



ESRI DEVELOPER SUMMIT 2023

# ArcGIS Maps SDK for JavaScript: Better UX with Popups

Lauren Ballantyne and Lauren Boyd

Slides available:  
[https://links.esri.com/DS23-  
better-ux-popups](https://links.esri.com/DS23-better-ux-popups)

```
const layer = view.map.allLayers.get(0);
view.whenLayerView(layer)
  .then(layerView => console.log(`Layer loaded`))
  // if there were problems with the layer
  .catch(console.error);
```

```
const view = new MapView({
  container: "viewDiv",
  map: map,
  environment: {
    lightings: {
      directShadowsEnabled: true
    }
  }
});
```

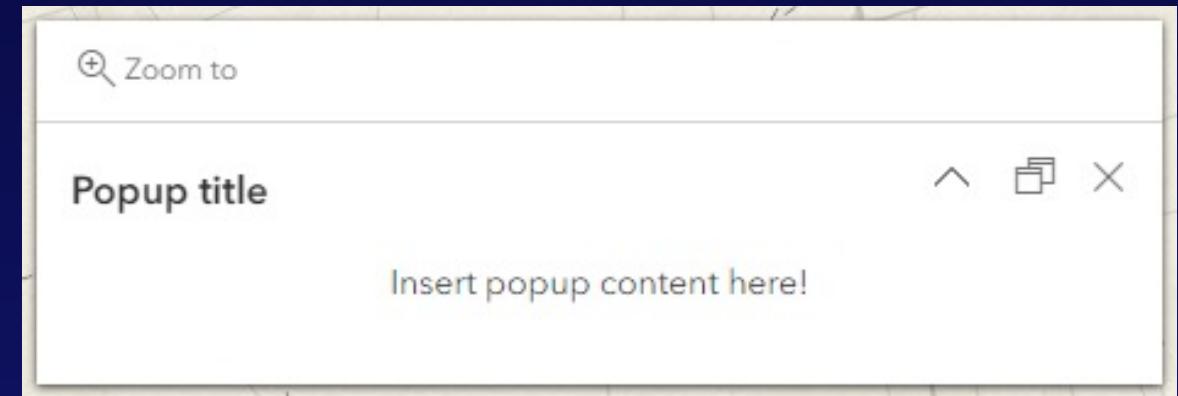
# Agenda

- What are popups?
- Popup Elements
- Arcade
- Configuring popups in the Map Viewer
- Adding more to popups using JS SDK

# Popups

What are they?

- Customizable
- Interactive
- Cross-platform feature
- Available for a variety of layer types



# Popup Elements

- Text
- Fields list
- Attachments
- Media (Charts and Images)
- Arcade \*NEW
- Related records \*NEW

The image displays four separate Power BI desktop popups arranged vertically. Each popup has a header bar with 'Get directions' and 'Zoom to' buttons, and a close button ('X').

- 6.2 Magnitude Earthquake**:  
166.37 km depth  
1/20/2023, 6:23 a.m.  
[40 km WSW of Pointe-Noire, Guadeloupe \(16.13, -62.16\)](#)  
**USGS PAGER ALERT:**  
No Response Needed (GREEN)  
**TSUNAMI WARNING:**  
No Alert Issued
- US States and Territories: Arkansas**:  
Name: Arkansas  
Source of Geography Code: USS  
Universal Geography Code: AR
- AED Location: York**:  
AED\_Instructions.txt
- Bird species observations**:  
**Canada Goose**  
Below are the two most recent behavior comments relating to Canada Goose observation. Click "Show all" to see all relating comments.  
Canada Goose behavior comments  
July 20, 2022

The first popup contains a chart showing the Unemployment rate for the most recent 14 months of BLS data, plotted against time.

# Arcade

What is it?

- ArcGIS's cross-platform expression language
- Create expressions to calculate new values on the fly
  - Use values
  - Use geometries
- Use FeatureSets to access data from other layers hosted in ArcGIS Online



# Arcade

## Use in pop-ups

- Attribute expressions
- Arcade elements

The screenshot shows the ArcGIS Arcade editor interface. On the left, the 'Run' tab is active, displaying the following JavaScript code:

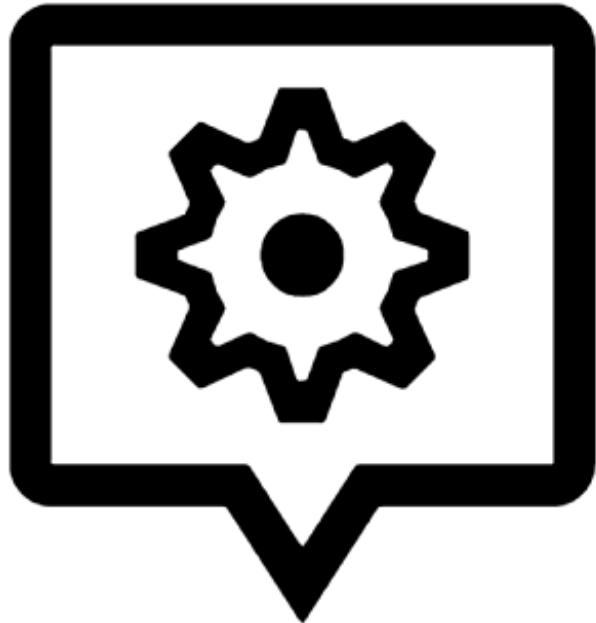
```
1  /*
2  Open the Suggestions tab and choose a template to get started creating different content types for your popups.
3  To learn more about using Arcade to create pop-up content visit:
4  https://developers.arcgis.com/arcade/guide/profiles/#popup-element
5 */
6
7 return {
8   type : 'text',
9   text : 'place your text or html here' //this property supports html tags
10 }
```

On the right, a sidebar titled 'Suggestions' is open, showing a search bar and a list of templates:

- Templates
  - Chart
  - Fields list
  - Rich text
- (x) Profile variables
- fx Functions
- Suggestions
- Help

At the bottom right of the sidebar, there is a 'Collapse' button.

```
const view = new SceneView({  
  container: "viewDiv",  
  map: map,  
  environment: {  
    lighting: {  
      directShadowsEnabled: true  
    }  
  }  
})
```



# Map Viewer Popups

Lauren Ballantyne

```
  const layerView = viewer.layers.getLayer(index);  
  viewer.on("click", (event) => {  
    const layerView = viewer.layers.getLayer(index);  
    console.log(layerView);  
  })  
  // If you try to interact with the layerView, you'll get an error here
```

# Popups & the JS SDK

Lauren Boyd



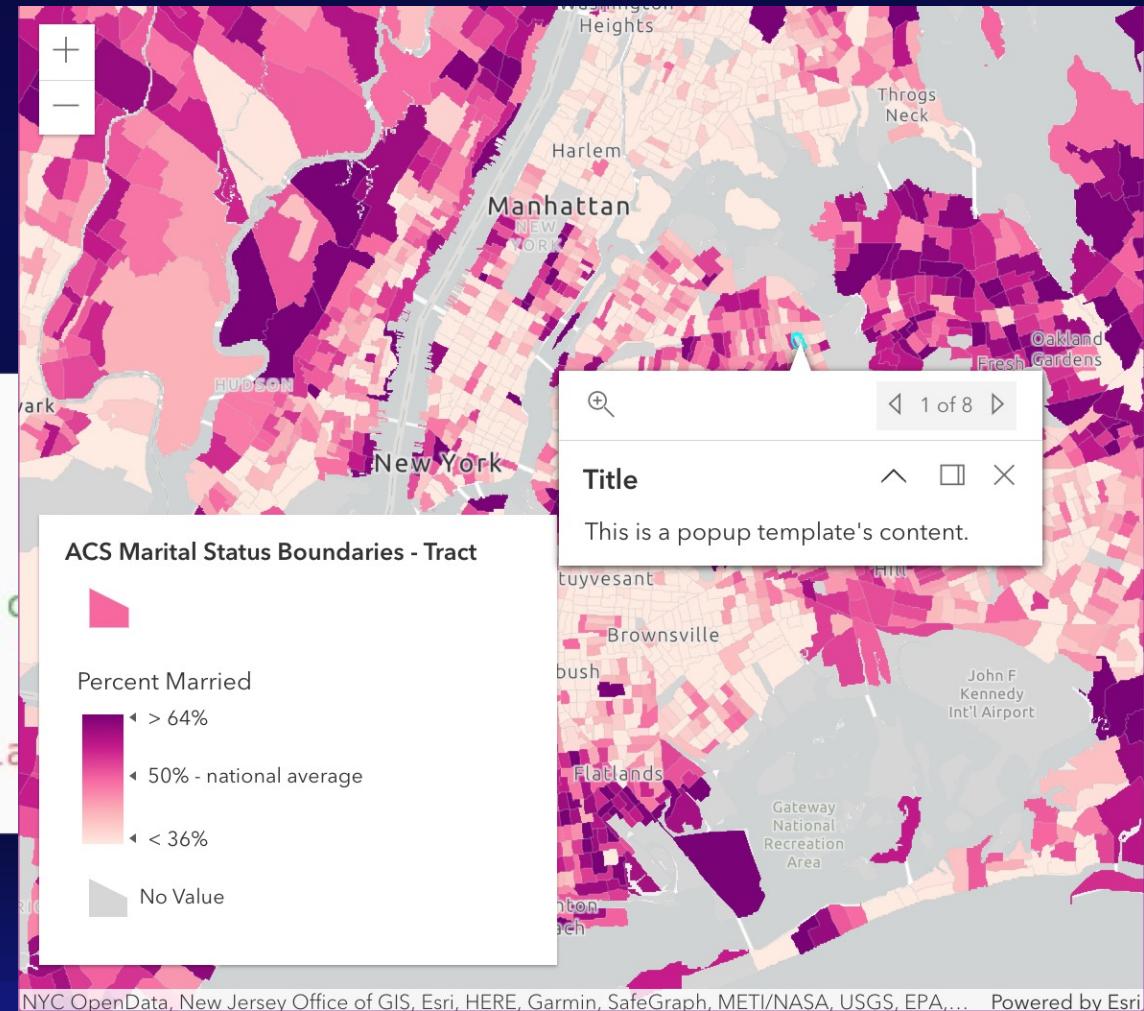
```
const layer = view.map.allLayers.get(0);
view.whenLayerView(layer)
  .then((layerView) => console.log(`Layer ${layer.name} loaded`))
  // if there were problems with loading
  .catch(console.error);
```

```
const view = new View({
  container: "view",
  map: map,
  environment: {
    lightings: {
      directShadowsEnabled: true
    }
  }
});
```

# PopupTemplate

- Formats and defines the popup content
- Set defaultPopupTemplateEnabled

```
1 const popupTemplate = {  
2   // autocasts as new PopupTemplate()  
3   title: "Title",  
4   content: "This is a popup template's content."  
5 };  
6  
7 featureLayer.popupTemplate = popupTemplate;
```



# Content

## Text Elements

```
1 // Create the TextContent element
2 let textElement = new TextContent({
3   // Set the text value to reference fields
4   text: "There are {Point_Count} trees within census block {BLOCKCE10}"
5 });
```

# Content

## Field Element

```
1 // Create the FieldsContent element
2 let fieldsElement = new FieldsContent({
3   // Add an array of fieldInfos
4   fieldInfos: [
5     fieldName: "BLOCKCE10",
6     label: "Block",
7     visible: true
8   ],
9   {
10     fieldName: "relationships/0/Point_Count_COMMON", // using a related table's field
11     label: "Sum of species tree count",
12     visible: false,
13     statisticType: "sum"
14   ]
15 });
```

# Content

## Media Elements

```
1 // Create the MediaContentt element
2 let mediaElement = new MediaContent({
3   // Autocasts as array of MediaInfo objects
4   mediaInfos: [
5     {
6       title: "Count by type",
7       type: "pie-chart", // autocasts as new PieChartMediaInfo
8       // Autocasts as new ChartMediaInfoValue object
9       value: {
10         fields: ["relationships/0/Point_Count_COMMON"],
11         tooltipField: "relationships/0/COMMON"
12       }
13     }
14   });
15 });
```

# Content

## Arcade Elements

```
1 // Creates a column chart using Arcade
2 layer.popupTemplate = {
3   title: "Educational Attainment",
4   content: [
5     type: "expression",
6     expressionInfo: {
7       expression: `
8         // Arcade expression that returns a popup element
9         ...
10        return{
11          type: "media",
12          attributes,
13          title: "Chart title",
14          mediaInfos: [...]
15        }
16      `,
17      title: "Educational Attainment"
18    }
19  ]
20};
```

# Content

## Attachment Elements

```
1 // Create a new AttachmentsContent element
2 let attachmentsElement = new AttachmentsContent({
3   displayType: "list" // this will show all attachments as a list of linked files
4 });
```

# Content

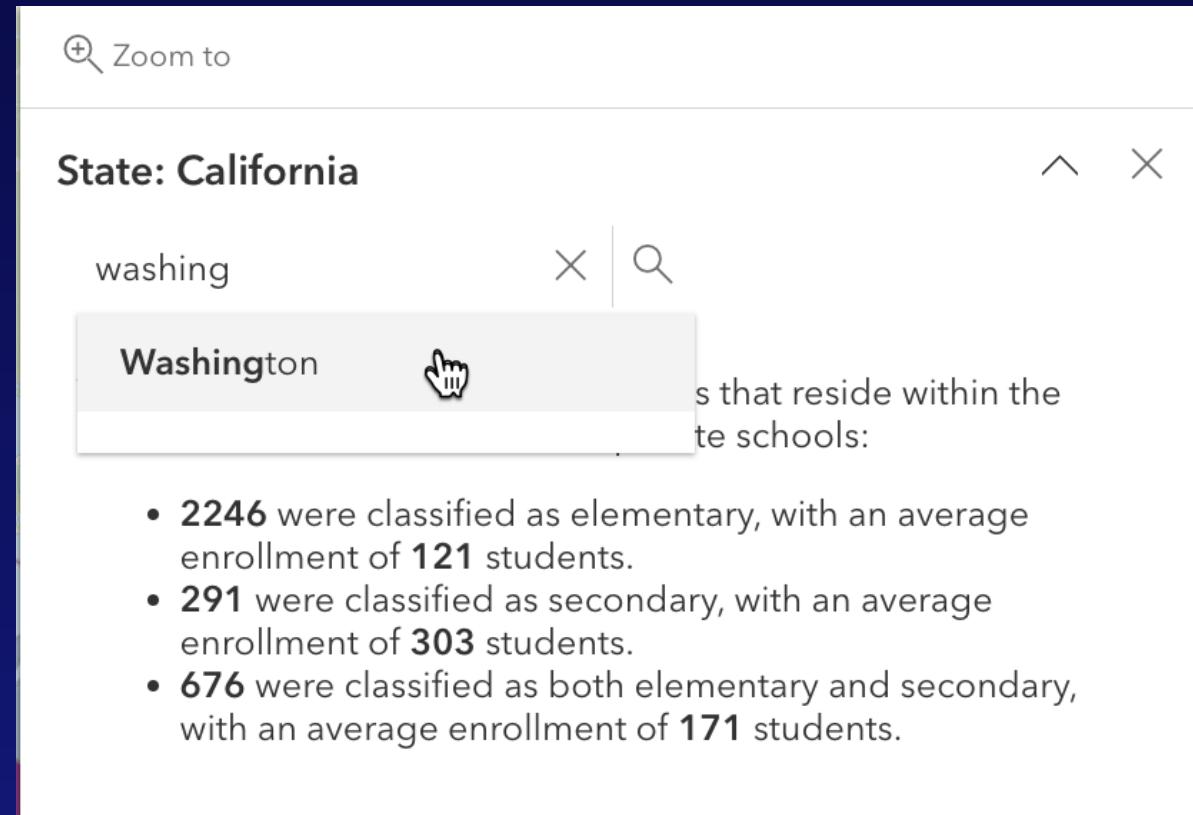
## Relationship Elements

```
1 // Create the RelationshipContent popup element
2 const relationshipContent = new RelationshipContent({
3   relationshipId: 3,
4   title: "Cities in {COUNTY_NAME}",
5   description: "All the cities that reside in {COUNTY_NAME}.",
6   displayCount: 3,
7   // Autocasts as new array of RelatedRecordsInfoFieldOrder objects
8   orderByFields: [
9     field: "CITY",
10    order: "asc"
11  ]
12});
```

# Content

## JS SDK Specific

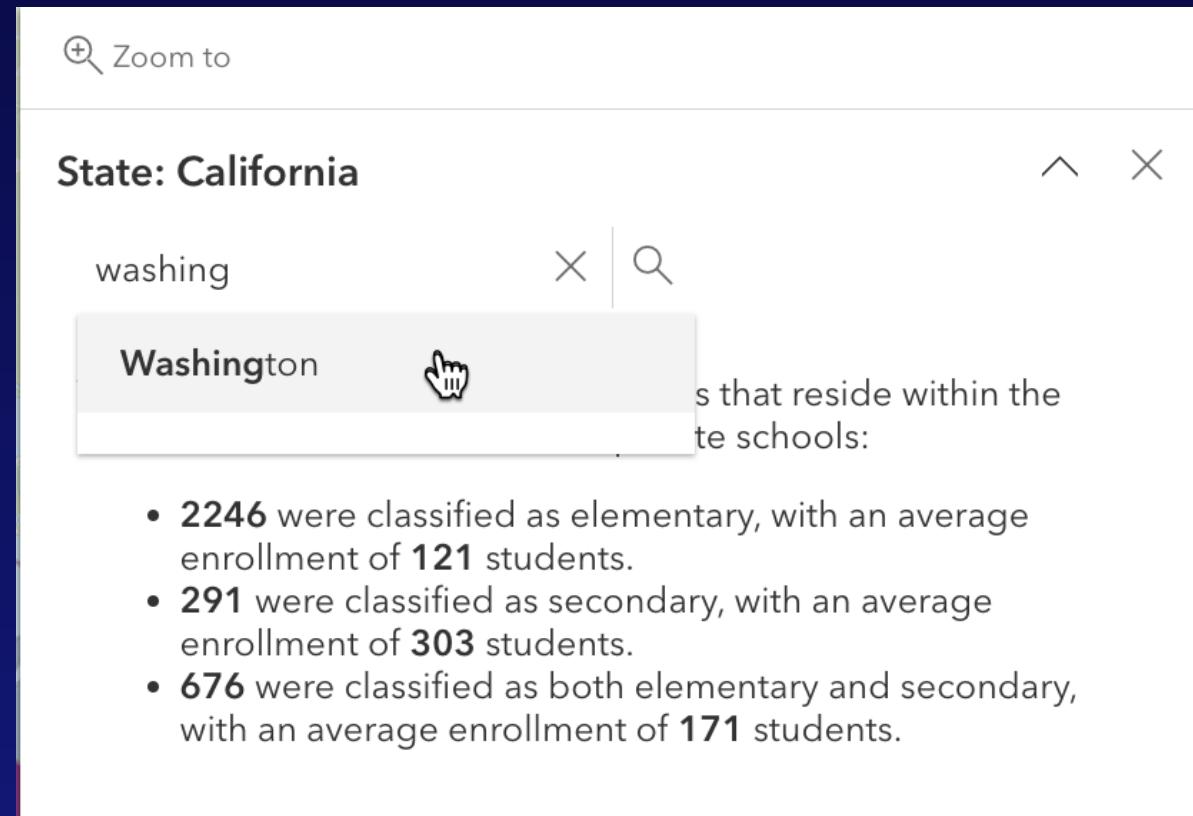
- CustomContent:
  - Displaying Widget



# Content

## JS SDK Specific

- CustomContent:
  - Displaying Widget
- Promise
  - Useful when calling method/executing query and want to display results



# Content

## JS SDK Specific

- CustomContent:
  - Displaying Widget
- Promise
  - Useful when calling method/executing query and want to display results
- Function
  - Popup may require additional processing

```
1 function formatContent(feature) {
2     // Check if the access type is open or unrestricted and set
3     // the color to green. Otherwise, set the color to red.
4     let color =
5         feature.graphic.attributes.ACCESS === "Open" || "Unrestricted"
6             ? "green"
7             : "red";
8
9     let textContent = new TextContent();
10    // Create the text content and set the text depending on which layer
11    // the feature is from and return in an array.
12    if (feature.graphic.layer.title == "Campsites") {
13        textContent.text =
14            `<b>{LABEL}</b> resides along {TRAIL}. This site is currently <span style='color: ` +
15            color + `';'>{ACCESS}</span>`;
16    } else {
17        textContent.text =
18            `'{TRAILNAME} is a <b>{MTFCC}</b> and currently <span style='color: ` +
19            color + `';'>{ACCESS}</span>.`;
20    }
21    return [textContent];
22}
```

# FieldInfo

- Defines how fields participate in popup
- Set on either:
  - PopupTemplate
  - Individual FieldContent

```
1 // Format and set values for field
2 let fieldInfo = new FieldInfo({
3   fieldName: 'PROMINENCE_ft',
4   label: 'Prominence (feet)',
5   isEditable: true,
6   visible: false,
7   //autocasts to FieldInfo.Format
8   format: {
9     places: 0,
10    digitSeparator: true
11  }
12 });
13
14 // Set on popupTemplate - suggested way
15 popupTemplate.fieldInfos = [fieldInfo];
16
17 // or set on FieldContent itself
18 fieldContent.fieldInfos = [fieldInfo];
19 popupTemplate.content = [fieldContent];
```

# Docking

```
1 view.popup = {  
2   dockEnabled: true,  
3   dockOptions: {  
4     // Sets which position to place the popup in the view  
5     position: "top-left",  
6     // Disables the dock button from the popup  
7     buttonEnabled: false,  
8     // Ignore the default sizes that trigger responsive docking  
9     breakpoint: true  
10    }  
11};
```

# Actions

- Default actions
  - Zoom to
- Custom Actions
  - Styled with image or class

**Cheshire Cat Brewery** ✓ □ ×

Cheshire Cat Brewery  
7803 Ralston Road  
Arvada, Colorado  
Phone: 1-303-431-9000

 [Brewery Info](#)  [Zoom to](#)

◀ 7 of 33 ▶

# Styling

## Out-of-the-box Themes

- Need to be specified in the CSS path

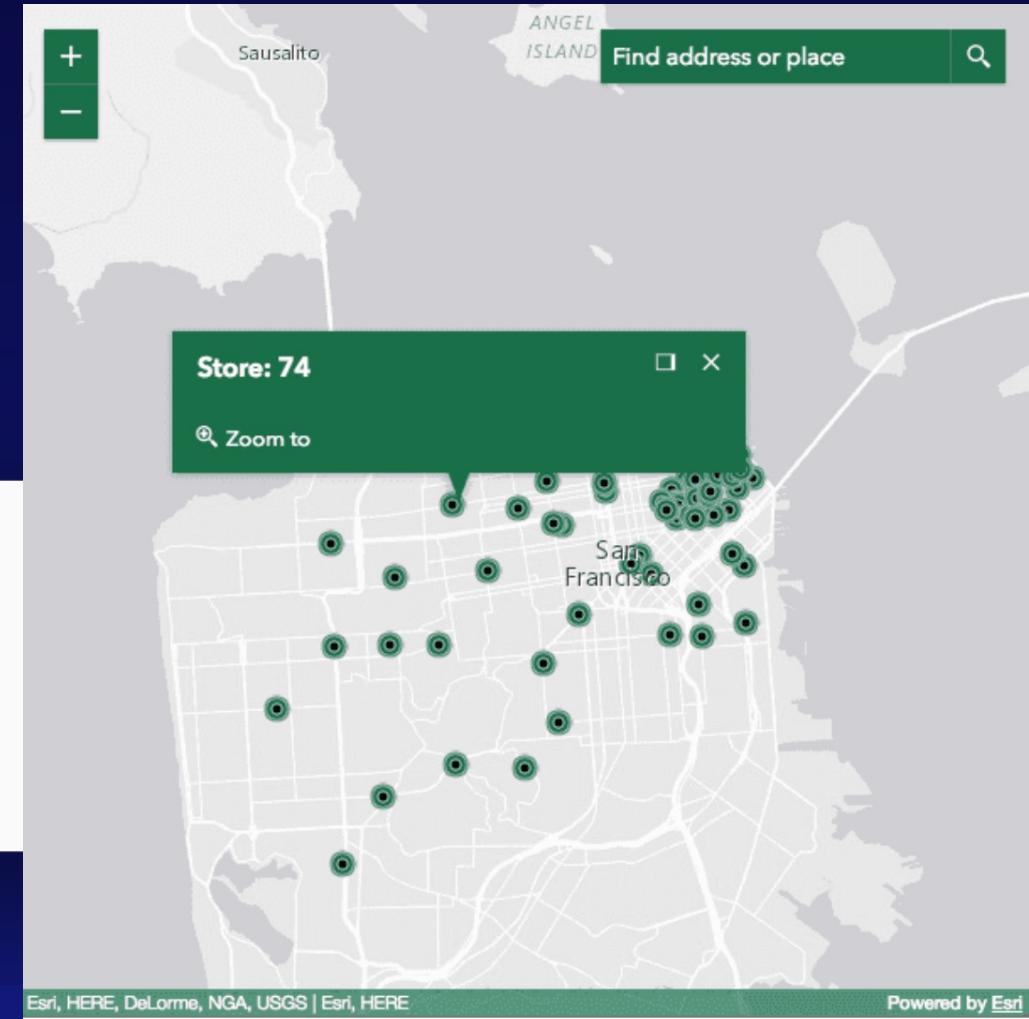
```
1 <link rel="stylesheet"
2     href="https://js.arcgis.com/4.26/esri/themes/light/main.css">
3
4 <link rel="stylesheet"
5     href="https://js.arcgis.com/4.26/esri/themes/dark/main.css">
```

# Styling

## Sassy Widgets

- All widgets have Sass files
- More fine-grained control

```
1 $font-color: #fff;
2 $background-color: #00704a;
3 $button-color: $background-color;
4 $interactive-font-color: $font-color;
5 $border-color--active: $interactive-font-color;
6 $background-color--active: lighten(#00704a, 25%);
```

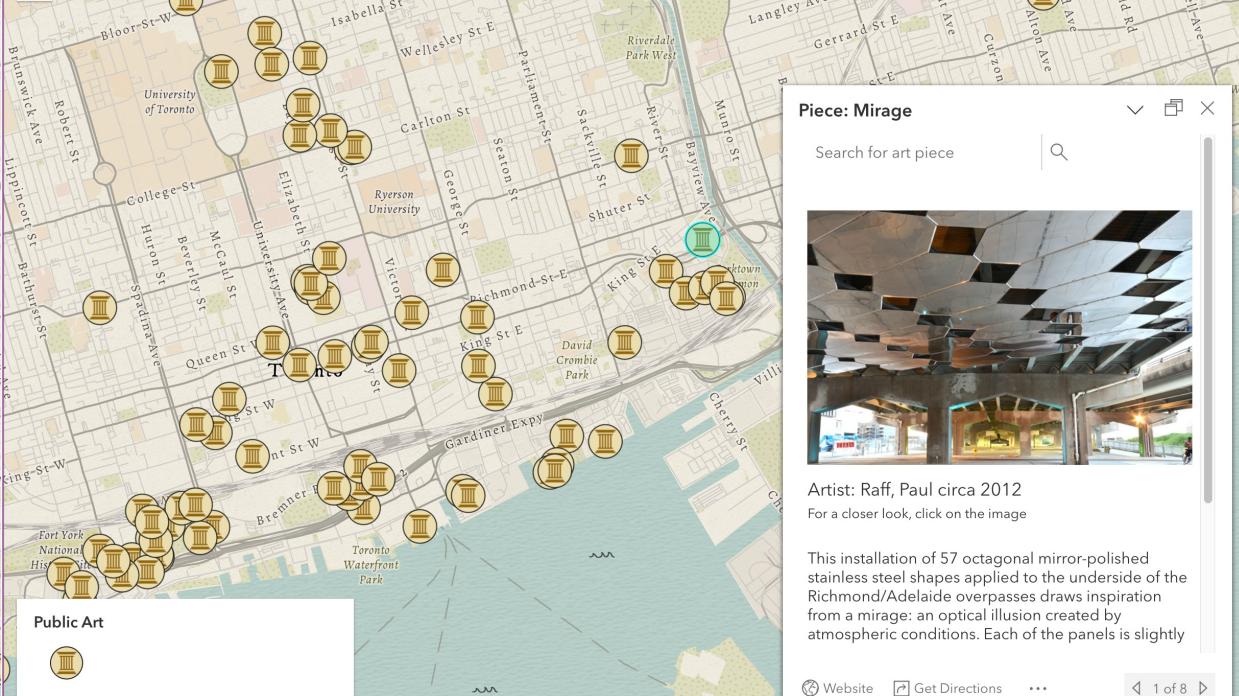


# Styling

## CSS Widget Styling

```
1 .esri-widget__heading {  
2   color: $heading_color; // #323232;  
3   font-weight: $font-weight__heading; // 600;  
4   margin: 0 0 0.5rem 0;  
5 }  
6 h1.esri-widget__heading {  
7   font-size: $font-size__h1; // 20px;  
8 }  
9 h2.esri-widget__heading {  
10  font-size: $font-size__h2; // 16px;  
11 }  
12 h3.esri-widget__heading,  
13 h4.esri-widget__heading,  
14 h5.esri-widget__heading,  
15 h6.esri-widget__heading {  
16  font-size: $font-size__lt-h2; // 14px;  
17 }
```

```
const view = new SceneView({  
  container: "viewDiv",  
  map: map,  
  environment: {  
    lighting: {  
      directShadowsEnabled: true  
    }  
  }  
})
```



# Popups and the JS SDK

## Lauren Boyd

```
layers.getLayer(index)  
layer  
  console.log(layerView)  
  // If you try to interact with the layerView, you'll get an error here
```

# Resources

## How to summarize aggregate data using Arcade in popups



## Rolling out related records in Map Viewer



## Browsing related records with the ArcGIS API for JavaScript

Slides available:  
[https://links.esri.com/DS23-  
better-ux-popups](https://links.esri.com/DS23-better-ux-popups)

```
const layer = view.map.allLayers.get(0);
view.whenLayerView(layer)
  .then(layerView => console.log(`Layer loaded`))
  // if there were problems with the layer
  .catch(console.error);
```

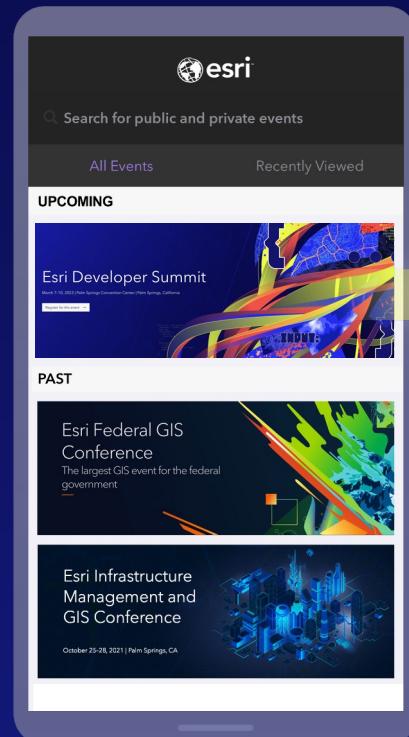
```
const view = new MapView({
  container: "viewDiv",
  map: map,
  environment: {
    lightings: {
      directShadowsEnabled: true
    }
  }
});
```

# Upcoming sessions

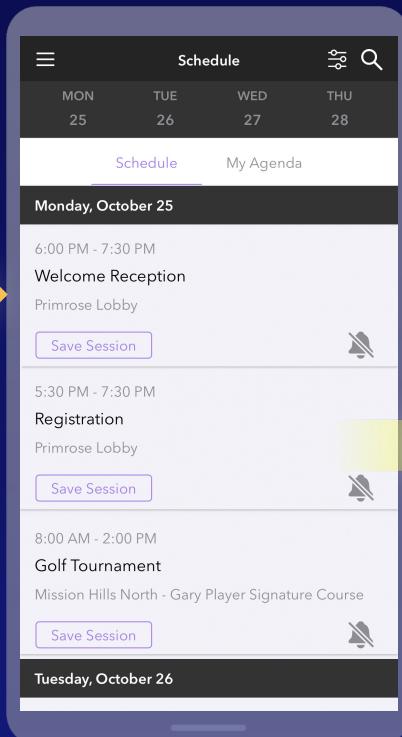
Session	Day/Time	Location
ArcGIS Maps SDK for JavaScript: Programming Patterns and API Fundamentals	Tuesday, 2:30PM – 3:30PM	Catalina   Renaissance Hotel
ArcGIS Maps SDK for JavaScript: Build a Custom UI for API Widgets	Tuesday, 2:30PM – 3:30PM	Mesquite B   PSCC
ArcGIS Maps SDK for JavaScript: Key Highlights of the Last Year	Tuesday, 5:30PM – 6:30PM	Primrose A   PSCC
ArcGIS Maps SDK for JavaScript: Data Visualization	Wednesday, 10:30PM – 11:30PM	Catalina/Madera   Renaissance Hotel
ArcGIS Online: Web Mapping with Arcade Expressions	Wednesday, 2:30PM – 3:30PM	Mojave Learning Center   Renaissance Hotel
ArcGIS Maps SDK for JavaScript: Using the FeatureLayer	Wednesday, 4:00PM-5:00PM	Catalina/Madera   Renaissance Hotel
ArcGIS Maps SDK for JavaScript: Bring in Data from Anywhere	Thursday, 10:30AM – 11:30AM	Mesquite C   PSCC
ArcGIS Maps SDK for JavaScript: Tips and Tricks for Developing and Debugging Apps	Thursday, 1:00PM – 1:30PM	Demo Theater 3: Mesquite D-E   PSCC
ArcGIS Maps SDK for JavaScript: Using Arcade with Your Apps	Thursday, 2:30PM – 3:30PM	Smoketree A-E   PSCC

# Please Share Your Feedback in the App

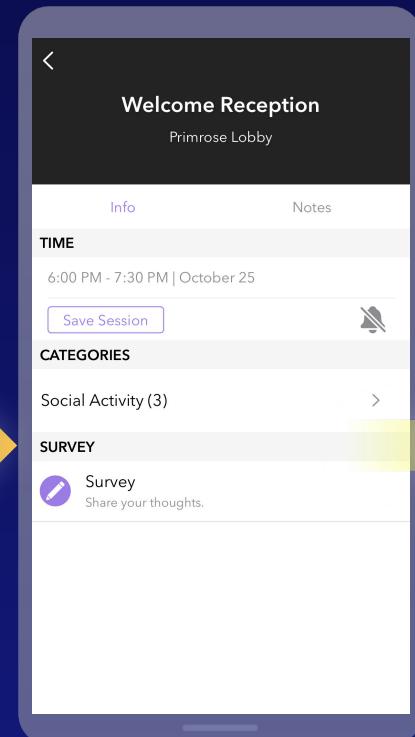
Download the Esri Events app and find your event



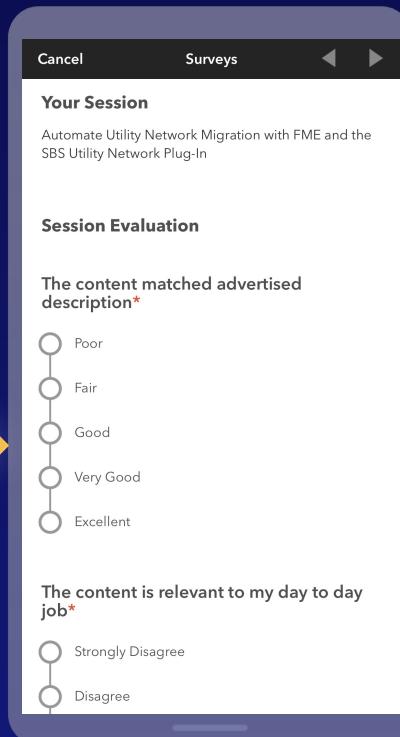
Select the session you attended



Scroll down to "Survey"



Log in to access the survey



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-  [youtube.com/@EsriDevs](https://youtube.com/@EsriDevs)
-  [links.esri.com/DevVideos](https://links.esri.com/DevVideos)
-  [github.com/Esri](https://github.com/Esri)
-  [github.com/EsriDevEvents](https://github.com/EsriDevEvents)
-  [links.esri.com/EsriDevCommunity](https://links.esri.com/EsriDevCommunity)

```
const layer = view.map.allLayers.get(0);  
view.whenLayerView(layer)  
.then(layerView => console.log(`  
// if there were problems with  
// the layer, they would appear here`))  
.catch(console.error);
```

```
const view = new MapView({  
  container: "viewContainer",  
  map: map,  
  environment: {  
    lightings: {  
      directShadowsEnabled: true  
    }  
  }  
});
```



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```
const layer = view.map.addLayer(  
  view.whenLayerView(layer)   
    .then(layerView => const  
      {  
        if (there were problems)  
          catch(console.error);  
      }  
    );  
  );
```

E/SCRIPT>

```
const view = new SceneView({  
  container: "viewDiv",  
  map: map,  
  environment: {  
    lighting: {  
      directional:  
    },  
  },  
});
```

LIVE  
BY  
THE  
CODE