



# ARCGIS EXPERIENCE BUILDER: GETTING YOUR FEET WET

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# 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

Jimu

Experience Builder's JS library used to create widgets

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

ArcGIS API for JavaScript



React



Redux



Bootstrap 4

# EXPERIENCE BUILDER PLATFORMS AND DEPLOYMENTS



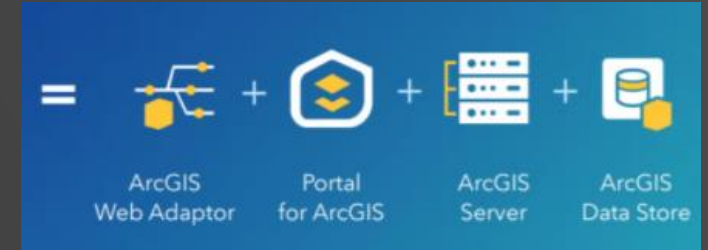
ArcGIS Online (SaaS  
– integrated  
version/GUI available)



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](https://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

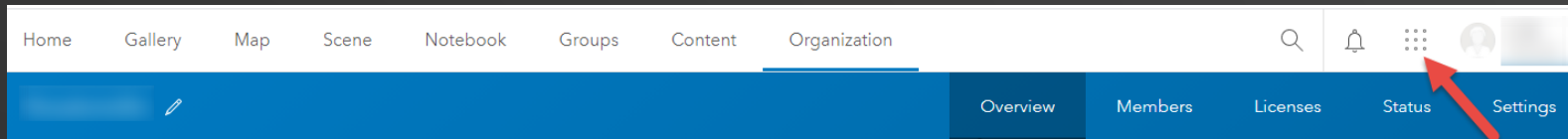
# ARCGIS ONLINE EXPERIENCE BUILDER



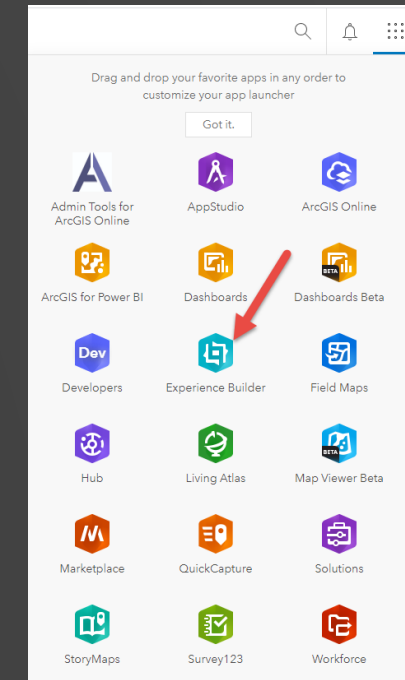
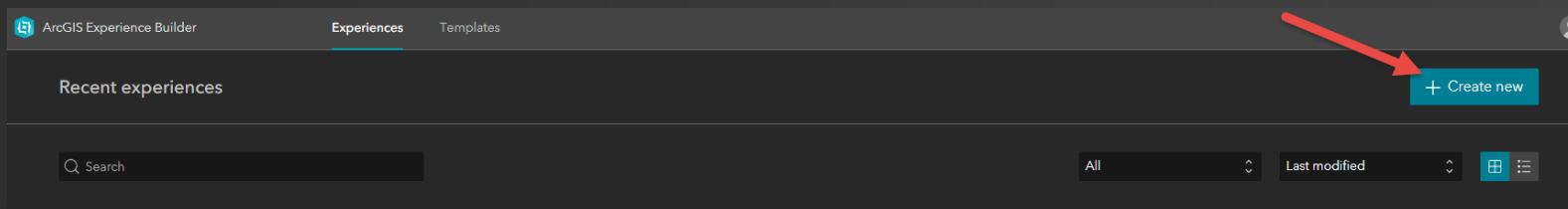
- Log into your ArcGIS Online Account (Make sure you have creator privileges)



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



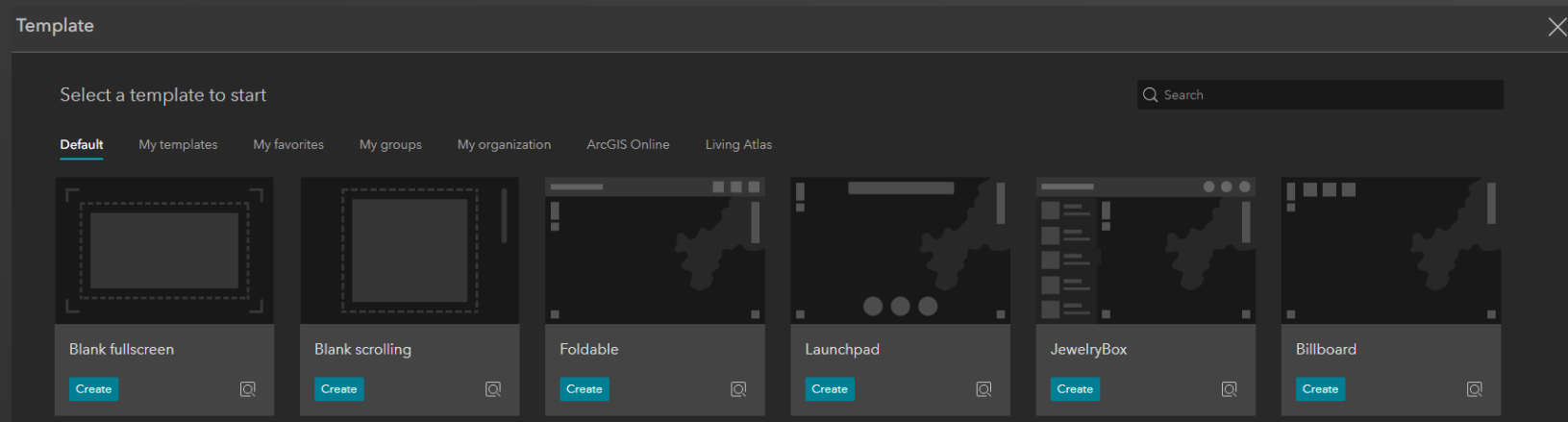
- First time click on “create new” to start an experience project (from your experiences you can create a template to use for future experiences)



# 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)



Untitled experience 2 Draft

Lock layout ☒ Live view 1280 x 800 Publish

**Page**

Page 1

**Outline**

Body

> Fixed Panel 2

Map 1

Here is the title Here is the subtitle

Esri, HERE, FAO, NOAA Powered by Esri

**Page 1**

Icon

Label Page 1

Body

Fill

Header ☐

Footer ☐

Page: Page 1

100%

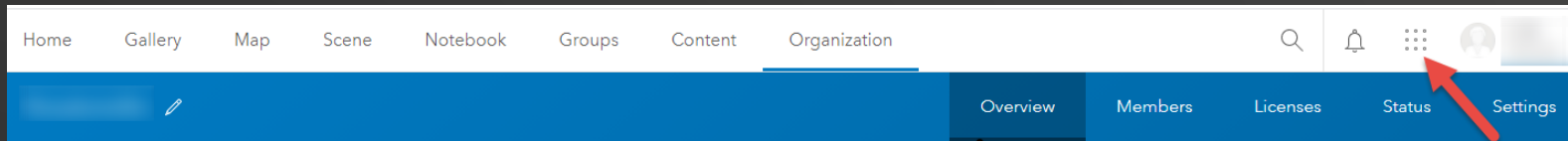
# ARCGIS ENTERPRISE EXPERIENCE BUILDER



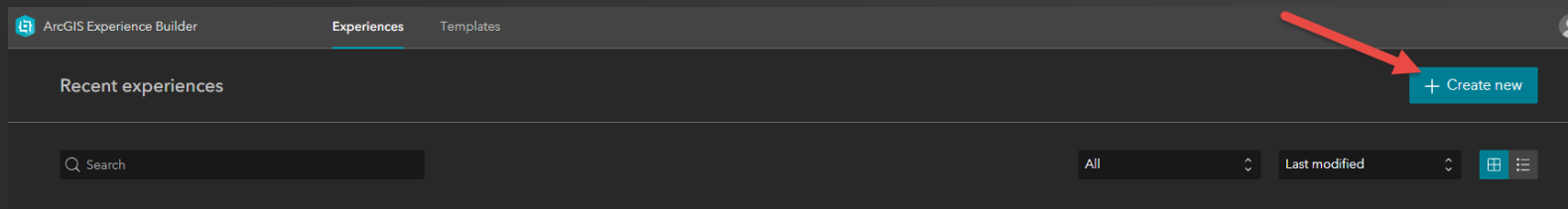
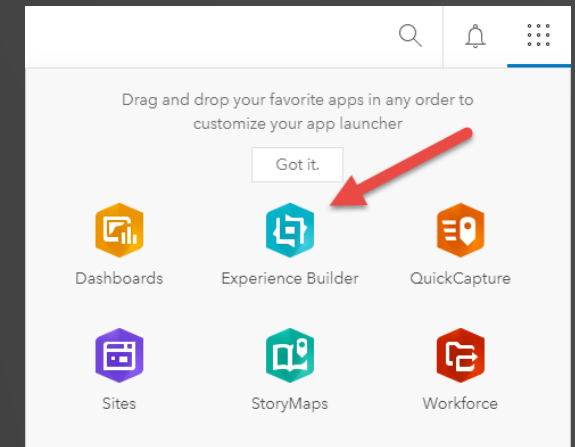
- Log into your ArcGIS Enterprise Portal Account (Make sure you have creator privileges)



- 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

Select a template to start



Default

My templates

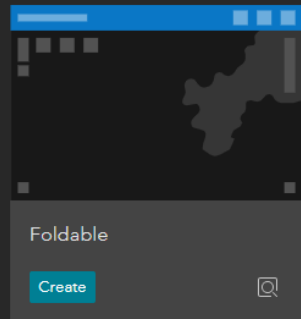
My favorites

Shared templates

ArcGIS Online

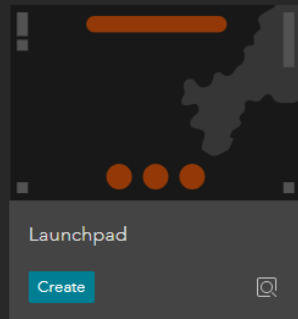
No Living  
Atlas  
Here

Search



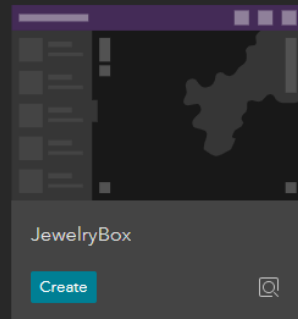
Foldable

Create



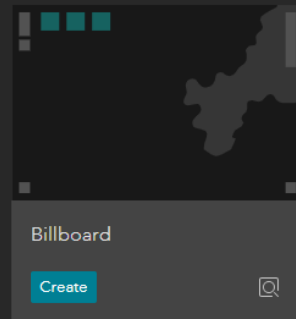
Launchpad

Create



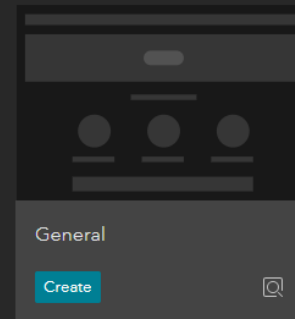
JewelryBox

Create



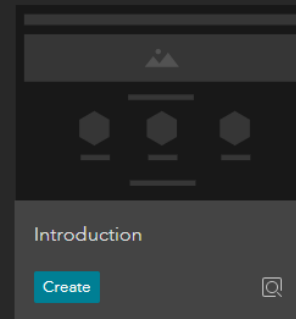
Billboard

Create



General

Create



Introduction

Create





# ARCGIS ENTERPRISE EXPERIENCE BUILDER (DEFAULT LAYOUT VIEW FOR FOLDABLE THEME)



Untitled experience 1 Draft

Lock layout ☒ Live view 1280 x 800

Page

Page 1

Outline

Body

Fixed Panel 2

Map 1

Here is the title Here is the subtitle

Arctic Ocean

Arctic Ocean

Pacific Ocean

Pacific Ocean

Atlantic Ocean

Indian Ocean

NORTH AMERICA

SOUTH AMERICA

AFRICA

EUROPE

ASIA

AUSTRALIA

Esri, HERE, FAO, NOAA

Powered by Esri

Page 1

Icon

Label Page 1

Body

Fill

Header

Footer

Page: Page 1

100%



# 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”

My Content					My Favorites		My Groups		My Organization		Living Atlas	
Search heiportaladmin					Table		Date Modified		Filter			
- 20 of 23 in heiportaladmin												
Title									Modified			
<input type="checkbox"/> chad test					Web Experience				☆ ...		May 4, 2021	



# 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”

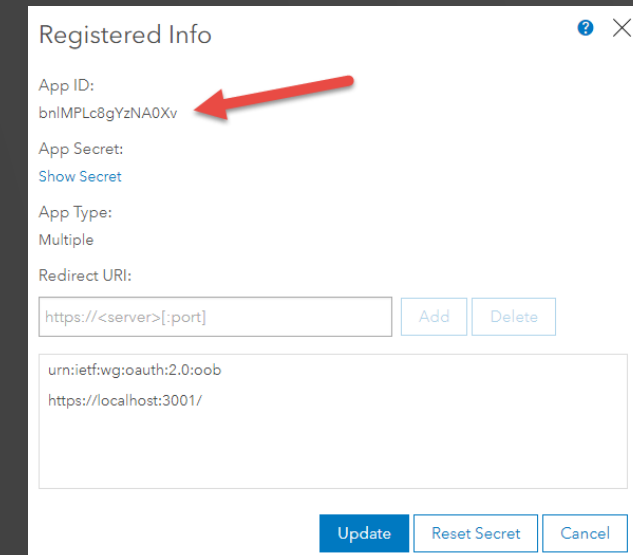
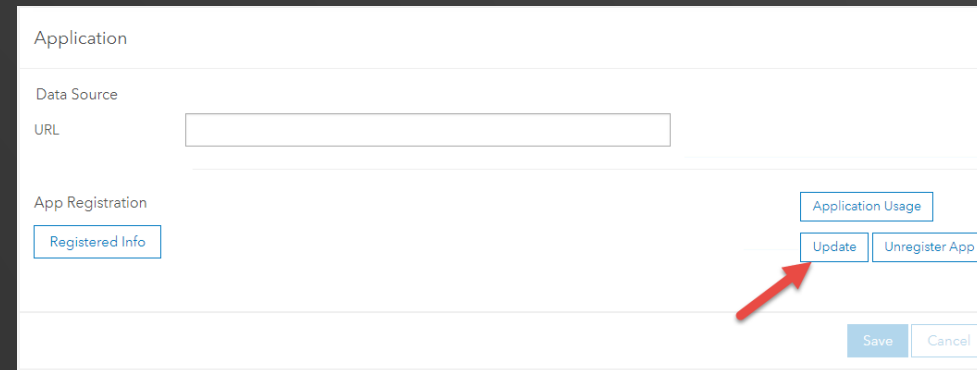
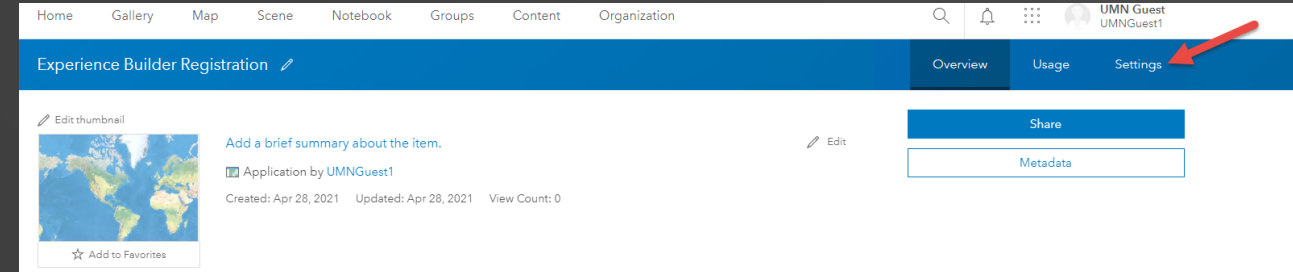
A screenshot of the 'Add an application' dialog box in ArcGIS Online. The dialog has a title bar with a question mark icon and a close button. The main text says 'Add an item from your computer or reference an item on the Web.' Below this, there is a 'Type:' section with four radio buttons: 'Web Mapping', 'Mobile', 'Desktop', and 'Application'. The 'Application' radio button is selected. Below the radio buttons is a 'Title:' label and a text input field containing 'Experience Builder Registration'. Below the title field is a 'Tags:' label and a text input field containing 'Experience Builder' with a close button. Below the tags field is a placeholder text 'Add tags'. At the bottom right of the dialog are two buttons: 'Add Item' and 'Cancel'.



# 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

ArcGIS Experience Builder  
v1.3 - Jan 28, 2021

Type	Size	MD5 checksum
Download	13.2 Mb	078c821532b96b6cd1cef5895ba7e3e7

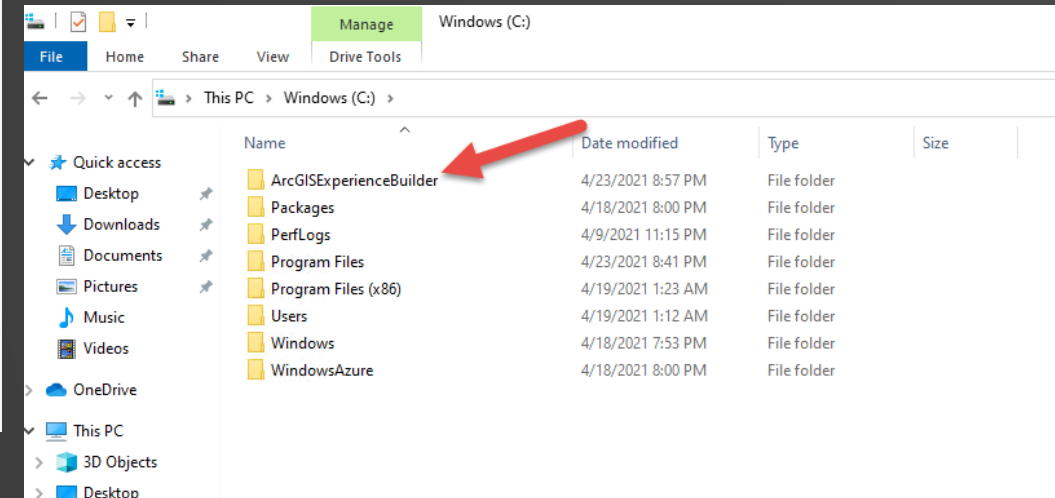
[arcgis-experience-builder-1.3.zip](#)

Type	Size	MD5 checksum
Node cache	281 Mb	b3304fd33a2645e85b87bcd9abd5ddad

[exb-1.3-node\\_modules-cache.zip](#)

Type	Size	MD5 checksum
Documentation	29.3 Mb	32d9d42dc708af998dfbce2a515d2152

[experience-builder-docs-1.3.zip](#)



# 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

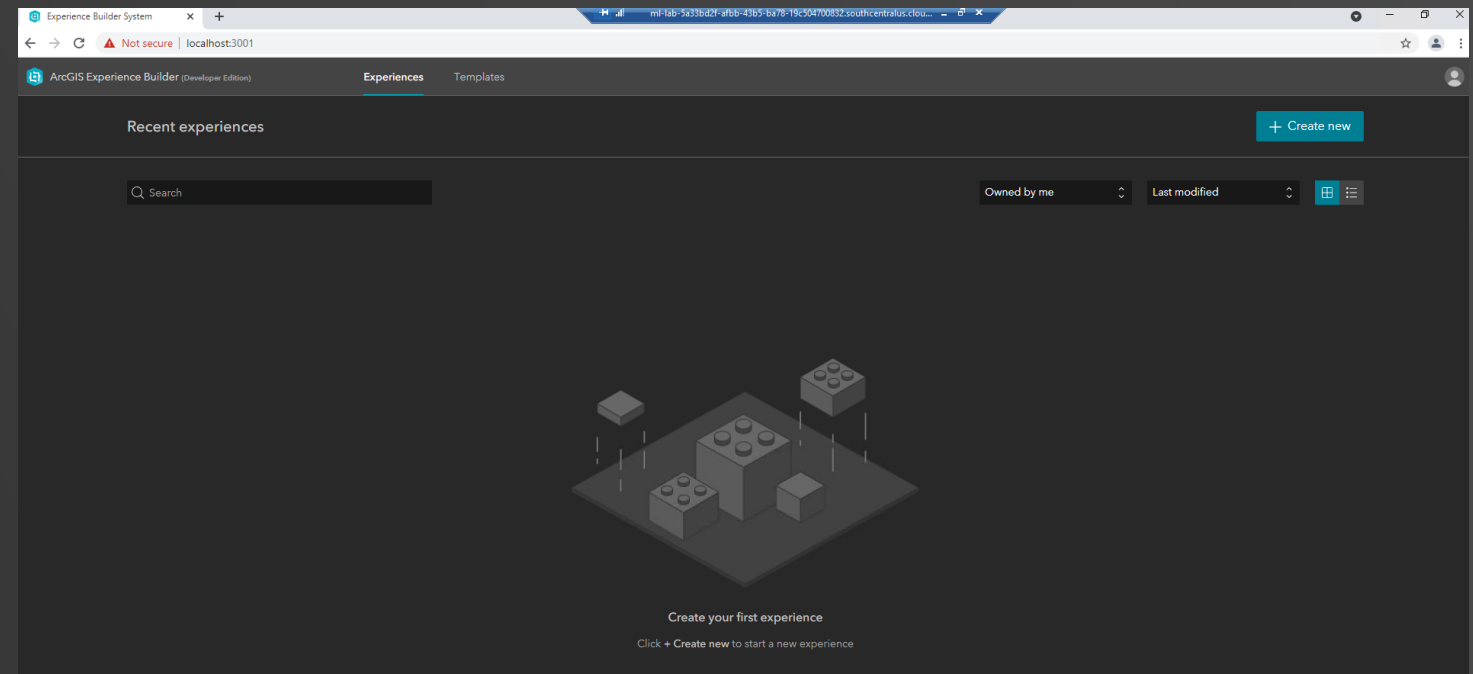
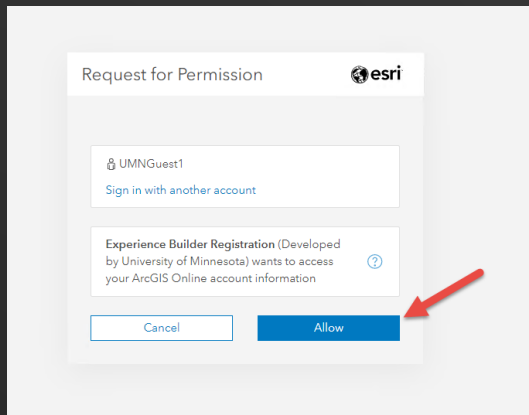


- When Experience Builder is launched for the first time you may hit a landing page saying this site is insecure. Just hit advanced and proceed. For this workshop, SSL certs weren't used so to the left of the URL it will say "Not secure"
- Then you will be prompted to enter your ArcGIS Online Account 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

Specify the URL to your ArcGIS Online organization or Portal for ArcGIS

Provide the Client ID for Experience Builder registered in the portal you specify above

Sign in



# 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

Administrator: Command Prompt

```
Microsoft Windows [Version 10.0.18363.1500]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\gis-student>cd /arcgisexperiencebuilder/client
```

```
14 Dir(s) 107,394,572,288 bytes free
```

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

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

```
> exb-client@1.3.0 start C:\ArcGISExperienceBuilder\client
> cross-env NODE_ENV=development webpack --mode development --watch
```

```
webpack is watching the files...
```

```
Version: webpack 4.43.0
```

```
Child
```

```
Time: 4003ms
```

```
Built at: 04/28/2021 5:19:04 PM
```

```
Entrypoint widgets/simple/dist/runtime/widget = widgets/simple/dist/runtime/widget.js
```

# 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



JIMU-UI

JIMU-LAYOUTS

JIMU FOR BUILDER

JIMU-ARCGIS

## Jimu-core

Widget Manager

Config Manager

DataSource Manager

Extension Manager

Message Manager

ArcGIS  
JS API 4.x

TypeScript

React

Redux

Webpack

# UNDERSTANDING TERMS



Markup Language  
Content

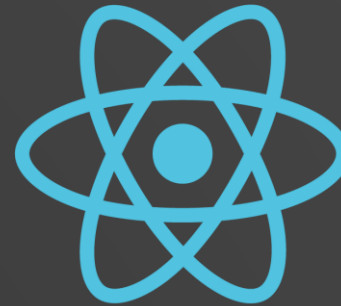


Style sheet Language  
Presentation



Programming Language  
Behavior

Front End  
JavaScript  
Library

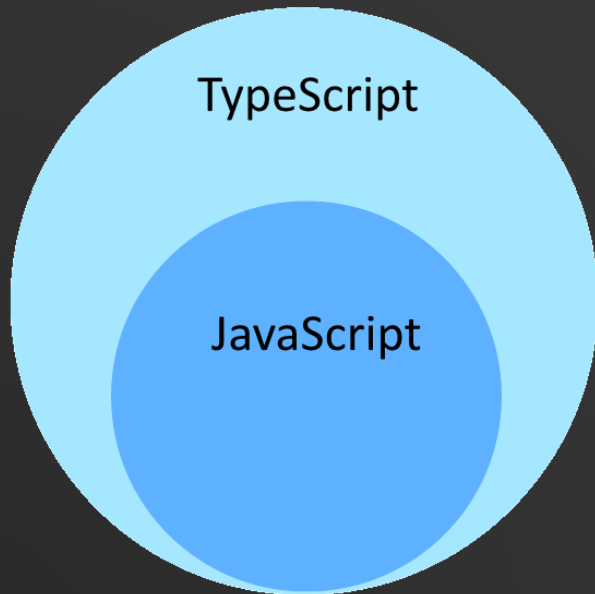


React

JavaScript Library  
Manage  
Application State



Redux



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

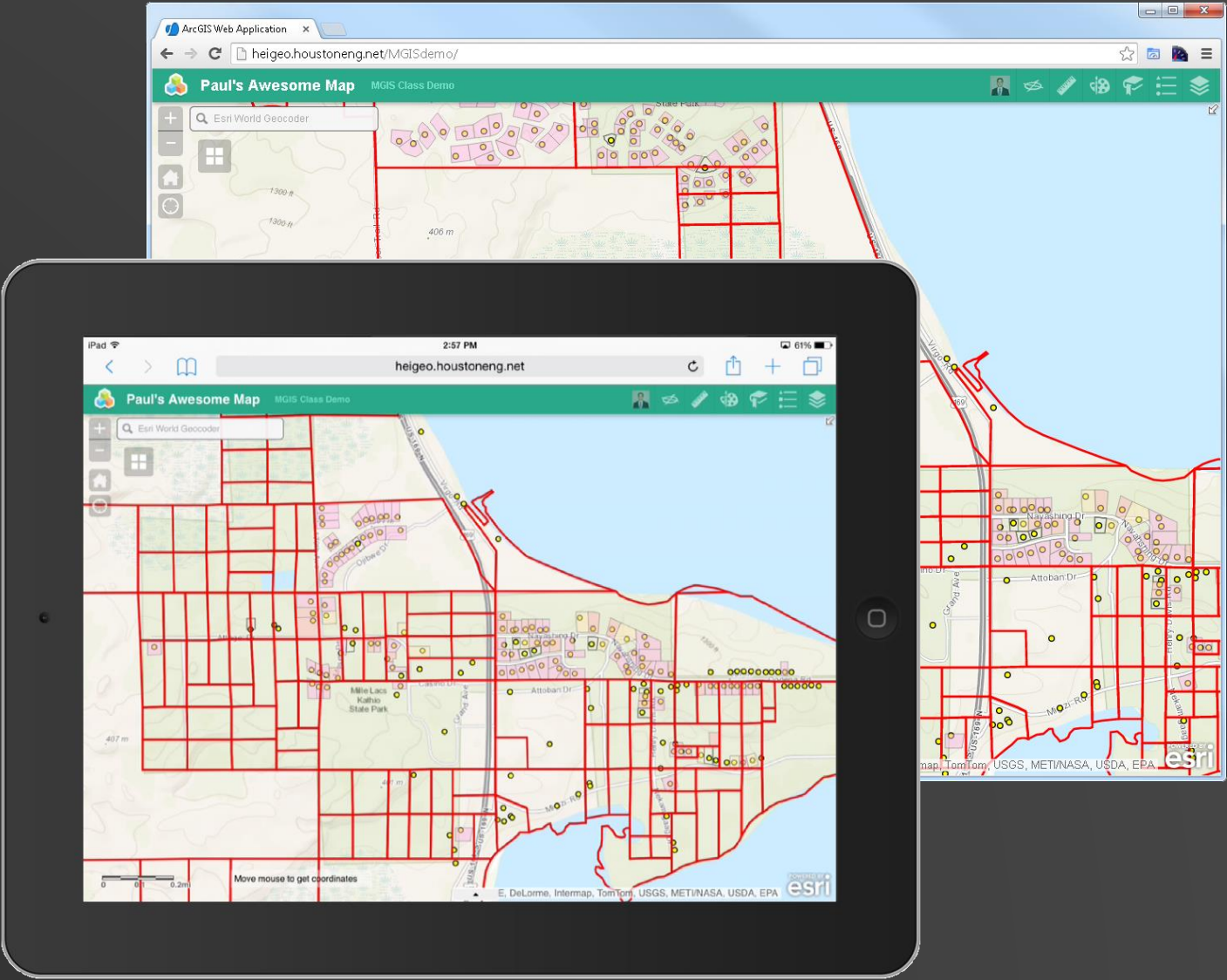
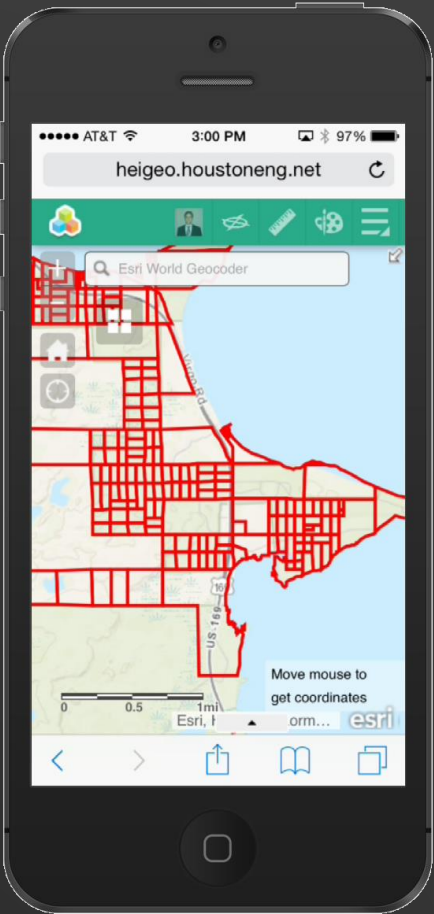
**Yes – But, we have no idea when**

# MOBILE



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

# RESPONSIVE WEB DESIGN



# RESPONSIVE WEB DESIGN – EXPERIENCE BUILDER

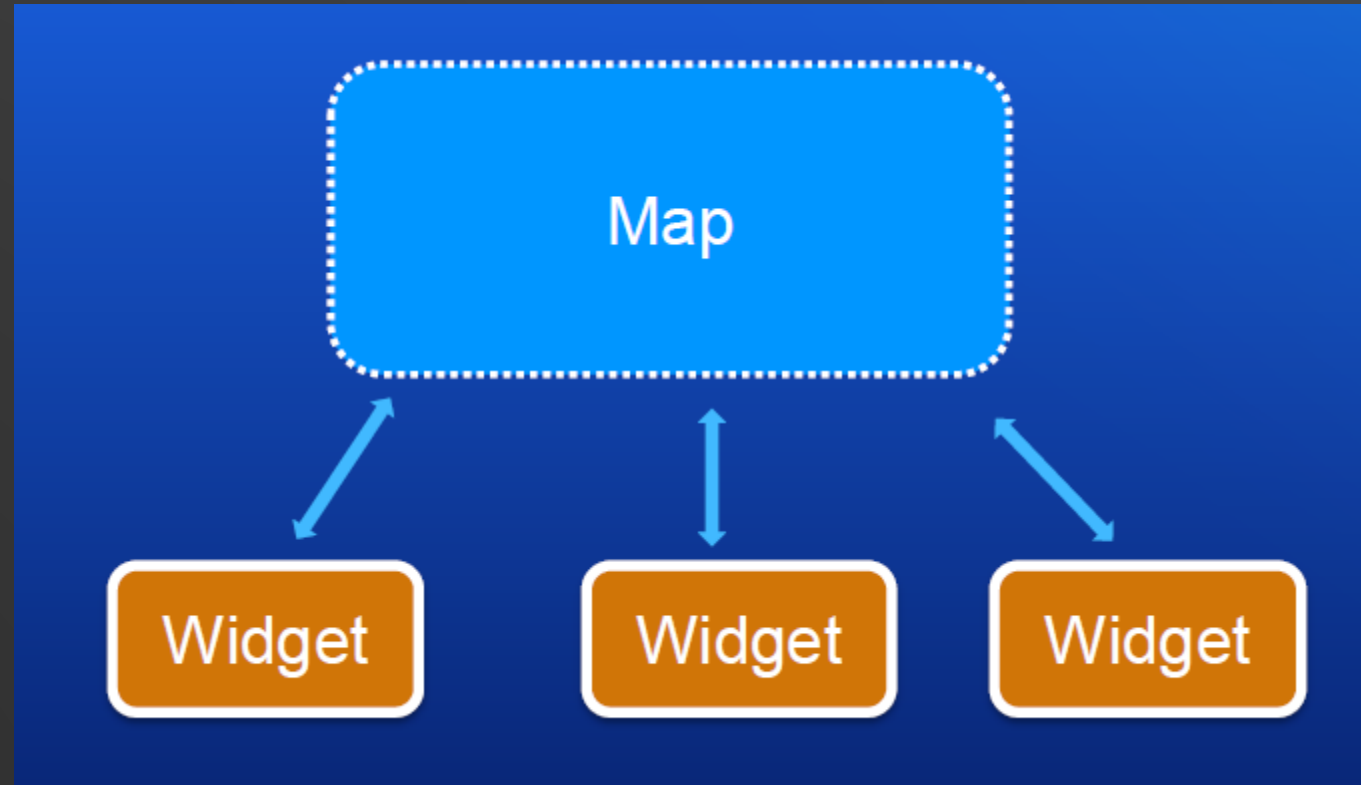


- Three screen modes:
  - Large
  - Medium
  - Small

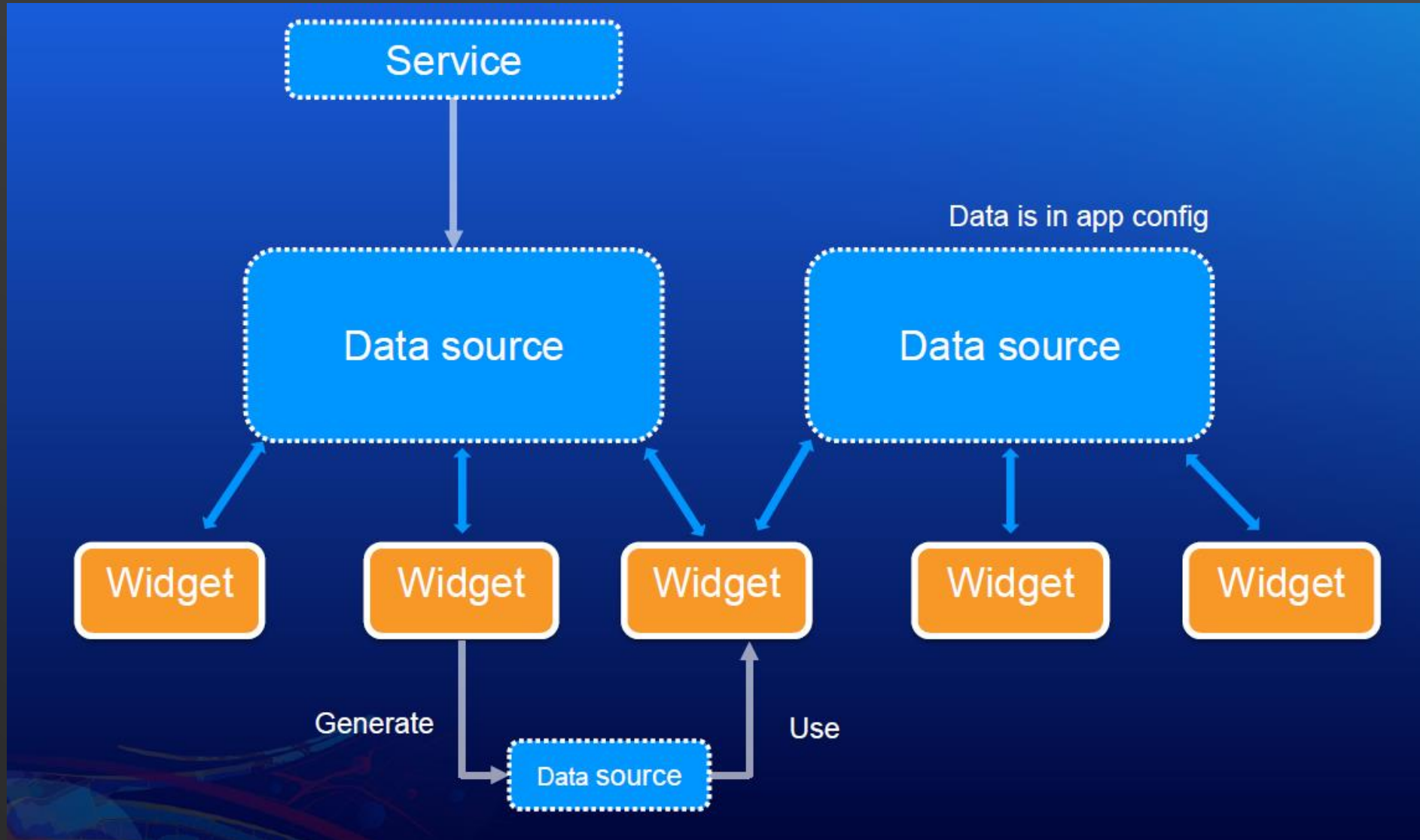




# WEB APPBUILDER – MAP CENTRIC APP



# 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?





- ✓ 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

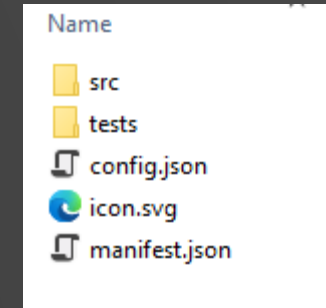
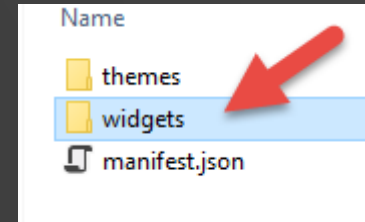
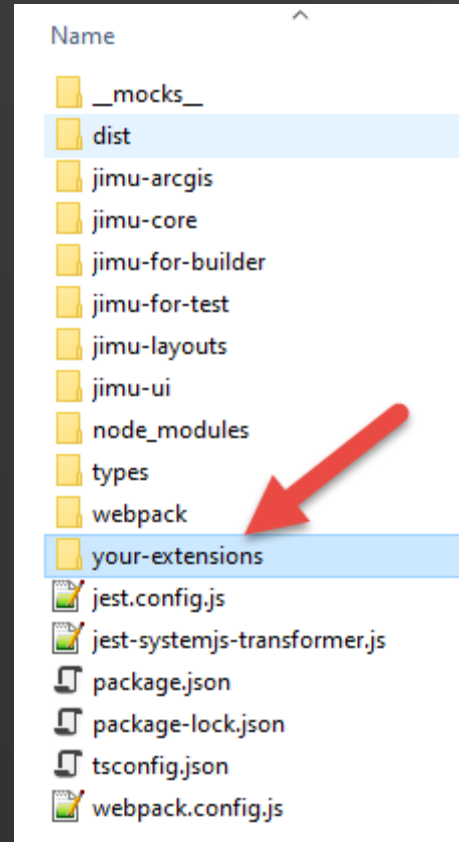
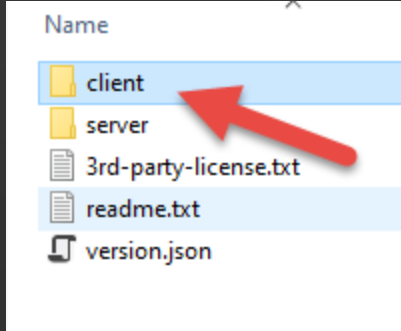
> exb-server@0.1.0 start D:\Development\NDDEQ\ArcGISExperienceBuilder\server
> cross-env NODE_ENV=production node src/server

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

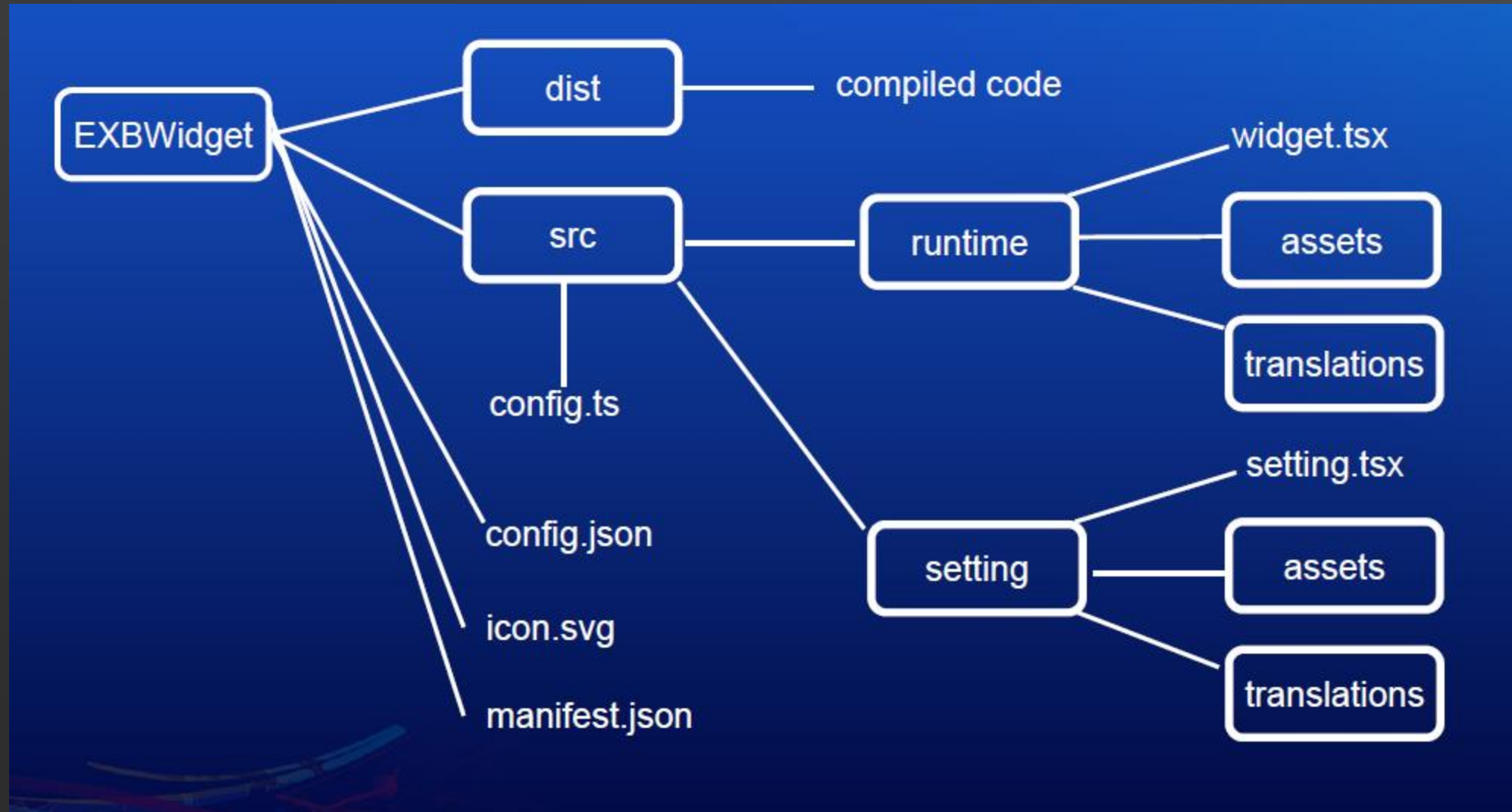
# WIDGET FOLDER



✓ /client/your-extensions/widgets



# WIDGET FILE STRUCTURE



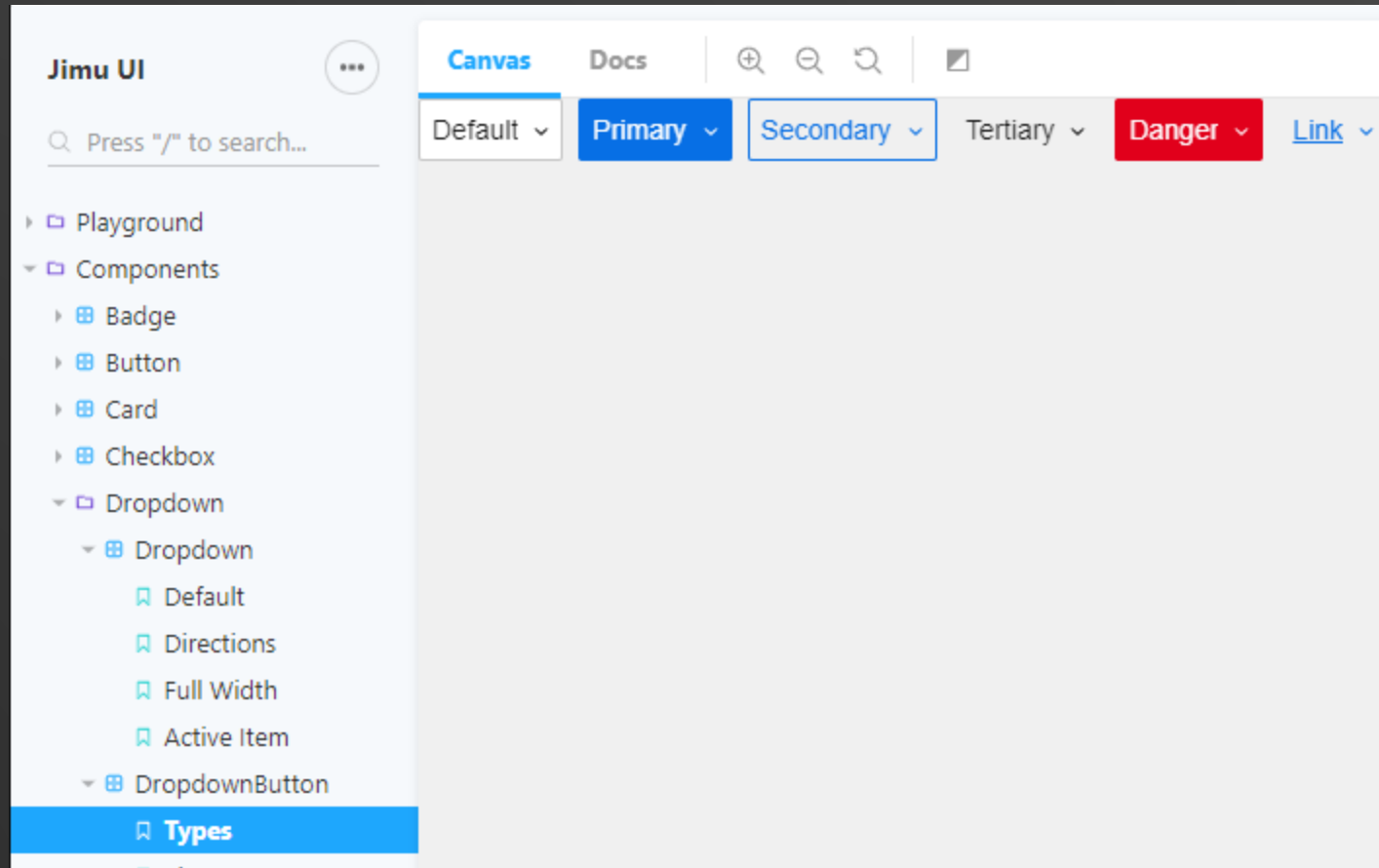
# MANIFEST.JSON



```
{
  "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



Jimu UI

Press "/" to search...

Playground

Components

Badge

Button

Card

Checkbox

Dropdown

Icon

ImageWithParam

Link

Nav

NavButtonGroup

NumericInput

Pagination

Progress

- Linear
- Circular
- Updating Values

Color Variants

Radio

Canvas

Docs

5%

15%

25%

35%

45%

55%

65%

75%

5%

15%

25%

35%

45%

55%

65%

75%

# 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/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/](https://experience.arcgis.com/experience/28466a6d361545358ec64fa3e932ee86/page/page_0/)

# HELPFUL RESOURCES



ArcGIS Experience Builder Online Edition  
[experience.arcgis.com](https://experience.arcgis.com)

Download Developer Edition  
[developers.arcgis.com/experience-builder](https://developers.arcgis.com/experience-builder)

Help documentation  
[doc.arcgis.com](https://doc.arcgis.com)

Community  
[community.esri.com/community/arcgis-experience-builder](https://community.esri.com/community/arcgis-experience-builder)

UI Components  
[developers.arcgis.com/experience-builder/storybook](https://developers.arcgis.com/experience-builder/storybook)

Samples Repo  
[community.esri.com/t5/arcgis-experience-builder/ct-p/arcgis-experience-builder](https://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](https://github.com/paulhedlund/experiencebuilderGISLIS)

```
<code />
```