Web AppBuilder for ArcGIS: Customizing and Extending

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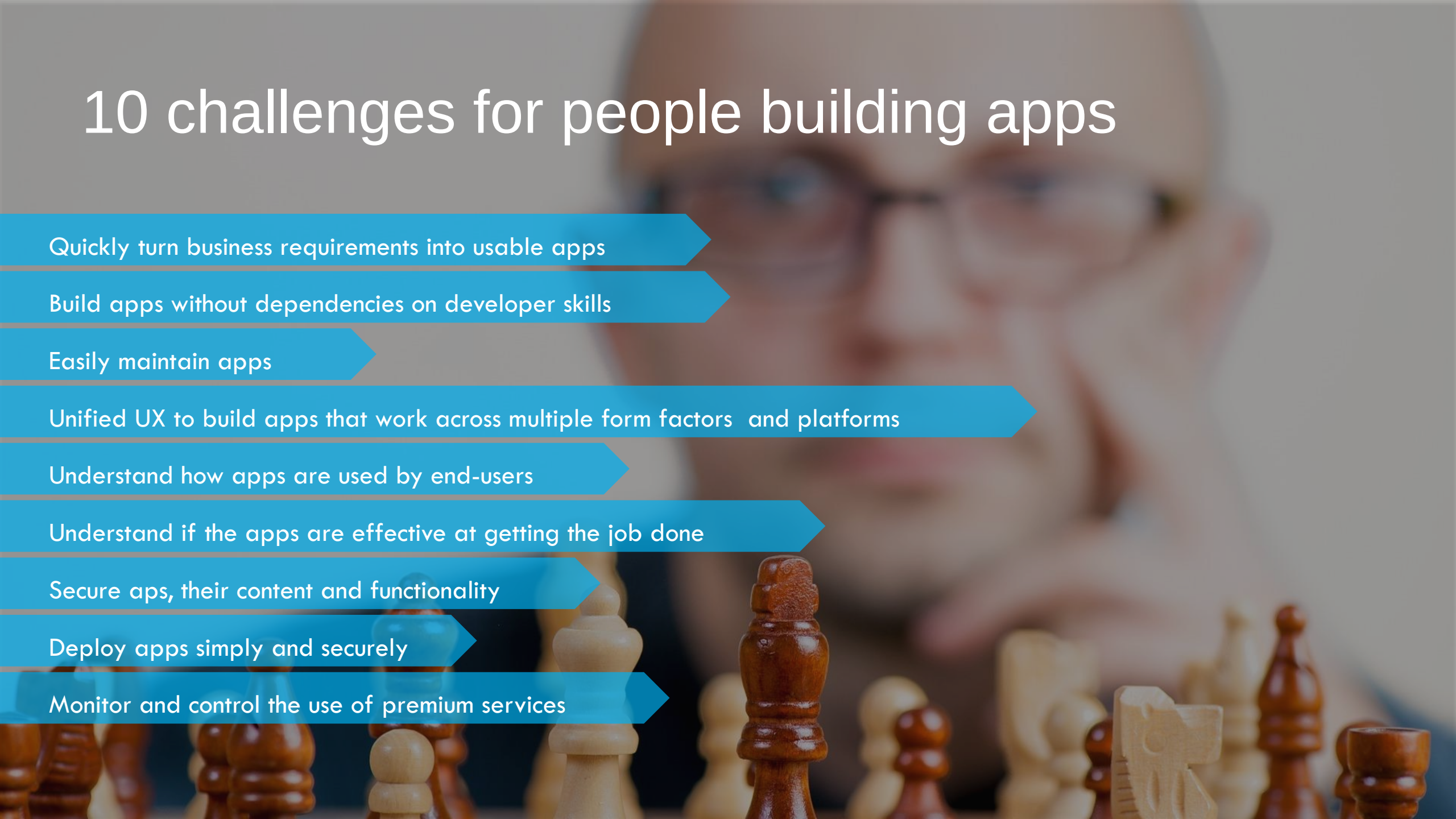
Let’s talk about App Creation

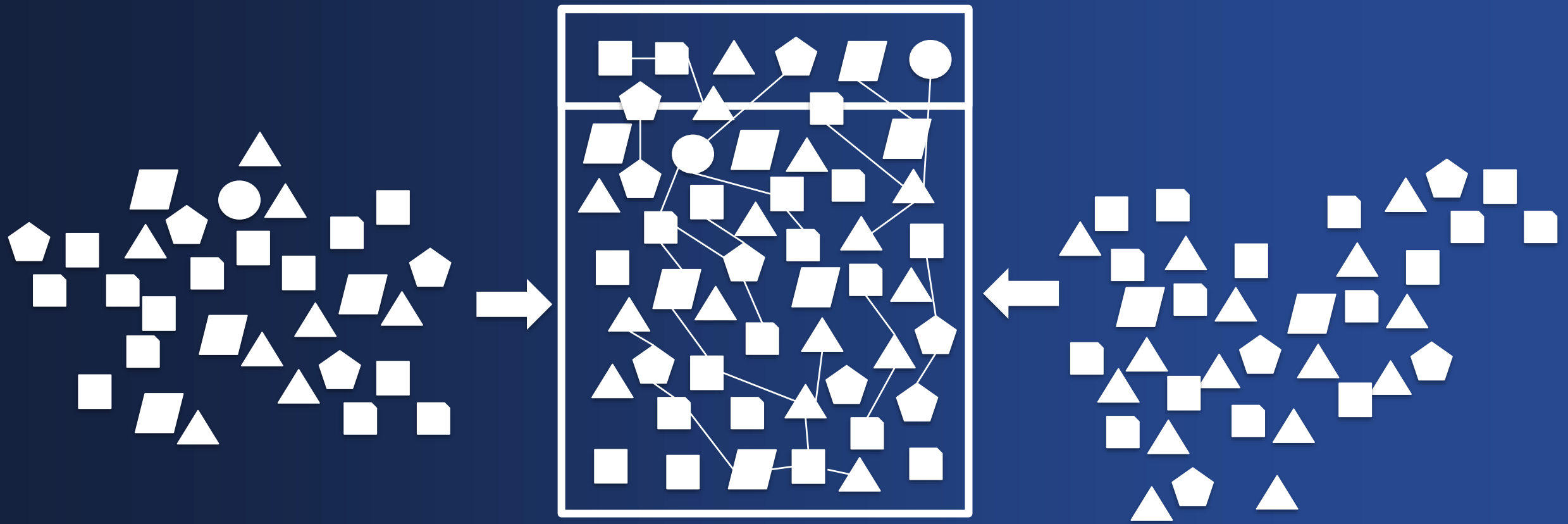
10 challenges for people building apps

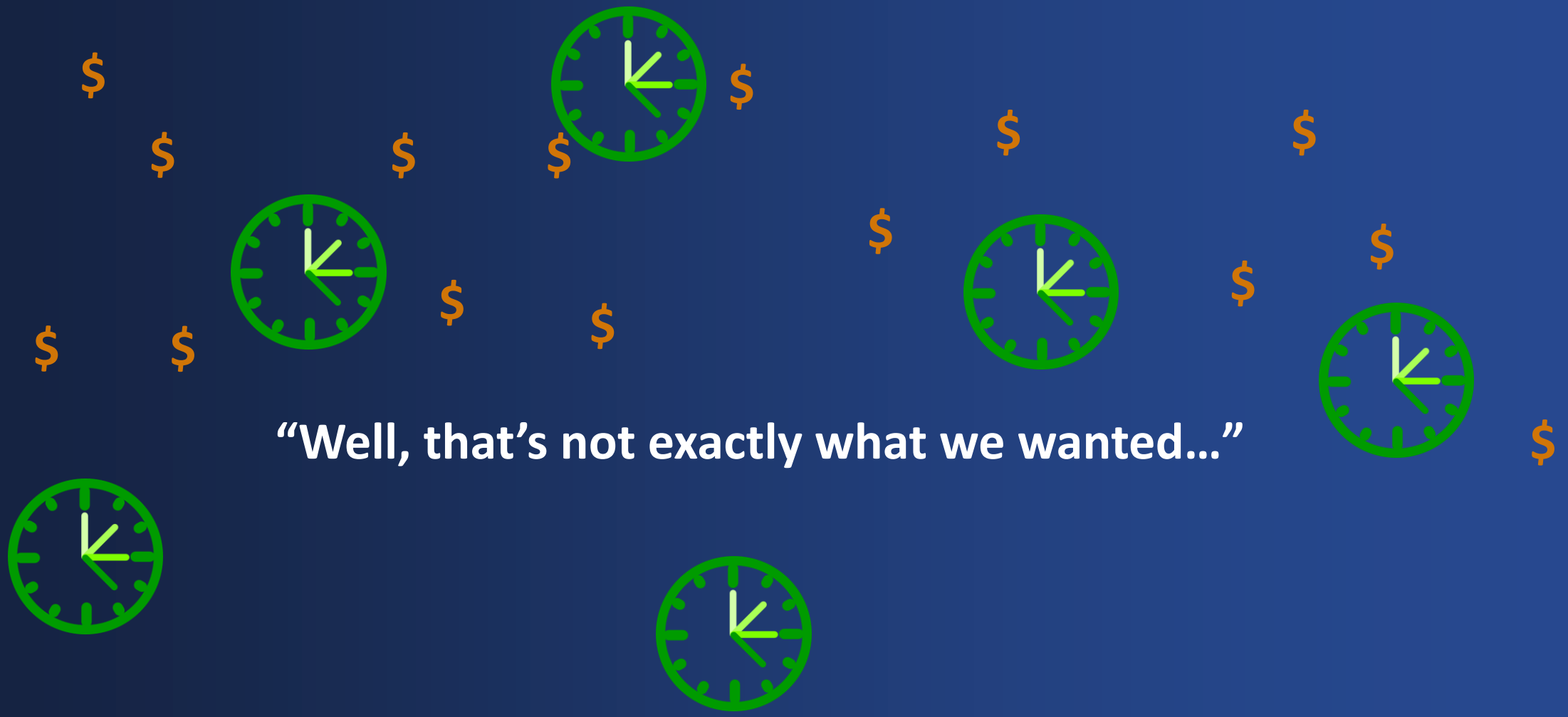


- Quickly turn business requirements into usable apps
- Build apps without dependencies on developer skills
- Easily maintain apps
- Unified UX to build apps that work across multiple form factors and platforms
- Understand how apps are used by end-users
- Understand if the apps are effective at getting the job done
- Secure aps, their content and functionality
- Deploy apps simply and securely
- Monitor and control the use of premium services

How did you create apps?

A Traditional way to Build an App

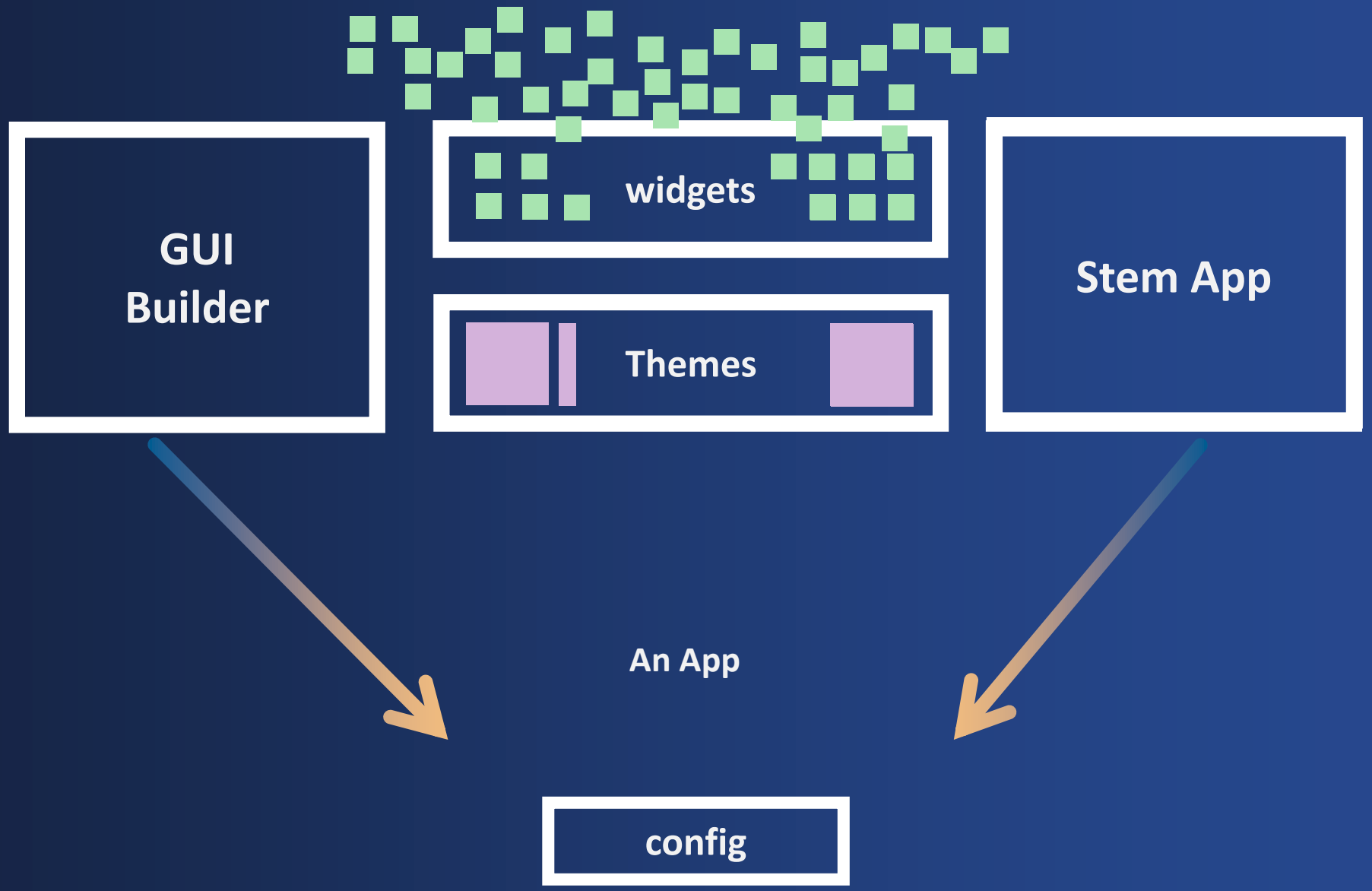


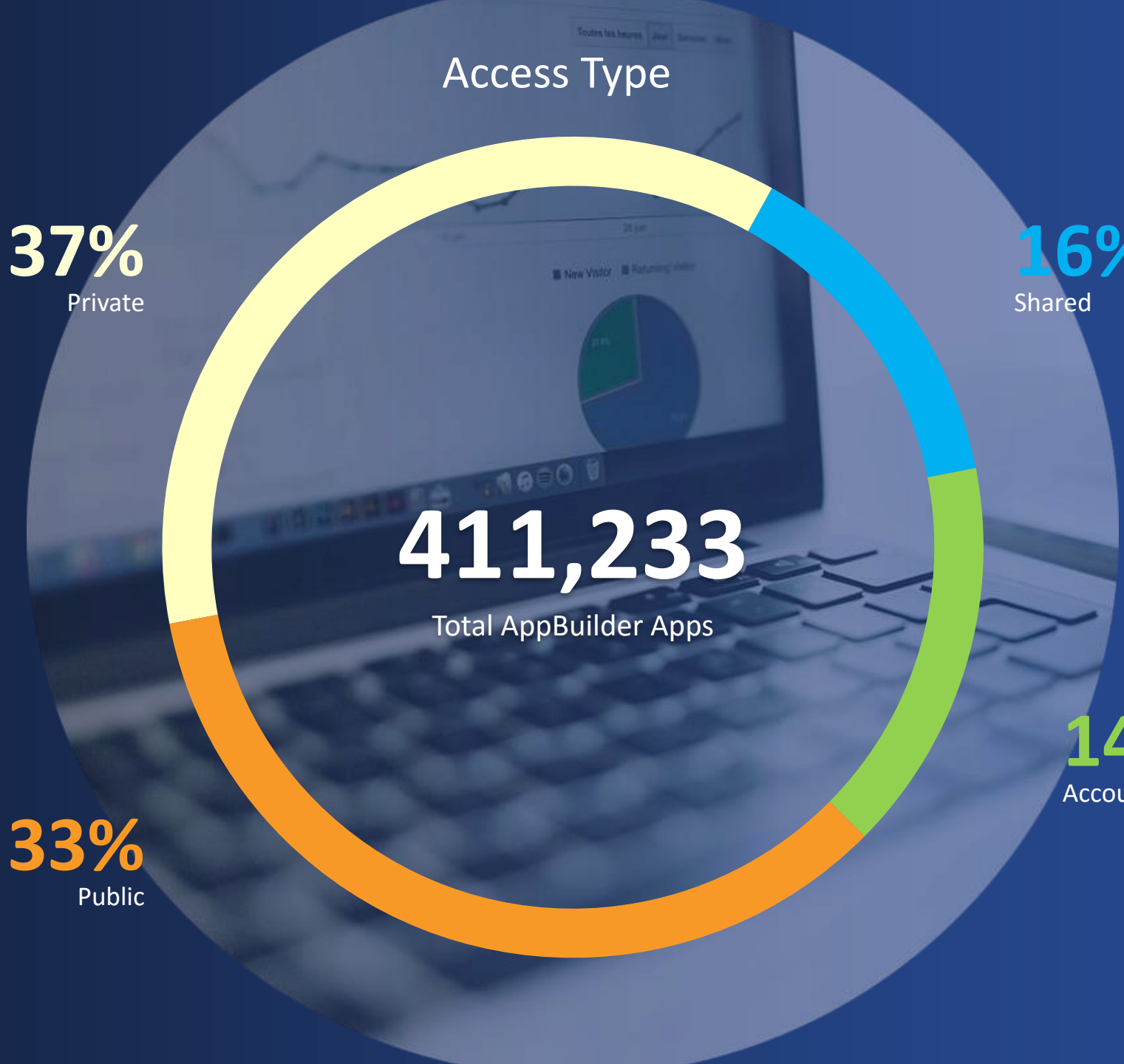

"Well, that's not exactly what we wanted…"

Builder

Simply, build a better experience for the users

A different way to Build an App

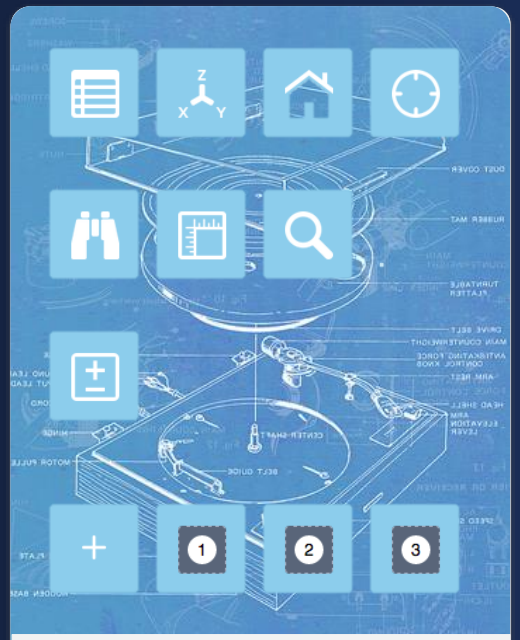



Access Type
37%
Private
16%
Shared
411,233
Total AppBuilder Apps
14%
Account
33%
Public

Introduction

Create a Theme

Q&A



Create a Widget

WAB Communities

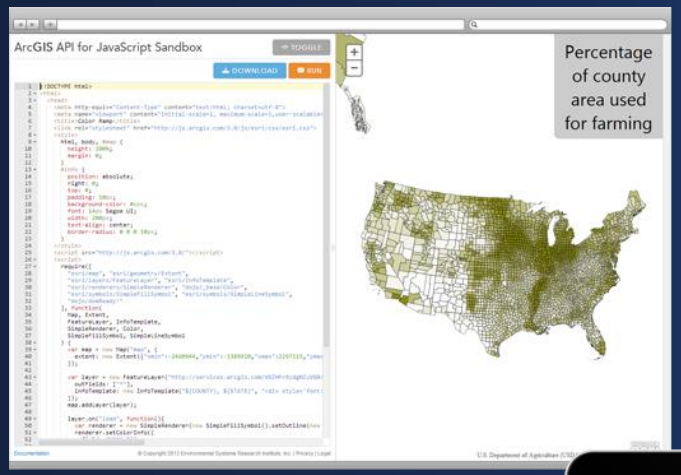
Introduction

Web AppBuilder for ArcGIS

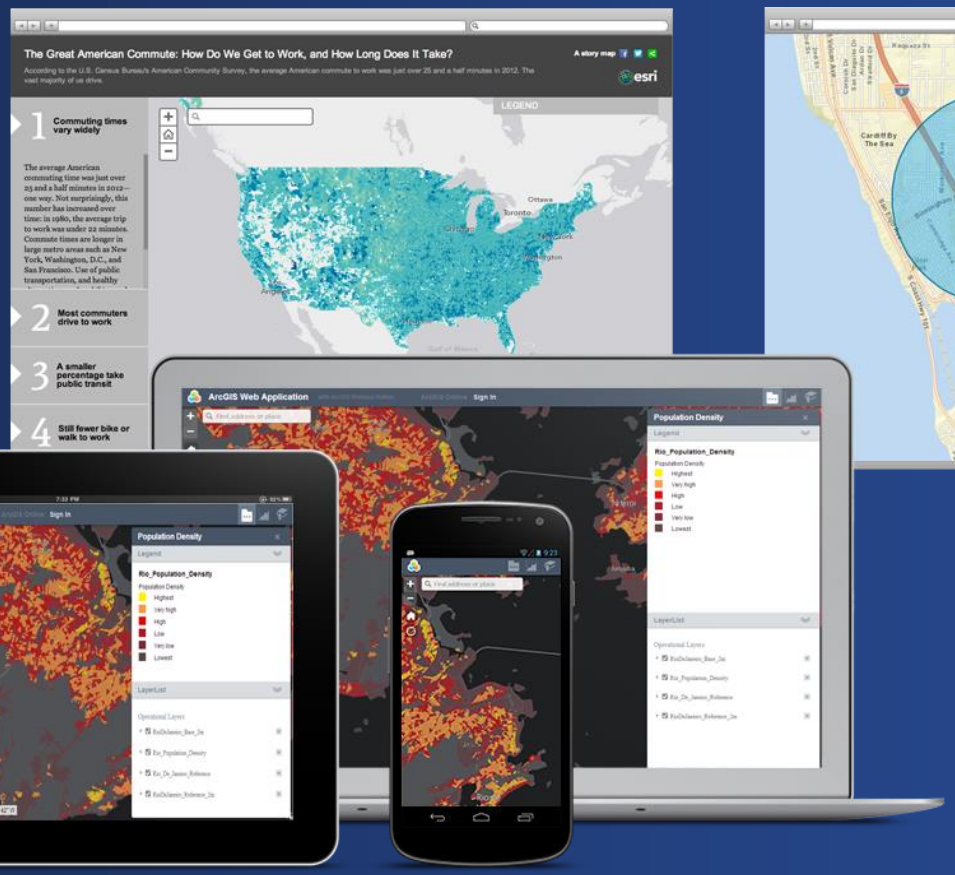
Building Web Apps for Your Organization

Using the ArcGIS API for JavaScript

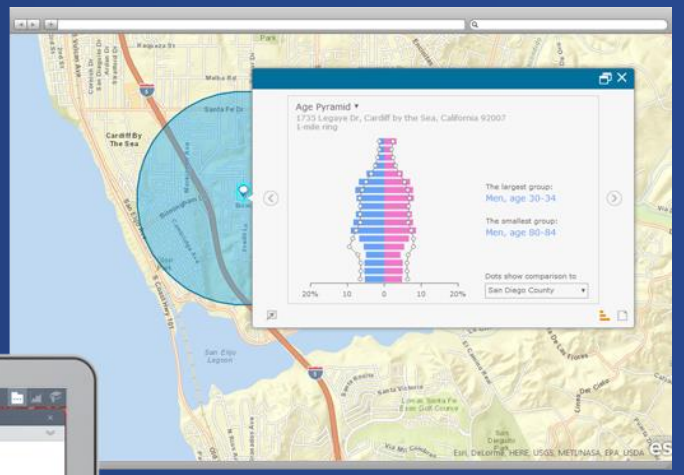
Samples



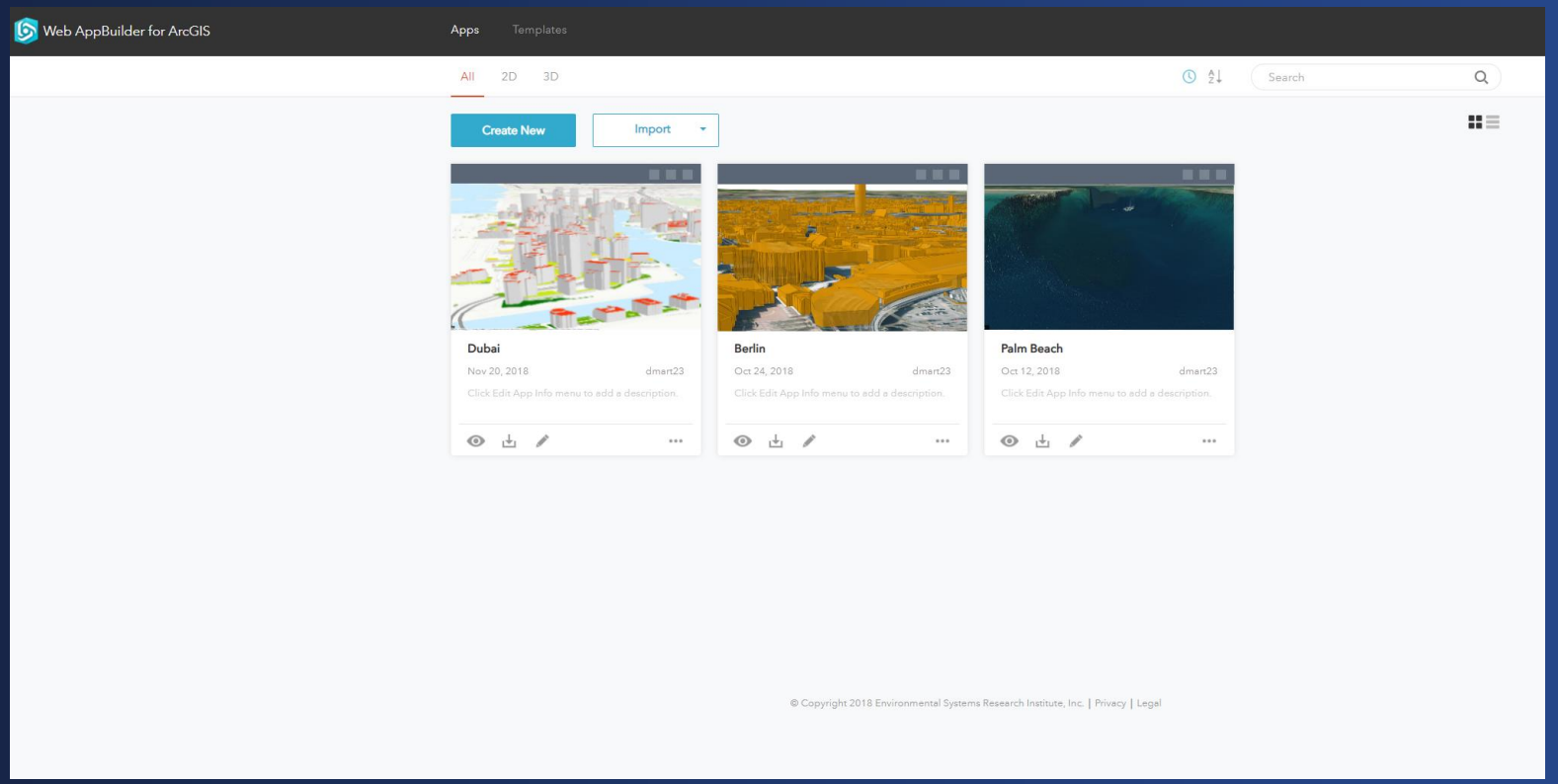
Configurable Apps & Builders



Widgets



Web AppBuilder (Developer Edition)



Widget

- Execution at run time
- Configure-in, not cut/paste
- Self sufficient and distributable
- Need container, no coding block
- Has programing framework of container

Theme

- Applied at run time
- Configure-in, not modify css
- Need container
- Self sufficient and distributable
- Has programing framework of container

Widgets

Building blocks of apps

It’s really just a web app

MyWidget.css

MyWidget.js

MyWidget.html

```
<!DOCTYPE html>
<html>
  <head>
    <meta http-equiv="Content-Type" content="text/html; charset=utf-8">
    <!--The viewport meta tag is used to improve the presentation and behavior of the samples
      on iOS devices-->
    <meta name="viewport" content="initial-scale=1, maximum-scale=1,user-scalable=no">
    <title>Class Breaks Renderer</title>

    <link rel="stylesheet" href="http://js.arcgis.com/3.13/esri/css/esri.css">
    <style>
      html, body, #map{
        height: 100%;
        margin: 0;
        padding: 0;
      }
    </style>
    <script src="http://js.arcgis.com/3.13/"></script>
    <script>
      var map;
      require([
        "esri/map", "esri/layers/FeatureLayer",
        "esri/InfoTemplate", "esri/symbols/SimpleFillSymbol",
        "esri/renderers/ClassBreaksRenderer",
        "esri/Color", "dojo/dom-style", "dojo/domReady!"
      ], function(
        Map, FeatureLayer,
        InfoTemplate, SimpleFillSymbol,
        ClassBreaksRenderer,
        Color, domStyle
      ) {
        map = new Map("map", {
          basemap: "streets",
          center: [-98.215, 38.382],
          zoom: 7,
          slider: false
        });

        var symbol = new SimpleFillSymbol();
        symbol.setColor(new Color([150, 150, 150, 0.5]));

        // Add five breaks to the renderer.
        // If you have ESRI's ArcMap available, this can be a good way to determine break values.
        // You can also copy the RGB values from the color schemes ArcMap applies, or use colors
        // from a site like www.colorbrewer.org
        //
        // alternatively, ArcGIS Server's generate renderer task could be used
        var renderer = new ClassBreaksRenderer(symbol, "POP07_SQMI");
        renderer.addBreak(0, 25, new SimpleFillSymbol().setColor(new Color([56, 168, 0, 0.5])));
        renderer.addBreak(25, 75, new SimpleFillSymbol().setColor(new Color([139, 209, 0, 0.5])));
        renderer.addBreak(75, 175, new SimpleFillSymbol().setColor(new Color([255, 255, 0, 0.5])));
        renderer.addBreak(175, 400, new SimpleFillSymbol().setColor(new Color([255, 128, 0, 0.5])));
        renderer.addBreak(400, Infinity, new SimpleFillSymbol().setColor(new Color([255, 0, 0, 0.5])));

        var infoTemplate = new InfoTemplate("${NAME}", "${*}");
        var featureLayer = new FeatureLayer("http://sampleserver1.arcgisonline.com/ArcGIS/rest/services/Demographics
          mode: FeatureLayer.MODE_SNAPSHOT,
          outFields: ["*"],
          infoTemplate: infoTemplate
        });

        featureLayer.setDefinitionExpression("STATE_NAME = 'Kansas'");
        featureLayer.setRenderer(renderer);
        map.addLayer(featureLayer);
      });
    </script>
  /head>

  body>
    <div id="map"></div>
  /body>

</html>
```

Inheriting from BaseWidget

```
define(['dojo/_base/declare', 'jimu/BaseWidget'],
function(declare, BaseWidget){
  var clazz = declare([BaseWidget],{
  });
  return clazz;
});
```

A widget derived from the BaseWidget class

Dijit lifecycle

- postCreate
- startup
- …

Widget events

- onOpen, onActive
- onClose, onDeActive

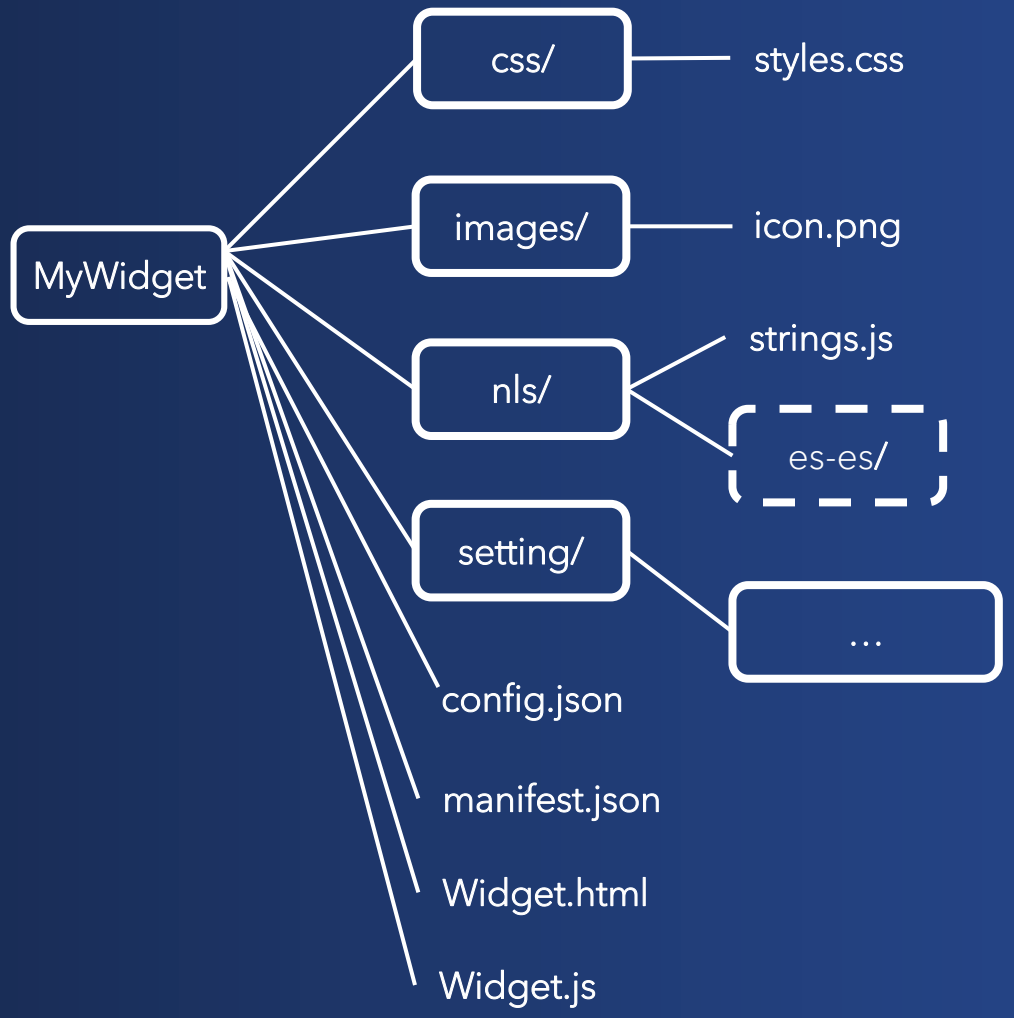
BaseWidget

- App properties (name, icon, localization)
- App config data
- Widget's config data
- Map object
- Widget state (open, closed, active…)
- Events (open/signIn)
- Widget communication

Your job?

- Widget UI (HTML/template)
- Widget config file (JSON)
- Widget styles (CSS)
- Localization
- **Your unique business logic / worklows (JavaScript)**

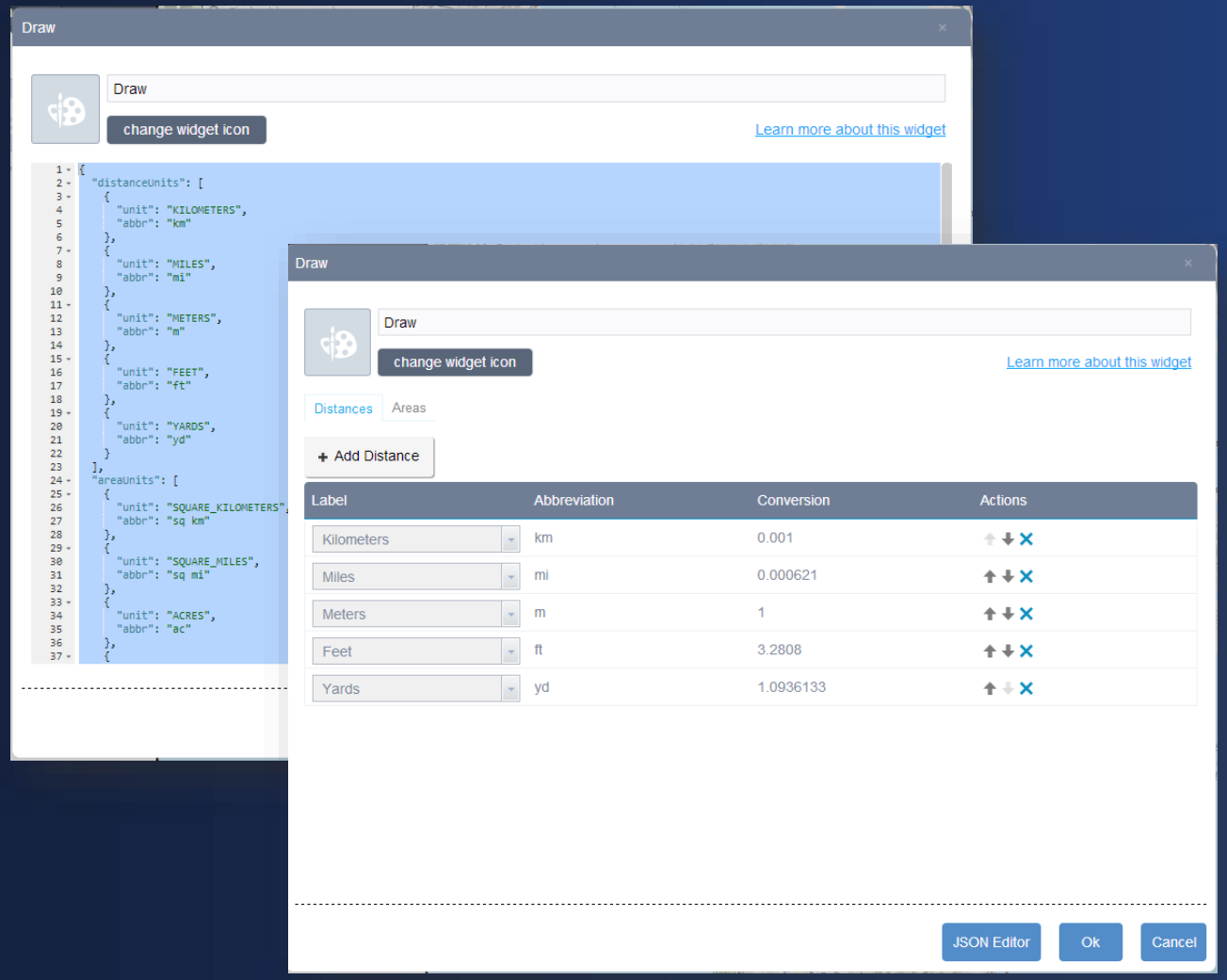
Conventions and Structure



Getting Started

1. Download developer edition
2. Connect to organization or portal
3. **Copy** widget template
4. **Run** the builder
5. **Create** an app with your widget
6. **Build** your widget in the app

Configure your custom widget inside the builder



- Building a UI for the user:
  - Setting.js
    - Config info
    - getConfig, setConfig
  - Setting.html
  - Usual localization pattern
  - css

Create a New Widget

Theme

App in style with personality

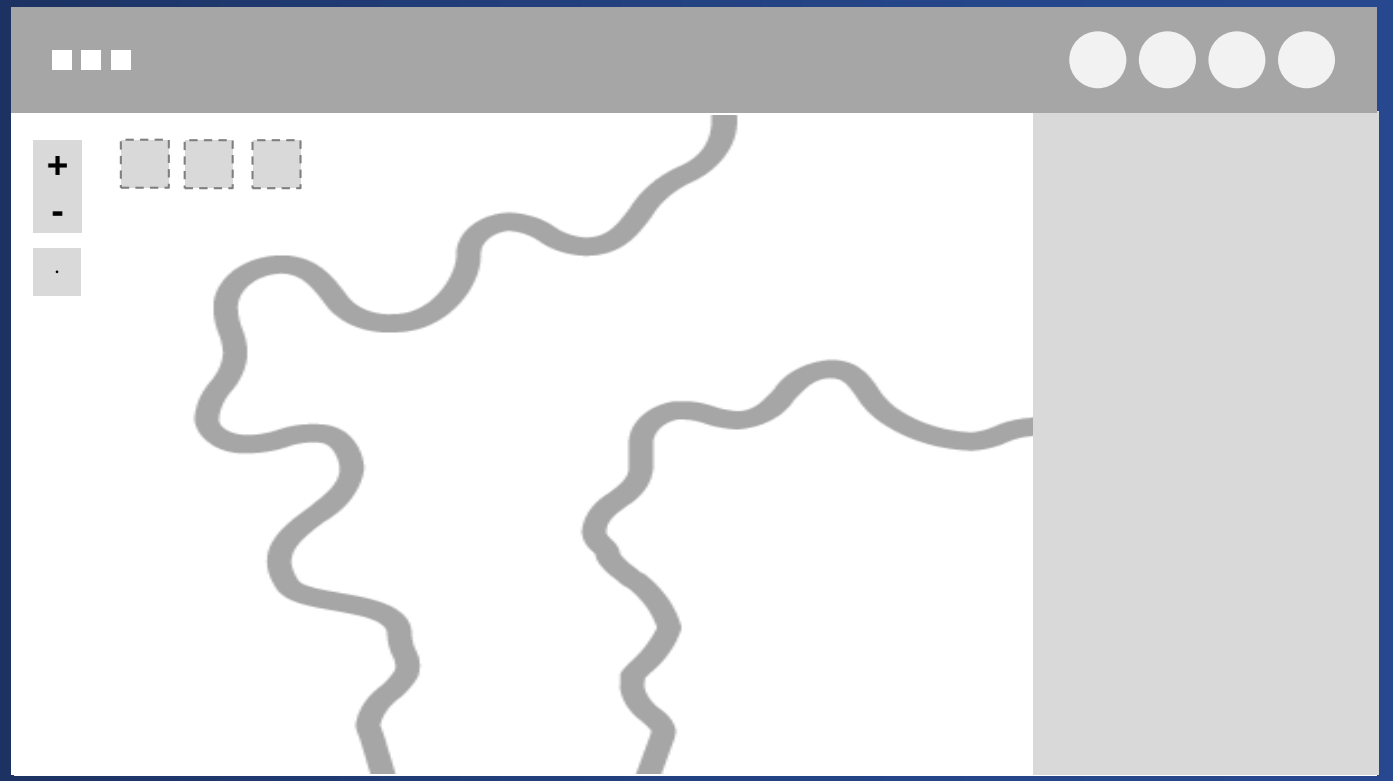

Theme is you

Major Components in a Theme

- Layout
- Panel
- Style
- Controller

What Composes a Theme?

- **Layout**
- Panel
- Style
- Controler



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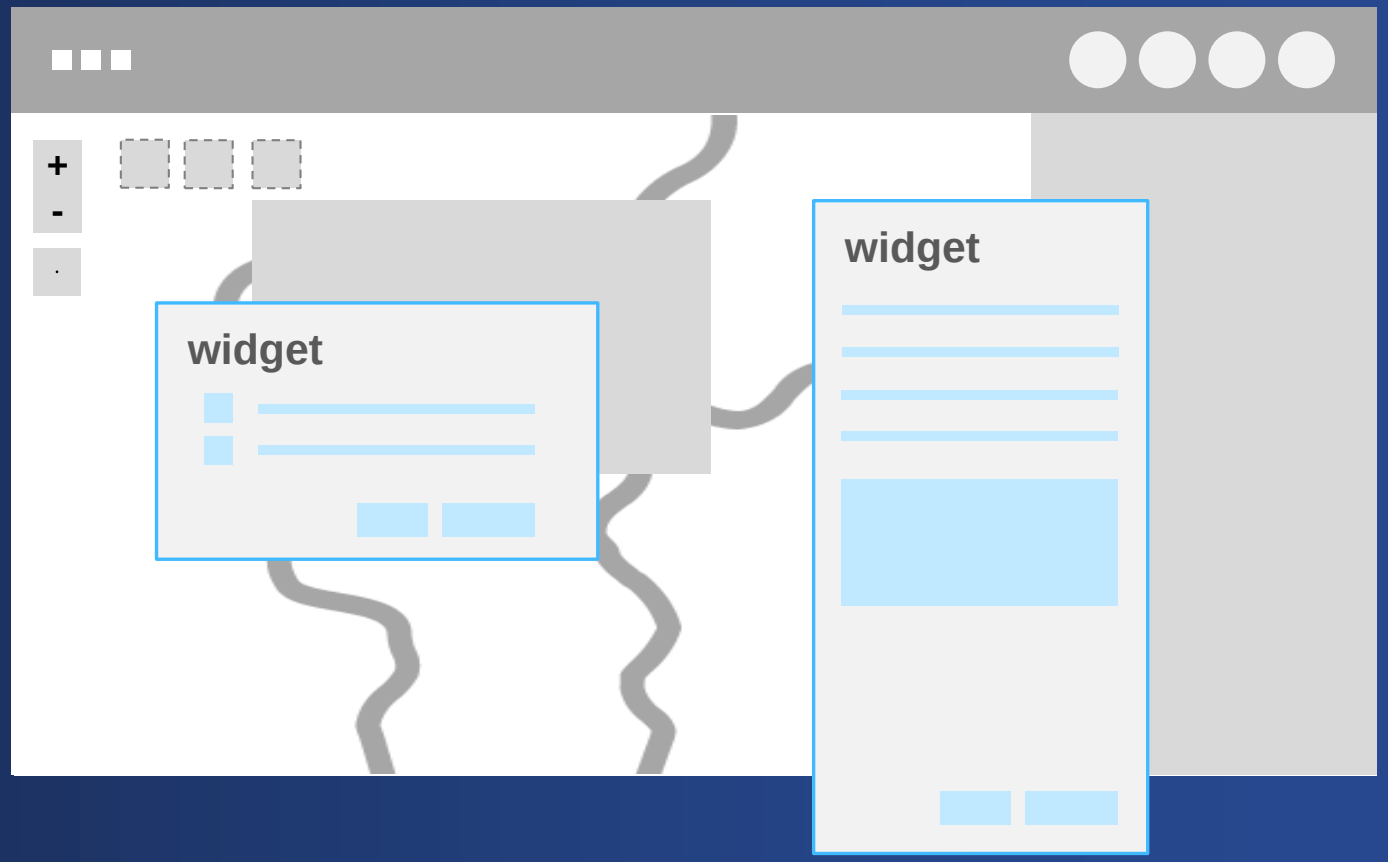
- Layout
- **Panel**
- Style
- Controller



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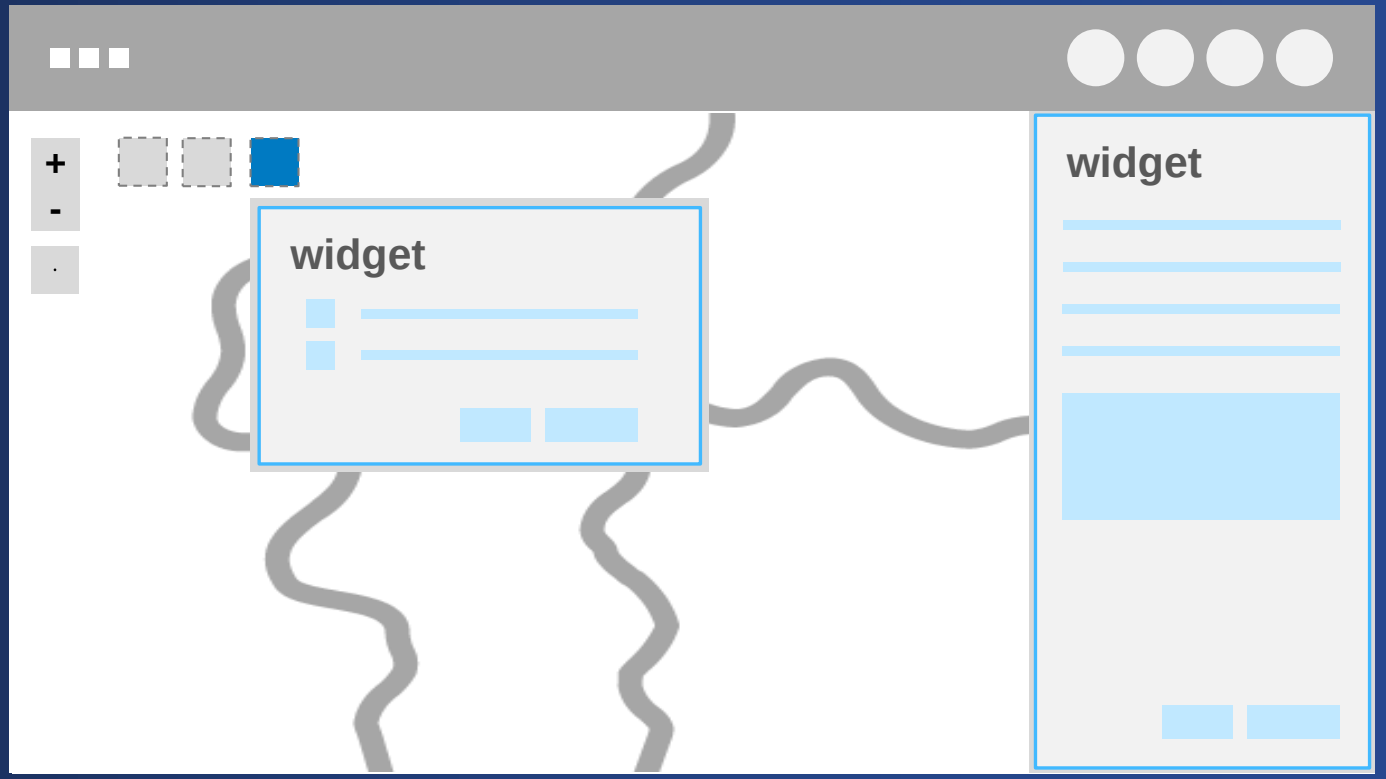
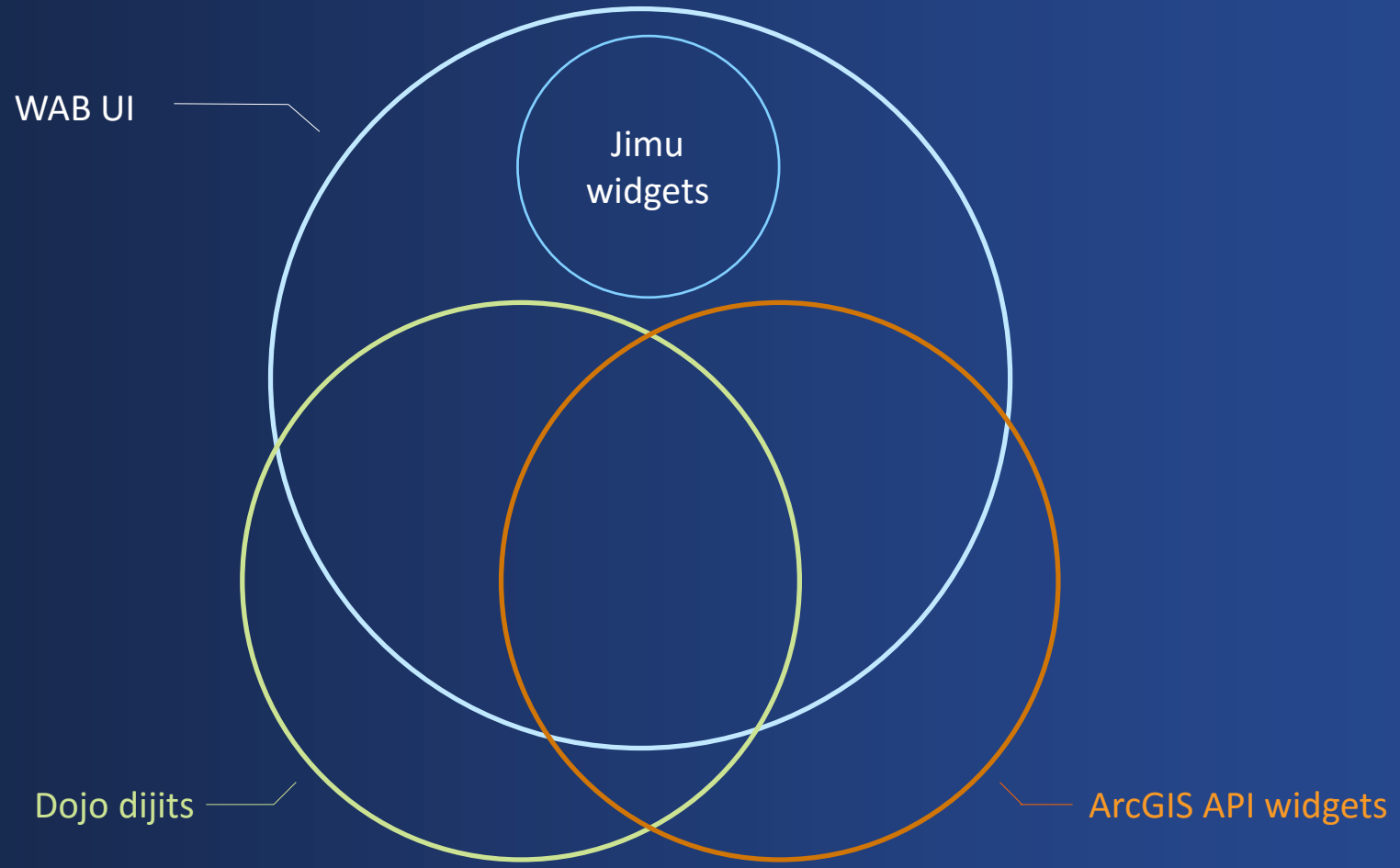


What Makes Up The WAB UI?



How UI Libraries Work In WAB:

Theme: common.css, style.css

Jimu: jimu.css, jimu-override.css, etc.

ArcGIS API for JavaScript: esri.css

Dojo dijits: claro.css

What Composes a Theme?

- Layout
- Panel
- Style
- **Controller**

Compare to a Functional Widget

		Controller Widget	Functional Widget
Purpose		• Displays app information • Defines app behaviors, interactions, workflows, etc.	Provides one specific functionality to the app
Folder Structure		Very similar	
Manifest	isController	True	False
	isThemeWidget	True	False
	inPanel	Always false	May vary
	Others	Very similar	

Let’s Create a New Theme

Community

For you and by you

Documentation

Online help documentation
http://doc.arcgis.com/en/web-appbuilder

Developer Edition help documentation
http://developers.arcgis.com/web-appbuilder

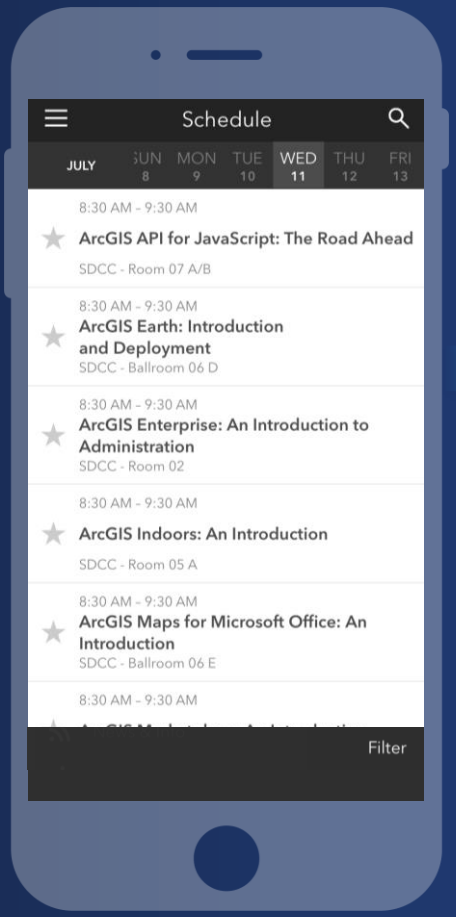
Other Online Resources

- Esri Solutions Widgets:
  - https://github.com/Esri/solutions-webappbuilder-widgets
- Lists of Widgets:
  - http://codesharing.arcgis.com/
  - http://esri-es.github.io/Web-AppBuilder-Custom-Widgets/
- Example widgets and theme shown today: https://git.io/fhHIN

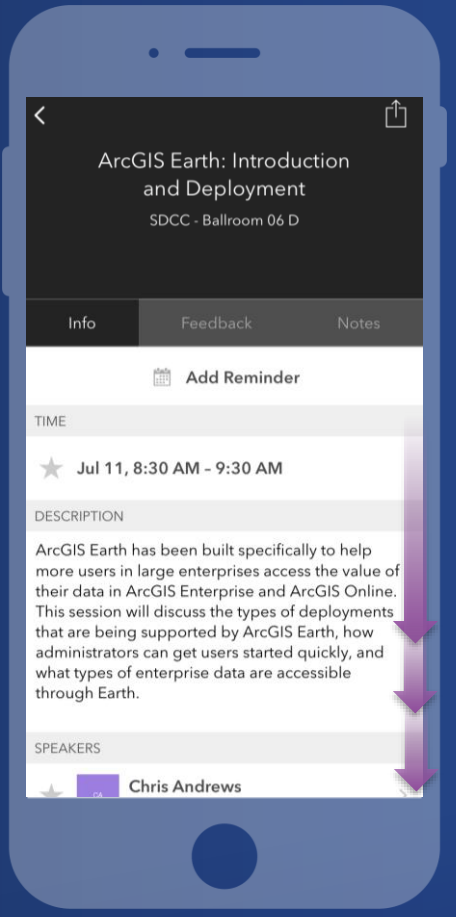
Please Take Our Survey on the App

Download the Esri Events app and find your event

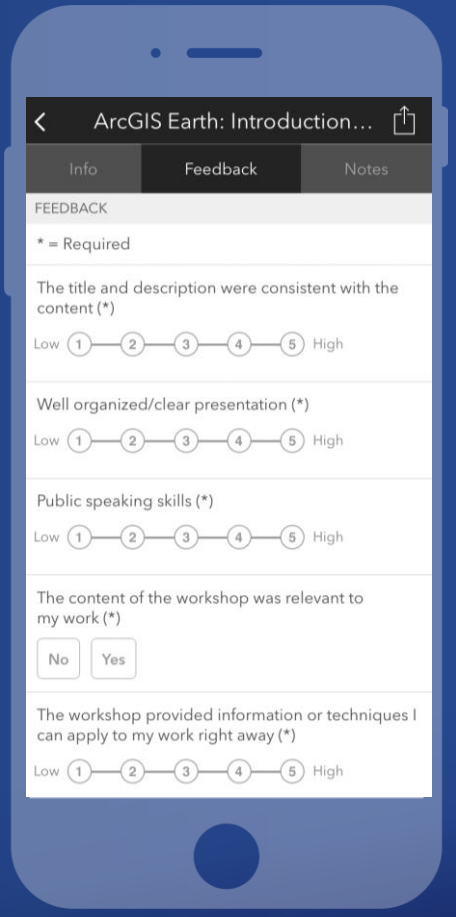
Select the session you attended



Scroll down to find the feedback section



Complete answers and select “Submit”



Questions?


esri
THE
SCIENCE
OF
WHERE