ARCGIS EXPERIENCE BUILDER: GETTING YOUR FEET WET

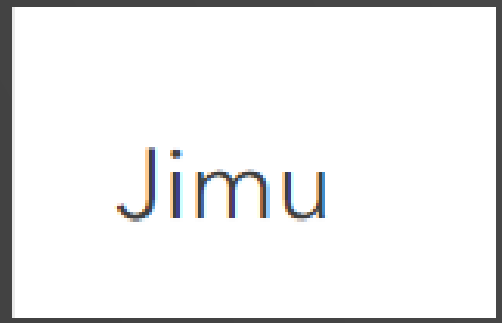
PRESENTERS: CHAD NUNEMACHER & PAUL HEDLUND

ARCGIS EXPERIENCE BUILDER TECHNOLOGIES

Superset of Javascript used to develop widgets

JS library used for creating user interfaces

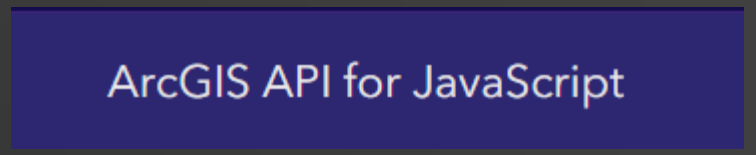
Javascript xml – allows you to describe what widget UI should look like via React



Experience Builder's JS library used to create widgets

JIMU

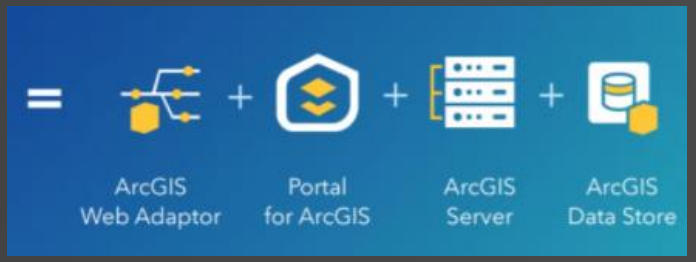
- Experience Builder's extensibility framework. It's built upon the following:
  - ArcGIS JS 4.X API
  - React + Redux
  - Bootstrap 4
  - HTML 5



EXPERIENCE BUILDER PLATFORMS AND DEPLOYMENTS

ArcGIS Online (SaaS – integrated version/GUI available)

ArcGIS Enterprise 10.6 or Later (on-premise – integrated version/GUI version 10.8.1 or greater)



Developer Edition (customized experience associated with AGO or Enterprise)

EXPERIENCE BUILD REQUIREMENTS

- ✓Laptop, Desktop, or tablet(for editing)
- ✓Any internet connected device (for viewing)
- ✓Supported browsers(Google Chrome, Microsoft Edge, Firefox, Safari)
- ✓Note: Only WebGL-enabled browsers are supported (this can be tested and verified by going to get.webgl.org)
- ✓Must have ArcGIS developer account or be member of AGO organization with create privileges to create experiences. Anyone can view public experiences.
- ✓Experience builder supports all languages that ArcGIS Online supports

COMPARING EXPERIENCE BUILDER AND WEB APPBUILDER

Experience Builder

- ✓ Map-centric or non-map-centric
- ✓ Single page or multipage
- ✓ Mobile-adaptive design
- ✓ Integrates with both 2D and 3D content
- ✓ Cross widget interactions and configuration
- ✓ Have developer edition
- ✓ very few widgets
- ✓ Newer product with ongoing enhancements

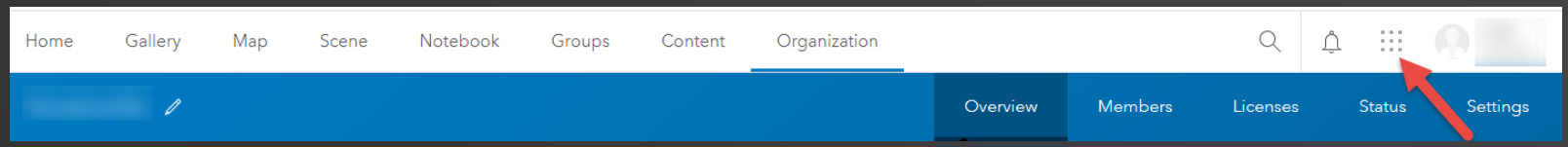
Web AppBuilder

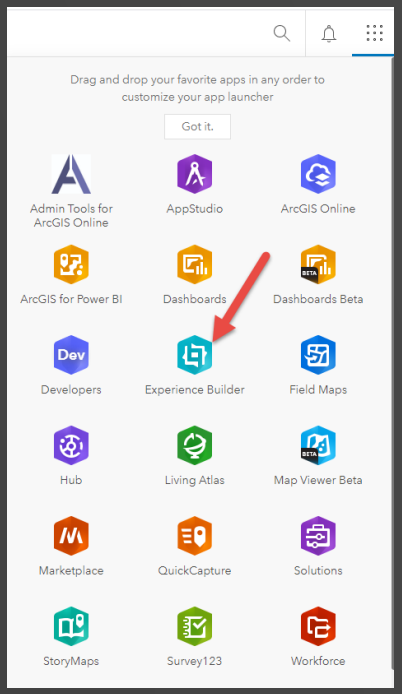
- ✓ Map-centric
- ✓ Single page
- ✓ Mobile friendly
- ✓ 2D or 3D content but can’t integrate them
- ✓ Widgets can not interact with other widgets
- ✓ Have developer edition
- ✓ 70+ widgets
- ✓ Mature product with few future enhancements

ARCGIS ONLINE EXPERIENCE BUILDER

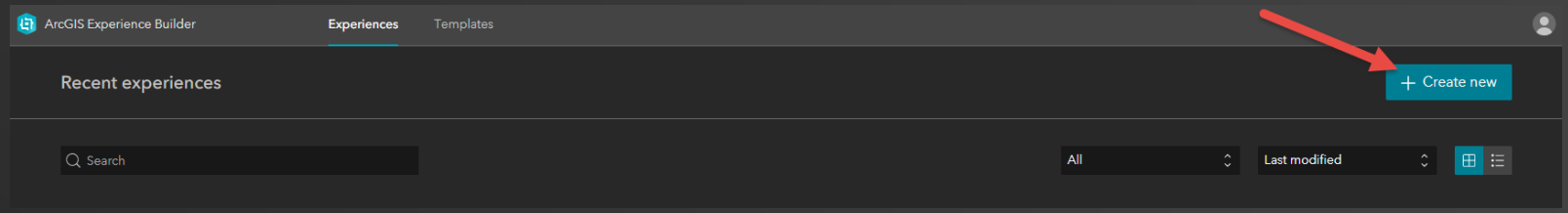
- Log into your ArcGIS Online Account (Make sure you have creator privileges)

- Navigate to the Experience Builder App in ArcGIS Online and Click on Icon



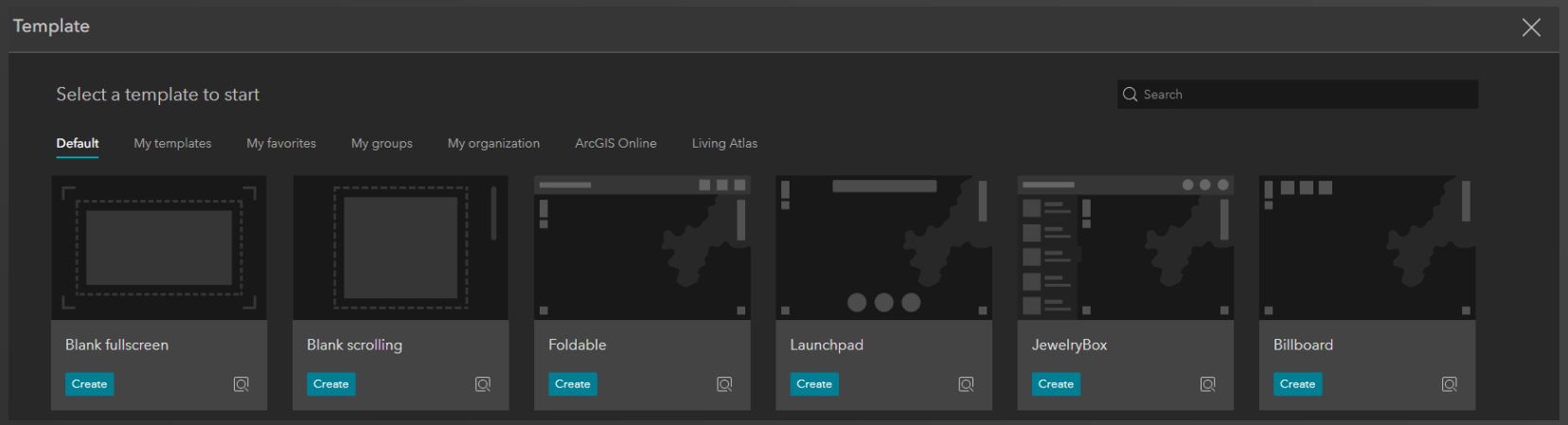


- First time click on “create new” to start an experience project (from your experiences you can create a template to use for future experiences)



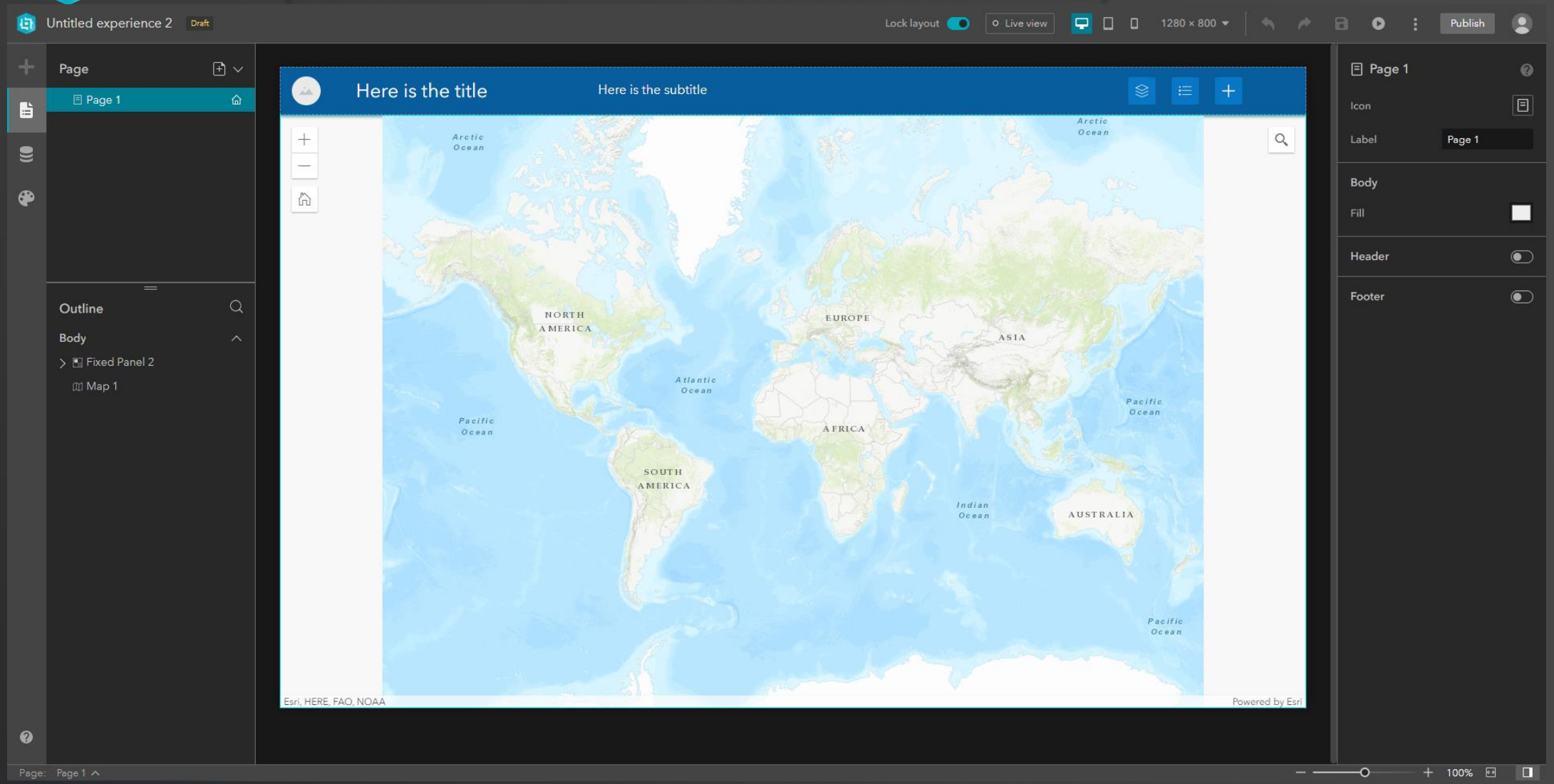
ARCGIS ONLINE EXPERIENCE BUILDER

- Then Select a template to start (pick from a default theme or create from a provide template)



ARCGIS ONLINE EXPERIENCE BUILDER

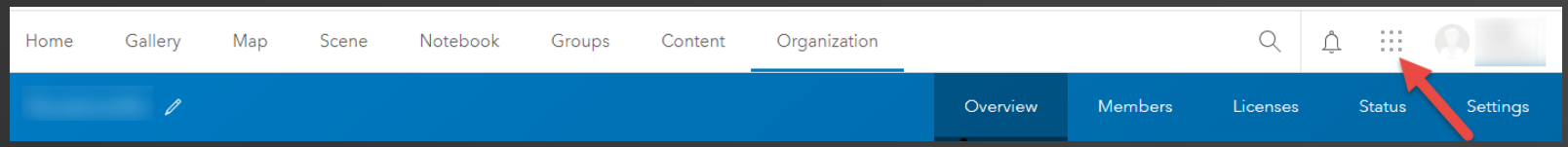
(DEFAULT LAYOUT VIEW FOR FOLDABLE THEME)

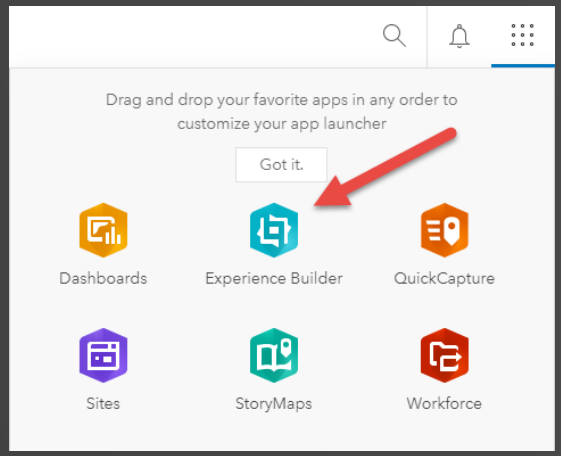


ARCGIS ENTERPRISE EXPERIENCE BUILDER

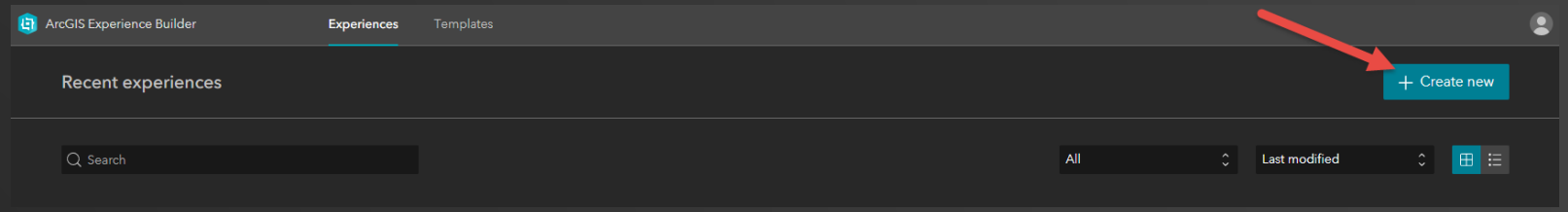
- Log into your ArcGIS Enterprise Portal Account (Make sure you have creator privileges)

- Navigate to the Experience Builder App in ArcGIS Online and Click on Icon



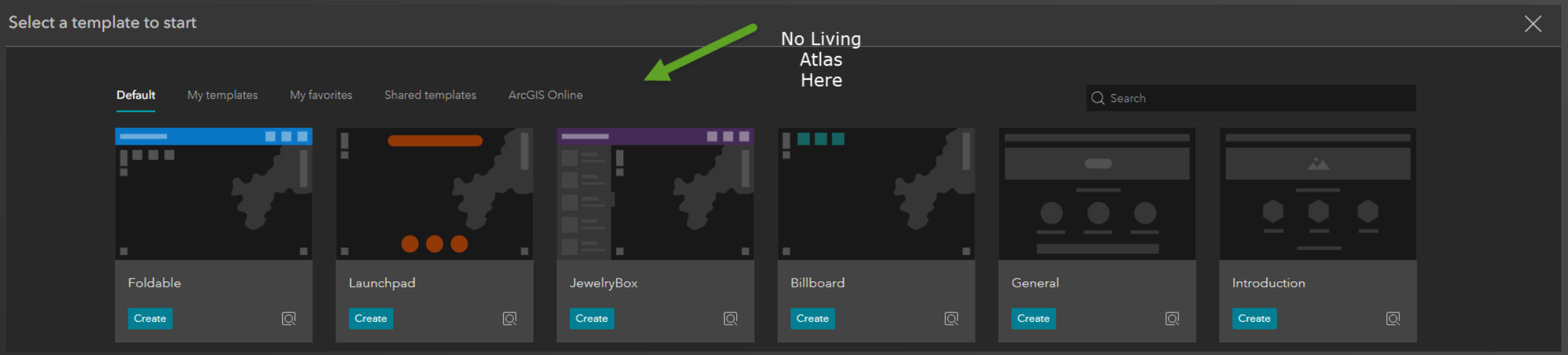


- First time click on “create new” to start an experience project (from your experiences you can create a template to use for future experiences)



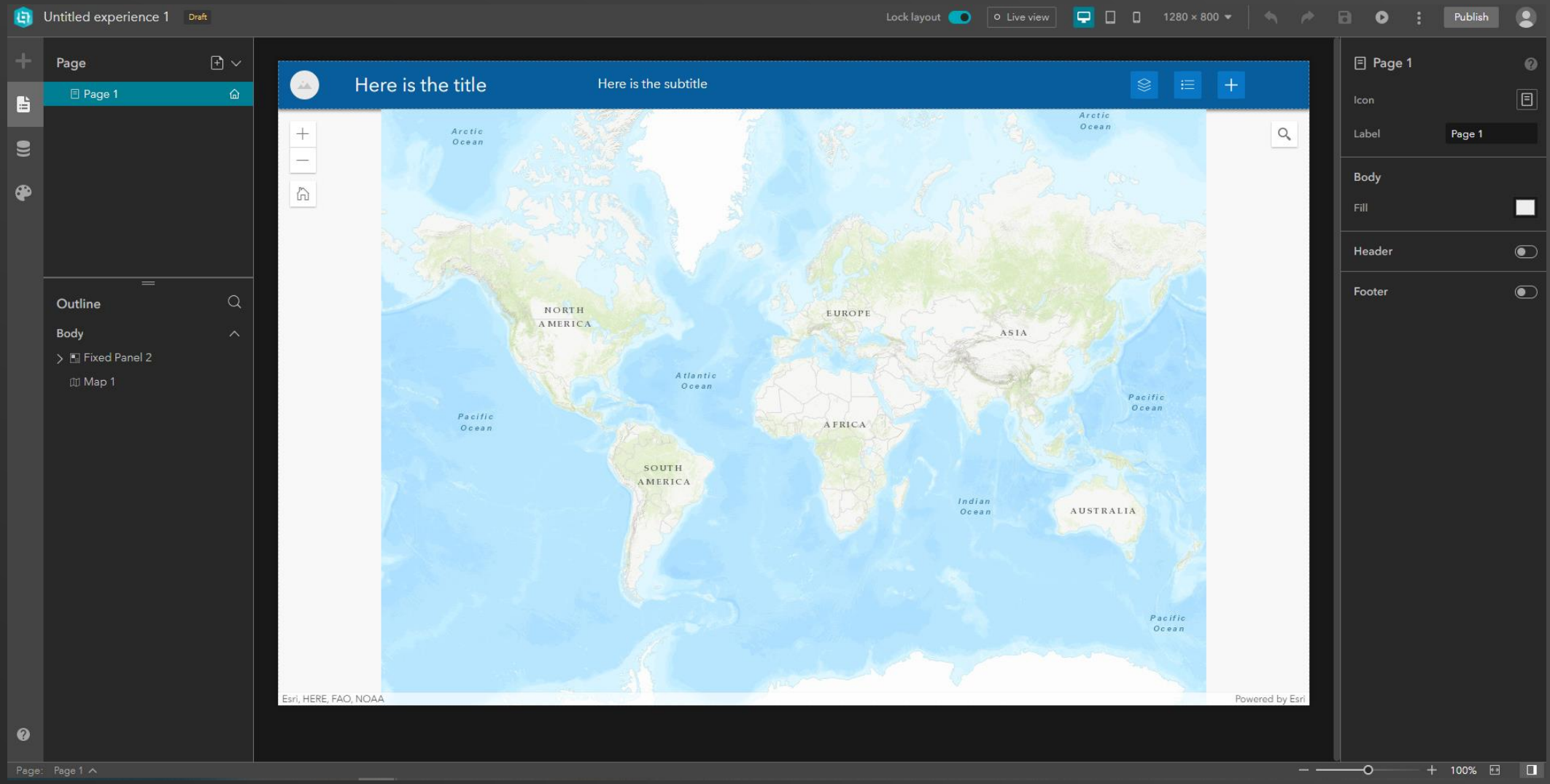
ARCGIS ENTERPRISE EXPERIENCE BUILDER

- Then Select a template to start (pick from a default theme or create from a provide template – almost identical to AGO interface except for a couple items



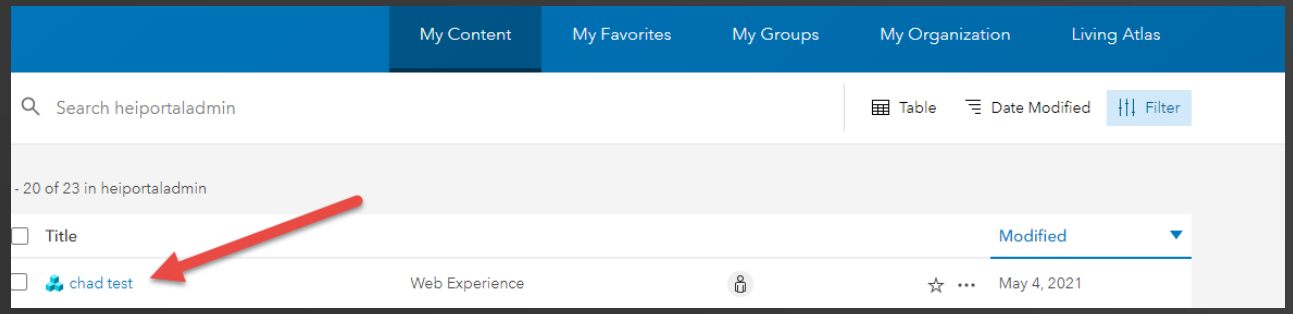
ARCGIS ENTERPRISE EXPERIENCE BUILDER

(DEFAULT LAYOUT VIEW FOR FOLDABLE THEME)



ARCGIS EXPERIENCE BUILDER

After you name you app, go to your Portal for ArcGIS or ArcGIS online My Content page. You will see your named Experience Builder app classified as “Web Experience”



ARCGIS INTEGRATED EXPERIENCE BUILDER

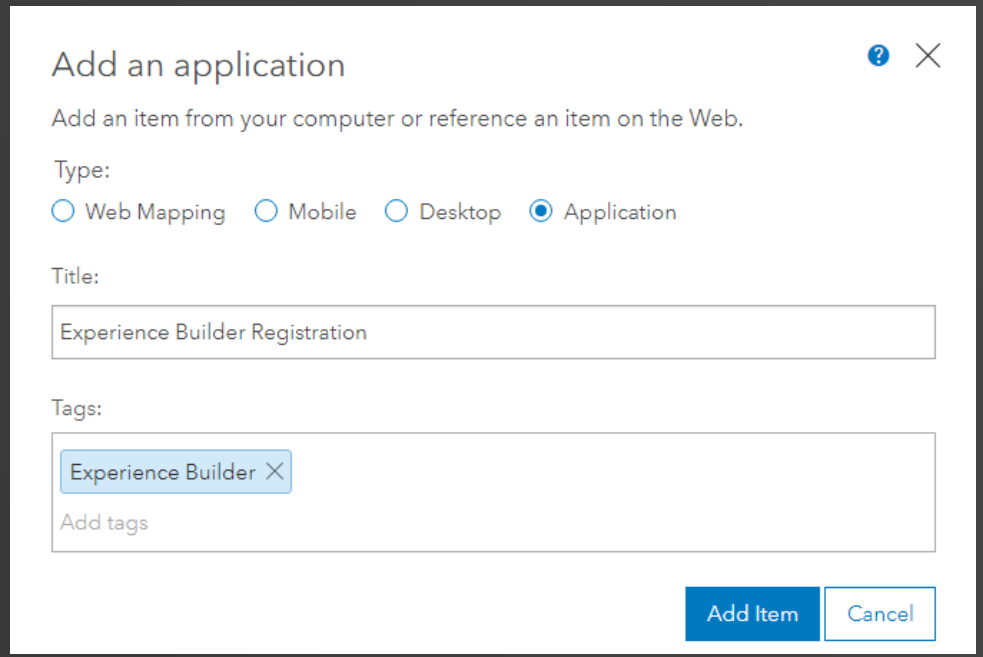
Let’s Quickly go over the some of Experience Builder interface tools and elements and build a quick integrated app. Most of the feature are self explanatory so I encourage you to explore on your own time

EXPERIENCE BUILDER DEVELOPER EDITION (PART 1 – THE SETUP)

ARCGIS ONLINE REGISTRATION FOR EXPERIENCE BUILDER

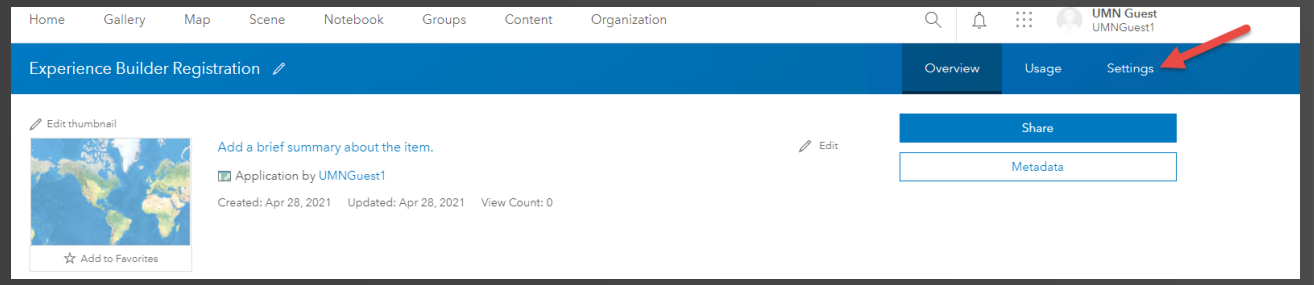
Registration Info obtained from the following: https://developers.arcgis.com/experience-builder/guide/install-guide/

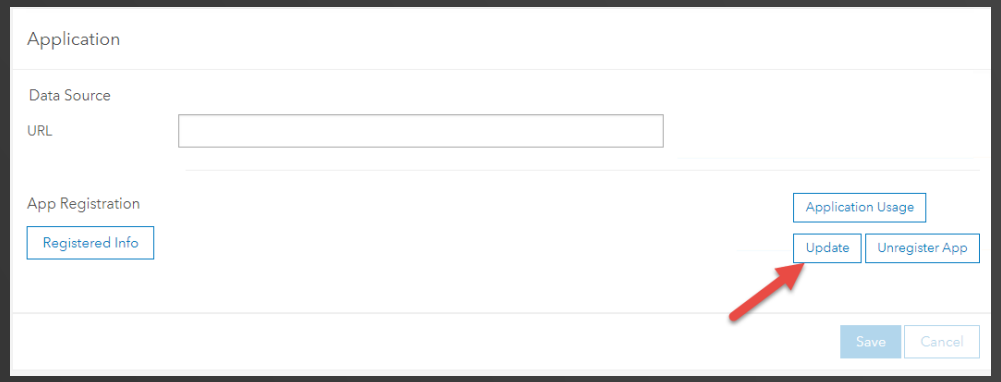
- Log into you ArcGIS Online Account
  - For our U of M account, was go here: https://umn.maps.arcgis.com
  - Click Sign In in upper right of home page
  - Click ArcGIS Login and enter provided credentials by U of M GIS Staff
- Then Click on “Content” and then “My Content”
- Click “Add Item” and Select “An Application”

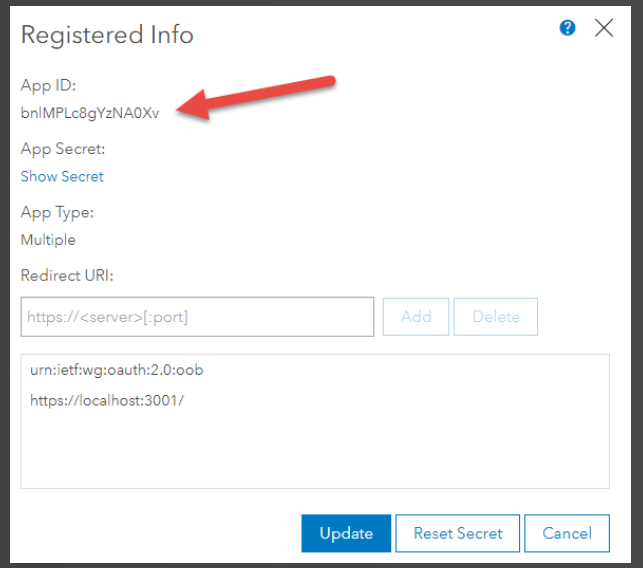


ARCGIS ONLINE REGISTRATION FOR EXPERIENCE BUILDER

- Click on Settings
- Scroll down to Application section and hit “Update”
- On “Registered Info” dialog box, enter https://localhost:3001/ and hit “Add” then “Update”
- Copy and paste App ID to notepad or notepad++ for this will be needed when connecting the first time to AGOL via Experience Builder

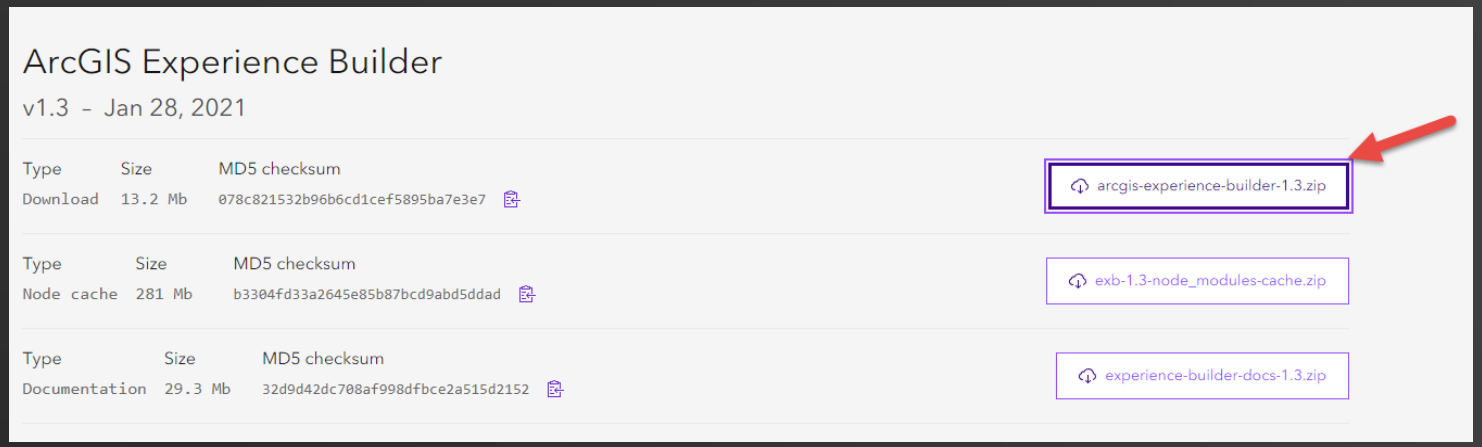


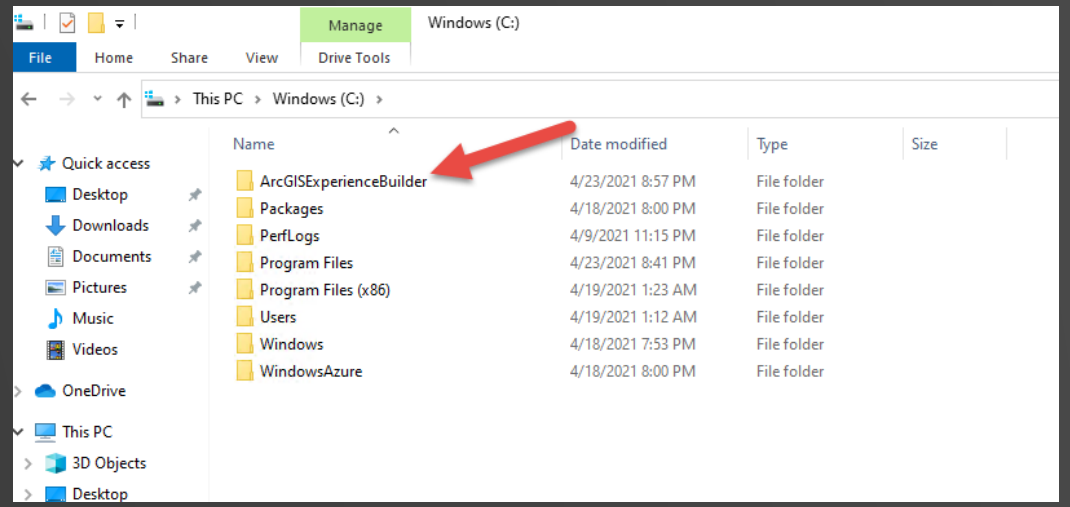




DOWNLOAD, INSTALL, AND CONFIGURE EXPERIENCE BUILDER

- Experience Builder runs on top of Node.js 12+.x, download and install Node.js (https://nodejs.org/en/download/) for your operating system. In our case, we will install LTS 64 bit Windows Installer (.msi). Just use all defaults and quickly install Node.js
- Download experience builder from the following: https://developers.arcgis.com/downloads/apis-and-sdks/?product=arcgis-experience-builder
- Who will likely be prompted to enter your ArcGIS Online (AGO) account info. Enter AGO username and password provided by U or M GIS Staff
- On the downloads screen, scroll down and click on “arcgis-experience-builder-1.3.zip” or newer. Download will then start. Once download complete, unzip (extract) to root of C: drive for this workshop





DOWNLOAD, INSTALL, AND CONFIGURE EXPERIENCE BUILDER

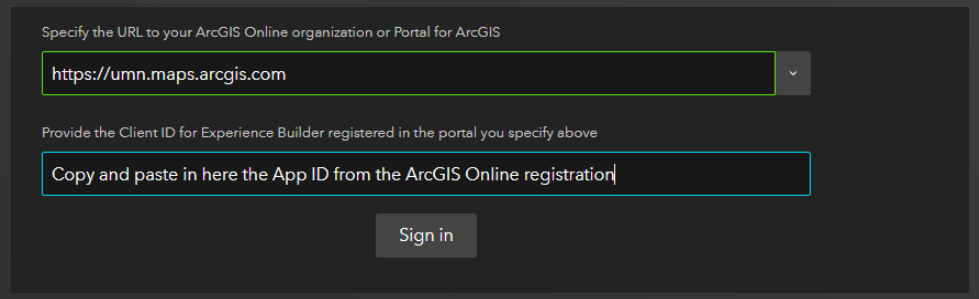
- Open Command or terminal window (easy way to open window in just type “cmd” in “type here to search” window and bottom of Windows screen and hit “enter”
- Navigate to server directory of Windows installation by typing the following command prompt:
  cd /arcgisexperiencebuilder/server
- Then at the prompt type: npm ci (this will install necessary modules)
- Then at the prompt type: npm start (this will start experience builder service)
- Open browser (Chrome for this workshop) at enter the following URL to launch EXB `https://localhost:3001/`

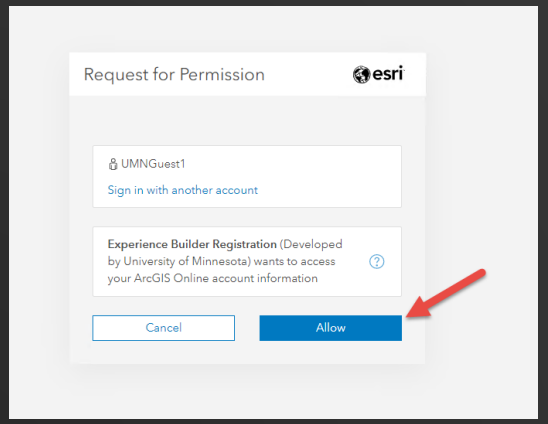
```
C:\ArcGISExperienceBuilder\server>npm ci

> nodemon@2.0.4 postinstall C:\ArcGISExperienceBuilder\server\node_modules\nodemon
> node bin/postinstall || exit 0

Love nodemon? You can now support the project via the open collective:
 > https://opencollective.com/nodemon/donate

added 940 packages in 46.73s
```

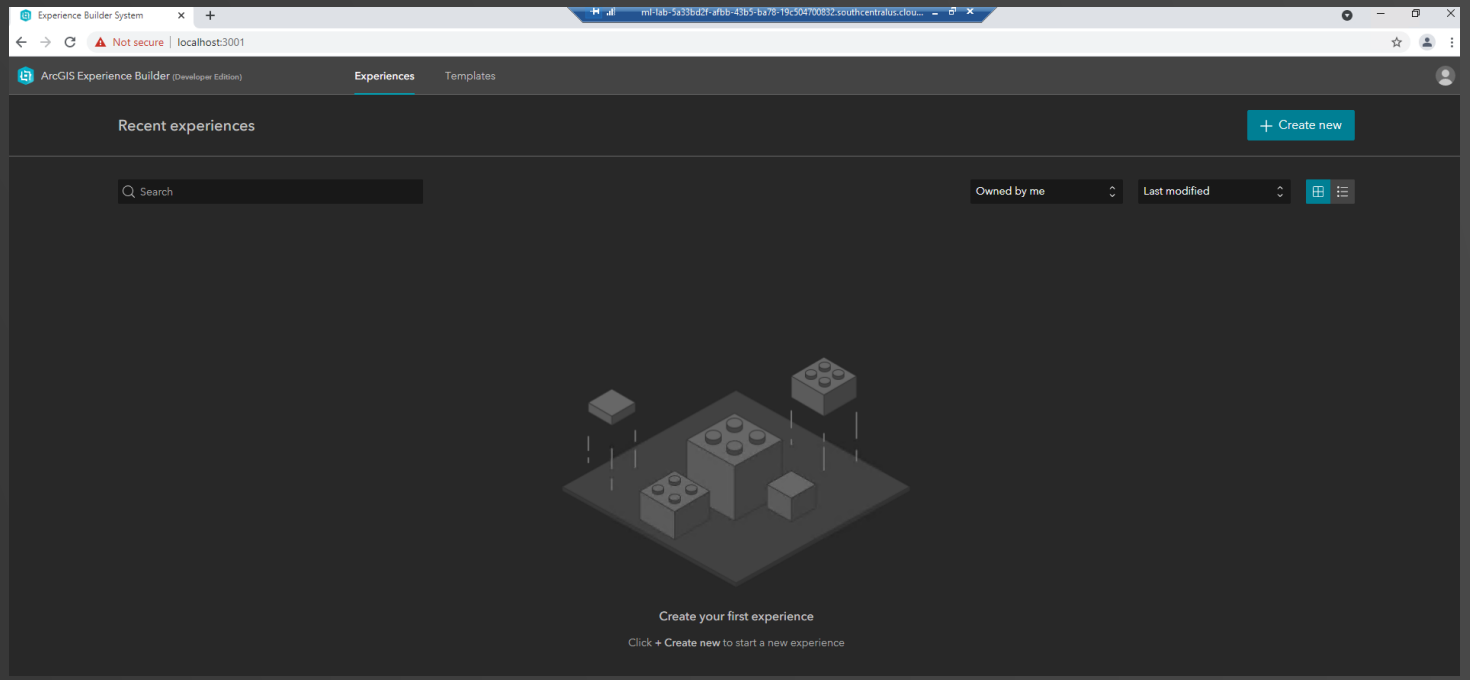
```
C:\ArcGISExperienceBuilder\server>npm start

> exb-server@0.1.0 start C:\ArcGISExperienceBuilder\server
> cross-env NODE_ENV=production node src/server

Http server running on port 3000
Developer Edition
Https server running on port 3001
```

DOWNLOAD, INSTALL, AND CONFIGURE EXPERIENCE BUILDER

- When Experience Builder is launched for the first time you may hit a landing page saying this site is insecure. Just hit advanced and proceed. For this workshop, SSL certs weren't used so to the left of the URL it will say "Not secure"
- Then you will be prompted to enter your ArcGIS Online Account URL (Or portal URL if using enterprise) and also the client ID which is the app ID you copied to notepad or notepad ++ earlier
- Enter in this information and allow "request for Permission" and you have successfully configured the server side of the developer edition of Experience Builder



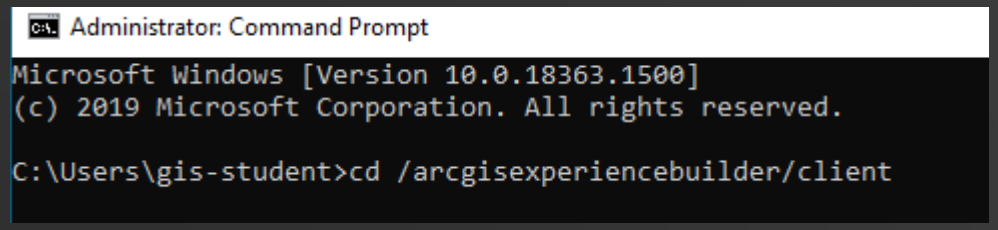


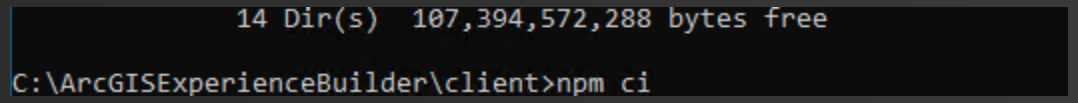


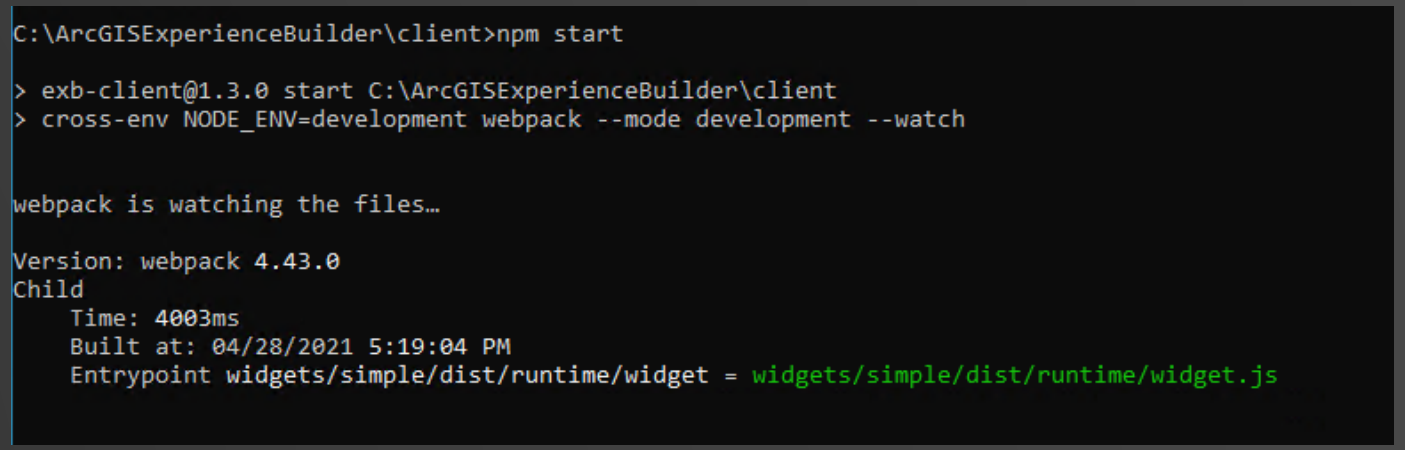
DOWNLOAD, INSTALL, AND CONFIGURE EXPERIENCE BUILDER

At This point we are done installing and configuring EXB if we just want to use the build in GUI, but if this was the case we could have just used the integrated AGO or ArcGIS 10.8.1+ integrated version of Experience Builder. We want to develop a custom widget so we will also need to do the Client install which will install a service to launch webpack to help with the bundling/loading of custom widgets and themes

- Open command prompt again and type the following at command prompt and hit enter: cd /arcgisexperiencebuilder/client
- Then type the following at the command prompt and hit enter: npm ci (this will install necessary modules)
- Once modules have been installed, type in the following at command prompt: npm start
- You can now start developing your custom widget



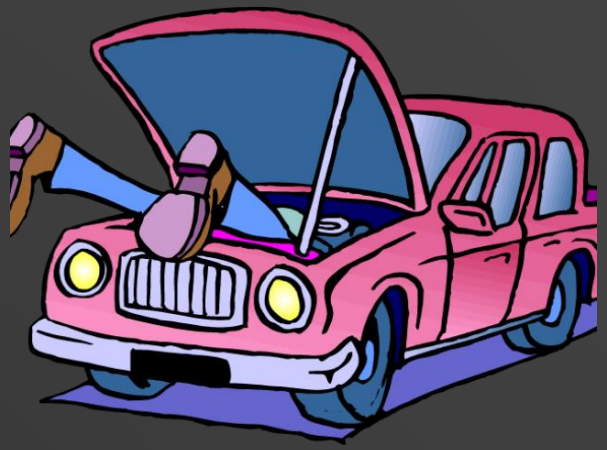




PAUL TAKES OVER

NOW ON TO THAT CODING STUFF

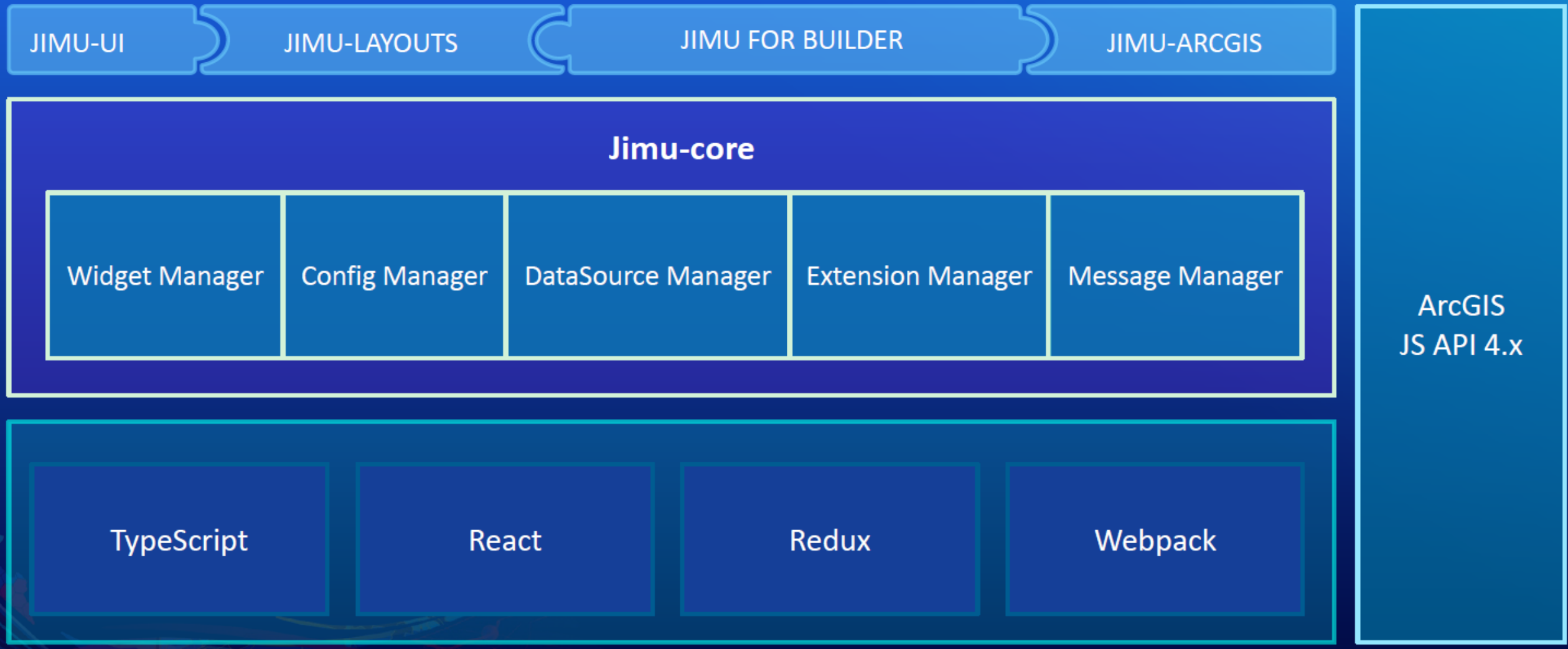
UNDER THE HOOD



Web AppBuilder
- ✓ JavaScript API 3.X
- ✓ Dojo

Experience Builder
- ✓ JavaScript API 4.X
- ✓ React

UNDER THE HOOD – IN DETAIL



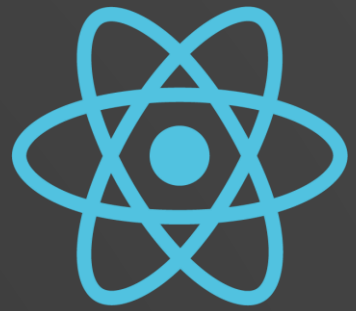
UNDERSTANDING TERMS

Markup Language
Content

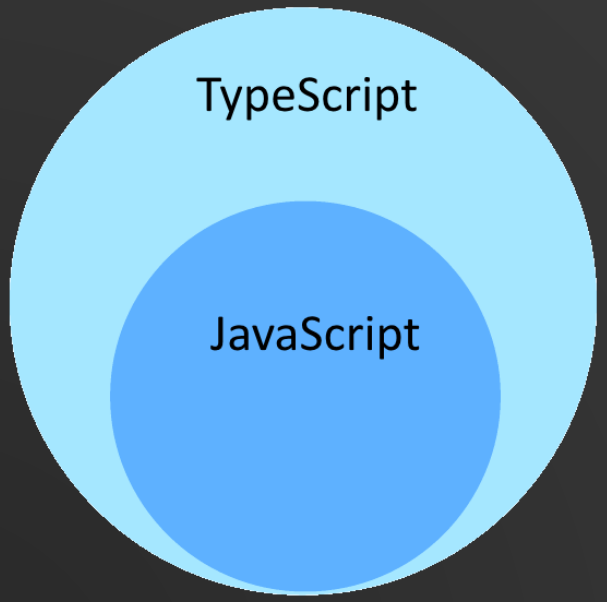
Style sheet Language
Presentation

Programming Language
Behavior

Front End
JavaScript
Library



JavaScript Library
Manage
Application State



Optional
Static
Typing

ESRI Developed
JavaScript library

JIMU

VERSIONS

Web App Builder
Current Version - 2.19

Experience Builder
Current Version 1.3
Version 1.4 to be released any day

exbVersion	JSAPI versions	ArcGIS Enterprise	Developer Edition	ArcGIS Online
1.3	4.18		1.3	December 2020
1.2	4.17		1.2	October 2020
1.1	4.16		1.1	June 2020
1.0	4.15	10.8.1	1.0	February 2020

QUESTION?

- ✓Will Experience Builder replace Web AppBuilder?
  - ✓ESRI's Official Answer – There is no plan to replace and make Web AppBuilder obsolete. Both builders will be running and maintained in parallel. Web AppBuilder will continue to be available.

- ✓Paul's Unofficial – Official Answer

YES!!

For many years ESRI said they had no plan to deprecate ArcGIS Desktop (ArcMap) as they were building ArcGIS Pro. They said they would maintain both in parallel. Now they say ArcGIS Desktop(ArcMap) will no longer be supported in 2026. I am not sure on the timeline, but expect something similar here.

QUESTION?

- ✓Can anything be transferred between Web AppBuilder and Experience Builder?
  - ✓ESRI's Official Answer – You need to re-configure apps or rewrite customer widgets created with Web AppBuilder if you choose to move them to Experience Builder.

- ✓Paul's Unofficial – Official Answer

NO!! - Starting over from scratch

- ✓Will Experience Builder reach functional parity of Web AppBuilder?
  - ✓ESRI's Official Answer – Starting with the core and popular widgets, Experience builder is planned to reach most of functional parity of Web AppBuilder through incremental releases.

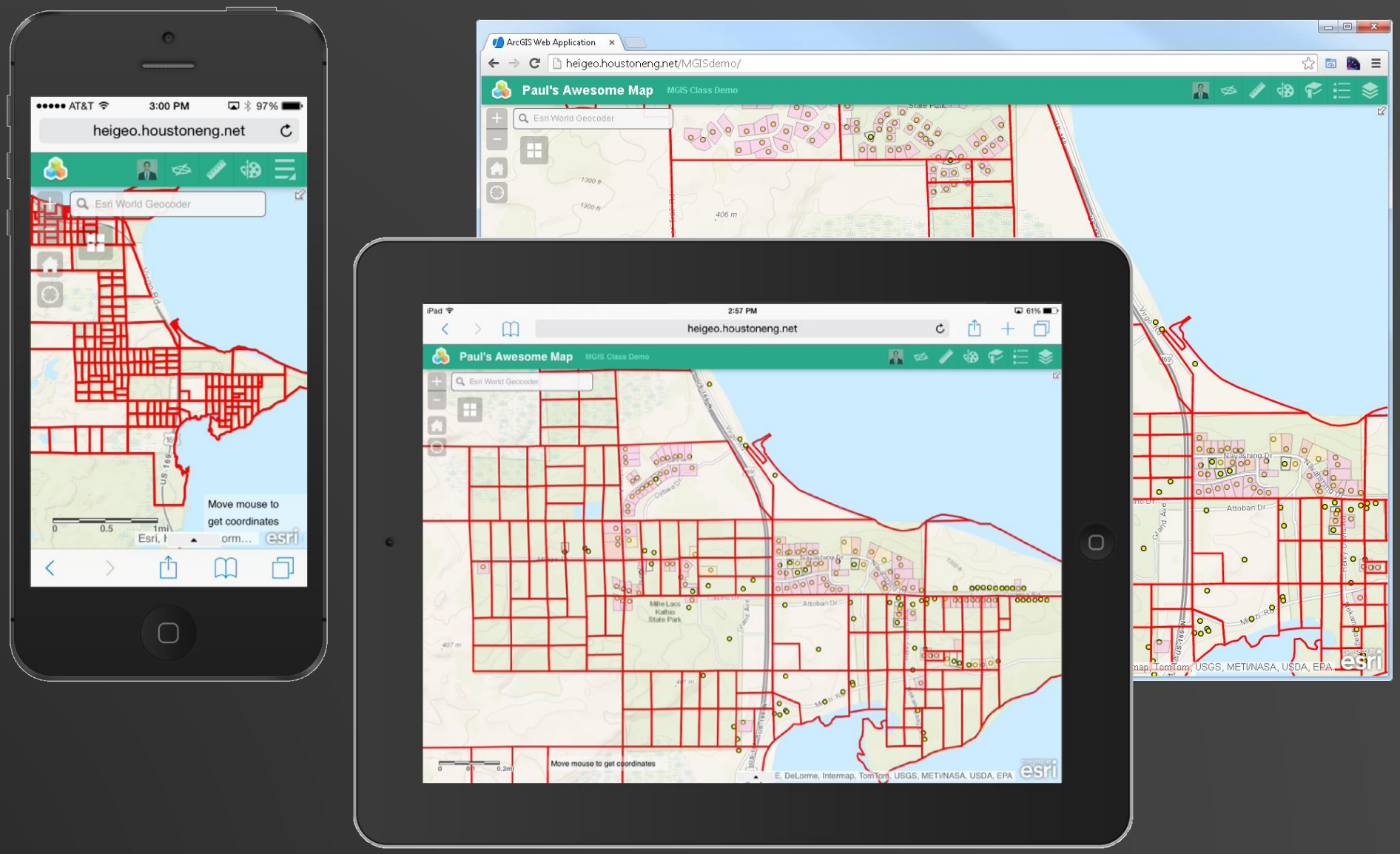
- ✓Paul's Unofficial – Official Answer

Yes – But, we have no idea when

MOBILE

- ✓Web App Builder = Mobile Friendly
- ✓Experience Builder = Mobile First

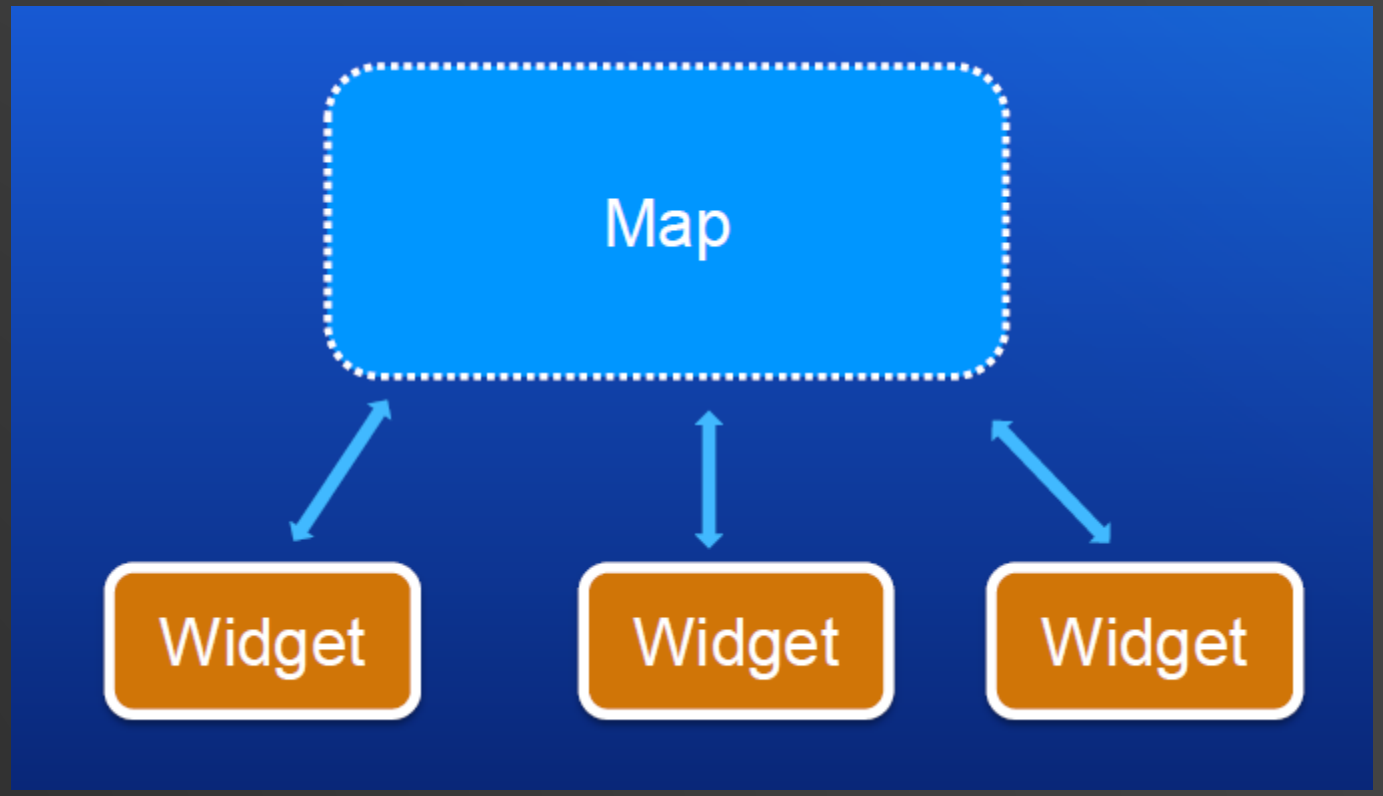
RESPONSIVE WEB DESIGN



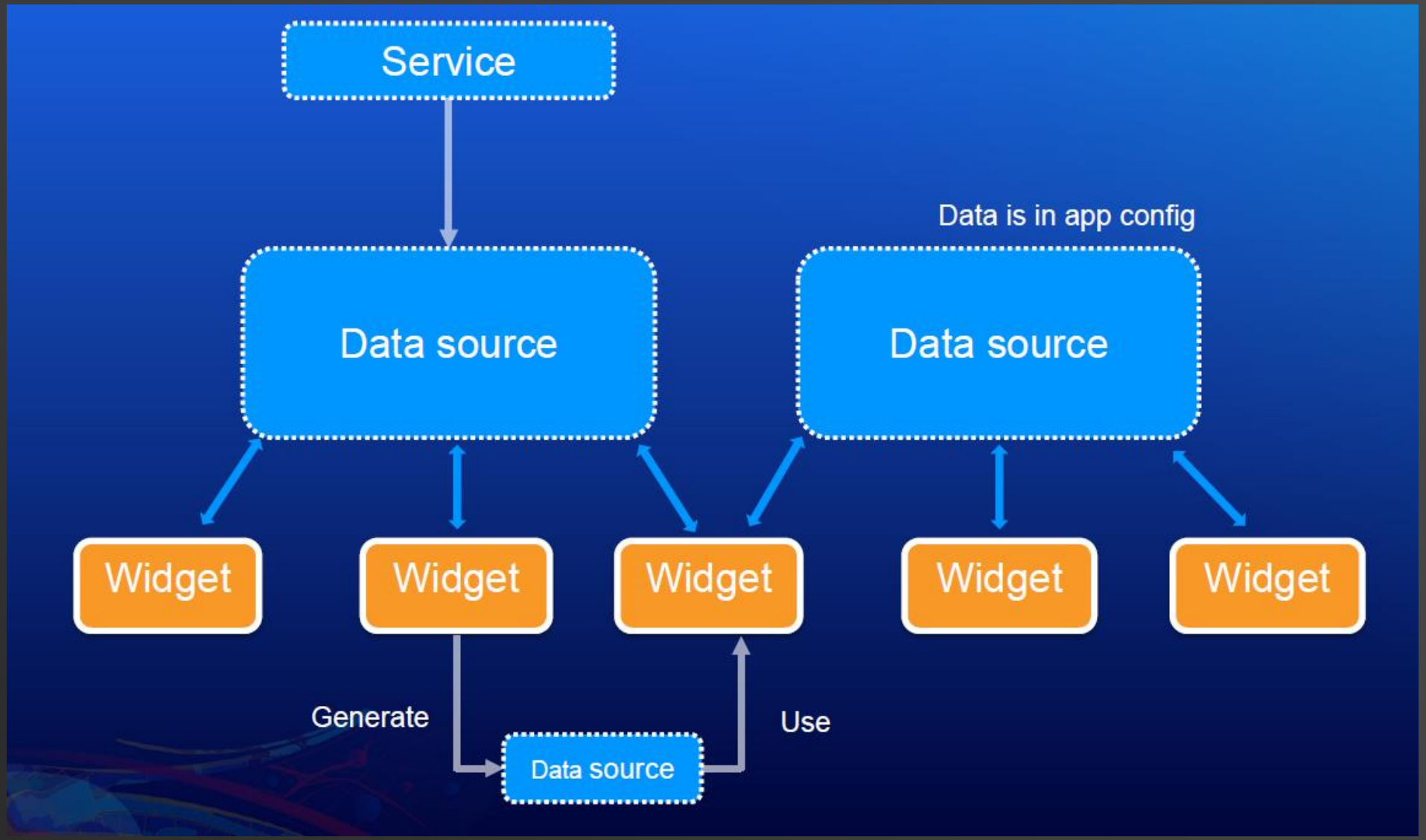
RESPONSIVE WEB DESIGN – EXPERIENCE BUILDER

- Three screen modes:
  - Large
  - Medium
  - Small

WEB APPBUILDER – MAP CENTRIC APP



EXPERIENCE BUILDER – DATA SOURCE CENTRIC APP



2021 EXPERIENCE BUILDER WIDGET ROAD MAP

*Query
*Chart
*Coordinate Conversion
*Branch Version Management
Service Explorer
Water Outage Isolation Trace
Print
Elevation Profile
Time Slider
Add Data
Business Analyst

Image Gallery
Search
Edit
Geoprocessing
Sketch (Draw)
Swipe
Basemap Gallery
Directions
Slice (3D)
Line of Sight (3D)
Daylight (3D)

**Planned for next update*

EXPERIENCE BUILDER – USE CASE

Is Experience Builder mature enough to use in real world cases?

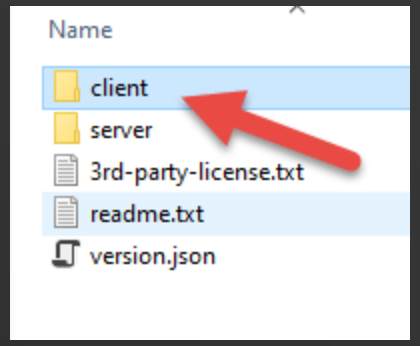
NODE.JS

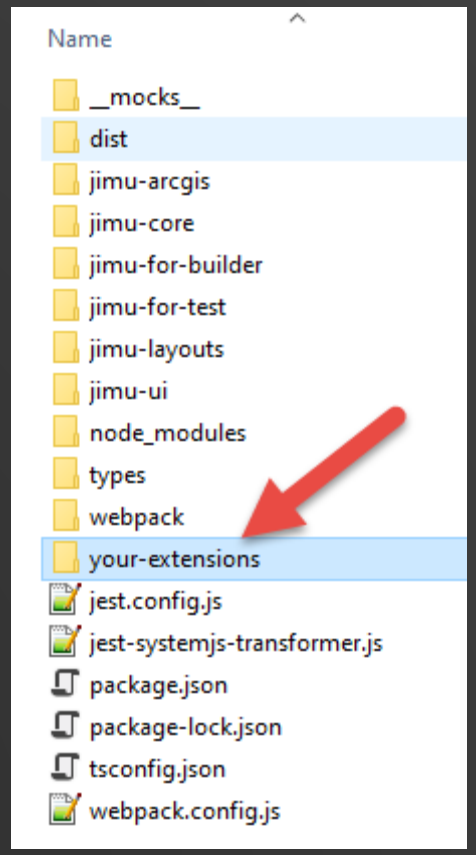
- ✓What do I need to know about Node.js after initial install?
  - ✓Command Prompt – Go to “Server” folder
  - ✓Type “npm start”

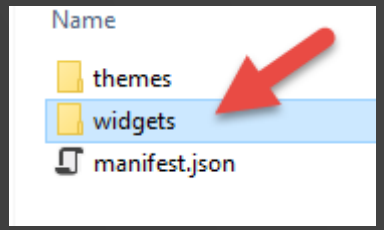
```
D:\Development\NDDEQ\ArcGISExperienceBuilder\server  (exb-server@0.1.0)
λ npm start

> exb-server@0.1.0 start D:\Development\NDDEQ\ArcGISExperienceBuilder\server
> cross-env NODE_ENV=production node src/server

Http server running on port 3000
Developer Edition
Https server running on port 3001
```

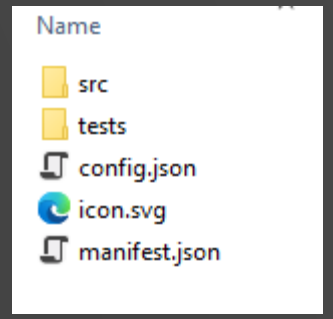
WIDGET FOLDER

✓/client/your-extensions/widgets

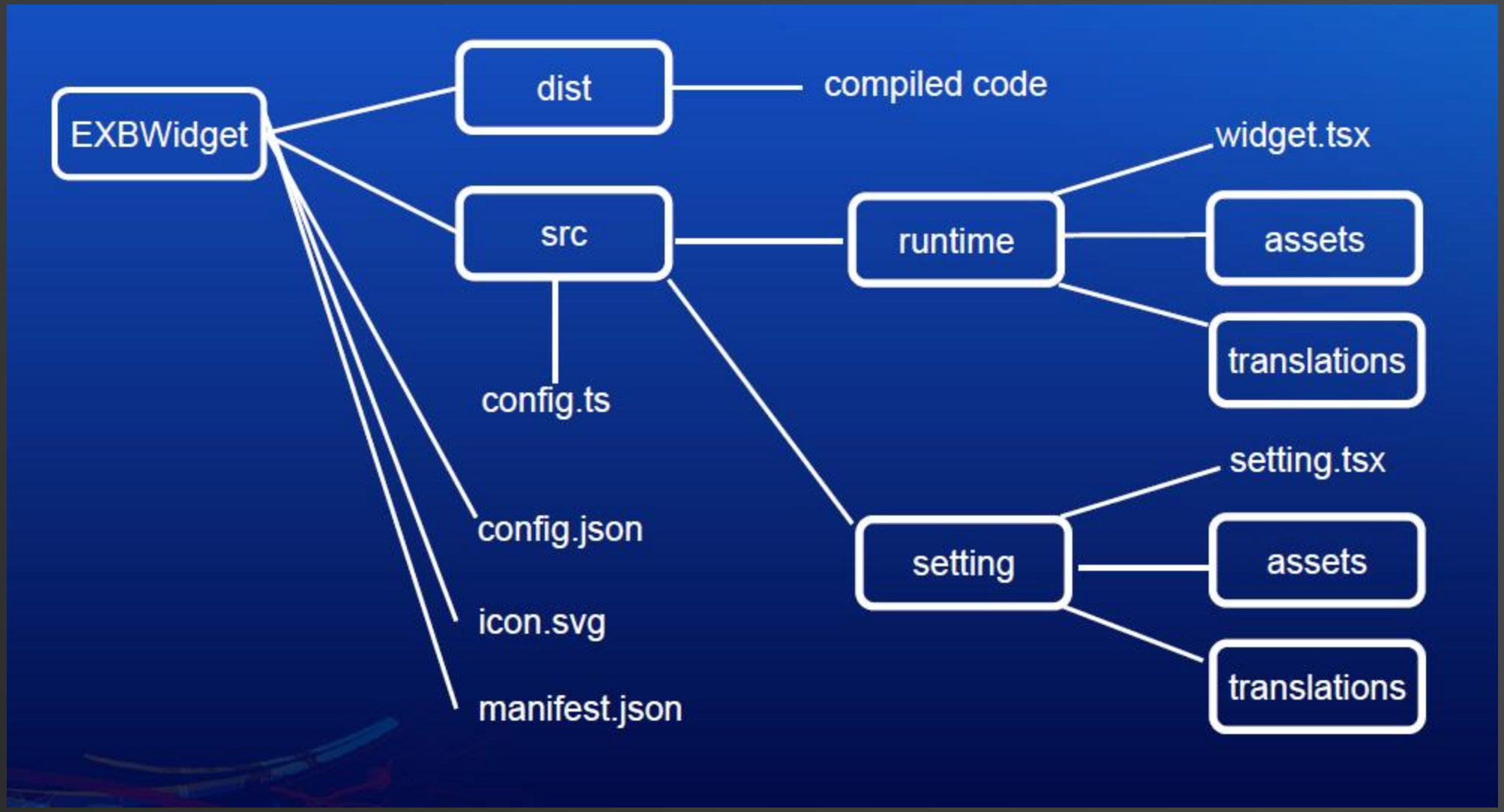








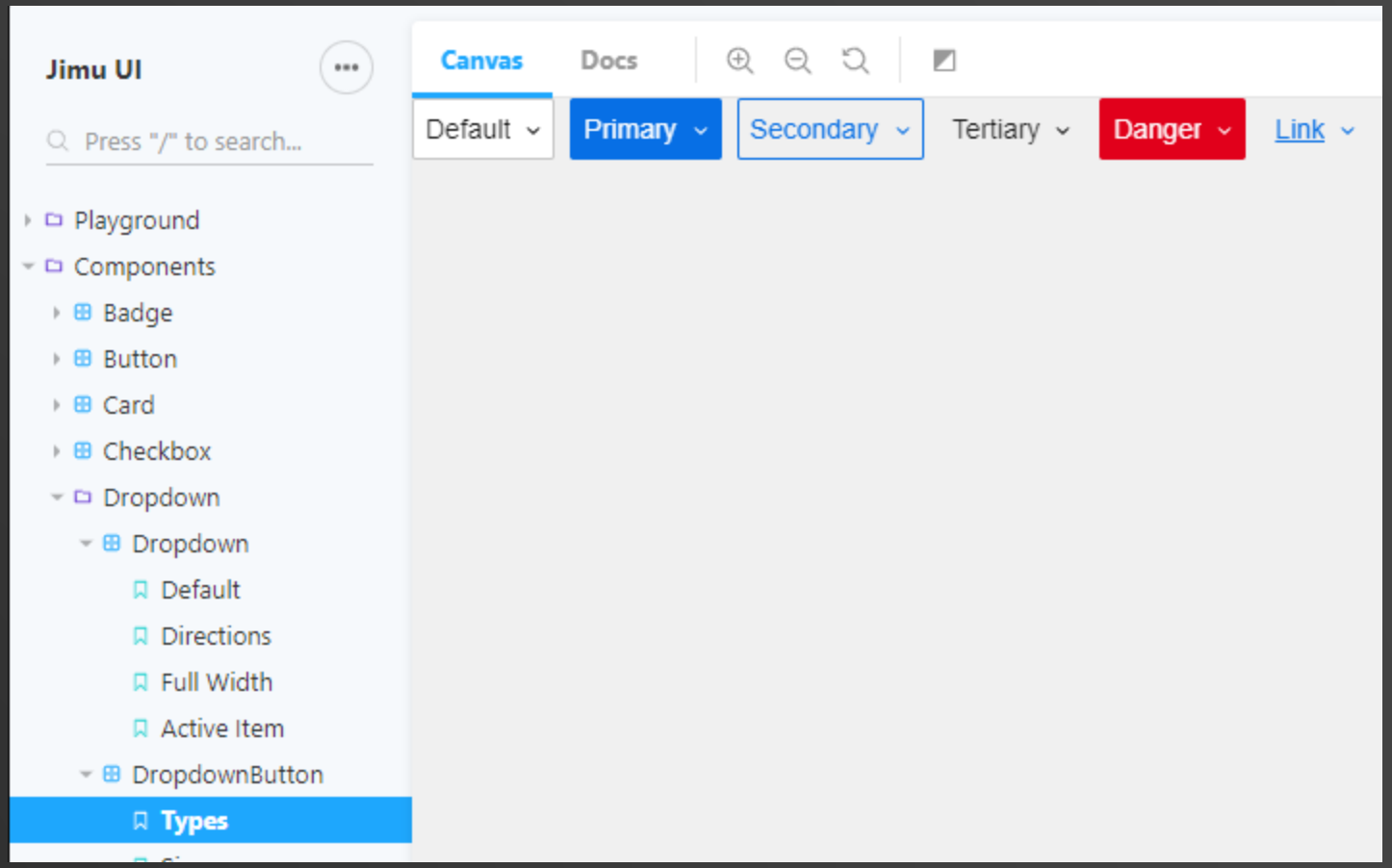
WIDGET FILE STRUCTURE



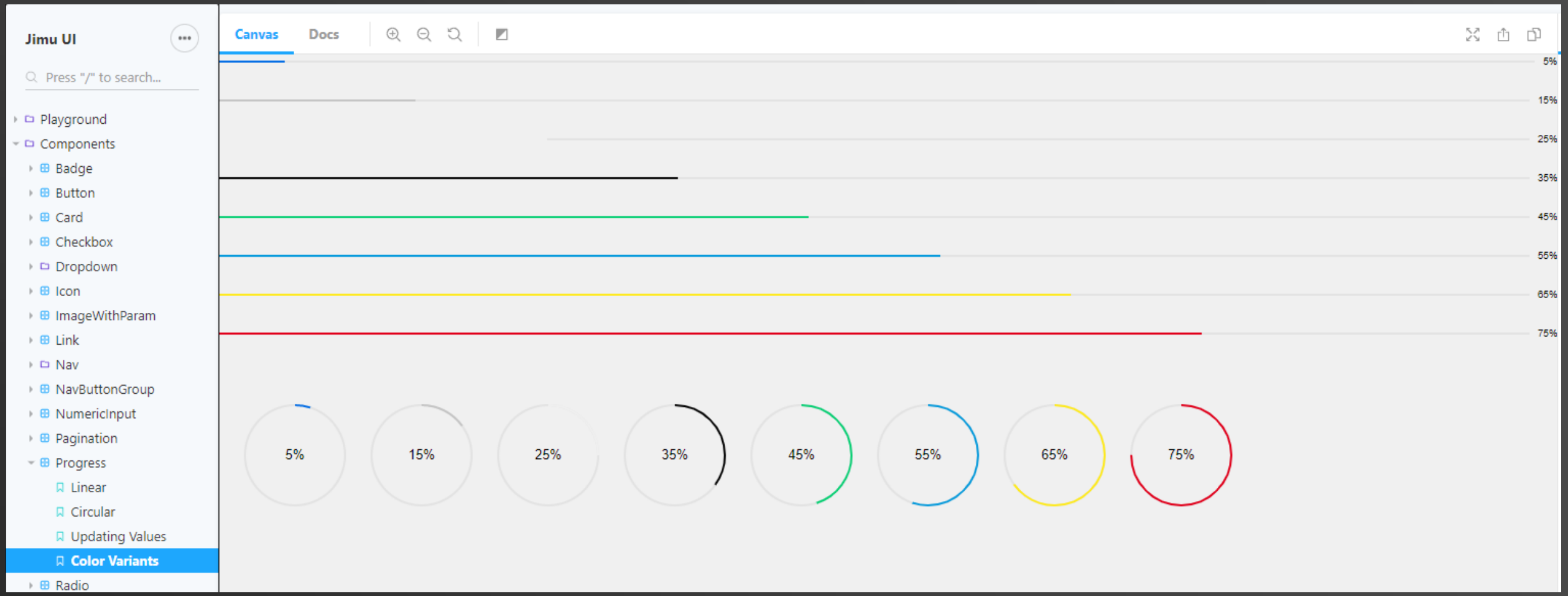
MANIFEST.JSON


```
{
  "name": "starter-widget",
  "type": "widget",
  "version": "1.3.0",
  "exbVersion": "1.3.0",
  "author": "Your Name",
  "description": "A hello world starter widget",
  "copyright": "",
  "license": "",
  "properties": {},
  "translatedLocales": [
    "en"
  ],
  "defaultSize": {
    "width": 800,
    "height": 500
  }
}
```

STORYBOOK – UI COMPONENTS



STORYBOOK – UI COMPONENTS



DEVELOPER EDITION – FIRST STEPS SUMMARY

- ✓Download Developer Edition Files
- ✓Register App ID
- ✓Create new “Experience” - Web Map
- ✓Build Custom Widget

EXAMPLES

- ✓https://experience.arcgis.com/experience/dde155a7b903429a90c7fe39e281f9be/page/page_1/
- ✓https://experience.arcgis.com/experience/22c7182a162d45788dd52a2362f8ed65
- ✓https://experience.arcgis.com/experience/f7f674ce7a4a45b4afc8c3c4b2bdba7d
- ✓https://experience.arcgis.com/experience/28466a6d361545358ec64fa3e932ee86/page/page_0/

HELPFUL RESOURCES

ArcGIS Experience Builder Online Edition
experience.arcgis.com

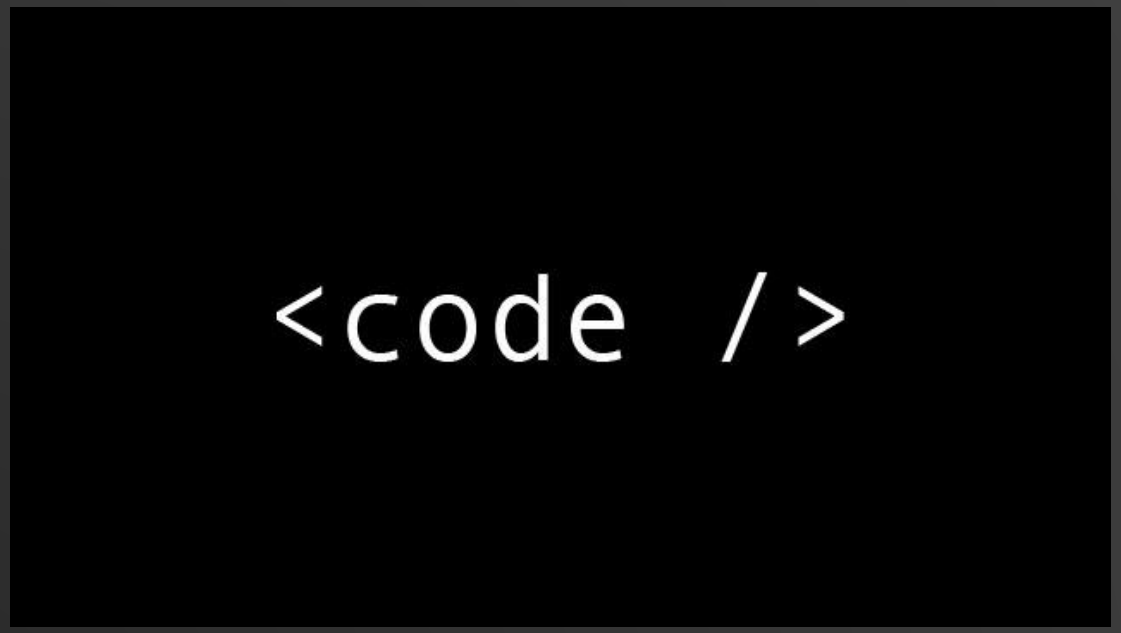
Download Developer Edition
developers.arcgis.com/experience-builder

Help documentation
doc.arcgis.com

Community
community.esri.com/community/arcgis-experience-builder

UI Components
developers.arcgis.com/experience-builder/storybook

Samples Repo
community.esri.com/t5/arcgis-experience-builder/ct-p/arcgis-experience-builder

TIME TO CODE - EXERCISES

Exercises and slides available here:
github.com/paulhedlund/experiencebuilderGISLIS