# Web AppBuilder for ArcGIS: Customizing and Extending

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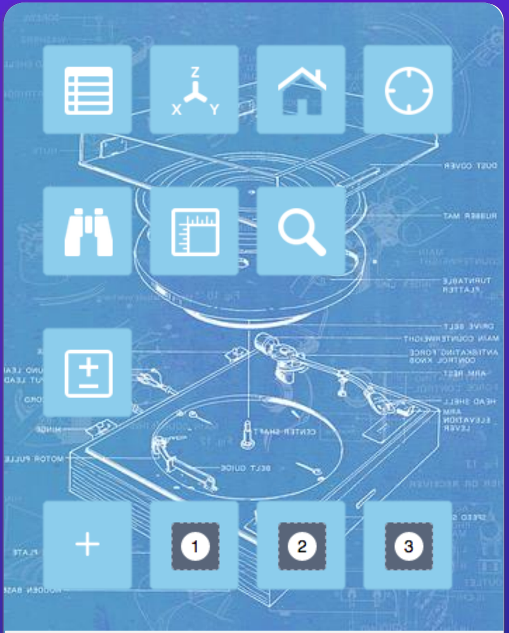
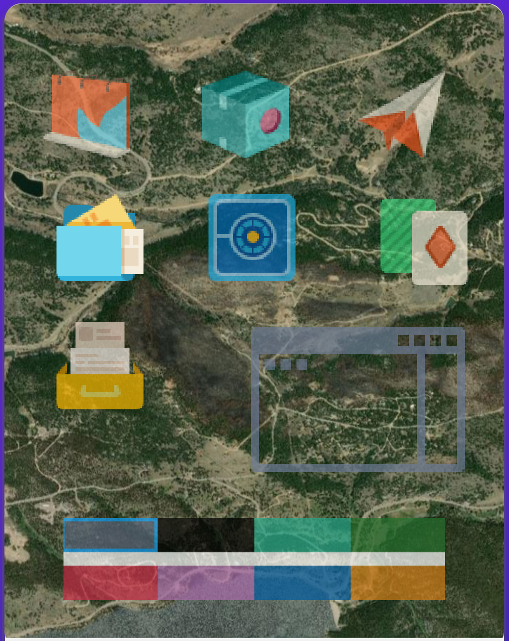
Introduction



Create a Widget

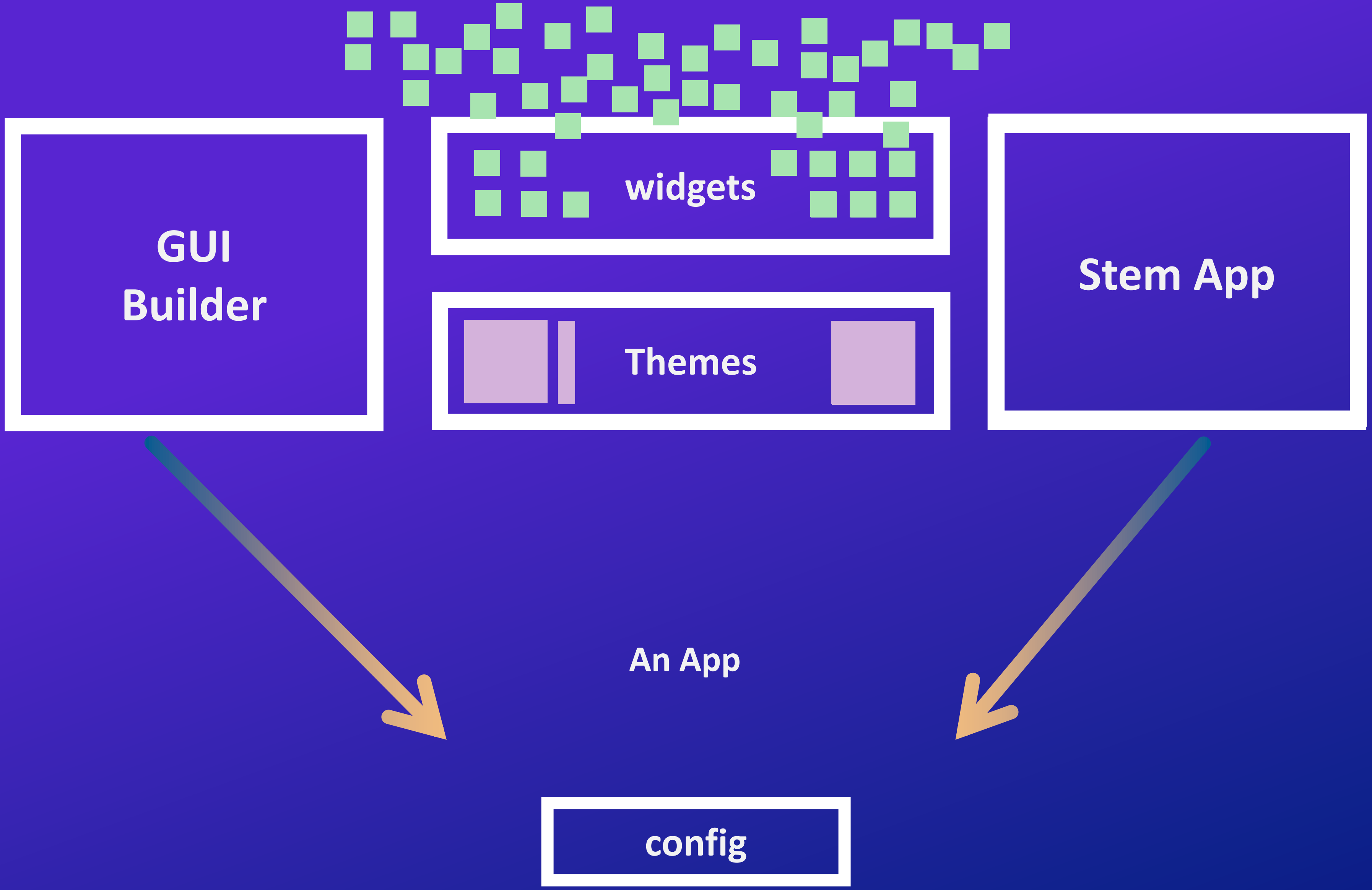


Create a Theme

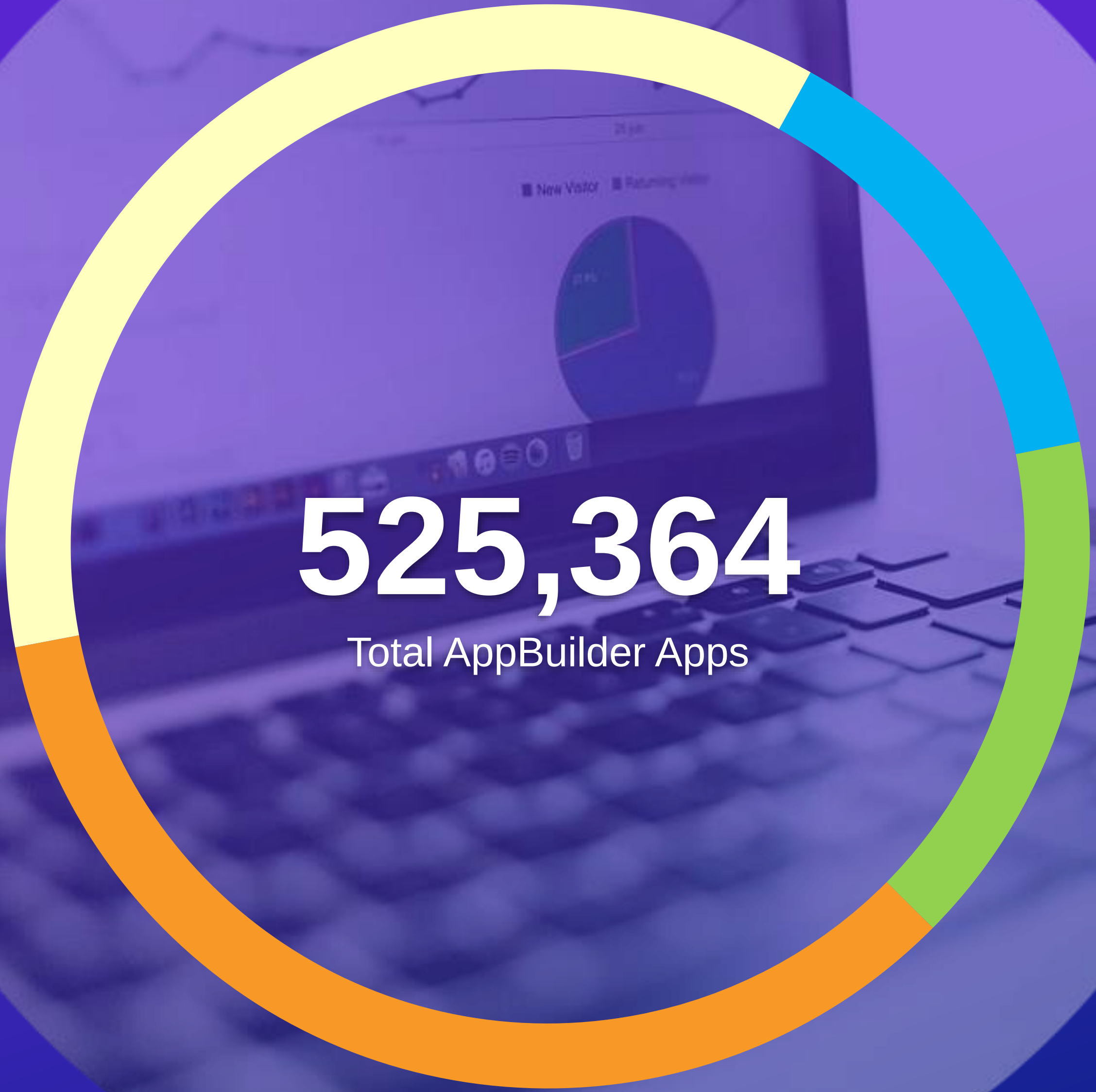
WAB Communities

# Introduction

# Building an App



# Access Type



**525,364**

Total AppBuilder Apps

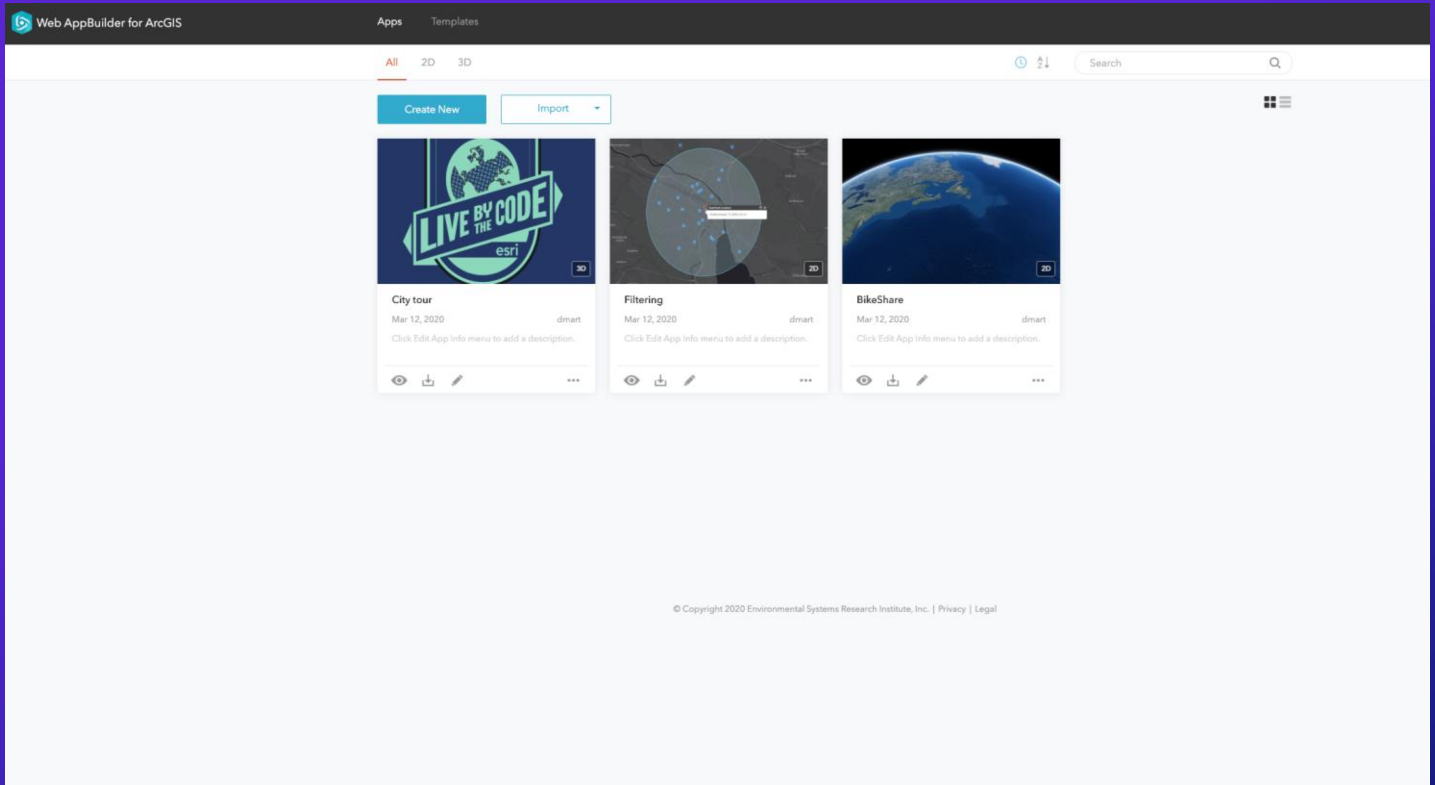
**38%**
Private

**16%**
Shared

**13%**
Account

**33%**
Public

# Web AppBuilder (Developer Edition)



City tour
Mar 12, 2020 dmart
Click Edit App Info menu to add a description.

Filtering
Mar 12, 2020 dmart
Click Edit App Info menu to add a description.

BikeShare
Mar 12, 2020 dmart
Click Edit App Info menu to add a description.

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## 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

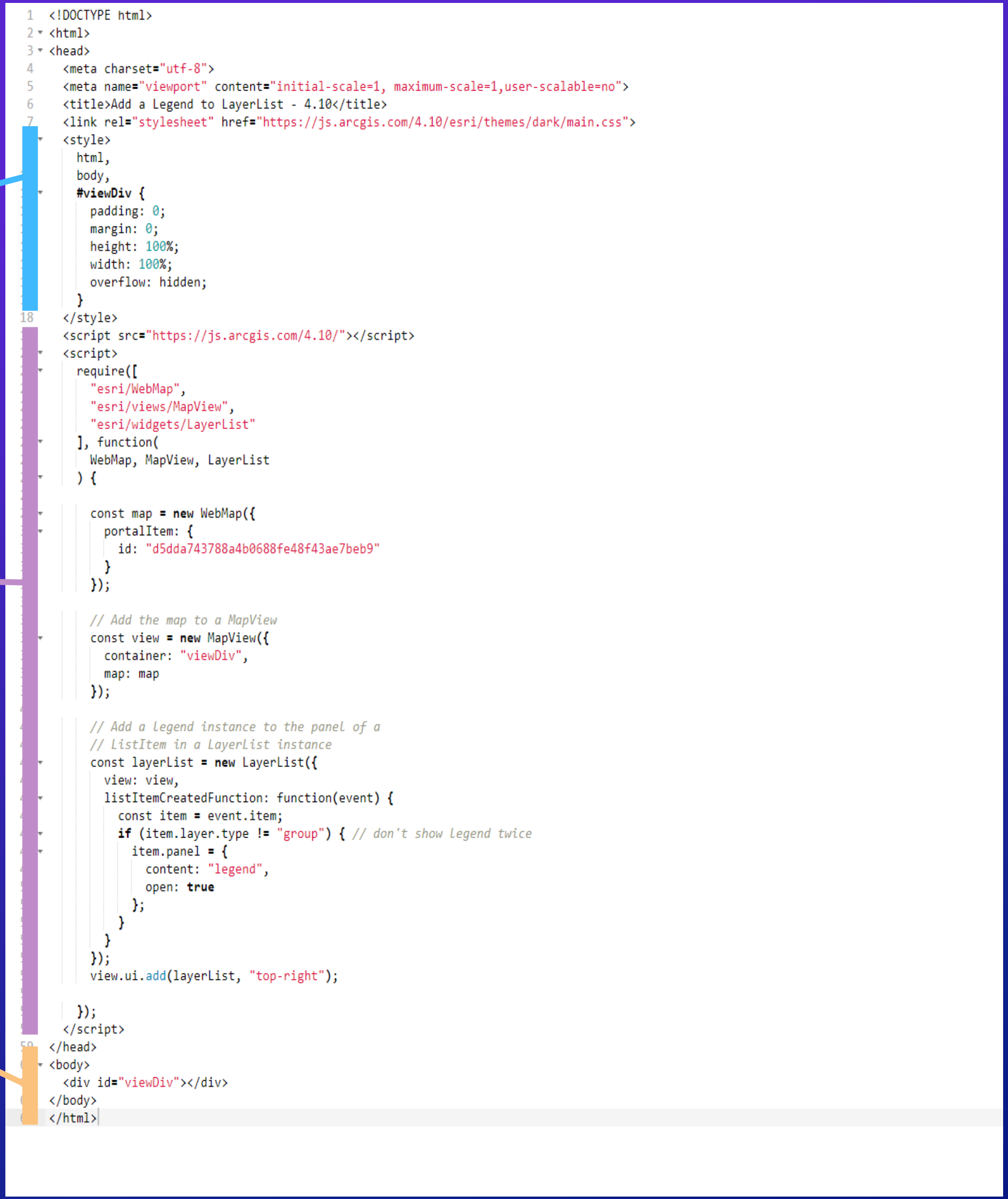
# Widgets

# It’s really just a web app

MyWidget.css

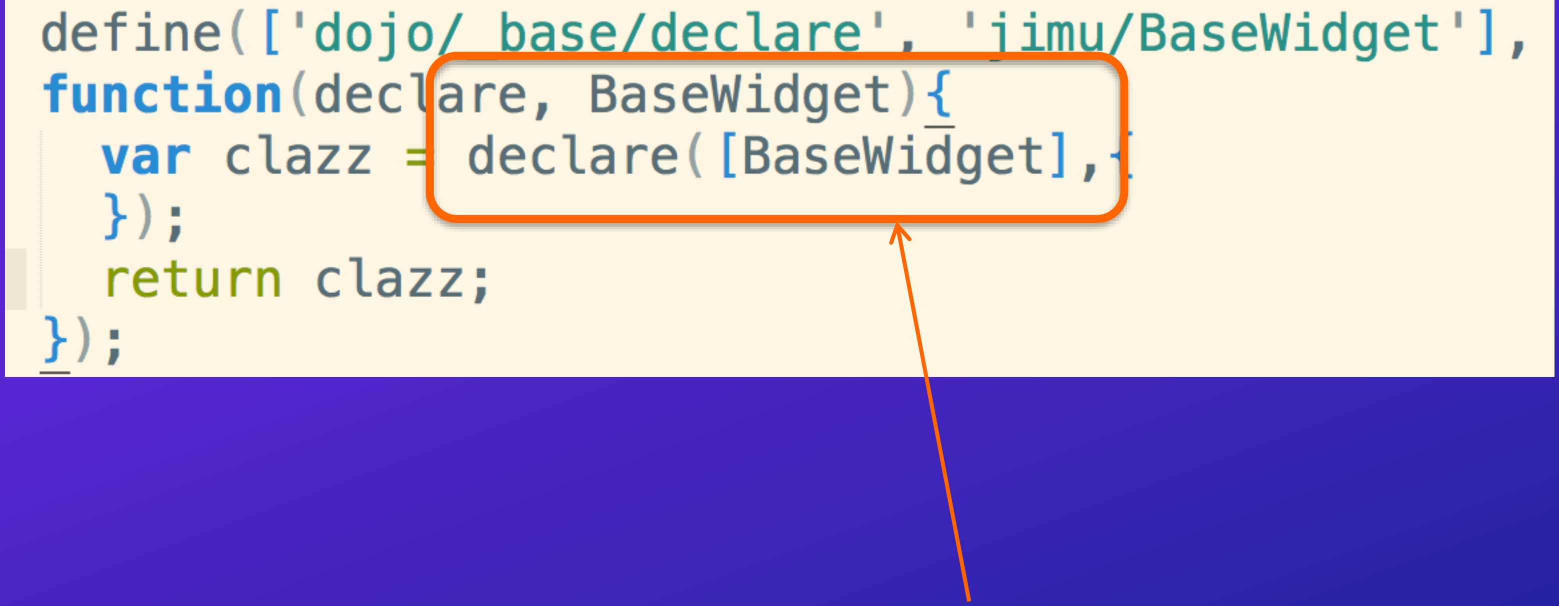
MyWidget.js

MyWidget.html



```html
<!DOCTYPE html>
<html>
<head>
  <meta charset="utf-8">
  <meta name="viewport" content="initial-scale=1, maximum-scale=1,user-scalable=no">
  <title>Add a Legend to LayerList - 4.10</title>
  <link rel="stylesheet" href="https://js.arcgis.com/4.10/esri/themes/dark/main.css">
  <style>
    html,
    body,
    #viewDiv {
      padding: 0;
      margin: 0;
      height: 100%;
      width: 100%;
      overflow: hidden;
    }
  </style>
  <script src="https://js.arcgis.com/4.10/"></script>
  <script>
    require([
      "esri/WebMap",
      "esri/views/MapView",
      "esri/widgets/LayerList"
    ], function(
      WebMap, MapView, LayerList
    ) {

      const map = new WebMap({
        portalItem: {
          id: "d5dda743788a4b0688fe48f43ae7beb9"
        }
      });

      // Add the map to a MapView
      const view = new MapView({
        container: "viewDiv",
        map: map
      });

      // Add a legend instance to the panel of a
      // ListItem in a LayerList instance
      const layerList = new LayerList({
        view: view,
        listItemCreatedFunction: function(event) {
          const item = event.item;
          if (item.layer.type != "group") { // don't show legend twice
            item.panel = {
              content: "legend",
              open: true
            };
          }
        }
      });
      view.ui.add(layerList, "top-right");

    });
  </script>
</head>
<body>
  <div id="viewDiv"></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

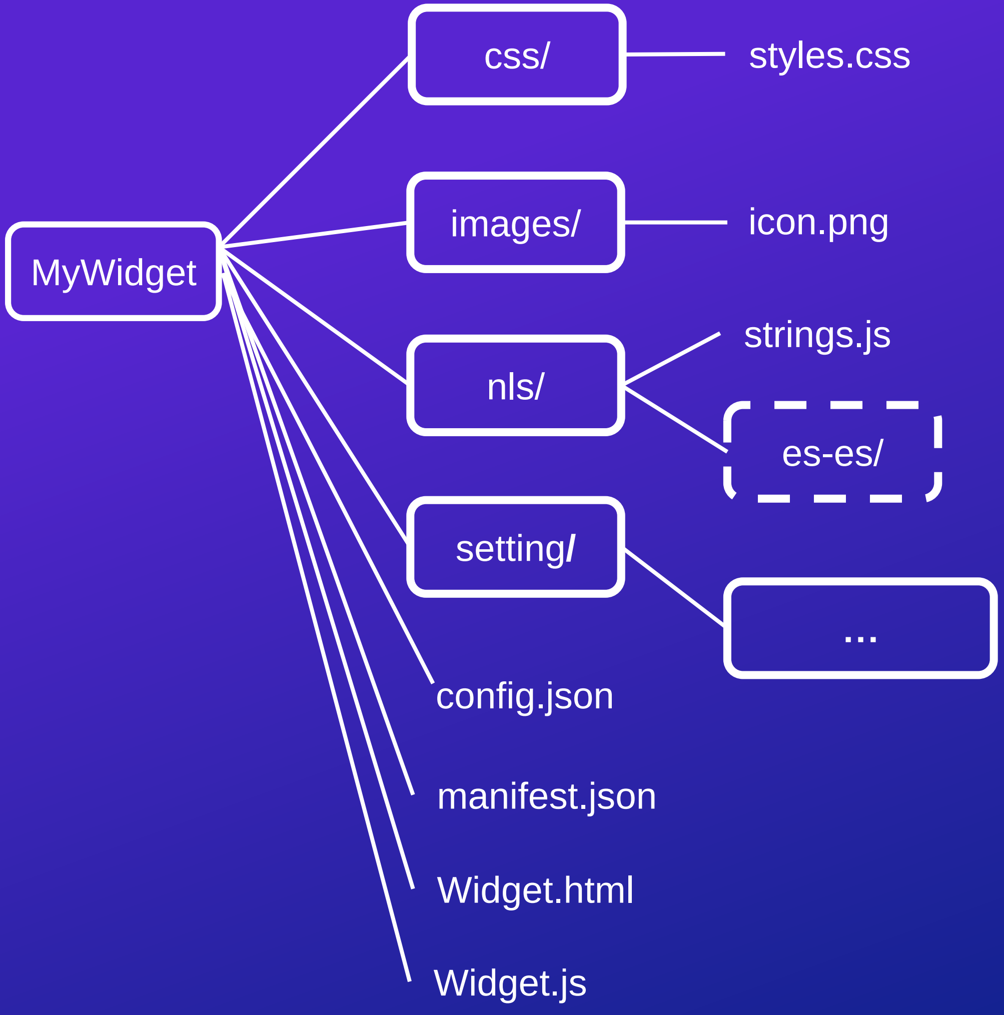
## BaseWidget

- 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 (JavaScript)

# Conventions and Structure


MyWidget

css/

styles.css

images/

icon.png

nls/

strings.js

es-es/

setting/

...

config.json

manifest.json

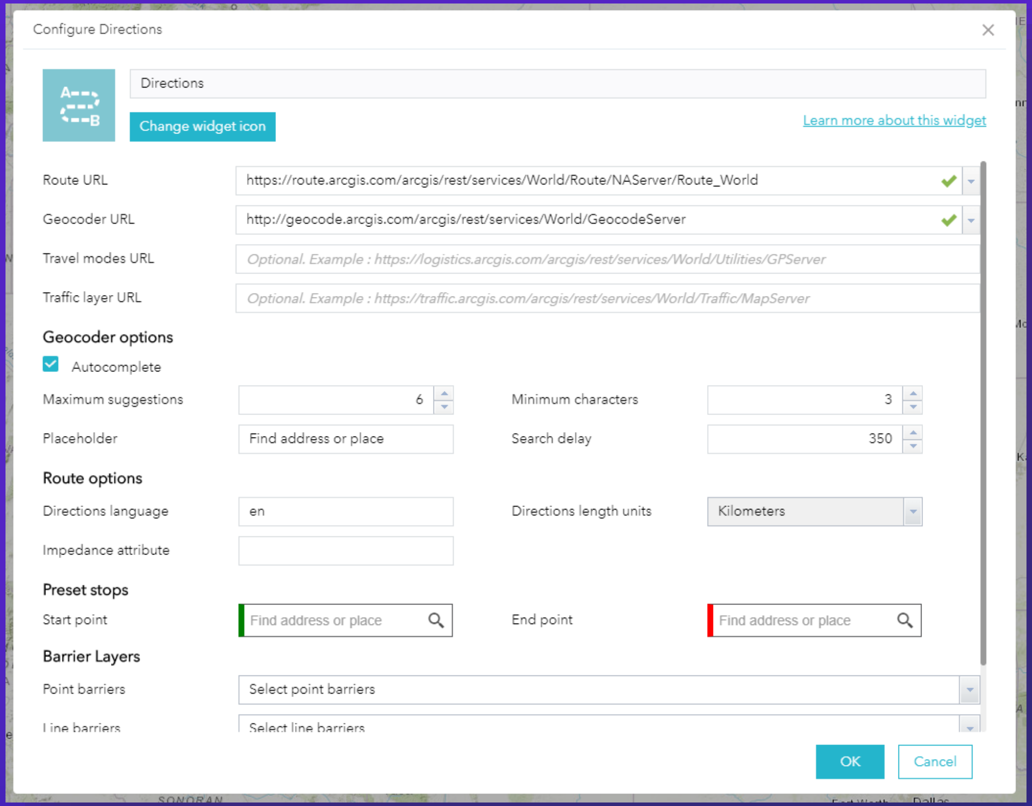
Widget.html

Widget.js

# 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



Configure Directions

Directions

Route URL: https://route.arcgis.com/arcgis/rest/services/World/Route/NAServer/Route_World ✓

Geocoder URL: http://geocode.arcgis.com/arcgis/rest/services/World/GeocodeServer ✓

Travel modes URL: Optional. Example : https://logistics.arcgis.com/arcgis/rest/services/World/Utilities/GPServer

Traffic layer URL: Optional. Example : https://traffic.arcgis.com/arcgis/rest/services/World/Traffic/MapServer

Geocoder options

☑ Autocomplete

Maximum suggestions: 6

Minimum characters: 3

Placeholder: Find address or place

Search delay: 350

Route options

Directions language: en

Directions length units: Kilometers

Impedance attribute:

Preset stops

Start point: Find address or place

End point: Find address or place

Barrier Layers

Point barriers: Select point barriers

Line barriers: Select line barriers

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

# Create a new widget

# Theme

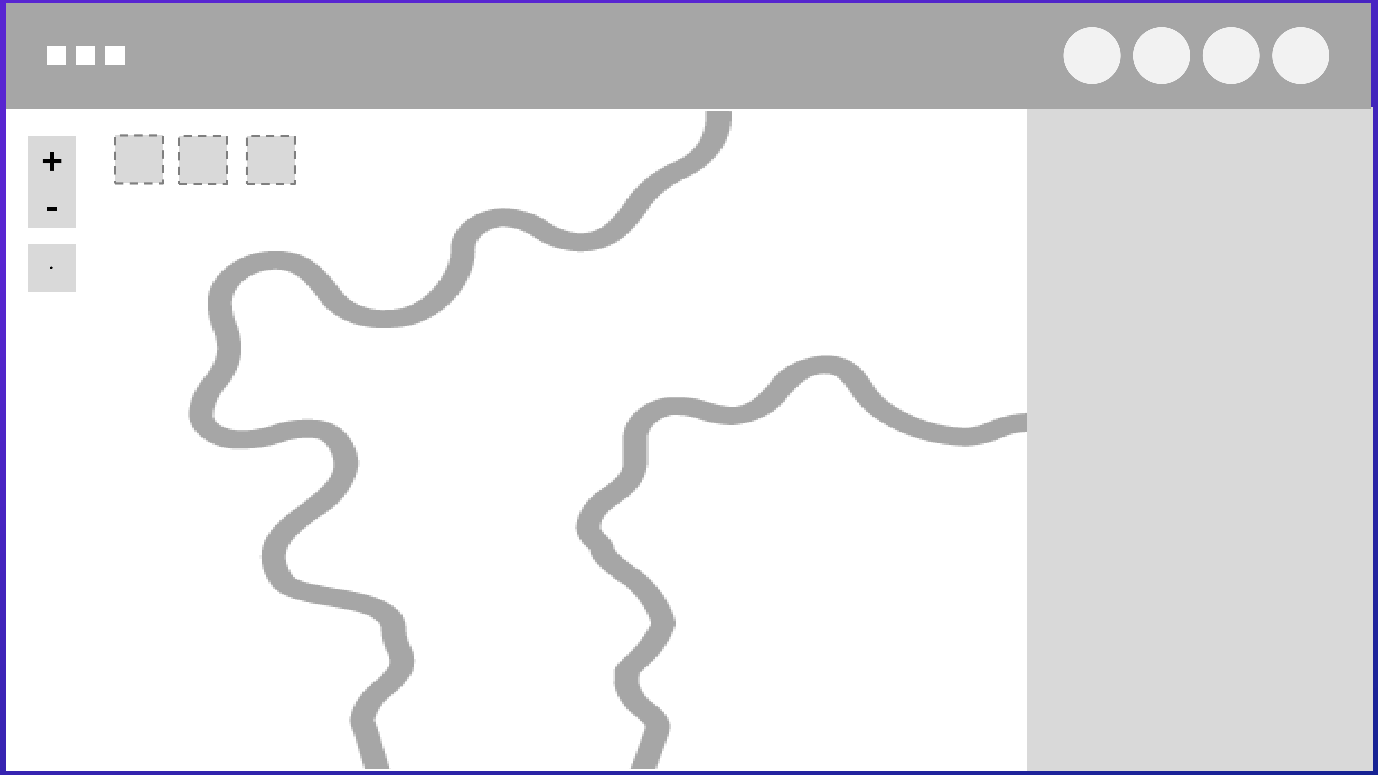
# Theme is you

# Major Components in a Theme

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

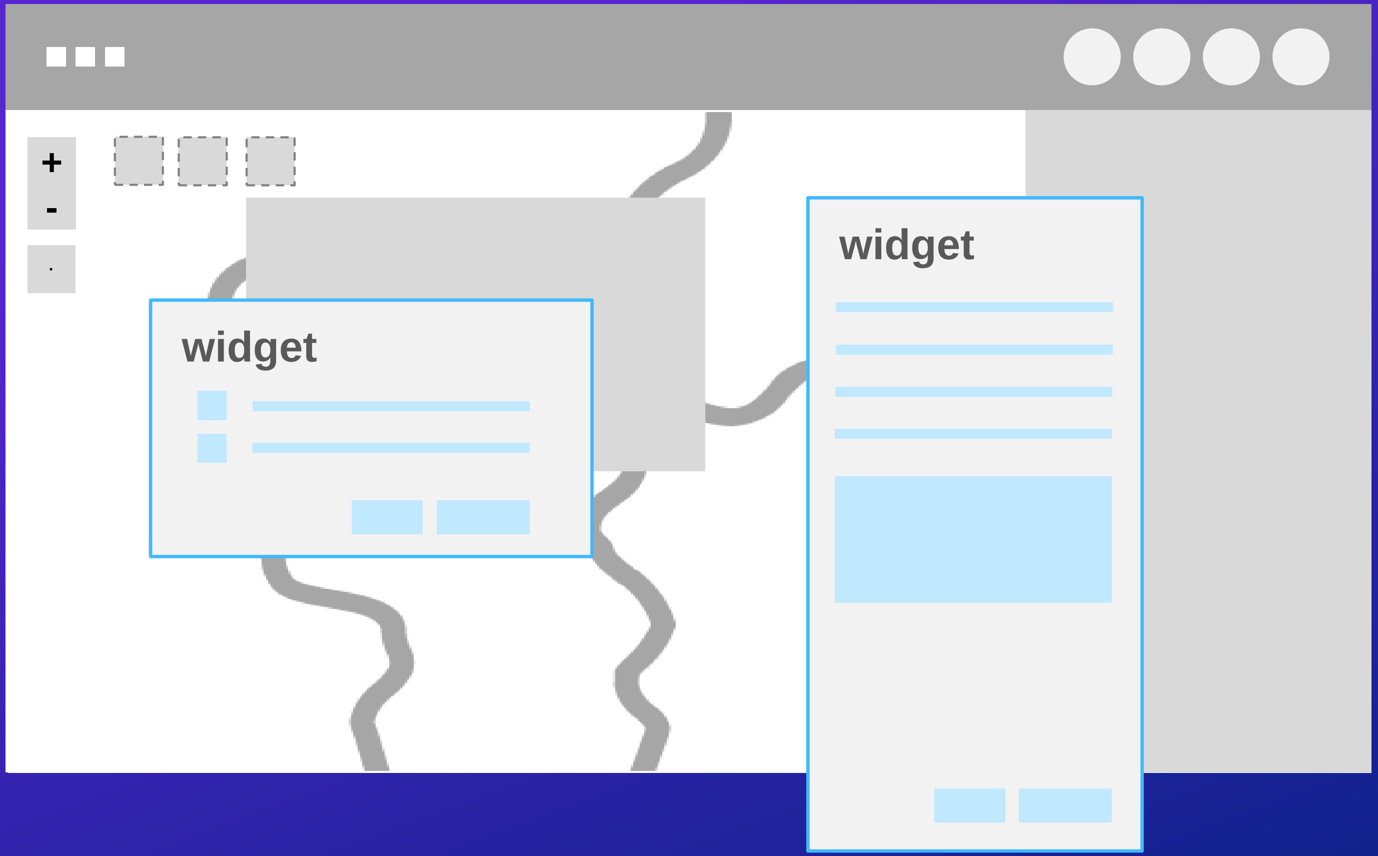
# What Composes a Theme?

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



# What Composes a Theme?

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



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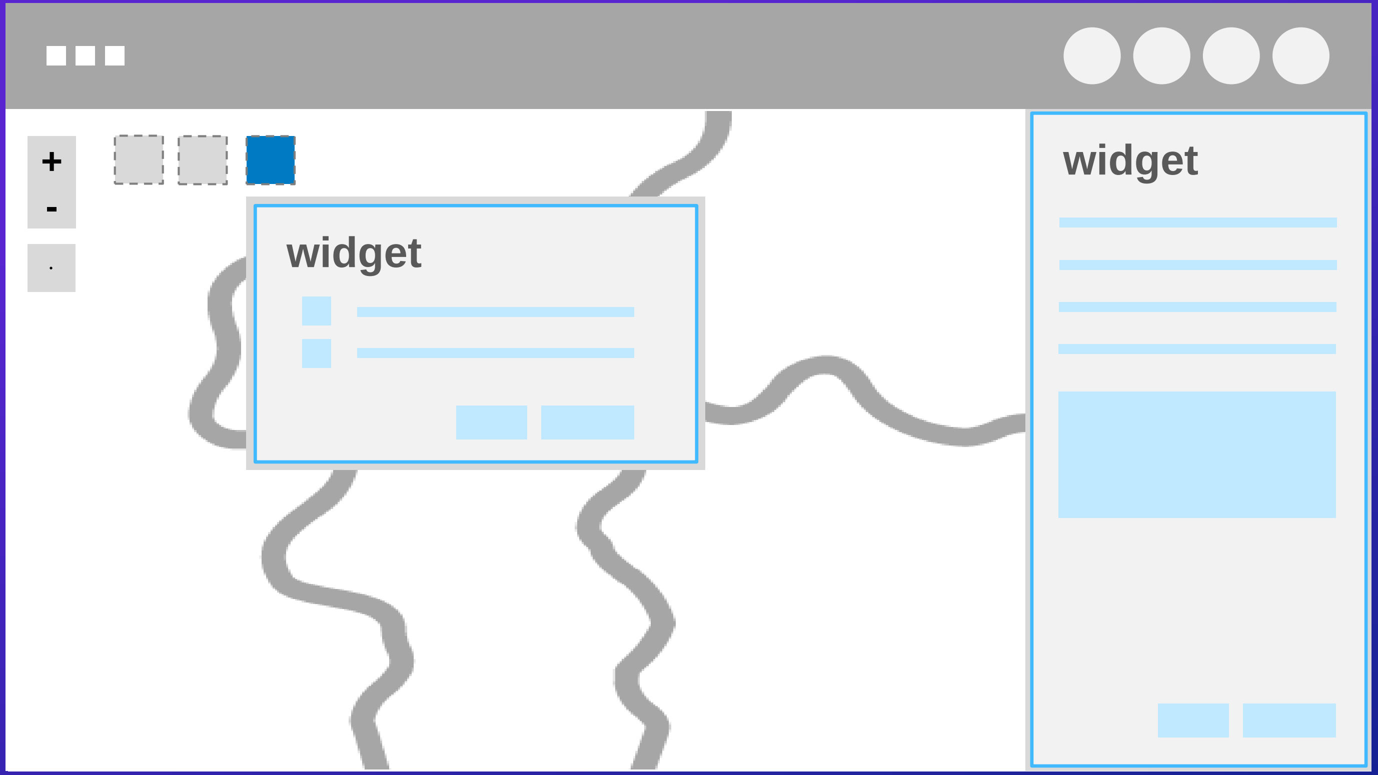

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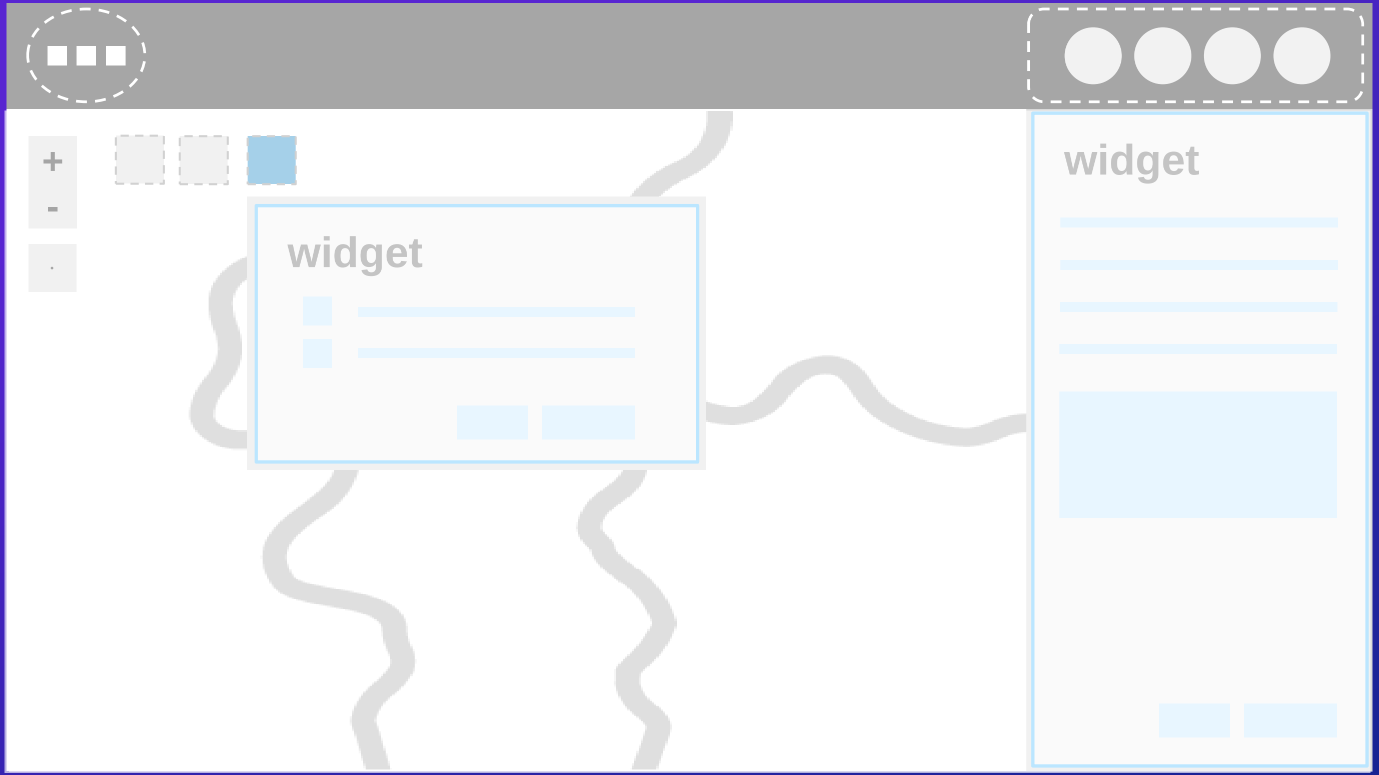
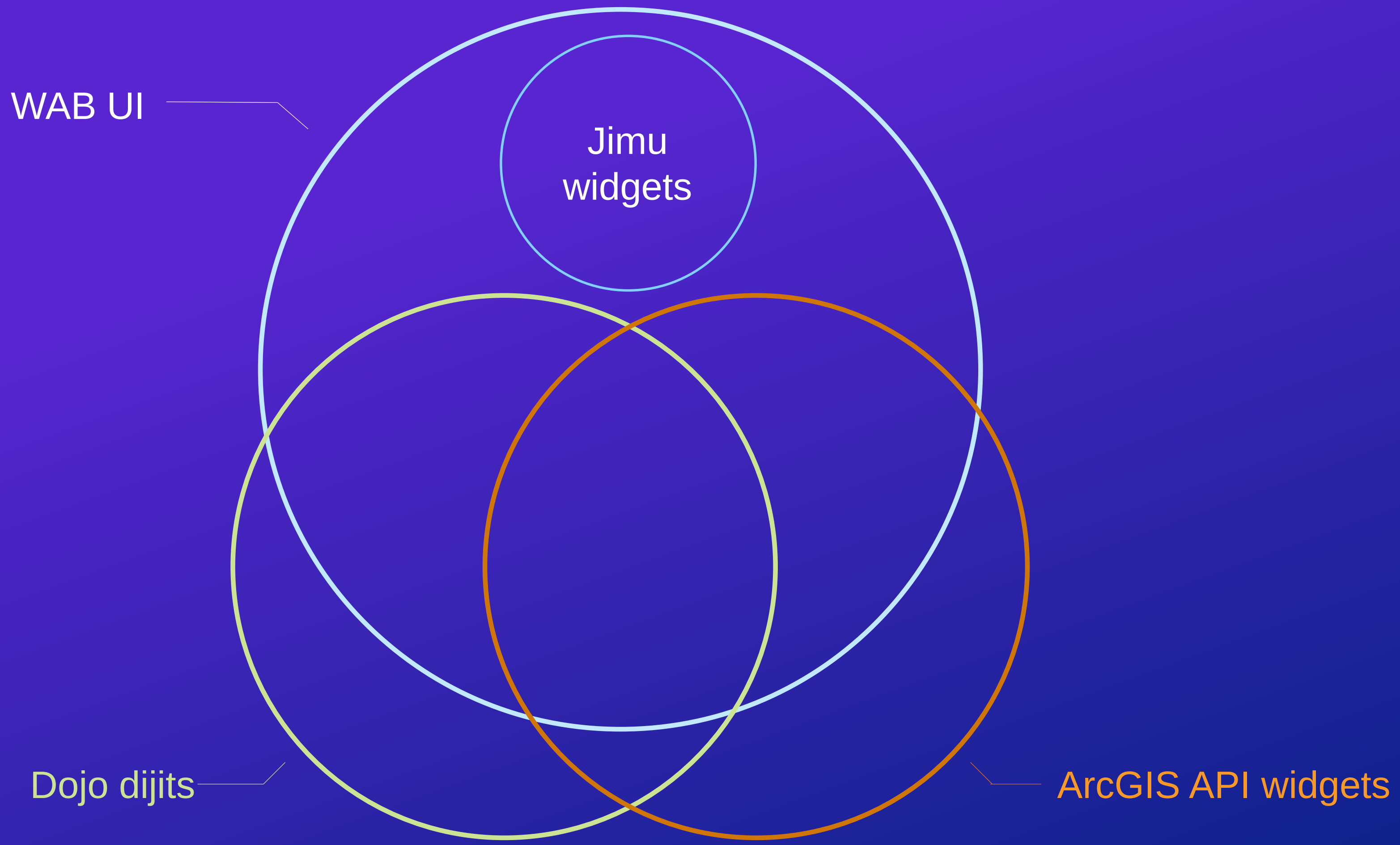
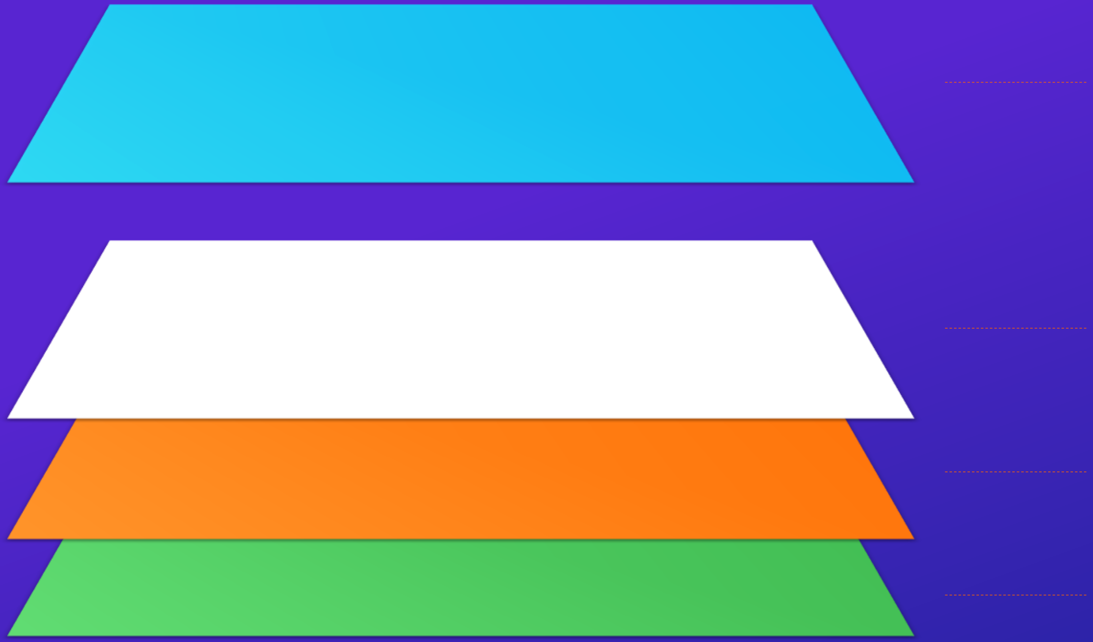


# What Makes Up The WAB UI?



# 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

# Compare to a Functional Widget

| | | Controller Widget | Functional Widget |
|---|---|---|---|
| Purpose | | - Displays app information<br>- 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

# Helpful Resources

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

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

Web AppBuilder for ArcGIS Geonet
https://community.esri.com/community/gis/web-gis/web-appbuilder

Slides and code from this presentation
https://esriurl.com/wab20

# Other Online Resources

- Esri Solutions Widgets:
  - https://github.com/Esri/solutions-webappbuilder-widgets
- Lists of Widgets:
  - http://esri-es.github.io/Web-AppBuilder-Custom-Widgets/
- Example widgets and theme shown today:  (need to update)

esri

THE
SCIENCE
OF
WHERE