



3D Visualization with the ArcGIS API for JavaScript




Kristian Ekenes

Raluca Nicola

2018 Esri DEVSummit Conference | Palm Springs, CA






Kristian Ekenes

-  Product Engineer JS API
-  Data visualization, Smart Mapping, Arcade
-  Redlands, California

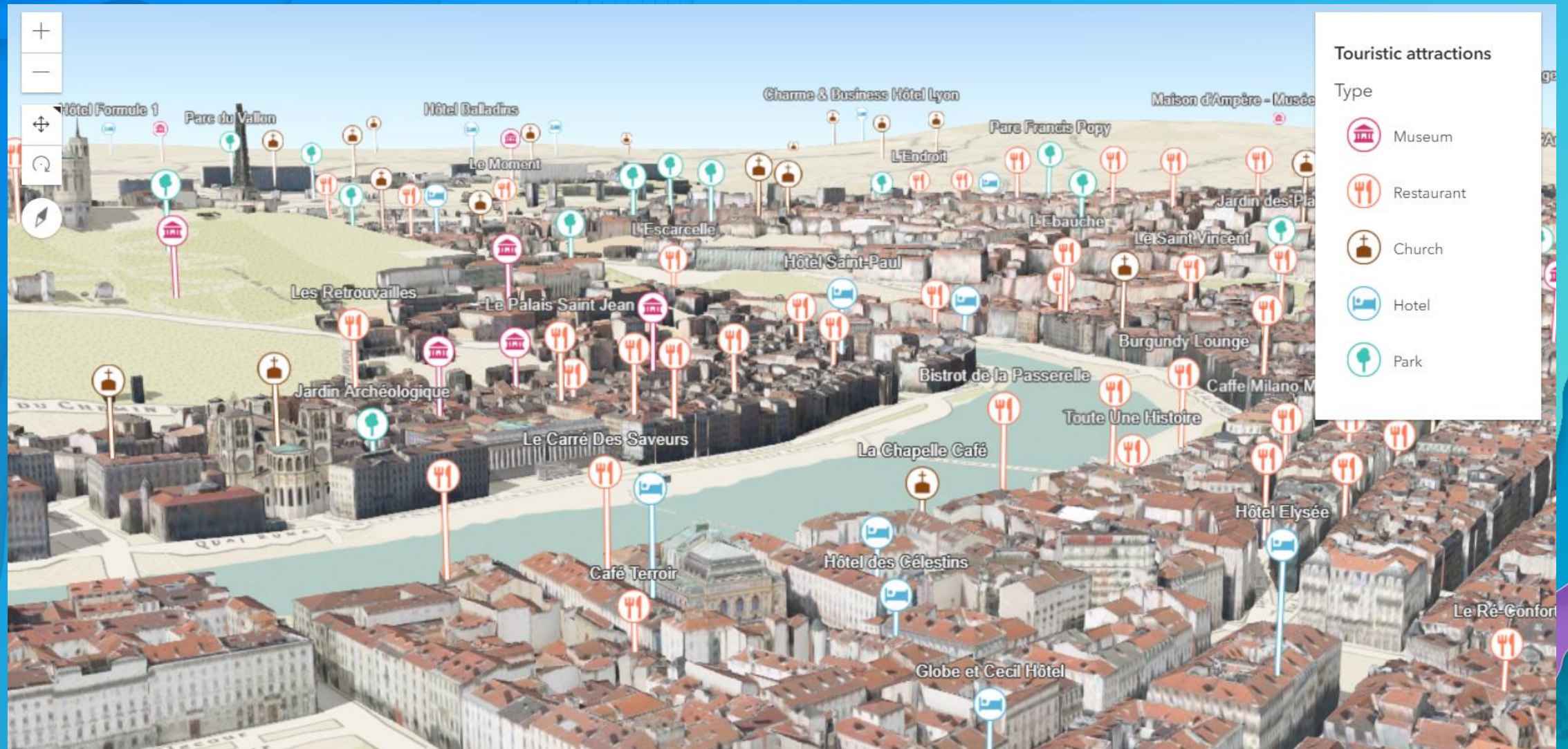


Raluca Nicola

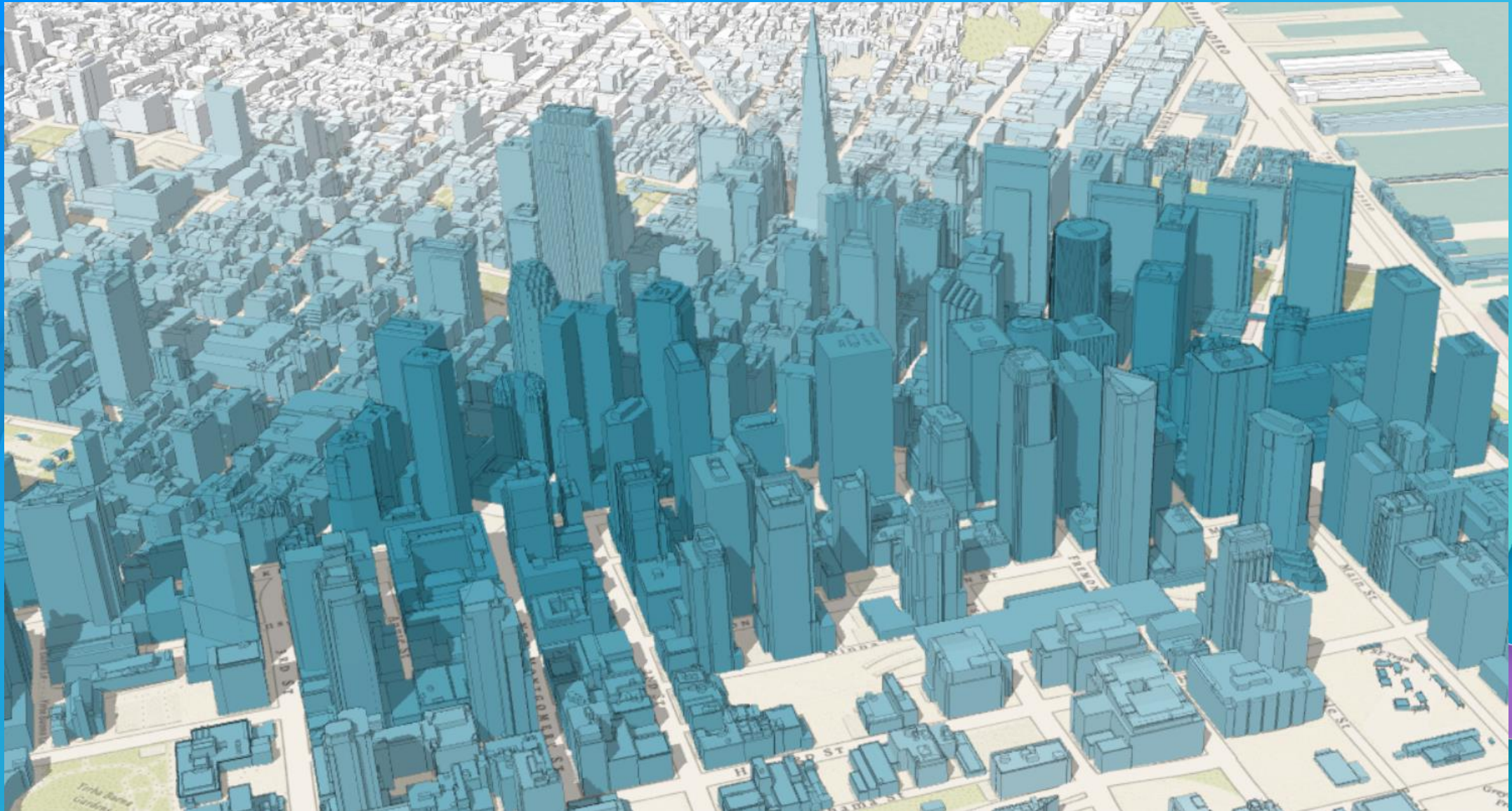
-  Product Engineer JS API
-  Data visualization, 3D
-  Zurich, Switzerland

Discover how to visualize geodata
in a meaningful way **in 3D**
using ArcGIS API for JavaScript

Points of interest in a city



City thematic visualization



Urban development



Three use cases
- hands on demos -

Sneak peak into the
future

Visualization API
- basics -

Symbols & renderers
- general overview -

5 min

20 min

10 min

5 min

Visualization API

Basic patterns



layer



renderer



symbol



symbolLayers

```
var layer = new FeatureLayer({
  renderer: new SimpleRenderer({
    symbol: new PointSymbol3D({
      symbolLayers: [new IconSymbol3DLayer({...})]
    })
  }),
  elevationInfo: {
    mode: "relative-to-scene"
  },
  labelingInfo: [{
    symbol: new LabelSymbol3D({
      symbolLayers: [new TextSymbol3DLayer({...})]
    })
  }]
});
```

renderer

symbol

symbolLayers

visualVariables

for numeric continuous visualizations

```
var layer = new FeatureLayer({
  renderer: new SimpleRenderer({
    symbol: new PointSymbol3D({
      symbolLayers: [new IconSymbol3DLayer({...})]
    }),
    visualVariables: [{
      type: "size",
      field: "TOTPOP_CY",
      normalizationField: "SQMI",
      stops: [{
        value: 4000,
        size: 6
      },
      {
        value: 23000,
        size: 40
      }
    ]
  }]
});
```

Data-driven visualization

- Renderers & Visual Variables

1. Field value(s)

TOTAL_POP

2. Arcade expression

Round((\$feature.BACHELOR + \$feature.MASTER) / \$feature.POP_25UP);

3. JavaScript function

```
function (graphic){  
  return graphic.attributes.POP_DENSITY;  
}
```

layer



elevationInfo



mode

```
var layer = new FeatureLayer({
  renderer: new SimpleRenderer({
    symbol: new PointSymbol3D({
      symbolLayers: [new IconSymbol3DLayer({...})]
    })
  }),
  elevationInfo: {
    mode: "relative-to-scene"
  },
  labelingInfo: [{
    symbol: new LabelSymbol3D({
      symbolLayers: [new TextSymbol3DLayer({...})]
    })
  }]
});
```

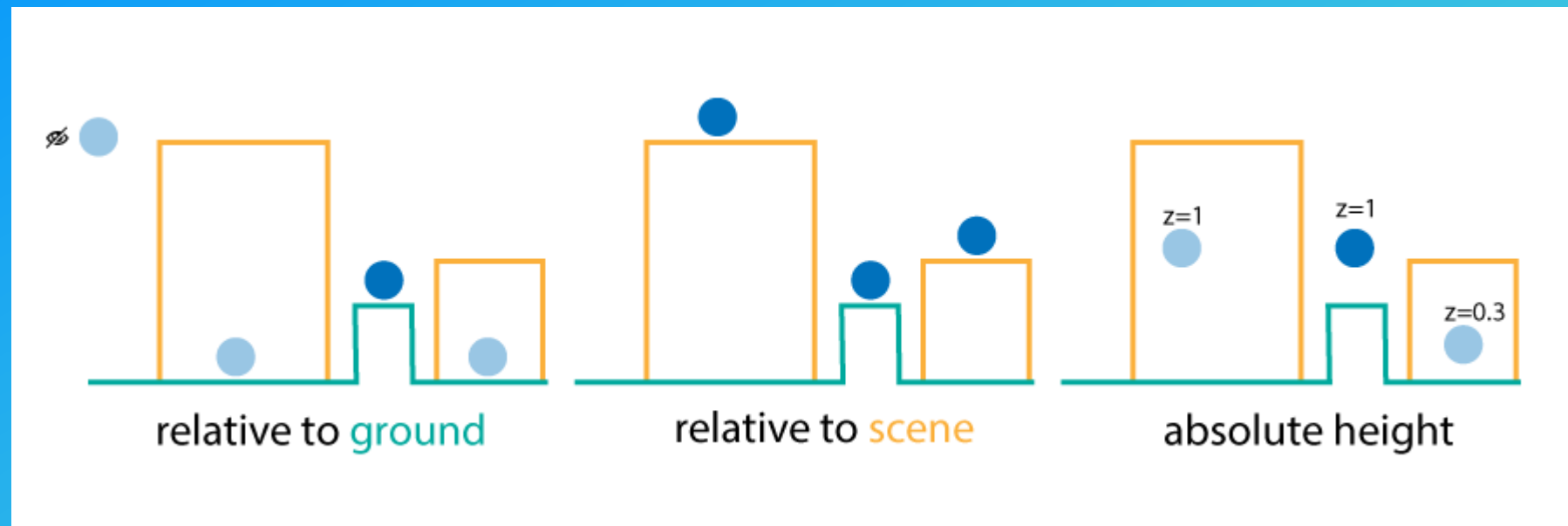
layer



elevationInfo



mode



on the ground



relative to ground

layer



labelingInfo



symbol



symbolLayers

```
var layer = new FeatureLayer({
  renderer: new SimpleRenderer({
    symbol: new PointSymbol3D({
      symbolLayers: [new IconSymbol3DLayer({...})]
    })
  }),
  elevationInfo: {
    mode: "relative-to-scene"
  },
  labelingInfo: [{
    symbol: new LabelSymbol3D({
      symbolLayers: [new TextSymbol3DLayer({...})]
    })
  }]
});
```

Three use cases

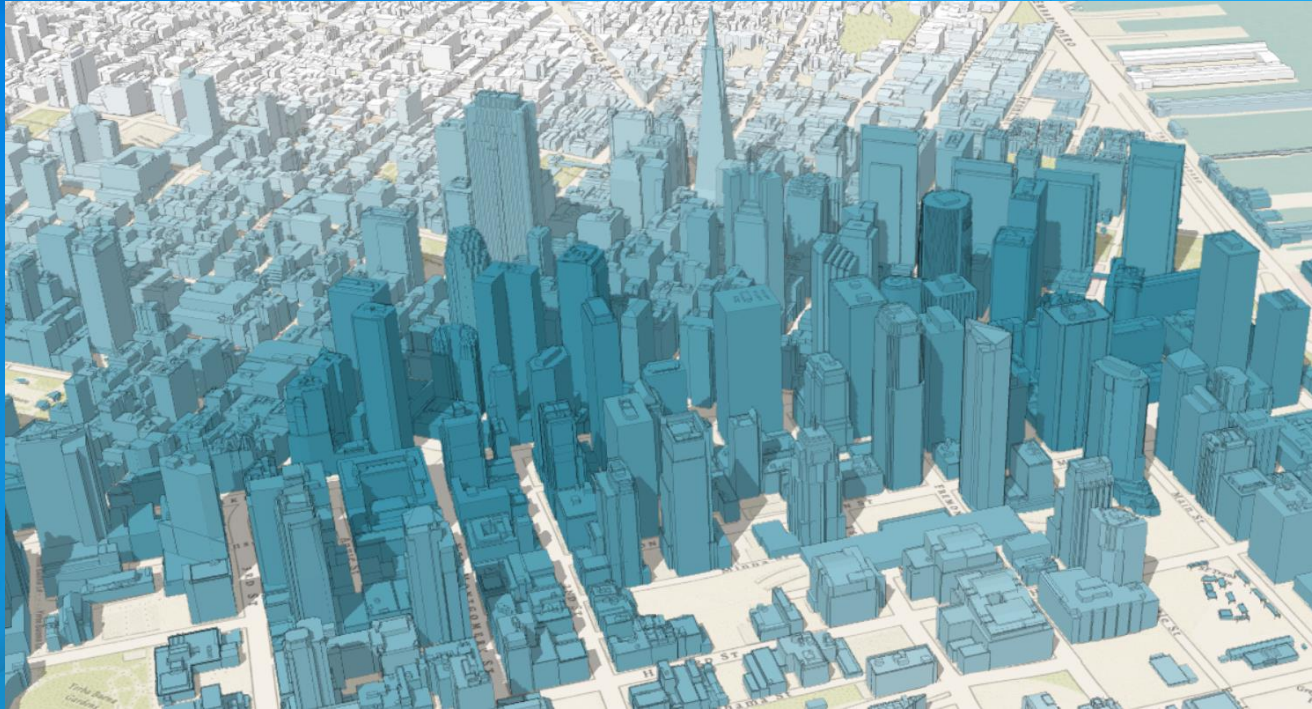
Hands on demos





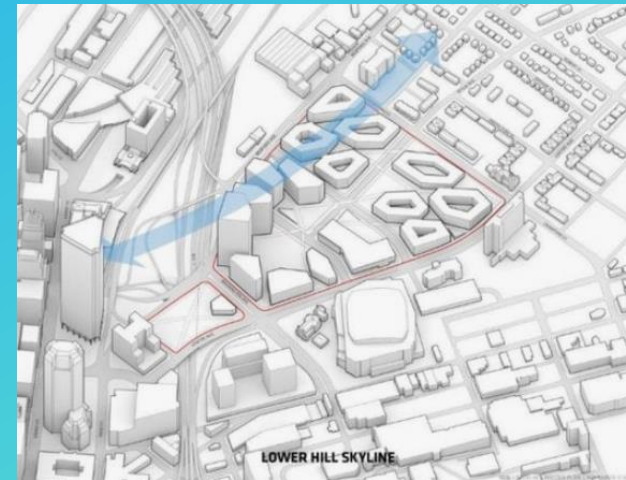
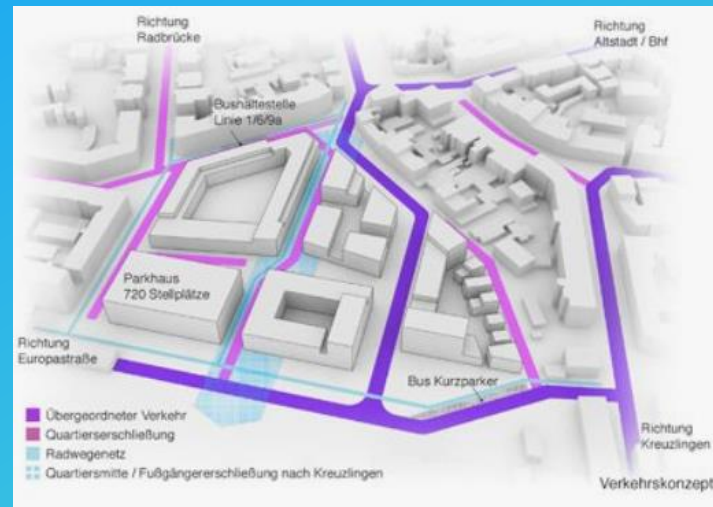
Points of interest in a city

Demo time



Smart mapping

Demo time





Urban development

Demo time

Symbols and Renderers

General overview



Symbols

PointSymbol3D



LineStyle3D



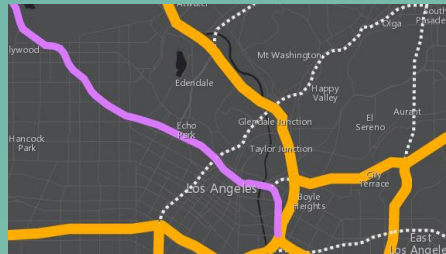
PolygonSymbol3D



IconSymbol3DLayer



LineStyle3DLayer



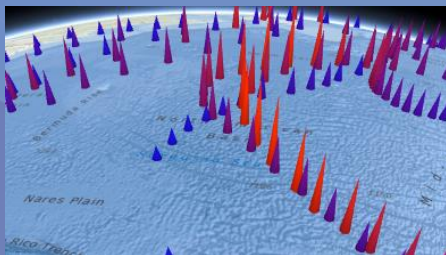
FillSymbol3DLayer



Flat

- Screen size units (pt, px)
- Graphics are in screen space

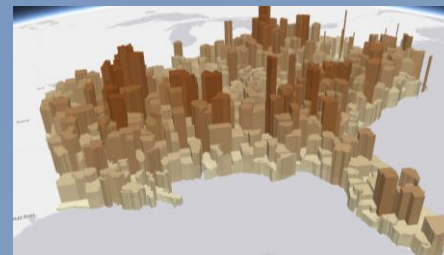
ObjectSymbol3DLayer



PathSymbol3DLayer



ExtrudeSymbol3DLayer



Volumetric

- Real world units (feet, meter)
- Graphics are in real world space

Symbols

MeshSymbol3D

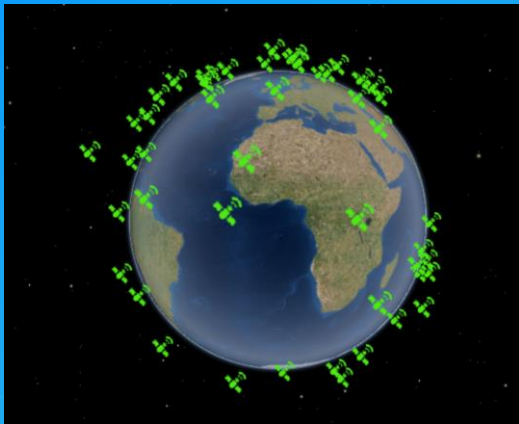


FillSymbol3DLayer



Renderers

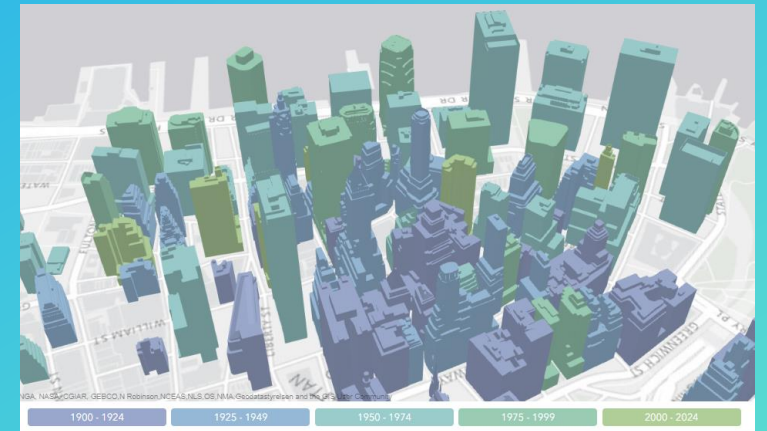
SimpleRenderer



UniqueValueRenderer



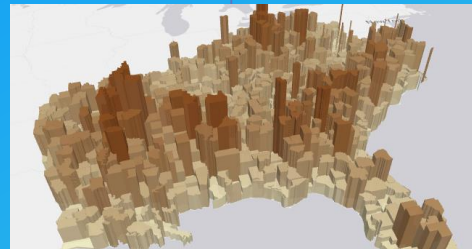
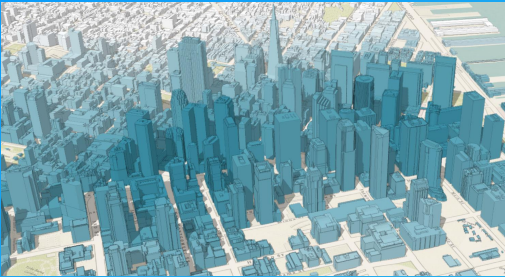
ClassBreaksRenderer



Multivariate mapping with visual variables

visualVariables - only for continuous numerical visualization

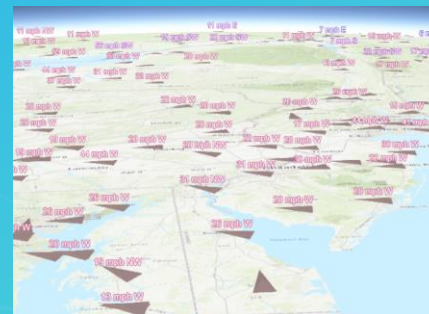
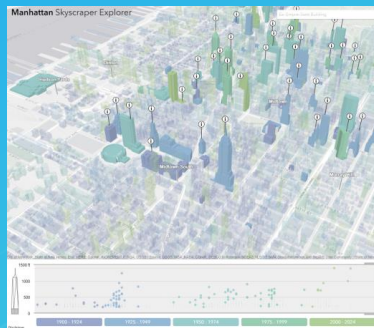
Color



Size



Opacity

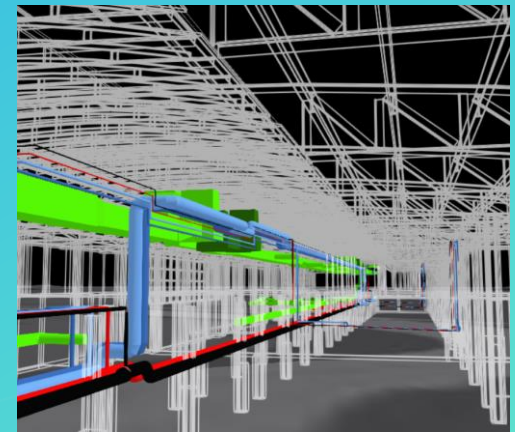


Rotation

Sneak peak into the future



Edge rendering – already in 4.7





esri

THE
SCIENCE
OF
WHERE