

# App Configuration, Customization, or Development

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# Agenda

- Overview of App Implementation Options
- Gathering Requirements
- Configurable Options
- Advanced Configuration
- Adding Custom Code
- Develop from Scratch

# Configure

Use COTS templates

Fast time to market

Great for rapid prototyping

No developer experience needed

# Customize

Extend templates with custom code

Higher starting point

Great when COTS meets most of the req.

Provides foundation for novice developers

# Develop

Code from scratch using the Esri APIs

Unique/Branded UI/UX

Great for orgs with access to developers

Deep development experience required

Configuration

Custom Development



# Where Do I Start?

How to ask the right questions



# Gathering Requirements

“Measure twice, cut once”

- Work with sponsor, stakeholders, users, IT
- Focus on the requirements not the solution
- Types of requirements
  - Business
    - High-level vision statements
  - Functional
    - What the application should do (from a user perspective)
  - Non-functional
    - How the application does it (usability, security, performance, etc.)
- Prioritize!



How the customer explained it



How the project leader understood it



How the analyst designed it



How the programmer wrote it



How the business consultant described it



What the customer really needed



# ArcGIS Apps

Templates and other COTS apps



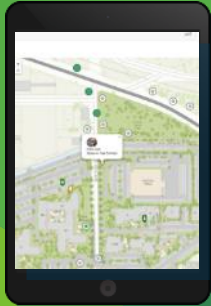
# ArcGIS Apps

## Field

Navigator



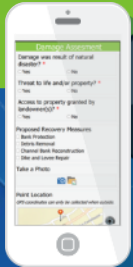
Workforce



Collector

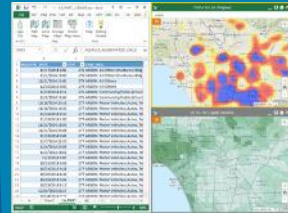


Survey123



## Office

Maps for Office



Dashboard



ArcGIS Earth



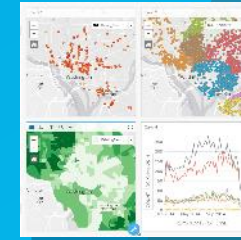
Drone2Map



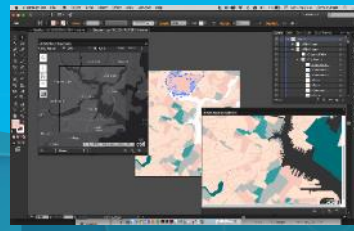
Explorer



Insights



Adobe Creative Cloud



## Community

Open Data



Story Maps



Crowdsourcing

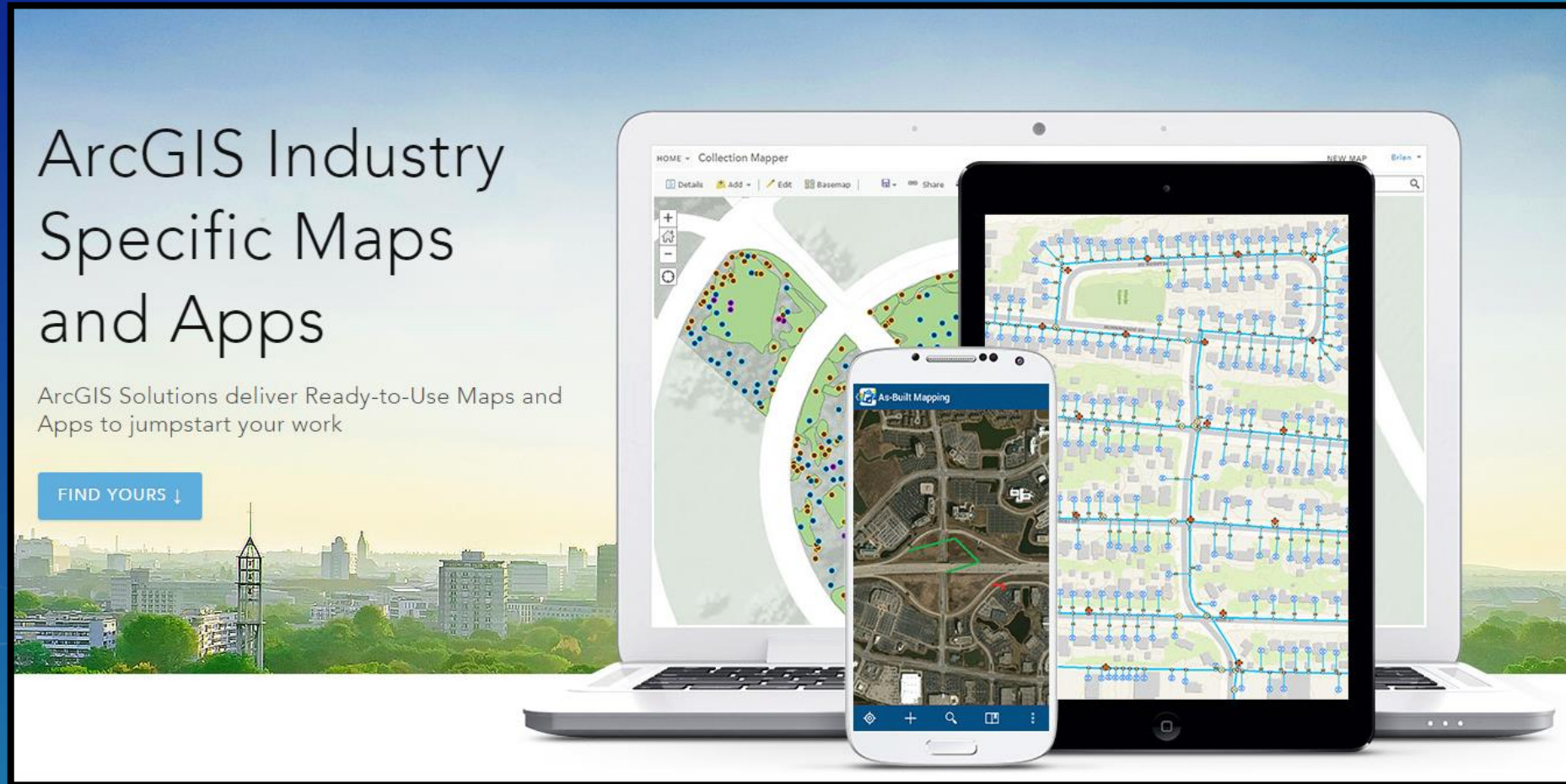


Easy, Powerful, and Ready-to-Use

<https://www.arcgis.com/features/apps/index.html>



# Solution Offerings



ArcGIS Industry  
Specific Maps  
and Apps

ArcGIS Solutions deliver Ready-to-Use Maps and Apps to jumpstart your work

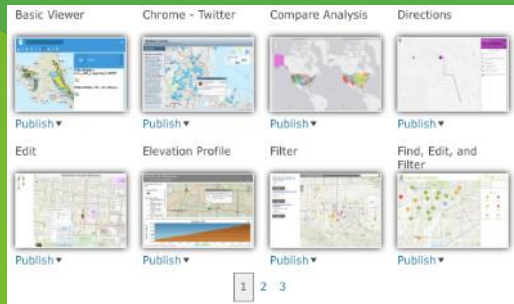
FIND YOURS ↓

The banner features a background image of a city skyline. In the foreground, there are three devices displaying ArcGIS maps: a laptop on the left showing a map with colored dots, a tablet in the center showing a map with blue lines and dots, and a smartphone on the right showing a map with a green line. The laptop screen also displays the 'Collection Mapper' interface with options like 'Details', 'Add', 'Edit', 'Basemap', and 'Share'.



# App Builders

## Configurable Apps



# Web AppBuilder



## Widgets

# AppStudio



(Apple, Android, Windows, Linux)

# HTML5/JavaScript

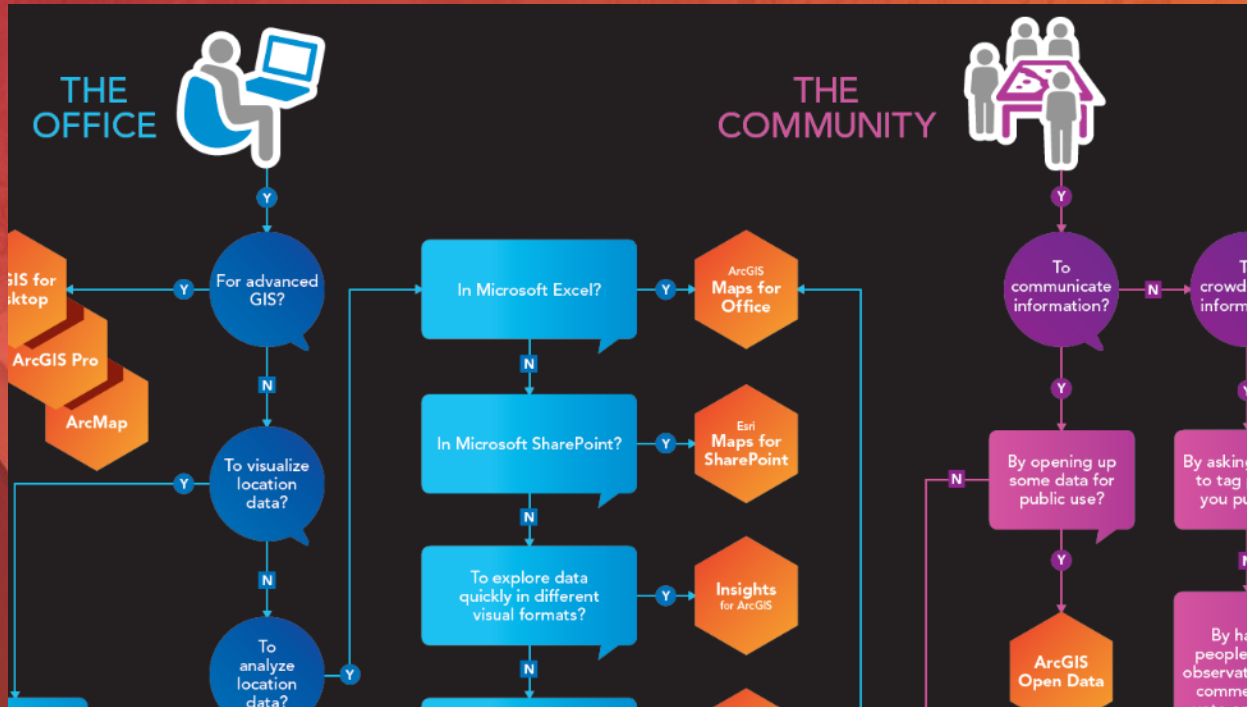
## Native Apps

## Providing Easy, Configurable, and Extensible Tools

<https://www.arcgis.com/features/apps/index.html>

# ArcGIS Apps Flowchart

<https://goo.gl/WXepiK>





# Additional Considerations

Tips and tricks for selecting the right ArcGIS App



# How Will Users Access My App?



## Considerations

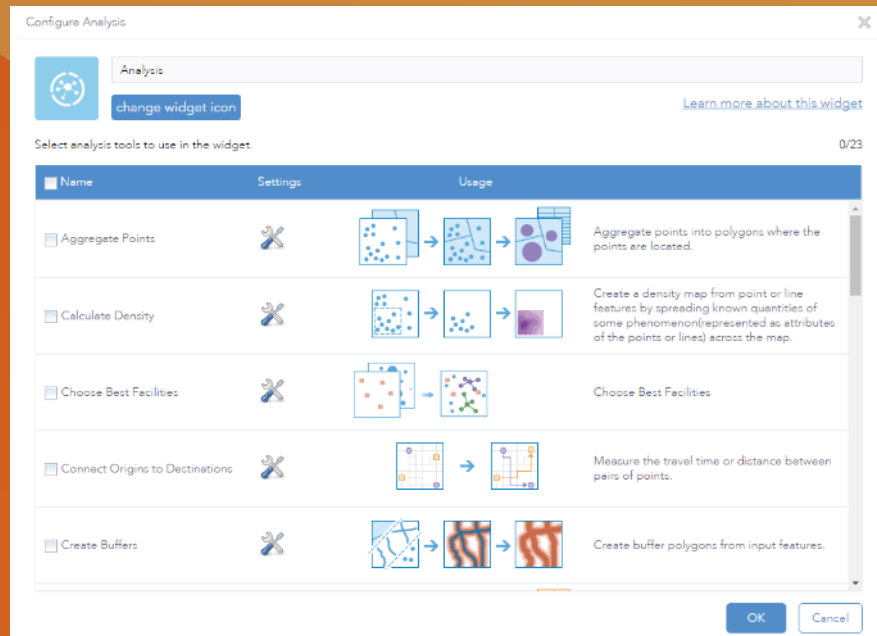
- Native vs. browser
- User experience - Responsive design
- Device compatibility
- Offline capabilities

## Recommendations

- Most ArcGIS Online/Enterprise apps and Story Maps are responsive
- Think about using multiple apps (each intended for a specific device and use case) sourced from the same web map



# Will I Need to Perform Analyses?



## Considerations

- Review COTS widgets first
- **MOST** configurable apps cannot ingest custom GP services

## Recommendations

- **Web AppBuilder**
  - Exposes analysis capabilities found in ArcGIS Online/Enterprise
  - Includes a GP widget that takes a GP service REST URL as a parameter

# Will Users be Editing Data?



## Considerations

- Map vs. form-centric data entry
- Offline capabilities
- Related records support
- Creating vs. updating data
- Is anonymous access required?
- Smart forms

## Recommendations

- Collector for native, offline, editing of related records, map centric workflows
- GeoForm for browser based, form-centric workflows, anonymous access
- Survey123 for native, offline, form-centric collection



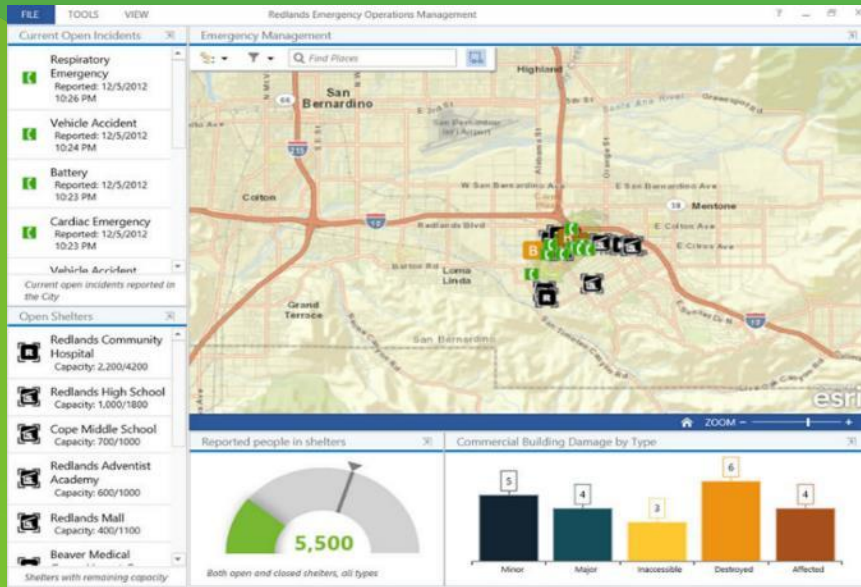
# Will My Users Need to View Dashboards?

## Considerations

- Widgets – charts, gauges, etc.
  - Do widgets need to be dynamic?
- Integrating other media – images, videos, documents, etc.

## Recommendations

- Operations Dashboard for configuring widget-driven dashboards
- Map Journal Story Map template for synthesizing data, maps, and other media
- NEW Web AppBuilder dashboard theme



# Do I Need to Display 3D Data?



## Considerations

- Use case – viewer, compare, larger story
- What widgets are needed?

## Recommendations

- Web AppBuilder
- Map Journal, Cascade, or Map Series Story Maps templates
- 3D Data Visualization, Compare Scenes, Simple Scene Viewer templates in ArcGIS Online/Enterprise



# Where Will I Host My App?



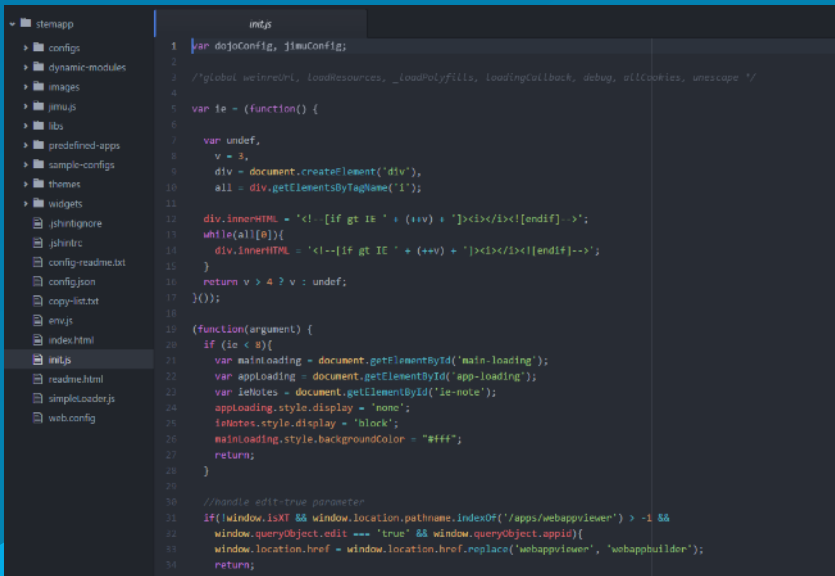
## Considerations

- Web apps require a web server
  - ArcGIS Online vs. local
- Native apps will live on devices

## Recommendations

- All ArcGIS Online/Enterprise templates can be hosted in your org subscription
- Most LGIM-based app templates require a local web server
- Any customizations to app code will require a local web server

# Do I Anticipate Customization?



```
1 var dojoConfig, jimaConfig;
2
3 /*global weinre:1, loadResources, _loadPolyfills, loadingCallback, debug, willCookies, unescape */
4
5 var ie = (function() {
6
7     var undef,
8         v = 3,
9         div = document.createElement('div'),
10         all = div.getElementsByTagName('I');
11
12     div.innerHTML = '<!--[if gt IE ' + (++v) + ']><!--></[endif]>';
13     while(all[0]){
14         div.innerHTML = '<!--[if gt IE ' + (++v) + ']><!--></[endif]>-->';
15     }
16     return v > 4 ? v : undef;
17 }());
18
19 (function(argument) {
20     if (ie < 8){
21         var mainLoading = document.getElementById('main-loading');
22         var appLoading = document.getElementById('app-loading');
23         var ieNotes = document.getElementById('ie-note');
24         appLoading.style.display = 'none';
25         ieNotes.style.display = 'block';
26         mainLoading.style.backgroundColor = "#fff";
27         return;
28     }
29
30     //handle edit-true parameter
31     if(!window.isXt && window.location.pathname.indexOf('/apps/webappviewer') > -1 &&
32         window.queryObject.edit === 'true' && window.queryObject.appid){
33         window.location.href = window.location.href.replace('webappviewer', 'webappbuilder');
34         return;
35     }
36 }
```

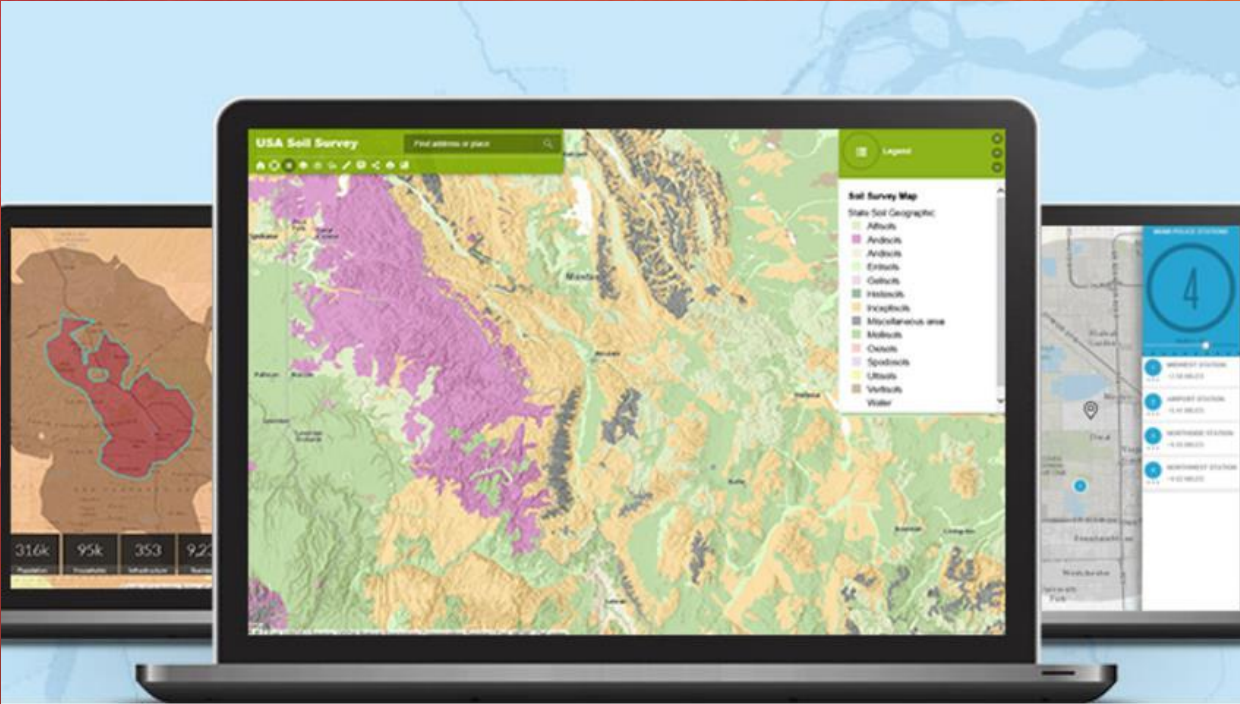
## Considerations

- Select apps whose source code is accessible
- Ensure access to a hosting web server

## Recommendations

- Developer Editions of Web AppBuilder or AppStudio
- All ArcGIS Online/Enterprise apps, Story Maps, and Survey123
- Download source code BEFORE configuring



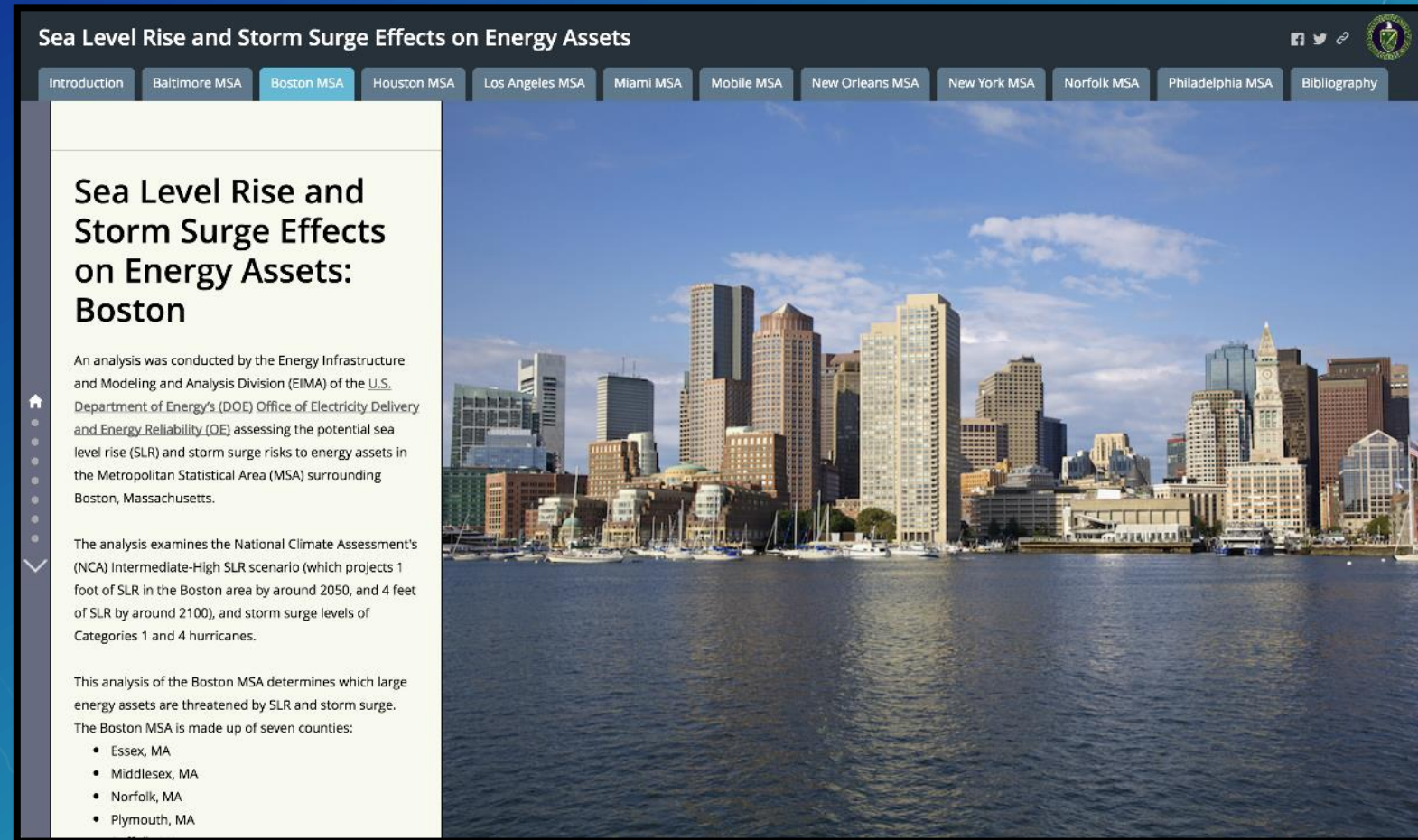


# Configurable Apps

# Advanced Configuration

Taking it to the next level...

Consider combining several configured web apps into one app





# Advanced Configuration

Taking it to the next level...

**Add HTML, JavaScript, or other components during configuration**



<https://developerscorner.storymaps.arcgis.com/>

# Customization or Development

What if I need more?





# When Configuration Isn't Enough

## Extend ArcGIS Apps with custom code

- Source code for many apps available for download from GitHub and ArcGIS Online
- Developer's site provides documentation and sample code
- GeoNet a good resource for custom widgets and other components
- Keep in mind...
  - A web server may be required
  - You will need someone who is comfortable in reading/developing code

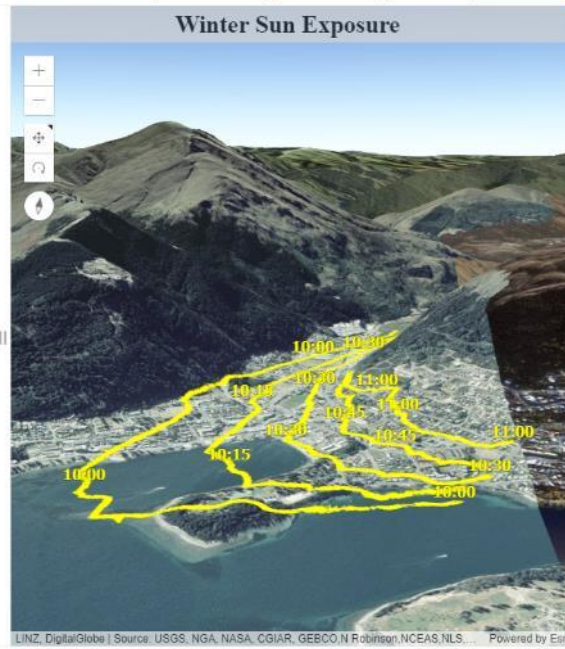


<https://developers.arcgis.com>



# Custom Code Resources

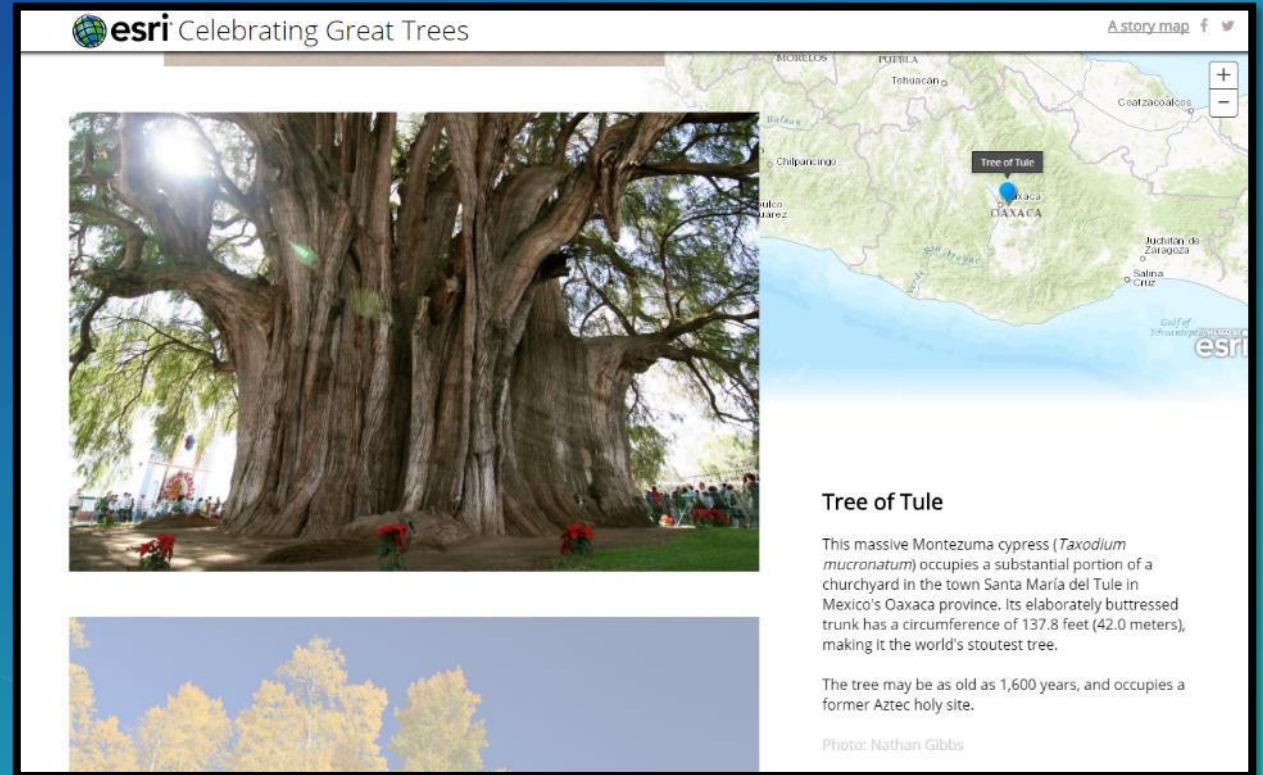
```
HTML Output
1 <!DOCTYPE html>
2 <html>
3 <head>
4   <meta charset="utf-8">
5   <meta name="viewport" content="initial-scale=1,maximum-scale=1,user-scalable=no">
6   <title>Load a basic web scene - 4.3</title>
7
8   <link rel="stylesheet" href="https://js.arcgis.com/4.3/esri/css/main.css">
9   <script src="https://js.arcgis.com/4.3/"></script>
10
11 <script>
12   require([
13     "esri/views/SceneView",
14     "esri/WebScene",
15     "dojo/dom",
16     "dojo/domReady!"
17   ], function(
18     SceneView, WebScene, dom
19   ) {
20
21     var titleDiv = dom.byId("titleDiv");
22
23     /*
24      * Creates a new WebScene instance. A WebScene must reference
25      * a PortalItem ID that represents a WebScene saved to
26      * arcgis.com or an on-premise portal.
27      *
28      * To load a WebScene from an on-premise portal, set the portal
29      * url in esriConfig.portalUrl.
30      */
31     var scene = new WebScene({
32       portalItem: { // autocasts as new PortalItem()
33         id: "3a9976baef9240ab8645ee25c7e9c096"
34       }
35     });
36
37     /*
38      * Set the WebScene instance to the map property in a SceneView.
39      */
40     var view = new SceneView({
41       map: scene,
42       container: "viewDiv",
43       padding: {
44         top: 40
```



# Developing from Scratch

## Benefits to building an app from the ground up

- Choose the programming language that works for you
- Full control over UI/UX
  - Great for branding purposes
- No need to work in someone else's code
- Build only the features that you need
  - Full control over implementing specific workflows/capabilities
- More interesting for developers!





# Developing from Scratch

Web APIs

ArcGIS Web API / JavaScript API / 4.3

## ArcGIS API for JavaScript



<https://developers.arcgis.com/web-api/>



# Developing from Scratch

## Runtime SDKs

### Android

Develop native mapping apps for Android devices with ArcGIS Runtime SDK for Android.

- [Get Started](#)
- [Guide](#)

### iOS

Create mapping apps for Apple iPhone, iPad, and iPod touch devices with ArcGIS Runtime SDK for iOS.

- [Get Started](#)
- [Guide](#)

### Java

Build and deploy to Windows, Linux, and macOS platforms with ArcGIS Runtime SDK for Java.

- [Get Started](#)
- [Guide](#)

### macOS

Build Cocoa mapping apps for Macs using ArcGIS Runtime SDK for macOS.

- [Get Started](#)
- [Guide](#)

### .NET

Deploy apps to Windows, Android, and iOS with ArcGIS Runtime SDK for .NET.

- [Get Started](#)
- [Guide](#)

### Qt

Write once and deploy to Windows, Linux, Android, and iOS with ArcGIS Runtime SDK for Qt.

- [Get Started](#)
- [Guide](#)

# Additional Resources

- UC Sessions

- How to Collect and Manage Requirements for Successful GIS Projects
  - Thursday, July 13, 10:15am Room 32A
- ArcGIS Apps: Selecting the Right Apps for Your Organization

- Esri Showcase

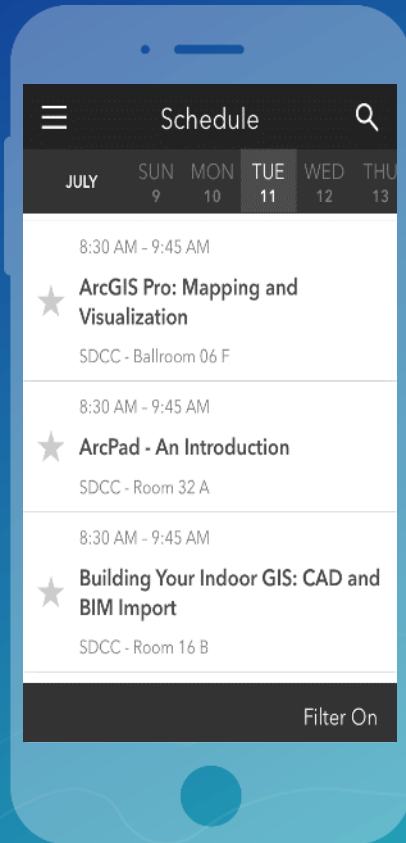
- ArcGIS Apps
- Esri Services

# Please Take Our Survey on the Esri Events App!

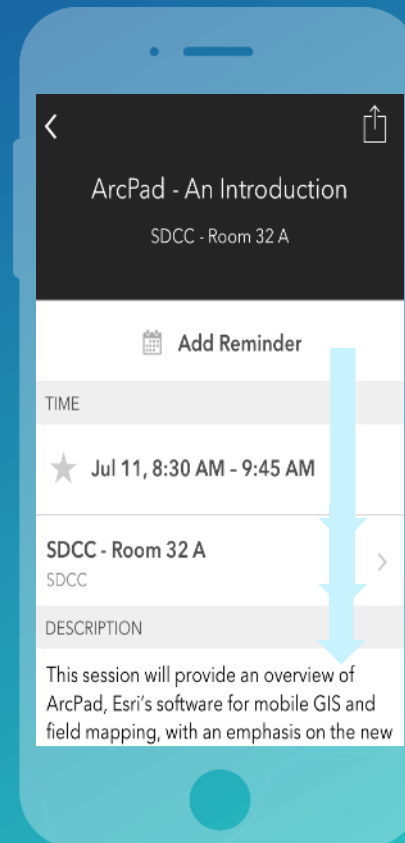
**Download the Esri Events app and find your event**



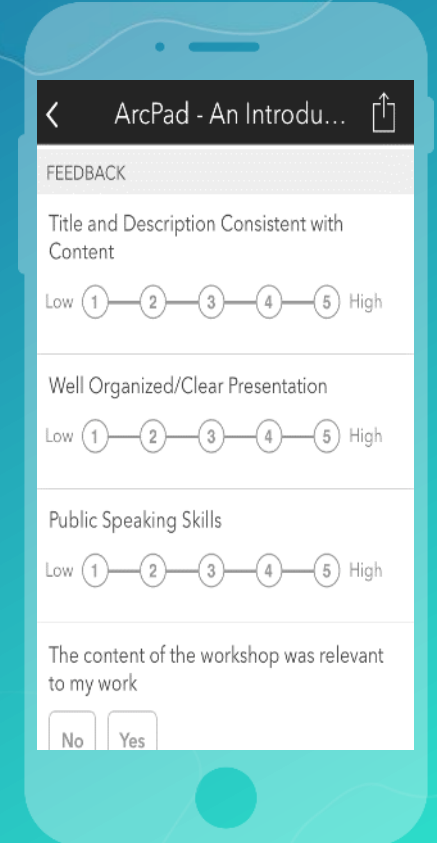
**Select the session you attended**



**Scroll down to find the survey**



**Complete Answers and Select "Submit"**





# Thank you!

## Any Questions?

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esri

THE  
SCIENCE  
OF  
WHERE