ArcGIS Experience Builder: Customizing and Extending

Gavin Rehkemper

David Martinez

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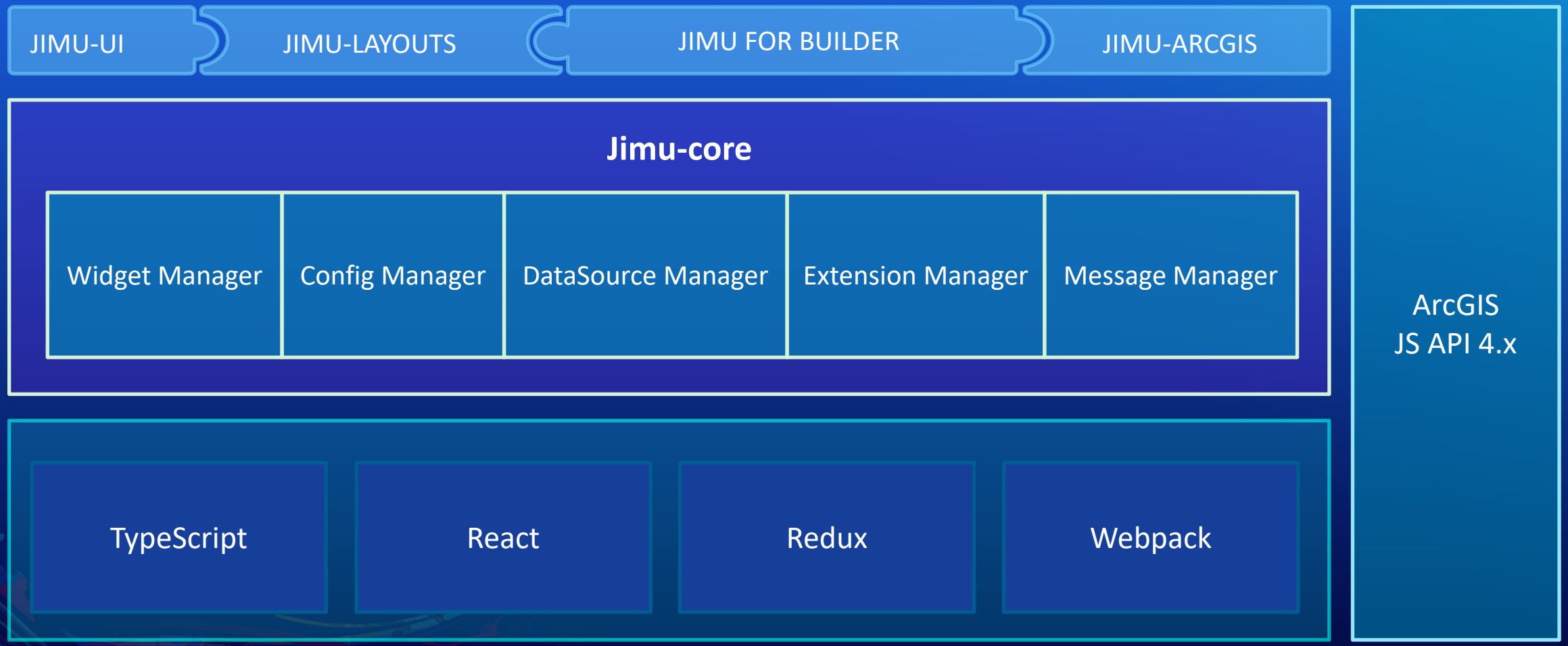
Agenda

- Developer tools
- Widgets
- Tips and tricks

Things you will need to know

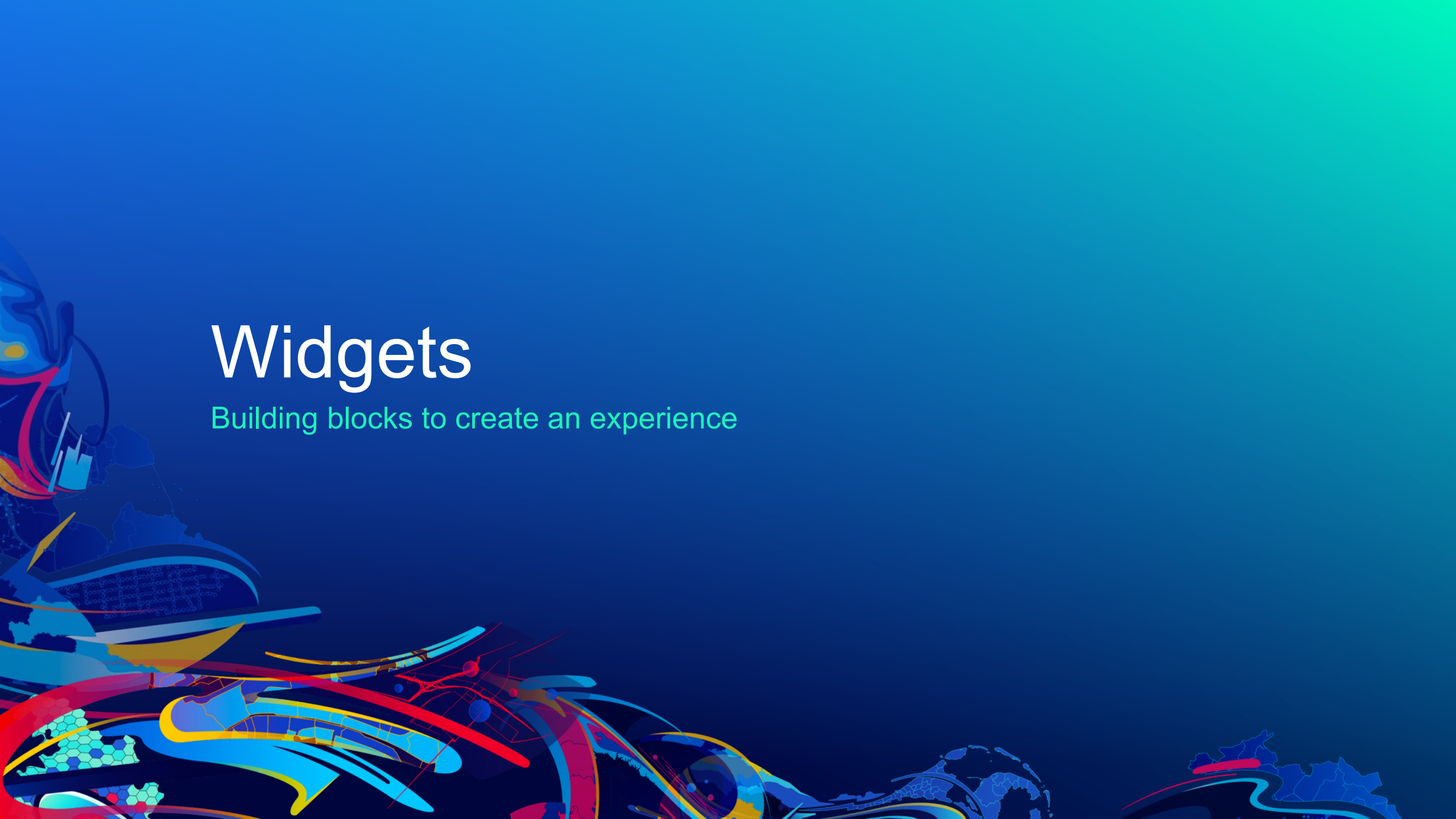
- React
- TypeScript
- Jimu

Technology stack

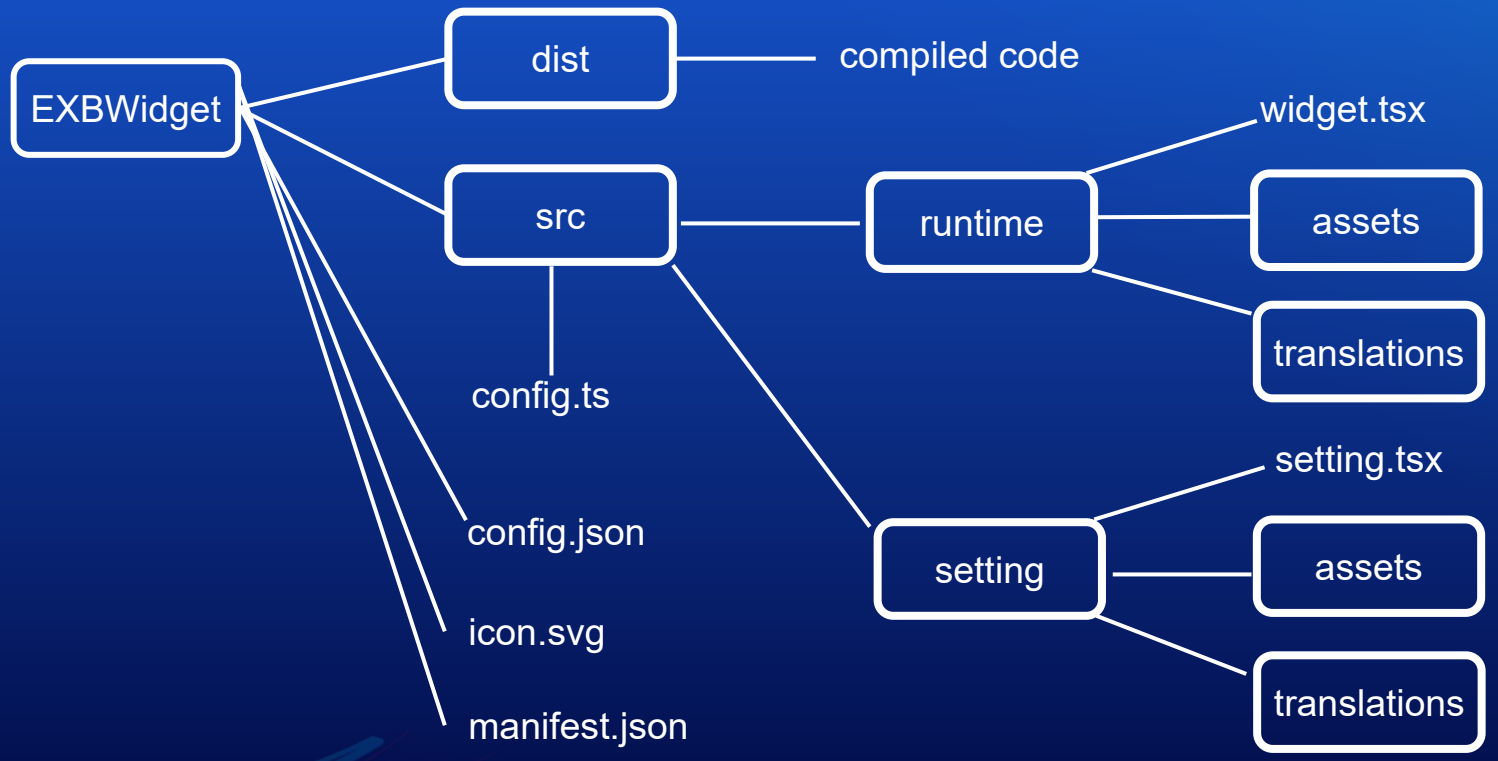


Widgets

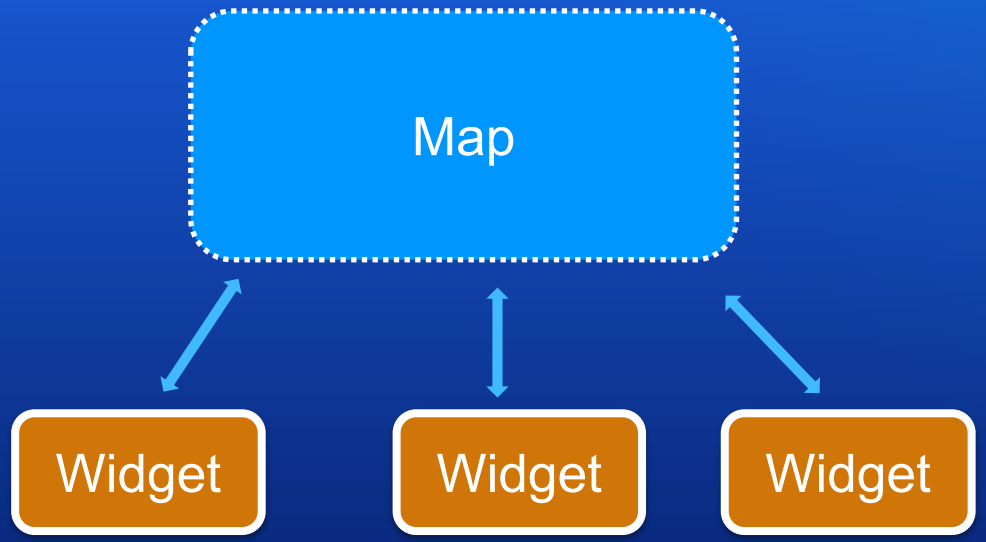
Building blocks to create an experience



Widget Structure

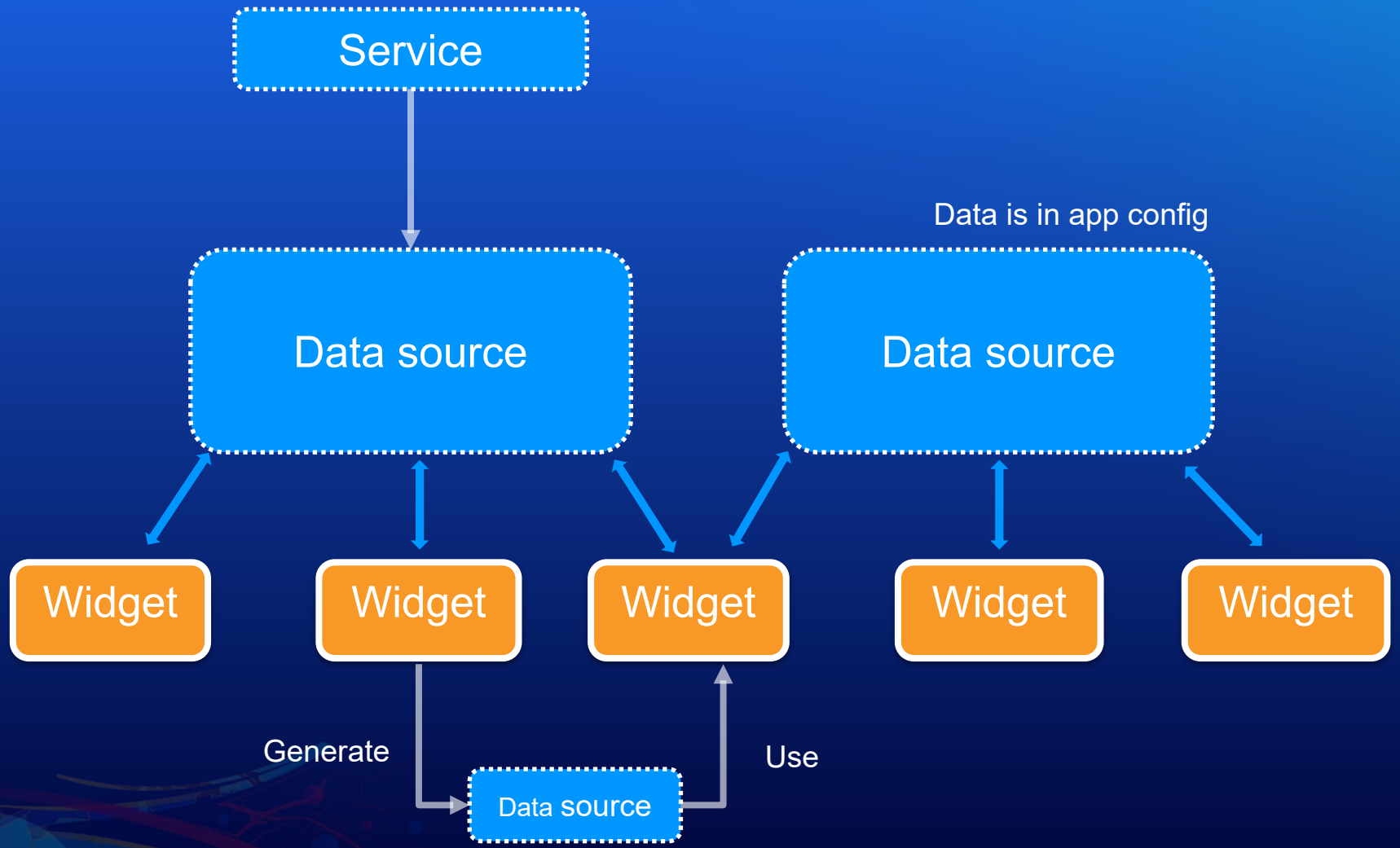


Web AppBuilder – map centric app



All widgets hold a map object
and can talk to map directly.

ExB – data source centric app



MapView/SceneView

- View concept same as ArcGIS JavaScript API
  - However, we wrap the view as JimuMapView
- Create a JimuMapView Object
  - MapViewManager.createJimuMapView()
- JimuMapView objects as these main properties:
  - view: map/scene view object
  - dataSourceId: datasource to create the view
  - mapWidgetId: the widget that creates the objects
  - jimuLayerViews: the layer view object wrapper

```
MapViewManager.getInstance().createJimuMapView({
  mapWidgetId: this.props.id,
  view: new MapView(options),
  datasourceId: webmapDs.id,
  isActive: true
})
```

Creating a widget

Two ways to create a widget

- Class components
  - Make use of ES6 class and extend the component class in React.
  - Can maintain its own data with state.
  - Passes props (properties) down to class components and access them with this.props.
  - Uses the render() method.

- Function components
  - Basic JavaScript functions using arrows functions, but you can also use regular function keyword.
  - Can accept and use props.
  - Uses React Hooks to use state and other features.
  - There is no render() method.

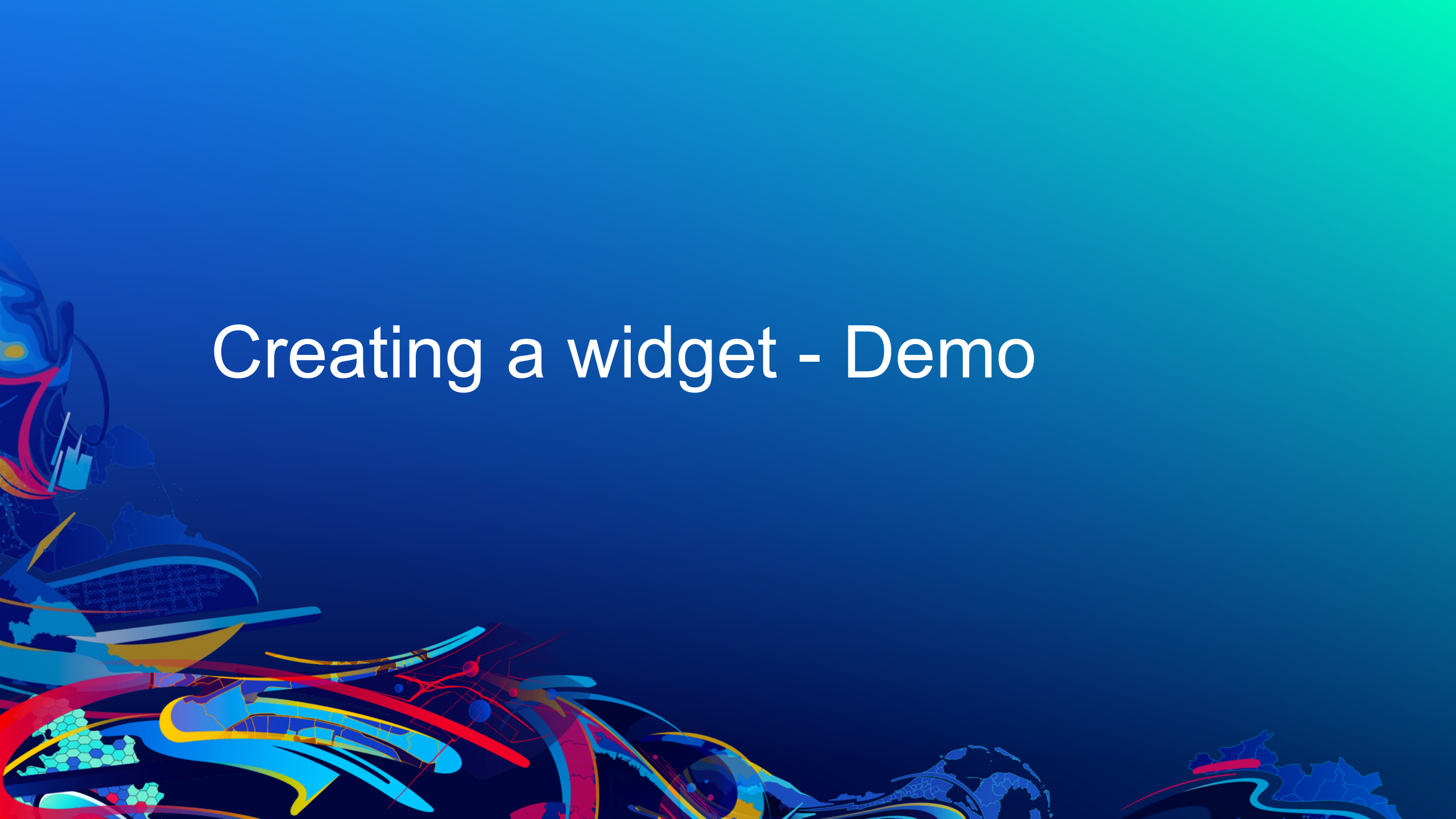
Create a widget using class component

```
//a custom pragma to transform your jsx into plain JavaScript
/** @jsx jsx */
//Import used to extend off BaseWidget class
import { AllWidgetProps, BaseWidget, jsx } from "jimu-core";
export default class Widget extends BaseWidget<AllWidgetProps, any> {

    render() {
      return (
        <div className="widget-starter jimu-widget" style={{ overflow: "auto" }}>
          <p>Hello world!</p>
          <p>Widget Name: {this.props.label}</p>
        </div>
      );
    }

}
```

Create a widget using function component

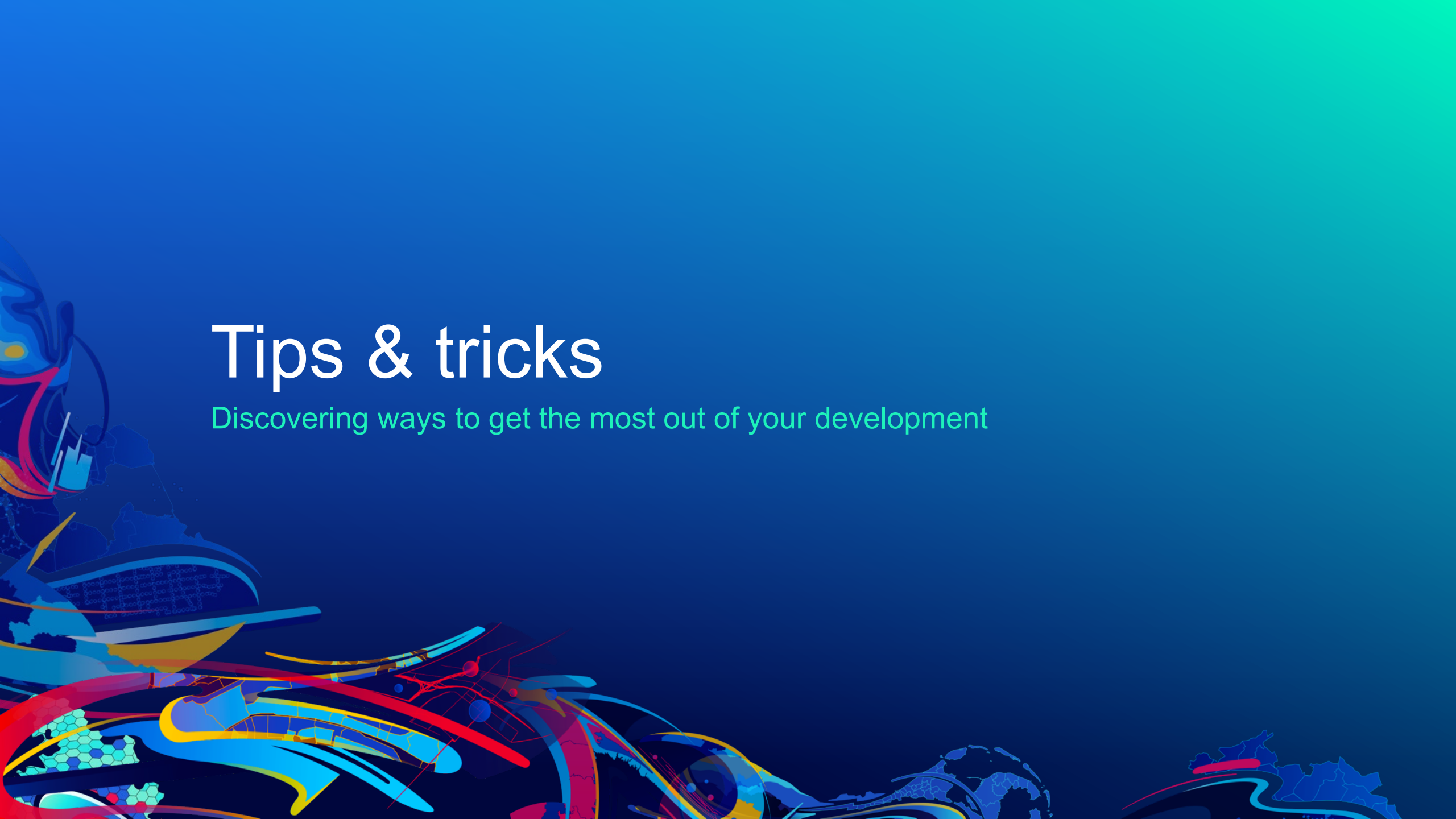
```tsx
/** @jsx jsx */
import { AllWidgetProps, jsx} from "jimu-core";

export default function Widget (props:AllWidgetProps) {
    return <div className="widget-starter jimu-widget" style={{ overflow: "auto" }}>
        <p>Hello world!</p>
        <p>Widget Name: {props.label}</p>
      </div>
  }
```

Creating a widget - Demo



Tips & tricks

Discovering ways to get the most out of your development



Top 3

- Change version of JS API
- Debugging
- Global state

Change version of JS API

- Search for “arcgisJsApiUrl and replace the URL:
  - client/dist/experience/index.html
  - client/dist/template/index.html
  - client/dist/site/index.html
  - client/dist/builder/index.html
- Temporary change
  - https://localhost?apiurl=//js.arcgis.com/4.18

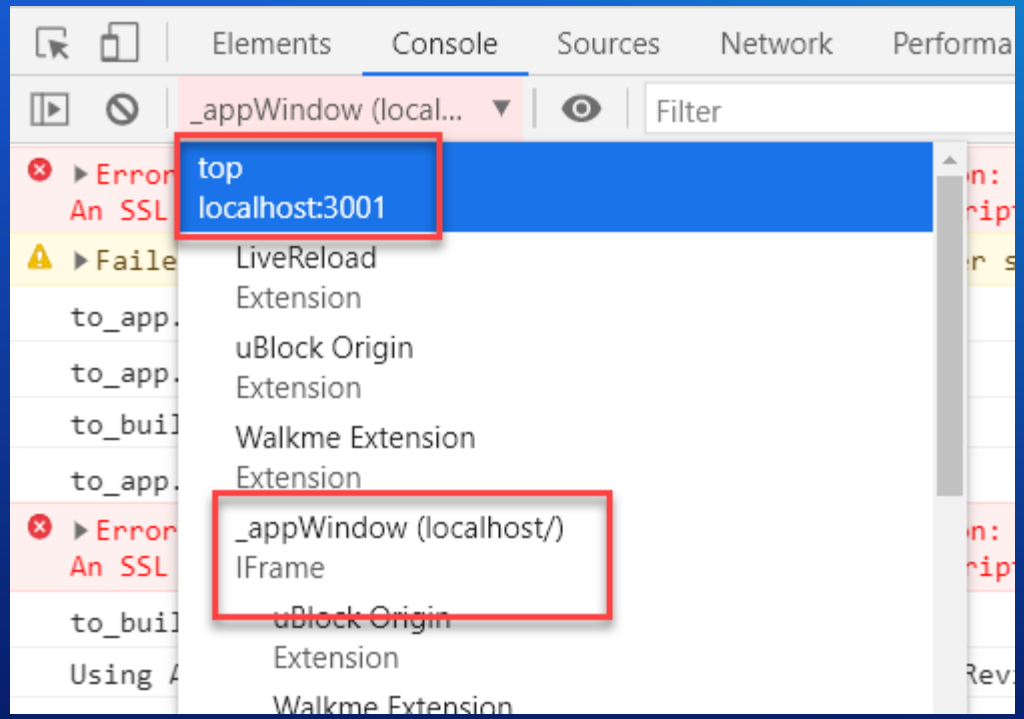
Debugging

- VS Code Extensions
  - IntelliSense for CSS class names in HTML
  - vscode-styled-components

- Global Variables
  - _appState
  - _dataSourceManager
  - _widgetManager
  - _sessionManager

Debugging

- In the Builder Page
  - “window.jimuConfig.isBuilder”



Automatic Map Reference

- When you know the app your widget is in will only have one map
- Would like to reduce the configuration steps

```
render() {
  return (
    <div className="widget-demo jimu-widget m-2">
      <JimuMapViewComponent
        useMapWidgetIds={this.getArbitraryFirstMapWidgetId()}
        onActiveViewChange={this.activeViewChangeHandler}
      />
```

Automatic Map Reference

```
getArbitraryFirstMapWidgetId = (): ImmutableArray<string> => {
  const appState: any = window._appState;
  // Loop through all the widgets in the config and find the "first"
  // that has the type (uri) of "arcgis-map"
  const arbitraryFirstMapWidgetInfo: { [key: string]: any } = Object.values(appState.appConfig.widgets).find((widgetInfo: any) => {
    return widgetInfo.uri === 'widgets/arcgis/arcgis-map/'
  });

  let useMapWidgetIds = Immutable([]); // empty by default
  if (arbitraryFirstMapWidgetInfo) {
    useMapWidgetIds = Immutable([arbitraryFirstMapWidgetInfo.id]);
  }
  return useMapWidgetIds;
}
```

https://github.com/gavinr/add-layers-auto-map-experience-builder

Resources

- Code for this presentation : https://esriurl.com/ds21exb
- Samples repo: https://github.com/Esri/arcgis-experience-builder-sdk-resources
- Doc site: https://developers.arcgis.com/experience-builder/
  - Guide
  - Sample code
  - API reference
- Post questions and feedback: https://community.esri.com/t5/arcgis-experience-builder/ct-p/arcgis-experience-builder

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