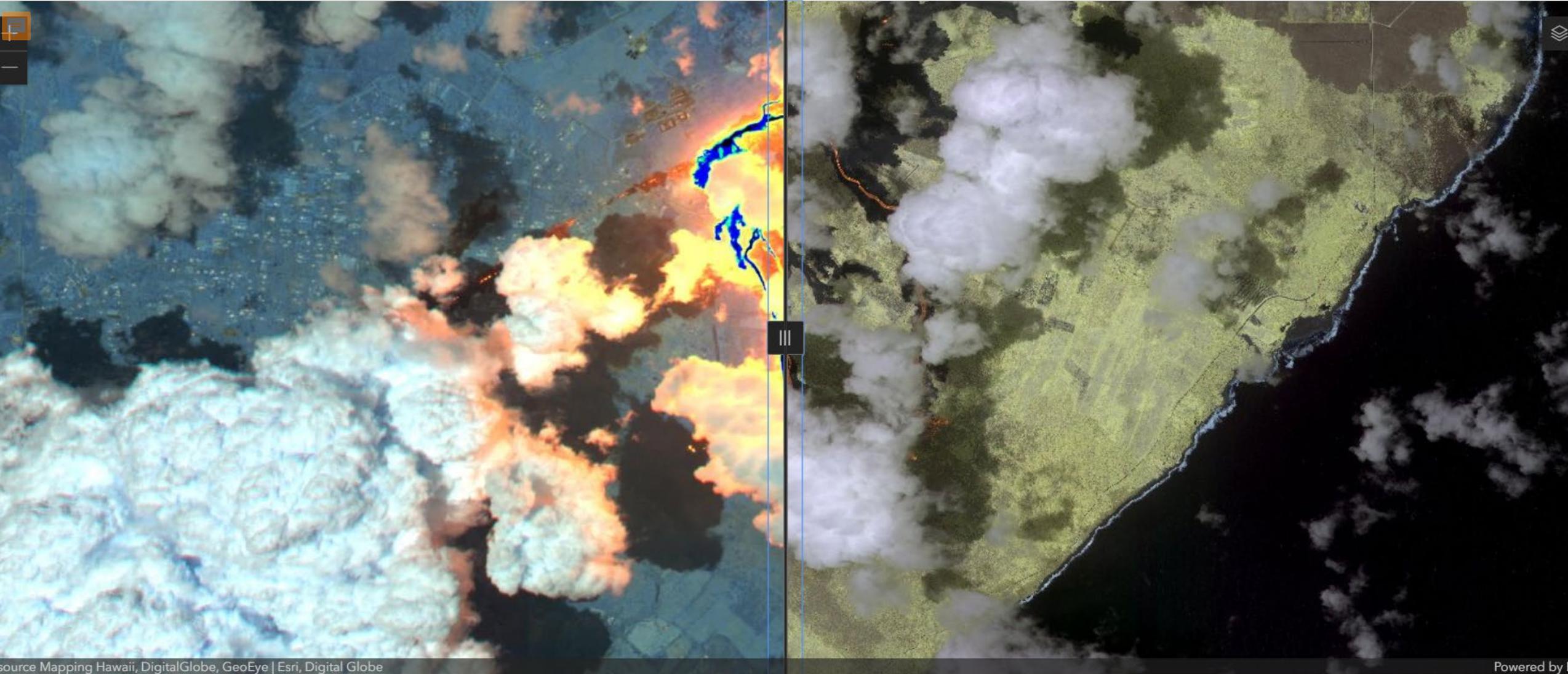
Take the following application for example:



# WIDGETS

- Use as-is or customize/extend
- Widget view / view model architecture





Source Mapping Hawaii, DigitalGlobe, GeoEye | Esri, Digital Globe

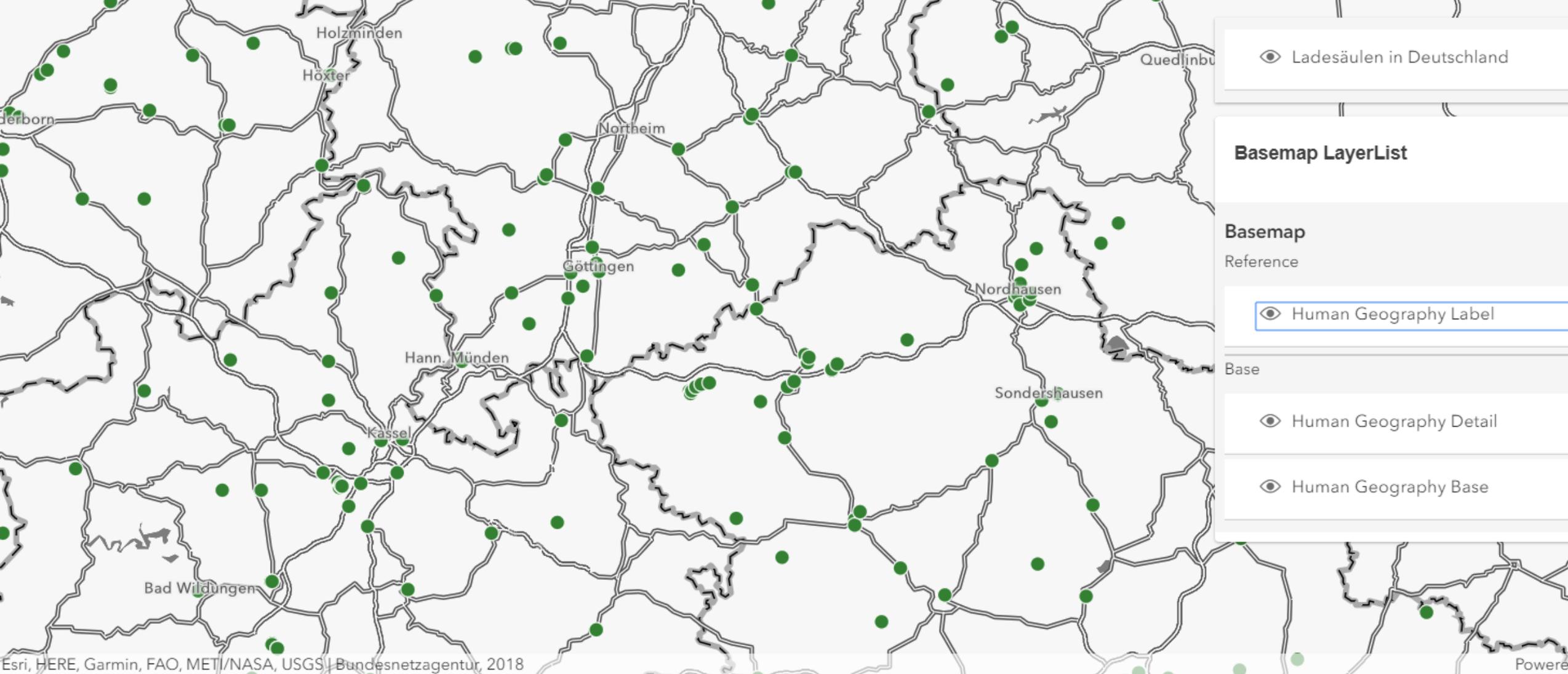
Powered by



**DEMO**

# SWIPE

- Any layer type except vector tile layers  
Vertical or horizontal swipe



# BASEMAP LAYER LIST

- Separates base layer from reference layer
- Can edit basemap's title, layer order and layer grouping



Esri, HERE, Garmin, NGA, USGS

Powered by Esri

# SKETCHING

- Draw graphics on the graphics layer
- Use the OOB widget

### Issue status

In Progress

E.g. submitted, received, in progress, or completed.

### Point of contact information

Who should we contact regarding this problem?

First name

Trystan

Last name

Mccoy

Telephone number

761-616-9091

Email

Update assessment

### Report Incidents

- Select template from the list
- Click on the map to create a new feature
- Update associated attribute data
- Click *Update Incident Info*

Filter types

IncidentsReport - Incidents report

 Dead animal

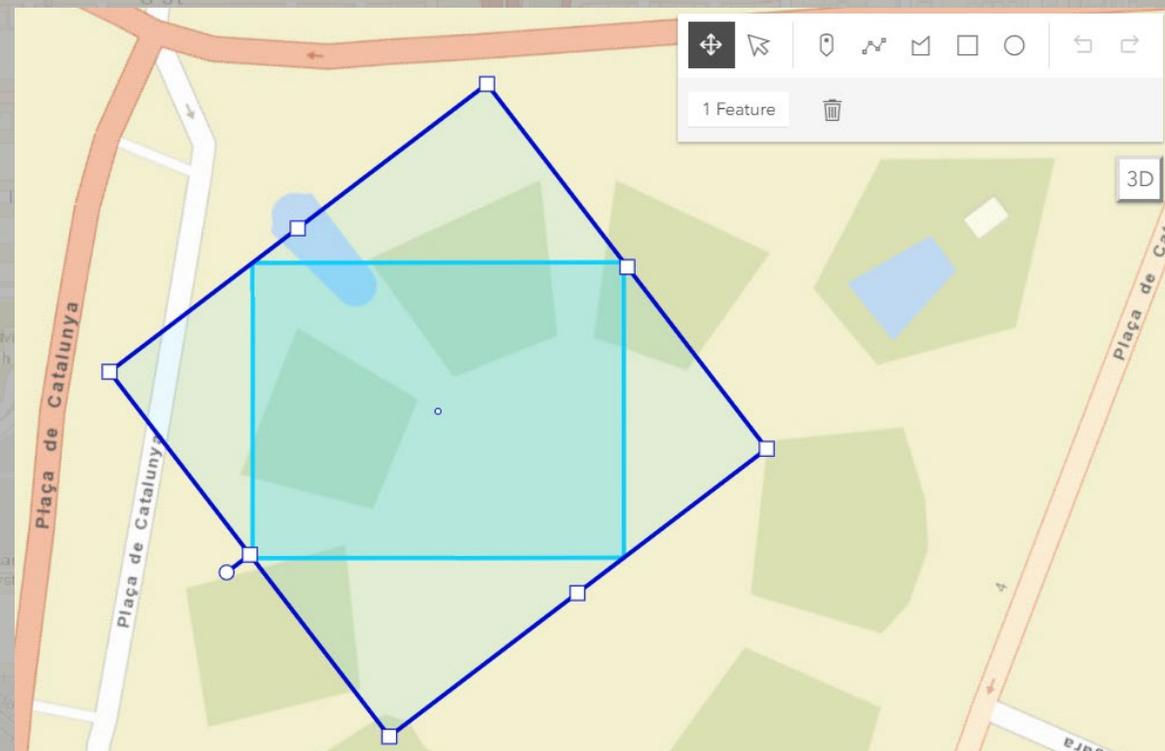
 Graffiti

 Manhole cover

 Other

 Pothole

 Street light



# EDITING

Form-based editing

Feature templates

Create & update geometry

# Editor

Search API Reference

- > esri
- > esri/core
- > esri/core/accessorSupport
- > esri/core/workers
- > esri/geometry
- > esri/geometry/support
- > esri/identity
- > esri/layers
- > esri/layers/buildingSublayers

## Editor

```
require(["esri/widgets/Editor"],
```

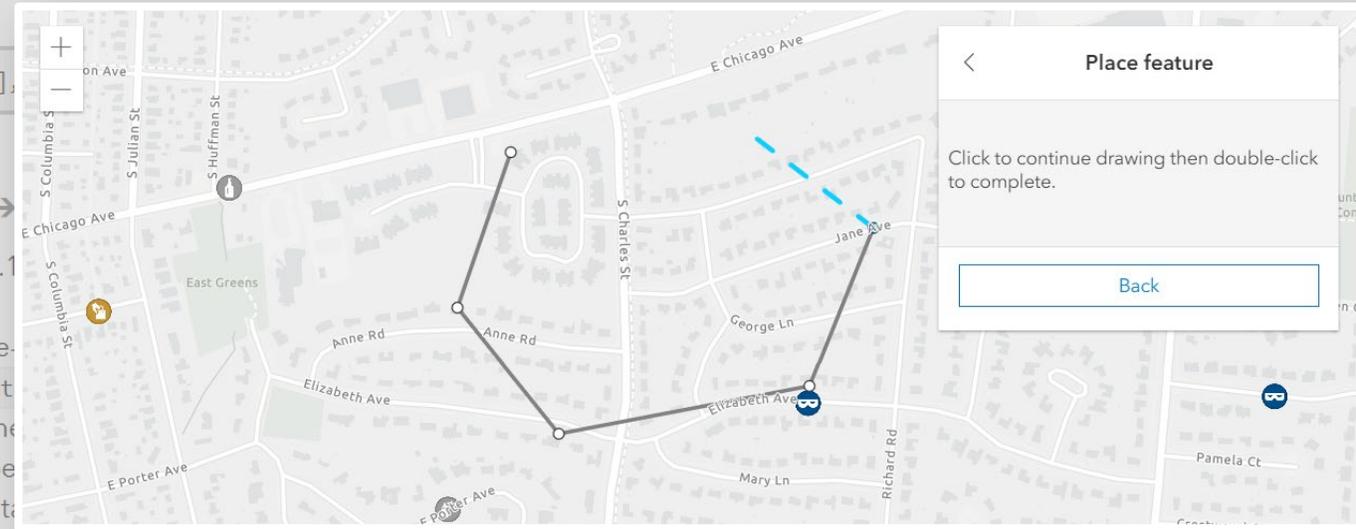
Class: [esri/widgets/Editor](#)

Inheritance: [Editor](#) → [Widget](#) →

Since: ArcGIS API for JavaScript 4.13

This widget provides an out-of-the-box editing experience. It has two different [Workflows](#), created within an editable feature layer. The layers are editable, the layers can be edited through the [layerInfos](#) property. This property contains information about the layers.

[Constructors](#) | [Properties](#) | [Methods](#) | [Type definitions](#)



# EDITOR WIDGET

Widget that brings together the editing experience

# Client-side GeometryEngine

Buffer, cut, merge, validation workflows, etc...

**DEMO**

## Method Overview

| Name                      | Return Type                        | Summary   | Object         |
|---------------------------|------------------------------------|---|----------------|
| <code>buffer()</code>     | <code>Polygon   Polygon[]</code>   | Creates planar (or Euclidean) buffer polygons at a specified distance around the input geometries. <a href="#">more details</a> | geometryEngine |
| <code>clip()</code>       | <code>Geometry</code>              | Calculates the clipped geometry from a target geometry by an envelope. <a href="#">more details</a>                             | geometryEngine |
| <code>contains()</code>   | <code>Boolean</code>               | Indicates if one geometry contains another geometry. <a href="#">more details</a>   | geometryEngine |
| <code>convexHull()</code> | <code>Geometry   Geometry[]</code> | Calculates the convex hull of the input geometry. <a href="#">more details</a>  | geometryEngine |
| <code>crosses()</code>    | <code>Boolean</code>               | Indicates if one geometry crosses another geometry. <a href="#">more details</a>  | geometryEngine |
| <code>cut()</code>        | <code>Geometry[]</code>            | Split the input Polyline or Polygon where it crosses a cutting Polyline. <a href="#">more details</a>                           | geometryEngine |
| <code>densify()</code>    | <code>Geometry</code>              | Densify geometries by plotting points between existing vertices. <a href="#">more details</a>                                   | geometryEngine |
| <code>difference()</code> | <code>Geometry   Geometry[]</code> | Creates the difference of two geometries. <a href="#">more details</a>  | geometryEngine |
| <code>disjoint()</code>   | <code>Boolean</code>               | Indicates if one geometry is disjoint (doesn't intersect in any way) with another geometry. <a href="#">more details</a>        | geometryEngine |

Overview

Release notes

Get the API

Quick Start

> Tutorials

> Core Concepts

> Data Visualization

> Building your UI

> Working with ArcGIS  
Online and Enterprise

▼ Developer Tooling

Frameworks

Angular

React

Ember

Vue

## Using the ArcGIS API for JavaScript with Frameworks

You can integrate the ArcGIS API for JavaScript into applications built with modern frameworks, like React, Angular, Vue, and Ember.

### Popular Frameworks

The following guides show how either of these approaches can be used to integrate the ArcGIS API for JavaScript with each of these popular frameworks.

- [Using the ArcGIS API for JavaScript with Angular](#)
- [Using the ArcGIS API for JavaScript with Ember](#)
- [Using the ArcGIS API for JavaScript with React](#)
- [Using the ArcGIS API for JavaScript with Vue](#)

Each of the above guides show how to use either of the two [module loading](#) approaches listed below. For other frameworks, read below to learn which approach is right for your application and then read the related guide.

### Module Loading

Content

[Popular Frameworks](#)

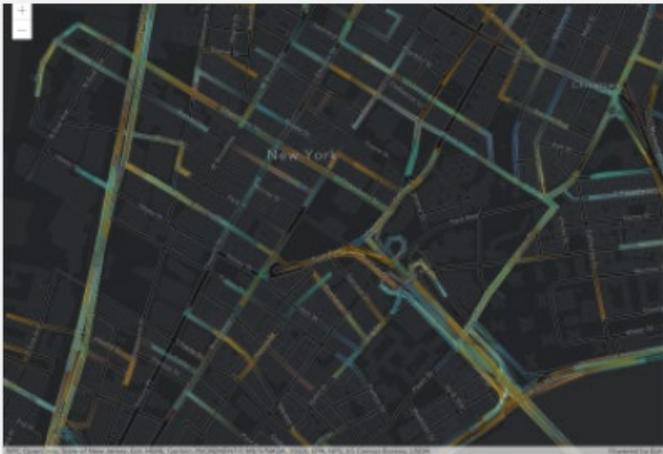
[Module Loading](#)

[Webpack Plugin](#)

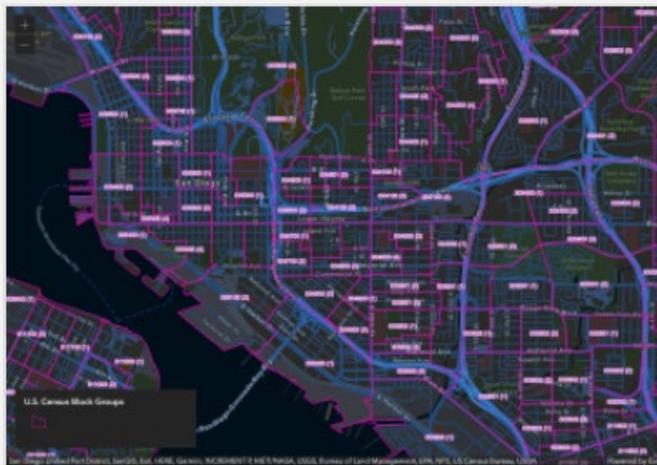
[esri-loader](#)

[When to use the  
webpack plugin vs esri-  
loader](#)

[Framework Tools](#)



Animated lines with WebGL



Summarize intersecting points in a popup



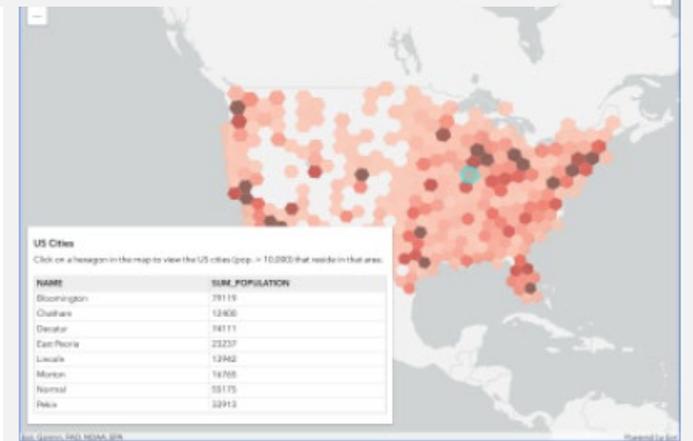
Query Attachments



Create a FeatureLayer with client-side graphics



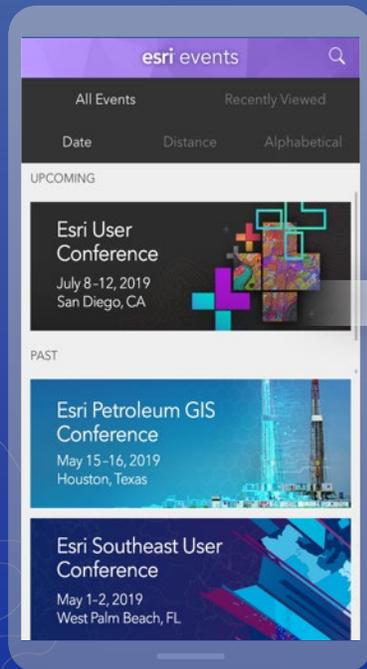
Animate layer visibility



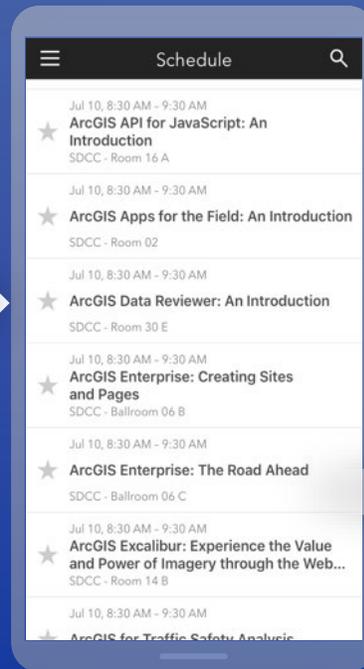
Query Related Features

# Please Share Your Feedback in the App

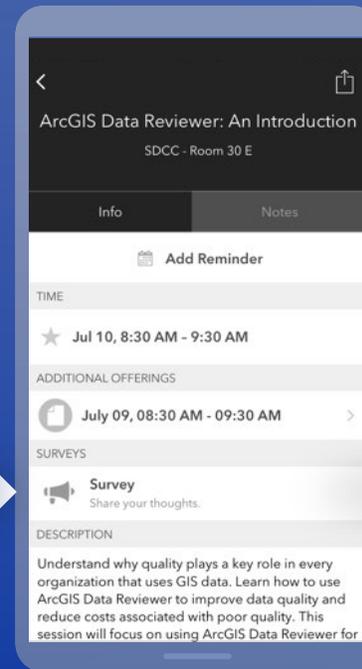
Download the Esri Events app and find your event



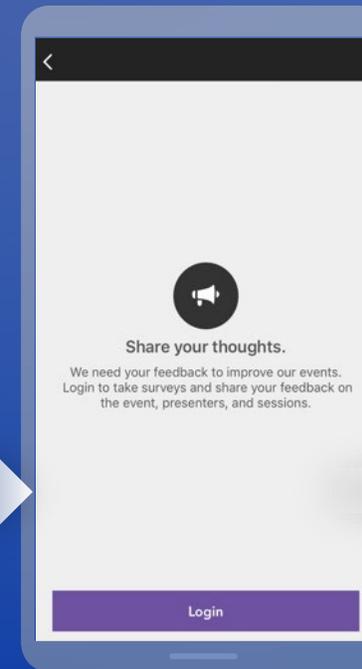
Select the session you attended



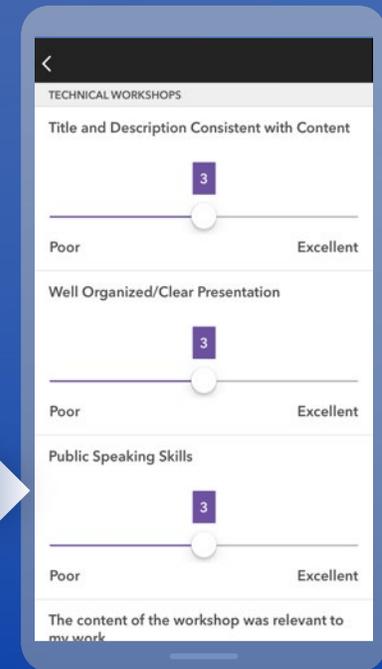
Scroll down to "Survey"



Log in to access the survey



Complete the survey and select "Submit"



Share your apps and suggestions with us...

- Your apps!
- Your impressions on the latest API
- Ideas for future events related to web development



[jsapi\\_pm@esri.com](mailto:jsapi_pm@esri.com)