



Build Using TypeScript and ArcGIS Maps SDK for JavaScript

ArcGIS Instant Apps

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2025 ESRI DEVELOPER & TECHNOLOGY SUMMIT



Introductions



Agenda

- What are Instant Apps
- Vite + React + Typescript
- Calcite Design System
- Map components
- Instant App components
- Theming & Branding
- Questions

Why are we having this session

- We use Esri's tech just like you do
 - ArcGIS Maps SDK for JavaScript
 - Calcite Design System
 - ArcGIS Online/Enterprise
 - Same upgrade challenges and frustrations
 - Building apps since 2011



What are Instant Apps?

<https://doc.arcgis.com/en/instant-apps/gallery/>

- Share maps and apps
- Purpose driven
 - View chart data
 - Explore and edit attachments
 - Find nearby locations
 - Create portfolios
 - Public Notification
 - Inset maps

The screenshot shows a web-based application interface for the ArcGIS Instant Apps gallery. At the top, there is a search bar labeled "Enter search terms" and a filter section with buttons for "List", "Relevance", and "Filter". Below this, a message indicates "Items: 134 Category: Industries X Clear All". On the left, a "Filter" sidebar lists categories with their counts: Templates(134), * Industries(134) (selected), Transportation(11), Education and Research(48), Public Safety and Emergency Management(11), Environment and Natural Resources(8), Health and Human Services(2), Oil and Gas(1), Telecommunications(1), Public Works(20), Retail(2), Real Estate(10), Insurance(1), Public Policy and Planning(39), Sciences(1), GIS and IT(3), Imagery(3), and Media and Entertainment(2). The main area displays three instant apps:

- Health Insurance Demographics of Florida**: An app card featuring a thumbnail of a person holding a tablet, with the title and a brief description: "Explore the app to learn more about the selected socioeconomic demographics of health insurance coverage of Florida at a census tract level!".
- Wastewater Management in India**: An app card featuring a thumbnail of a wastewater treatment facility, with the title and a brief description: "Explore different resources to analyze the current wastewater management conditions in different states of India."
- City of Philadelphia Disability Representation Map**: An app card featuring a thumbnail of a map, with the title and a brief description: "Through intentional collaboration with the Philadelphia CityGeo team, the United States Access Board, Esri, and residents with disabilities this map has led to uncharted exploration in how to ensure equity and accessibility for GIS products and globa...".

Create an Instant App

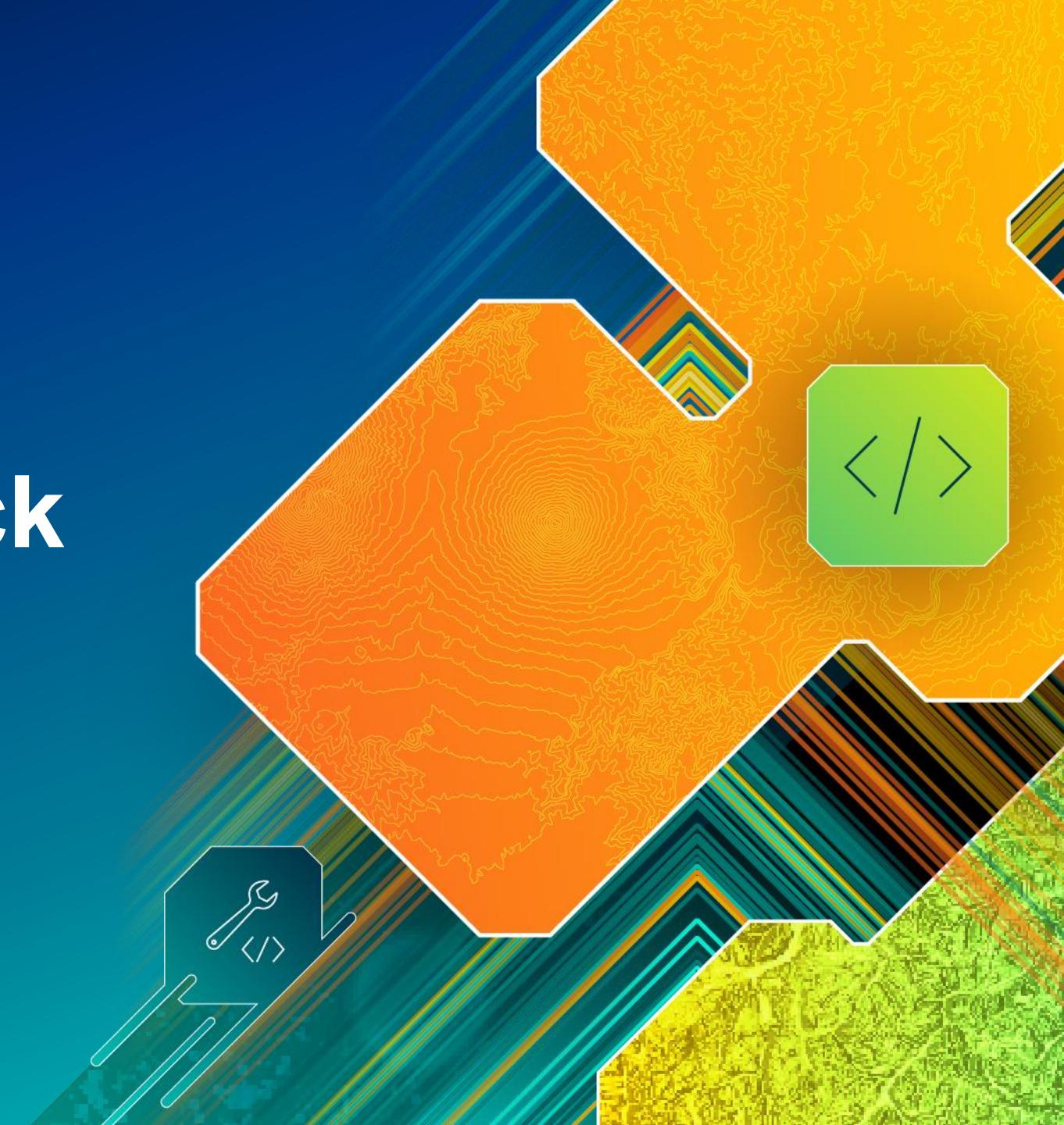
The screenshot shows the Esri Instant Apps interface. At the top, there's a navigation bar with 'Create', 'My Apps', and 'Featured' buttons, along with a search bar labeled 'Search app capabilities'. Below this is a 'Suggestions' section with a note: 'Answer a few questions so we can suggest an app for you'. A '1. What is your goal for the app?' section lists four options: 'Showcase one or more maps with essential tools' (selected), 'Allow viewers to interact with your data', 'Provide public information', and 'Display a variety of features and content types'. To the right, there are several app categories displayed as cards: '3D Viewer' (with a 3D building icon), 'Atlas' (with a map of the US icon), 'Attachment View' (with a grid icon), 'Basic' (with a map of Australia icon), 'Category Gallery' (with a collage icon), and 'Chart Viewer' (with a chart icon). Each card has 'Sample' and 'Choose' buttons.

Technology Stack

- Vite
- React
- TypeScript
- Calcite Design System
- ArcGIS Maps SDK for JavaScript
 - @arcgis/core
- Instant Apps
 - Templates Common Library
 - Instant Apps Components

Technology Stack

Ryan



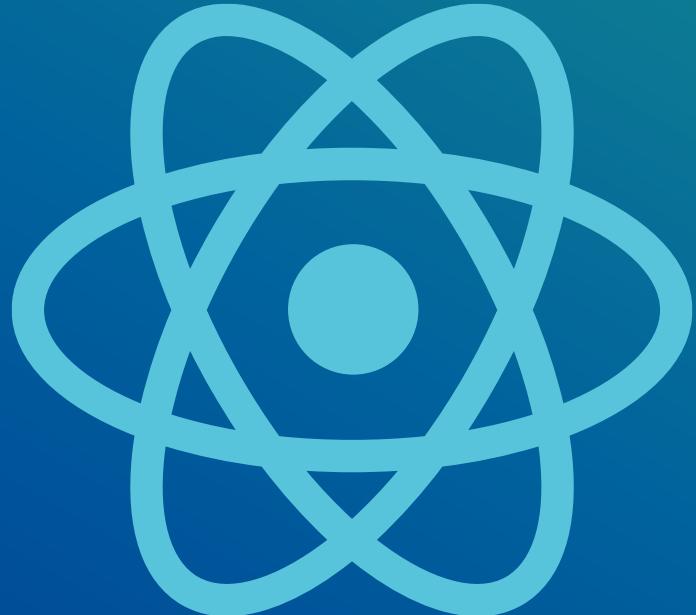
Technology Stack: Vite

- Front end tooling that provides a faster, leaner development environment
- Instant Server Start
- Speedy Web Compiler (SWC)
- Optimized Build
- CLI to scaffold projects – generate generic applications



Technology Stack: React

- Library to build web and native user interfaces
 - Component-based UI
 - Unidirectional data flow (one-way data binding)
 - Top to bottom
 - Virtual DOM
 - Copy of real DOM
 - JSX (JavaScript Syntax Extension)
 - JavaScript code in HTML-like syntax
 - Popular framework – tons of help and documentation on the web



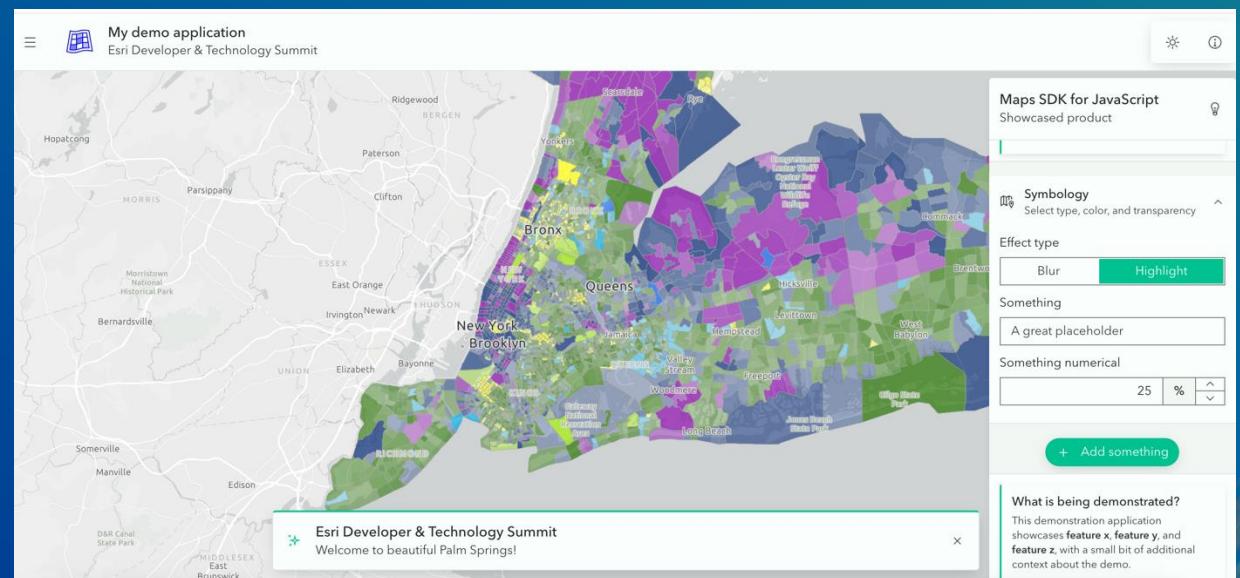
Technology Stack: TypeScript

- TypeScript is JavaScript with Syntax for types
 - Add typings to your code
 - Catch bugs sooner
 - Predictability
 - Readability
- Features
 - Static types
 - Interfaces
 - Enums

Technology Stack: Calcite Design System

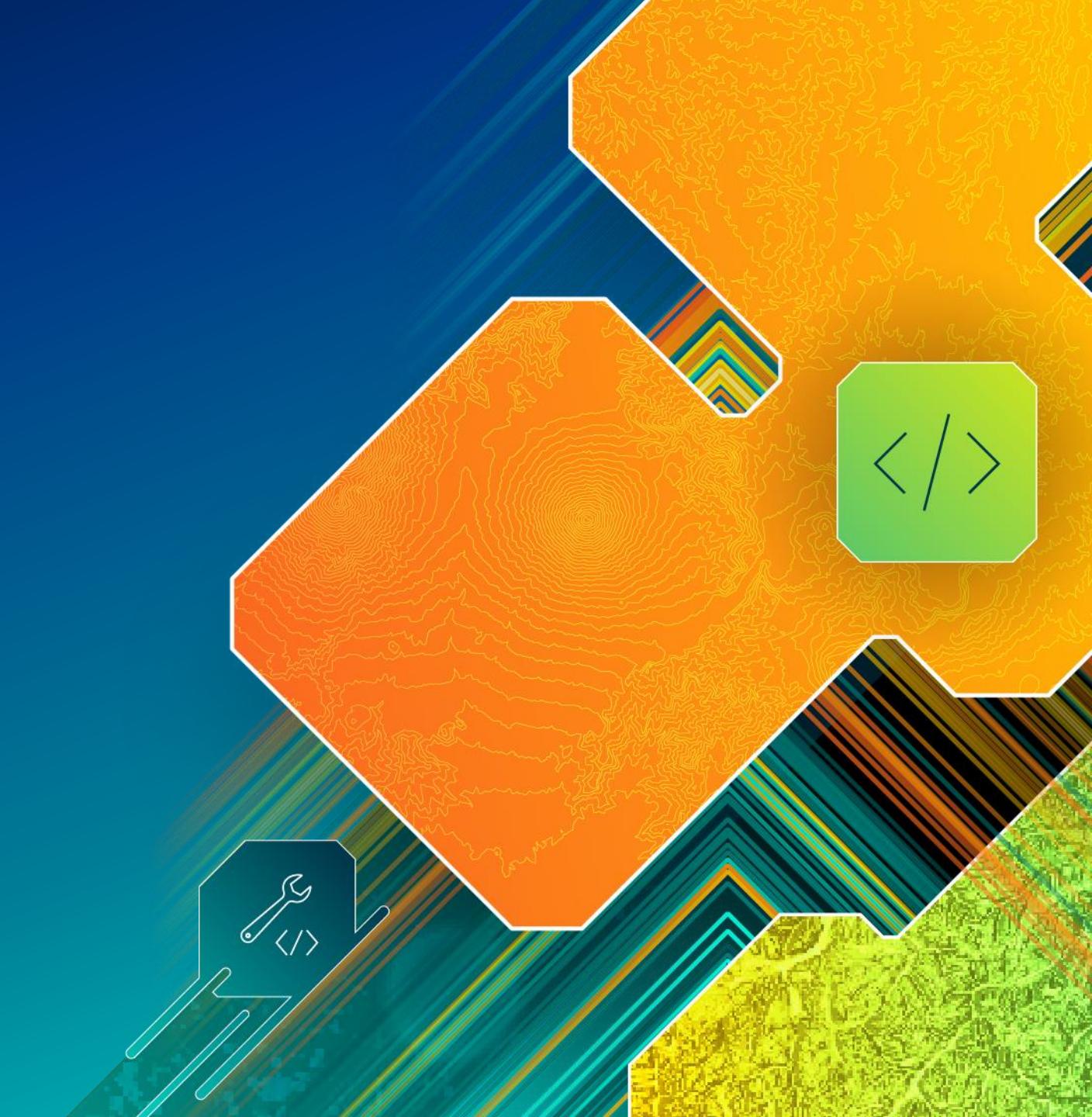
- Calcite Design System
 - Easily build beautiful consistent apps
 - Consistent UX
 - Speed up development timelines
 - Accessibility
 - Web standards
 - Framework integration

Don't reinvent the wheel, instead, focus on what's important in your app like business logic



Calcite Demo

Kelly

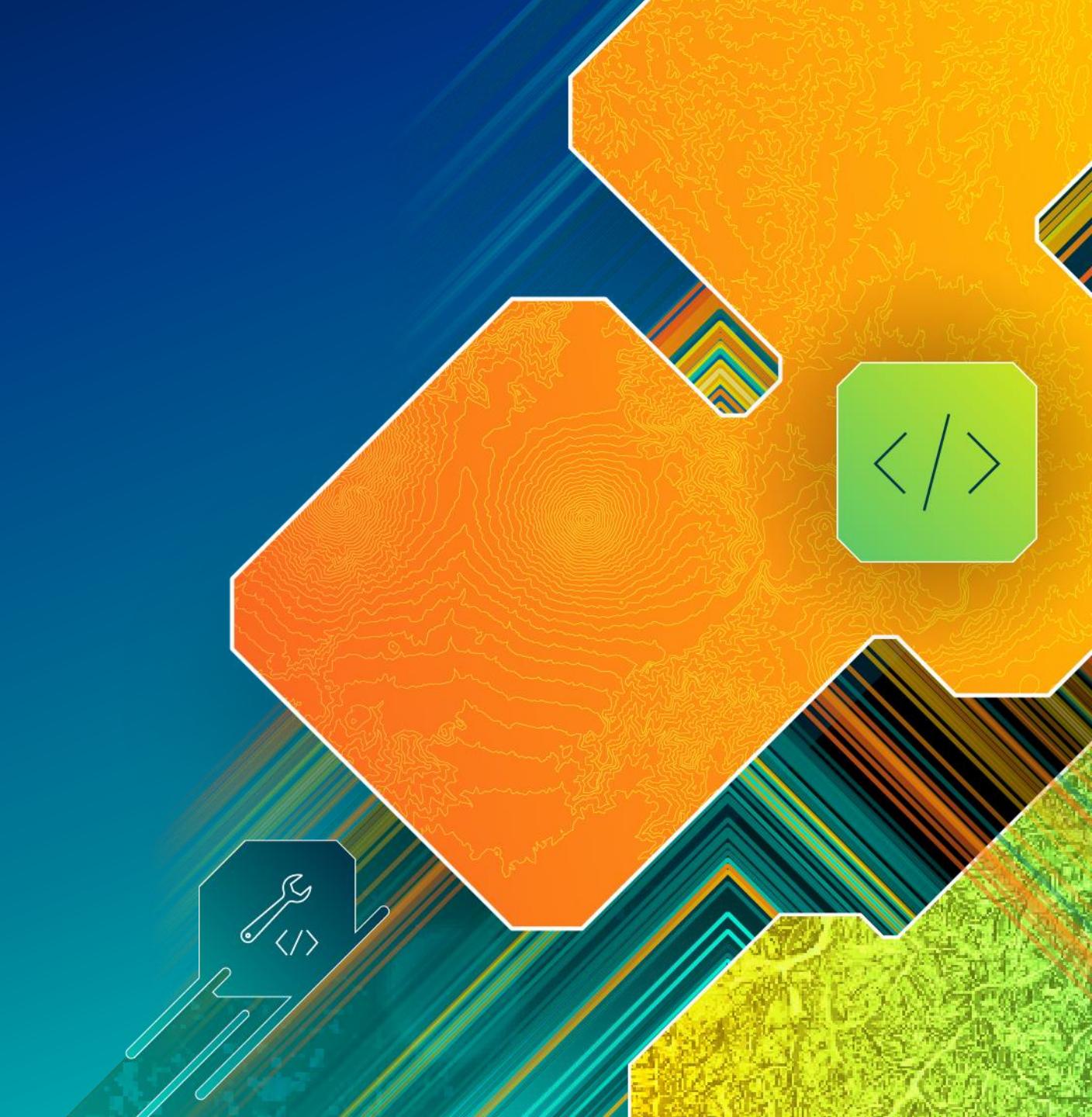


Technology Stack: Instant Apps Components

- Web components that use both Esri's Calcite Design System and functionality from the ArcGIS Maps SDK for JavaScript
- Consistent UX, easily bring into apps, framework agnostic
- Components
 - Export
 - Filter
 - Interactive Legend
 - Language Switcher
 - And more

Instant App Components

Ryan



Technology Stack: ArcGIS Maps SDK for JavaScript

- Build compelling web apps that unlock your data's potential
- 2D/3D visualizations
- 50+ out of the box widgets
 - Now available as web components in ArcGIS Maps Components
- Multiple options to bring into your app
 - CDN
 - ESM
- Well-documented
- Dedicated support
- Esri Community



Technology Stack: Templates Common Library

- Common utilities for use in Instant Apps

- Application Base

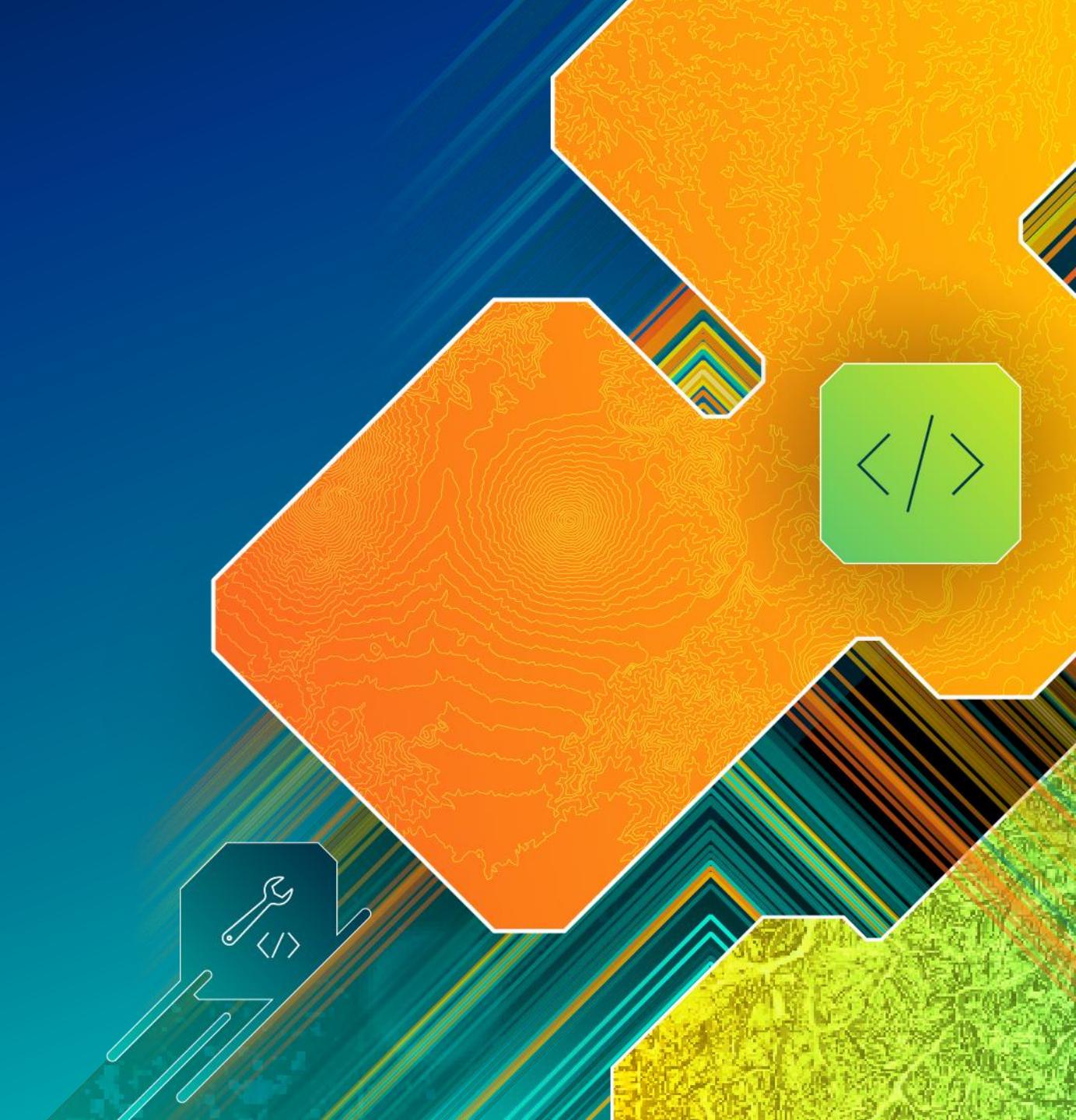
- Authentication
 - Localization
 - Sets up Portal

- Helper Classes

- Create map from item
 - Set Page Title
 - Handle URL Params

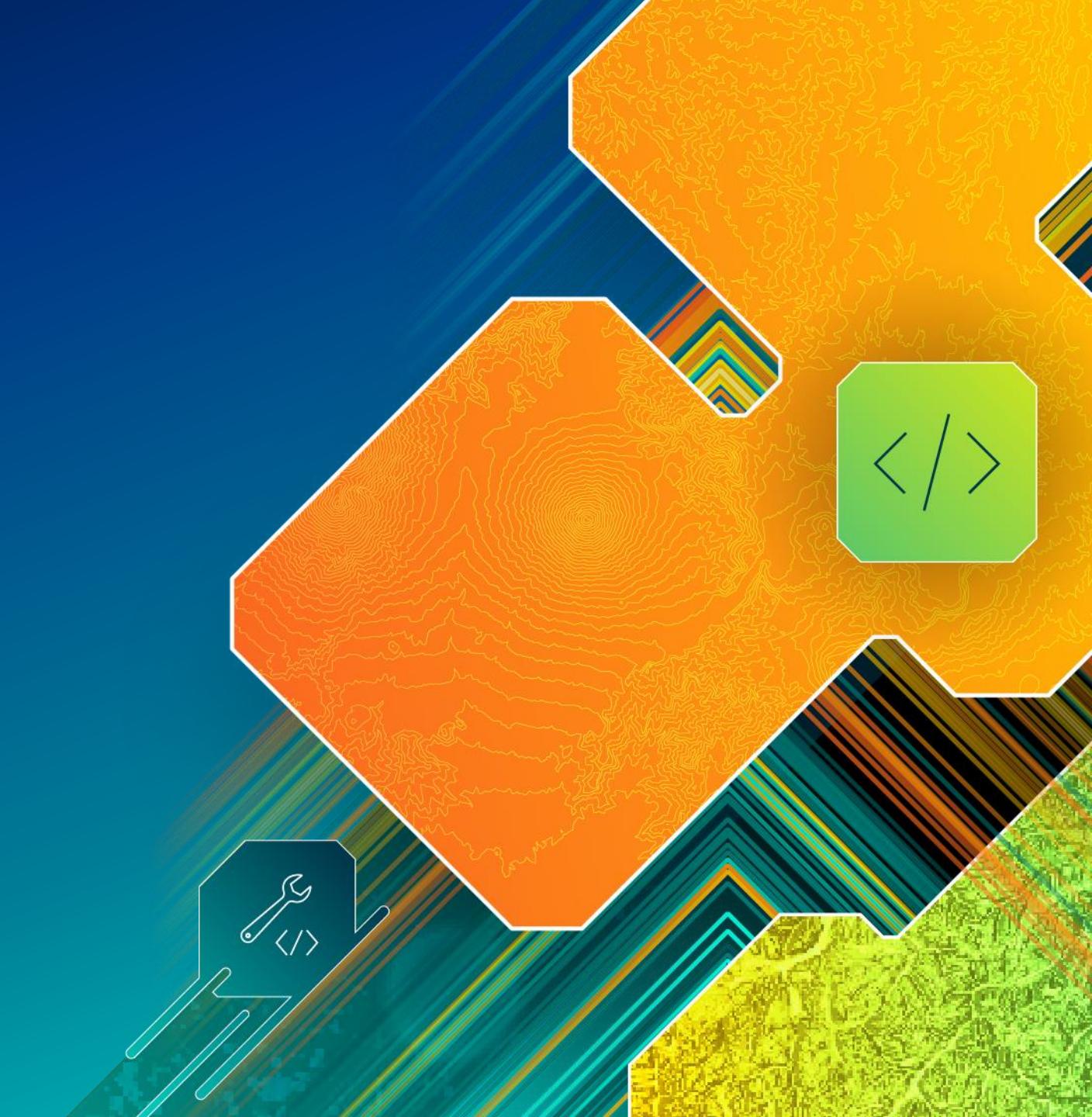
React Demo

Ryan Libed



Theming and Branding

Kelly Hutchins



Theming

- Calcite Design Tokens
- Light/Dark
- Calcite icons

Calcite Design Tokens

The screenshot shows a website navigation bar at the top with a dark blue background. The left side of the bar has the text "Calcite Design System / Foundations". To the right are five menu items: "Home", "Foundations" (which is highlighted with a purple underline), "Components", "Resources", and "Icons". Below the navigation bar is a white content area. On the left, there's a sidebar with a light gray header containing "Overview", "Accessibility", and a collapsed section "Design tokens" which is expanded to show "Token usage" (highlighted with a purple dot) and "Token reference". Below these are "Colors and theming", "Typography", and an expanded section "Iconography". The main content area has a dark blue header with the title "Token usage" in large white font. Below the header is a horizontal purple line. The first section of the content is titled "What are design tokens?" in large black font. Below it is a sub-section titled "About design tokens" in bold black font. A paragraph of text follows, explaining that design tokens encapsulate visual elements like colors and typography, and provide a solution for standardizing across diverse contexts. Another paragraph discusses the challenge of maintaining consistency and documentation in a complex ecosystem. At the bottom of the content area, there's a section titled "Benefits of design tokens" in bold black font.

Calcite Design System / Foundations

Home Foundations Components Resources Icons

Overview
Accessibility
Design tokens
Token usage
Token reference
Colors and theming
Typography
Iconography

Token usage

What are design tokens?

About design tokens

Design tokens, or tokens, encapsulate essential visual elements such as colors, typography, spacing, and more. Tokens are a powerful solution to standardizing, documenting, and reusing shared patterns. They provide design elements agnostic of a specified means, exported for each unique supported context.

In the ever-expanding global digital ecosystem, designing and maintaining user interfaces that resonate across diverse geographical, technological, and spatial contexts is a formidable task. Design systems grapple with the increasingly complex need for consistency and documentation of design decisions.

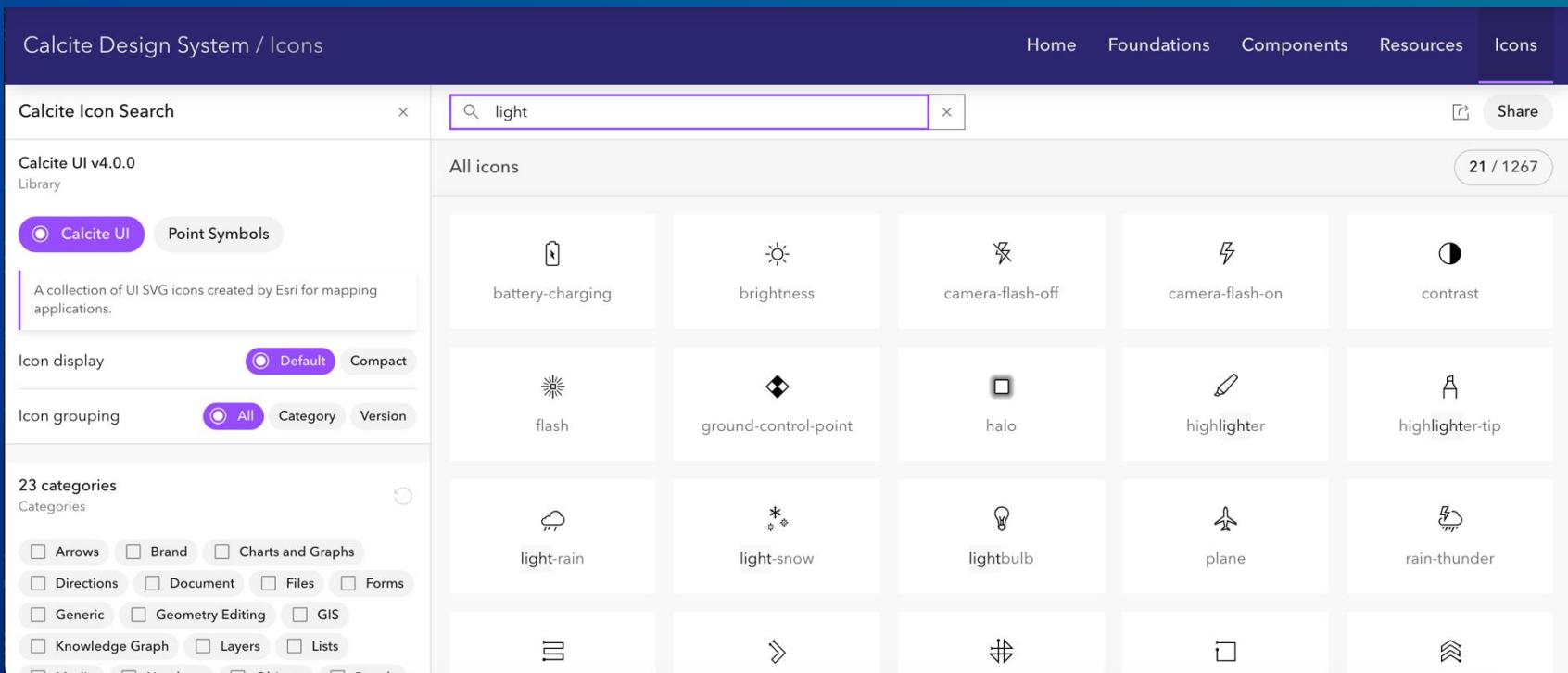
Benefits of design tokens

On this page

- What are design tokens?
- About design tokens
- Benefits of design tokens
- Types of design tokens
- Token tiers
- Semantic tokens
- Core tokens
- Component tokens
- Tokens in Figma

Was this page helpful?

Calcite Icons



Connect with us

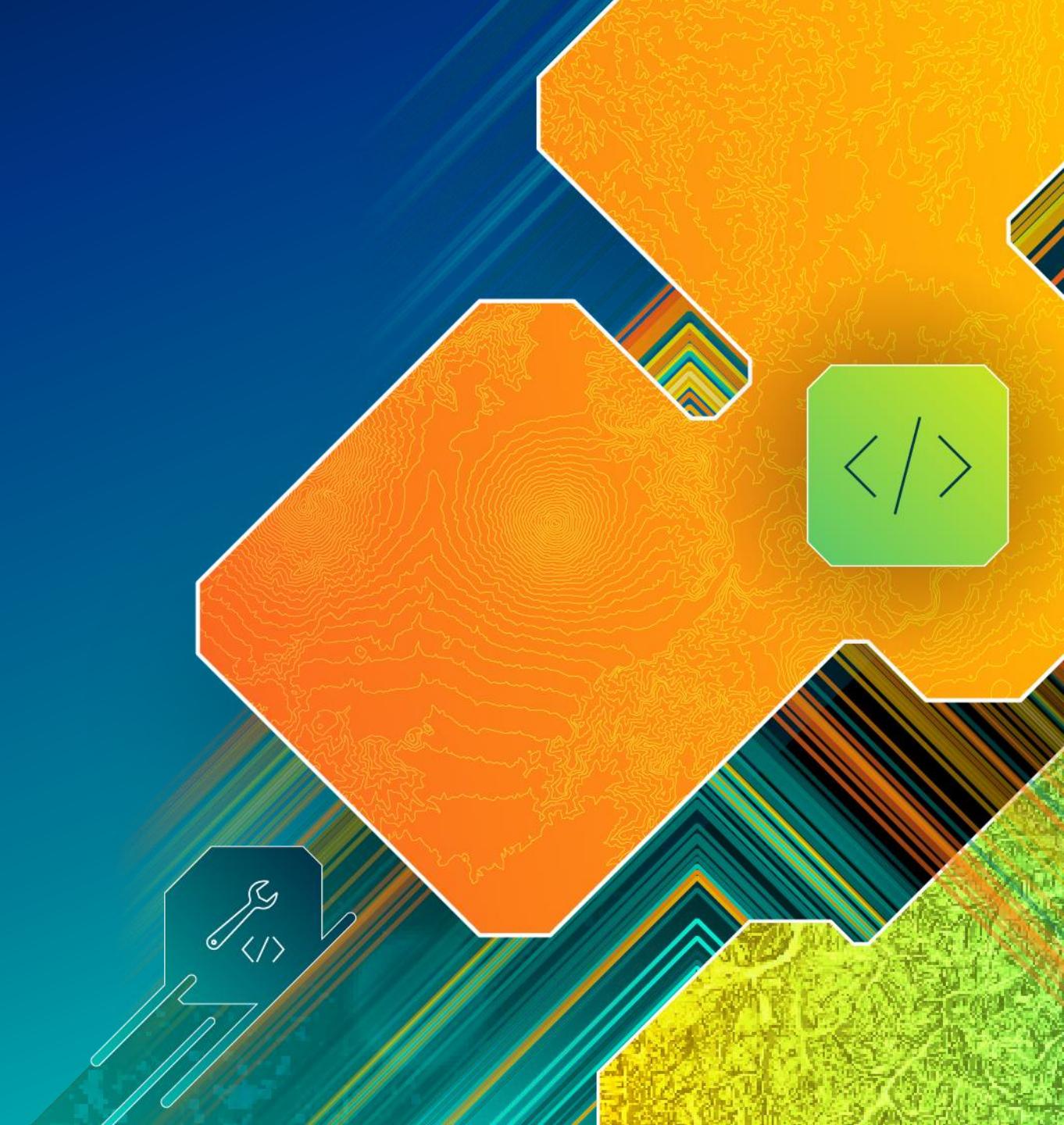
<https://community.esri.com/t5/arcgis-instant-apps/ct-p/arcgis-instant-apps>

The screenshot shows the 'Browse ArcGIS Instant Apps' section of the community page. It features a header with navigation links: Home > All Communities > Products > ArcGIS Instant Apps. There is also a 'Subscribe' button and an 'Options' menu. Below the header, there are four main categories: 'ArcGIS Instant Apps Questions', 'ArcGIS Instant Apps Blog', 'ArcGIS Instant Apps Documents', and 'ArcGIS Instant Apps Ideas'. Each category has a small preview image, a title, and some statistics (e.g., 106 posts, 3.4M views, 733 comments). The 'ArcGIS Instant Apps Ideas' category is currently selected. Below these, the 'Latest Activity' section is displayed, showing a post titled 'Instant App zoom controls disappear when viewing on a mobile device'. The post includes a description, a user profile picture, and engagement metrics (0 likes, 3 comments, 55 views). Another post, 'Instant App 'Manager' - filter layers with 'contains' operator', is partially visible below it. To the right of the activity feed, there is a 'Create A Post' button and a 'Top Collaborators' section listing two users: KellyHutchins and BethRomero.

Resources

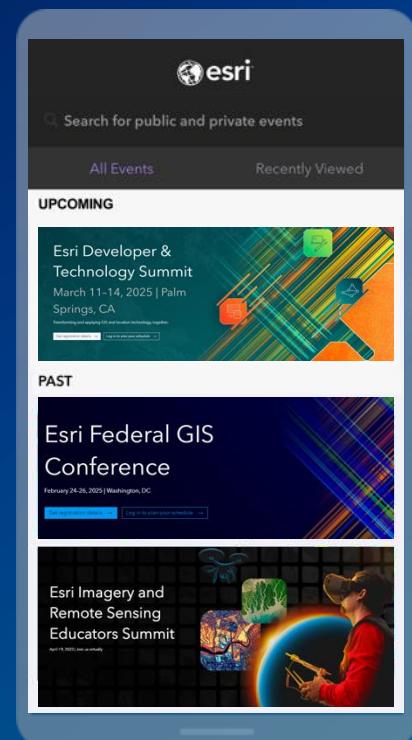
- [Vite](#)
- [React](#)
- [TypeScript](#)
- [Calcite Design System](#)
- [ArcGIS Maps SDK for JavaScript](#)
- [Templates Common Library](#)
- [Instant Apps Components](#)

Questions

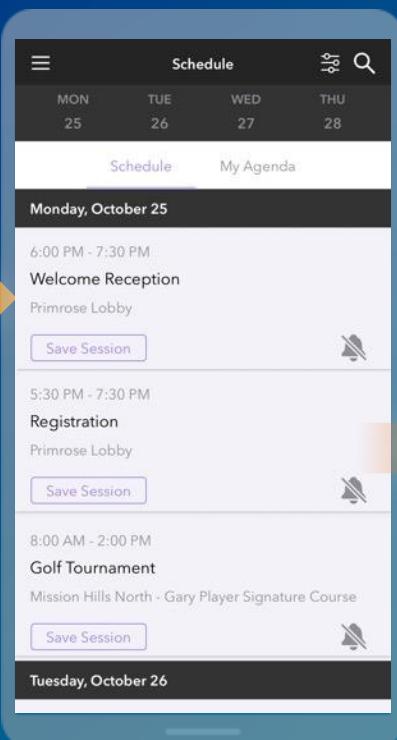


Please share your feedback in the app

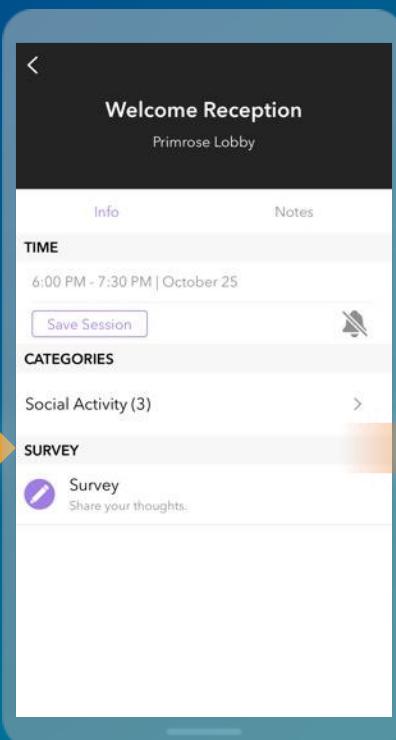
Download the Esri Events app and find your event



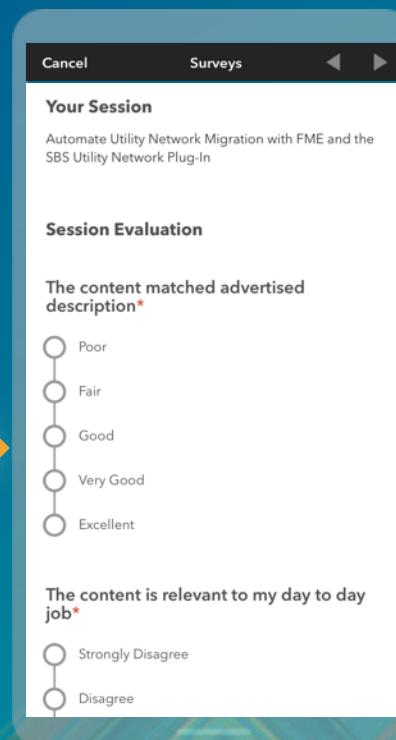
Select the session that you attended



Scroll down to "Survey"



Log in to access the survey



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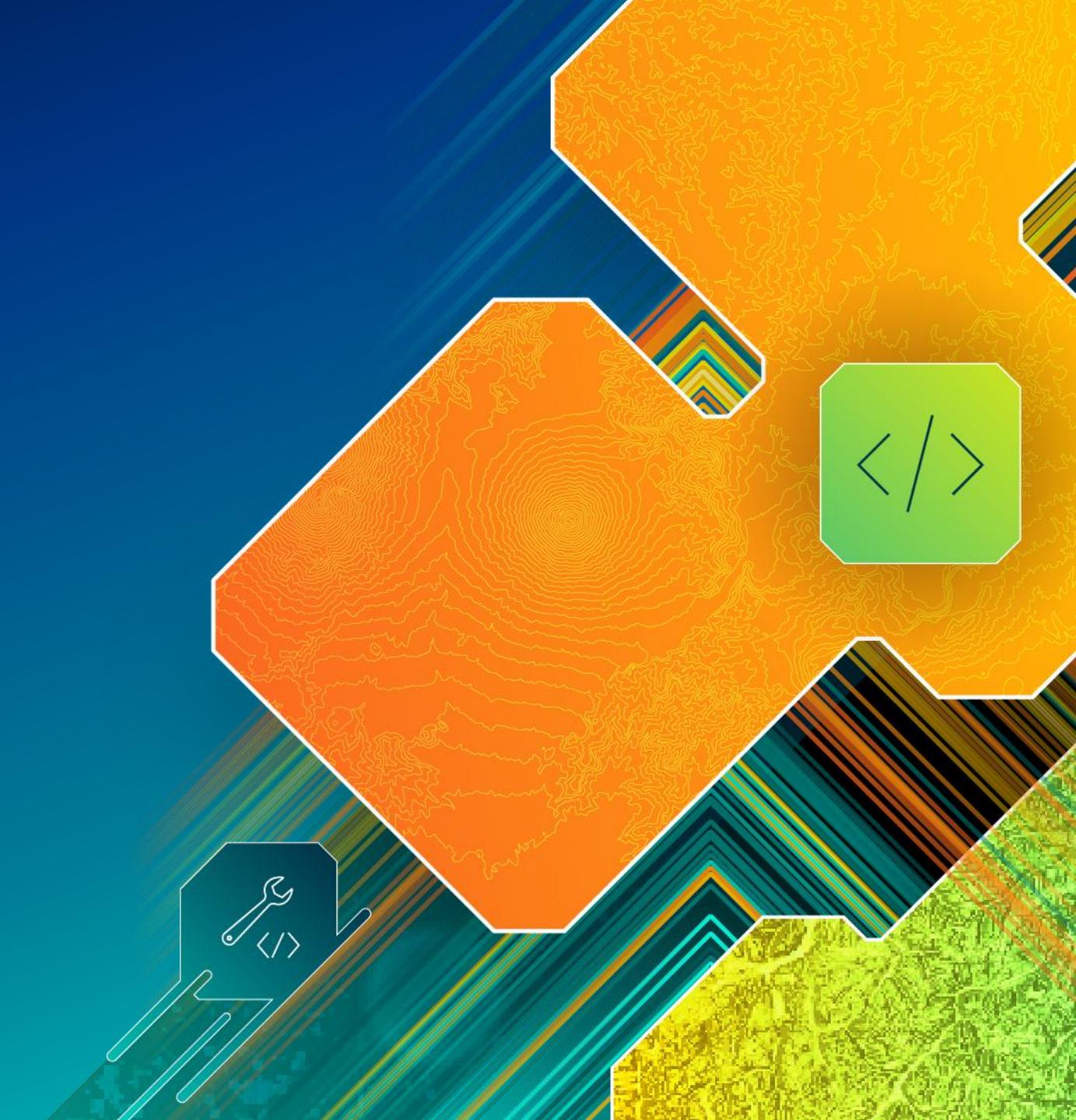
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Questions



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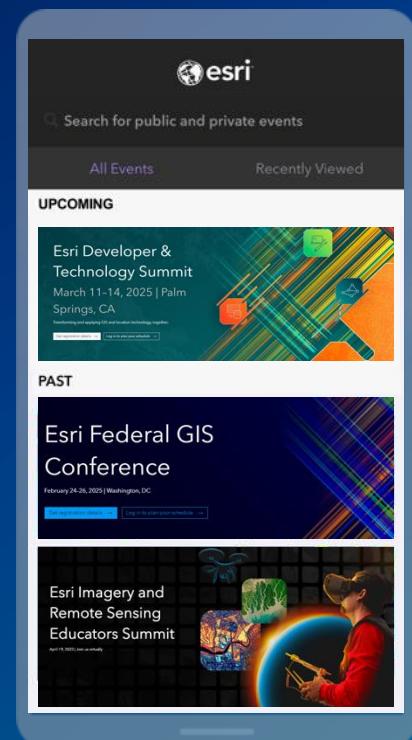


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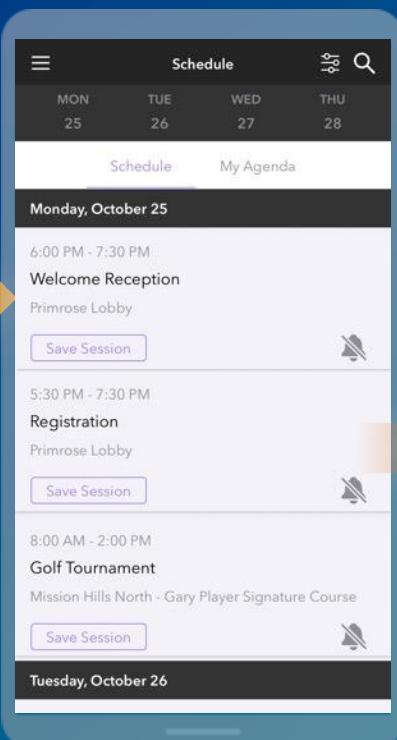


Please share your feedback in the app

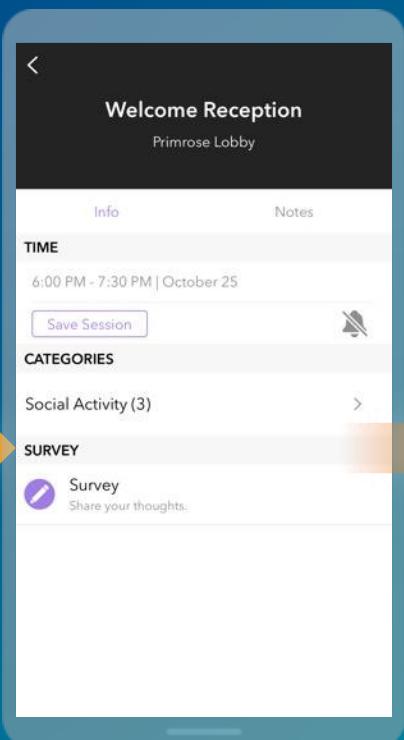
Download the Esri Events app and find your event



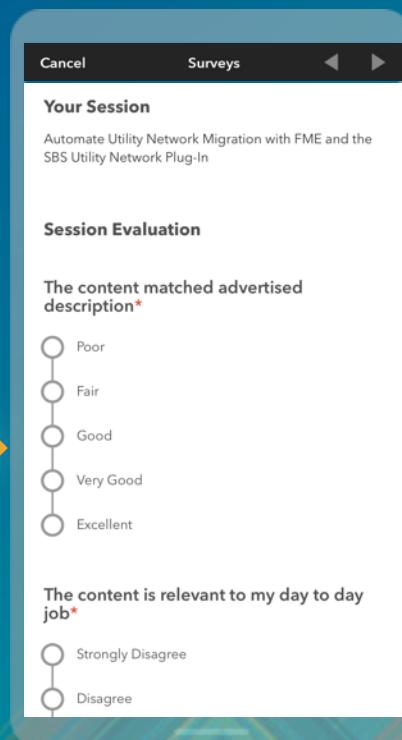
Select the session that you attended



Scroll down to "Survey"



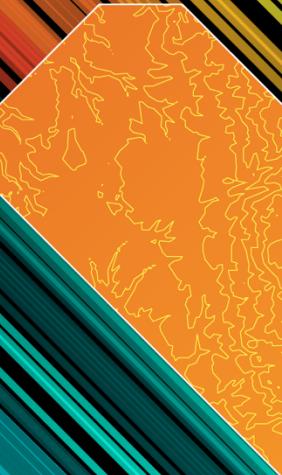
Log in to access the survey



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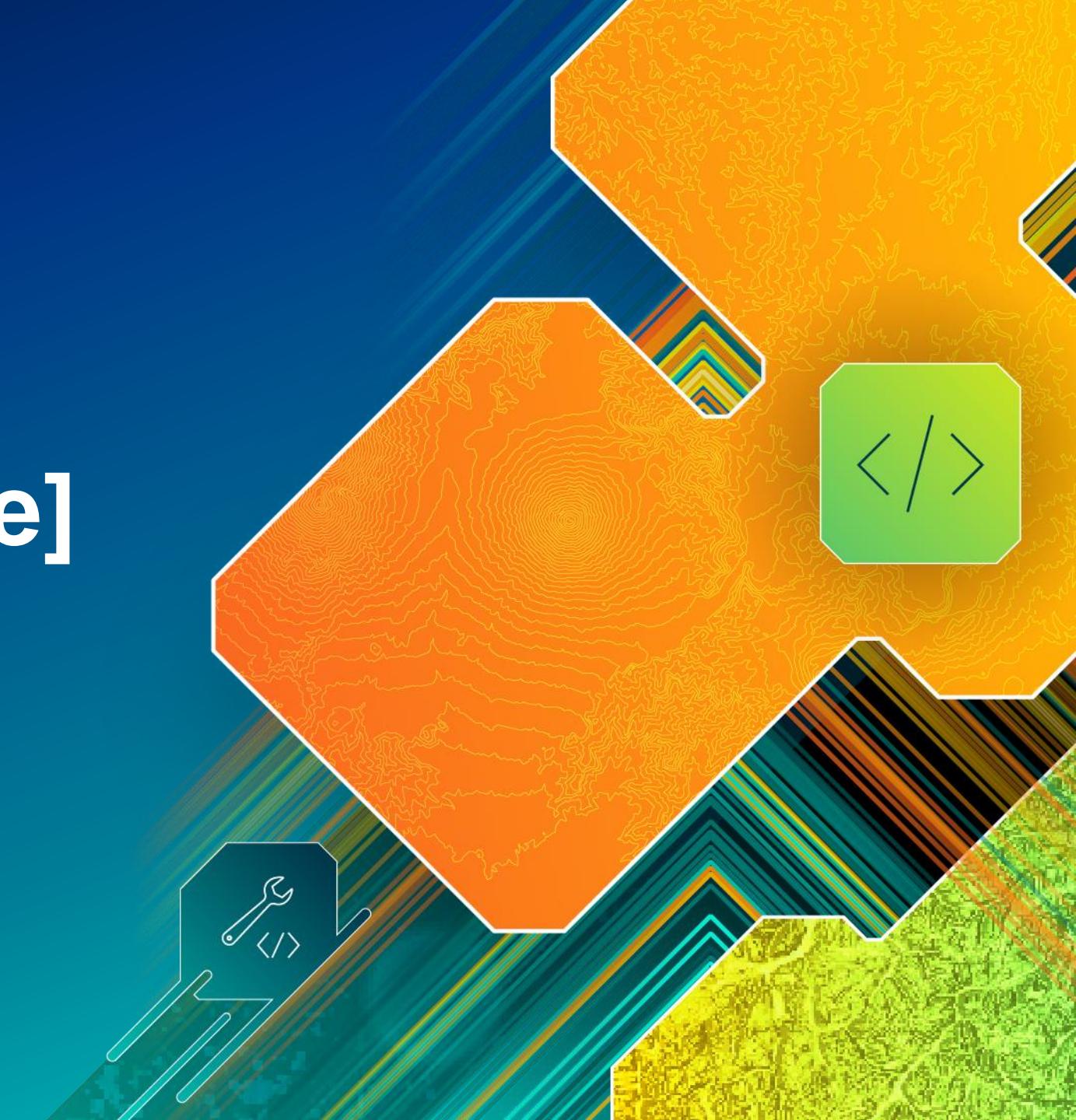
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[Add section title]



[Add topic]

- [Add subtopic]
- [Add subtopic]
- [Add subtopic]

[Add topic]

[Add big word]

[Add smaller word]

[Add “Quote”]

[Name]

Demo: [Add demo title]



What is [add product name, capability, or technology]?

- [Add simple description of product, capability, or technology]
 - [Add capability]
 - [Add capability]
 - [Add capability]

What is [add product name, capability, or technology]?

- [Add description]
- [Add description]
- [Add description]

[Add product or solution name] road map

Near-term

- [Add enhanced functionality in development]
- [Add enhanced functionality in development]

Midterm

- [Add enhanced functionality in development]
- [Add enhanced functionality in development]

Long-term

- [Add enhanced functionality in development]
- [Add enhanced functionality in development]

[Add product name] vision and strategy

- [Add subtopic]
- [Add subtopic]
- [Add subtopic]

What is [add feature]?

- [Add simple description of application or solution type]
 - [Add capability]
 - [Add capability]
 - [Add capability]

[Add topic]

Currently available	Changes coming
<ul style="list-style-type: none">• [Add existing functionality A]• [Add existing functionality B]	<ul style="list-style-type: none">• [Add enhanced functionality A in development]• [Add enhanced functionality B in development]

[Add topic]

Currently available

[Replace with visual of existing functionality]

[Add optional caption]

Changes coming

[Replace with visual of enhanced functionality]

[Add optional caption]

[Add product or solution name] road map

Near-term

- [Add enhanced functionality in development]
- [Add enhanced functionality in development]

Midterm

- [Add enhanced functionality in development]
- [Add enhanced functionality in development]

Long-term

- [Add enhanced functionality in development]
- [Add enhanced functionality in development]

[Add product name] release schedule



What is [add product name]?

- [Add simple description of application or solution type]
 - [Add capability]
 - [Add capability]
 - [Add capability]

Highlights

- [Add highlight]
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- [Add highlight]

[Add product name] release schedule

