App Configuration, Customization, or Development

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• 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
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!
ArcGIS Apps
Templates and other COTS apps
ArcGIS Apps

**Field**
- Navigator
- Workforce
- Collector
- Survey123

**Office**
- Maps for Office
- Dashboard
- ArcGIS Earth
- Drone2Map
- Explorer
- Adobe Creative Cloud
- Insights

**Community**
- Story Maps
- Open Data
- 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

http://solutions.arcgis.com
App Builders

Configurable Apps

- 20+
- HTML5/JavaScript

Web AppBuilder

- Widgets

AppStudio

- Native Apps

Providing Easy, Configurable, and Extensible Tools

https://www.arcgis.com/features/apps/index.html
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?

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

Sea Level Rise and Storm Surge Effects on Energy Assets: Boston

An analysis was conducted by the Energy Infrastructure and Modeling and Analysis Division (EIMA) of the U.S. Department of Energy's Office of Electricity Delivery and Energy Reliability (OED) assessing the potential sea level rise (SLR) and storm surge risks to energy assets in the Metropolitan Statistical Area (MSA) surrounding Boston, Massachusetts.

The analysis examines the National Climate Assessment's (NCA) Intermediate-High SLR scenario which projects a 1 foot of SLR in the Boston area by around 2050, and 4 feet of SLR by around 2100, and storm surge levels of Categories 1 and 4 hurricanes.

This analysis of the Boston MSA determines which large energy assets are threatened by SLR and storm surge. The Boston MSA is made up of seven counties:
- Essex, MA
- Middlesex, MA
- Norfolk, MA
- Plymouth, MA
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
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

https://developers.arcgis.com/arcgis-runtime/
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
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Any Questions?

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