Developing Your Own Widget with the ArcGIS API for JavaScript

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Agenda

- Widgets
- Theming
- Widget Framework
- Putting it all together

Widgets

About

- What?
  - Encapsulated UI components
  - Cohesive (integrated, unified)
  - Single-purpose pieces of functionality
- Why?
  - Reusable
  - Interchangeable
- How?
  - Different frameworks are available

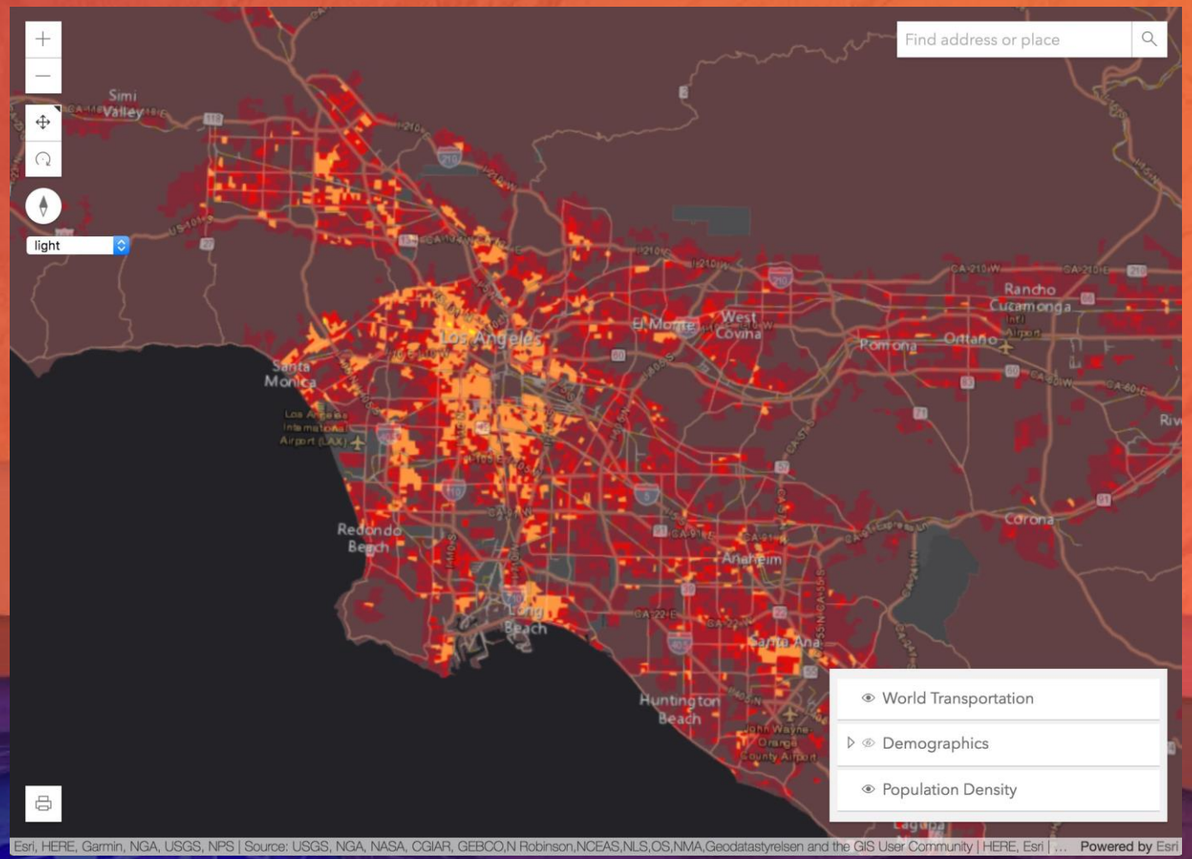
Widget Theming

About

- Why?
  - Consistency
    - Visual
    - Functional
  - User options Out-
    - of-the-box
    - Custom
- How?
  - Sass
  - BEM

Out-of-the-box themes

Theme Switcher



Theming with Sass

- CSS preprocessor
- Powered-up CSS
  - Nesting
  - Variables
  - Functions
  - Mixins
  - Inheritance

Sass makes it easier to…

- Restyle
- Organize
- Write less code :)

Naming CSS classes: BEM

Block Element Modifier

- Semantic
- Low specificity
- Scopes styles to blocks

```
// block
.example-widget {}

// block__element
.example-widget__input {}

// block--modifier
.example-widget--loading {}

// block__element--modifier
.example-widget__input--disabled {}
```

Recap

- Consistency
- User options
- Authoring

Widget Framework

About

- Views + ViewModels
  - Separation of concerns
  - Reusable
    - UI replacement
    - Easier integration
- Built with TypeScript

Views

- Extend esri/widgets/Widget
- Rely on ViewModel
- Focus on UI

ViewModels

- Extend esri/core/Accessor
- Provide APIs to support view
- Focus on business logic

esri/widgets/Widget

- Lifecycle
- API consistency
  - Unified object constructor
  - Properties
  - Watching

Lifecycle

- constructor
- postInitialize
- render
- destroy

`render`

- Defines UI
- Reacts to state
- Uses JSX

TypeScript

- Typed JavaScript

```
type PresenterName = "Matt" | "JC";

interface Person {
  name: string;
}

interface Presenter extends Person {
  name: PresenterName;
}

// TS2322: Type '{ name: "Alan" };' is not assignable to type 'Presenter'.
const myPresenter: Presenter = { name: "Alan" };
```

TypeScript

- JS of the future, now

```
// const
const numbers = [1, 2, 3];

// fat arrow functions
letters.forEach(letter => console.log(letter));

// template literals
const myString = `last number: ${ numbers[ numbers.length - 1 ] }`;

// decorators
class Example {
  @log
  stringify(item: object): string { /* ... */ }
}
```

TypeScript

- IDE support
  - Visual Studio, WebStorm, Sublime, and more!

Defining a class

```
/// <amd-dependency path="esri/core/tsSupport/declareExtendsHelper" name="__extends" />
/// <amd-dependency path="esri/core/tsSupport/decorateHelper" name="__decorate" />

import { declared, subclass } from "esri/core/accessorSupport/decorators";

import Base = require("my/class/base");

@subclass("MyClass")
class MyClass extends declared(Base) {

}

export = MyClass;
```

Defining a variable

```
// ...

@subclass("MyClass")
class MyClass extends declared(Base) {

  // adds variable `_foo`
  _foo: Foo = new Foo();

}

// ...
```

Defining a property

```
// ...

@subclass("MyClass")
class MyClass extends declared(Base) {

  // adds property `foo`
  @property()
  foo: Foo = new Foo();

}

// ...
```

Defining a method

```
// ...

@subclass("MyClass")
class MyClass extends declared(Base) {

  // adds method `bar`
  bar(): string {
    return this._getText();
  }

  private _getText(): string {
    // gets text
  }

}
```

Widget decorators

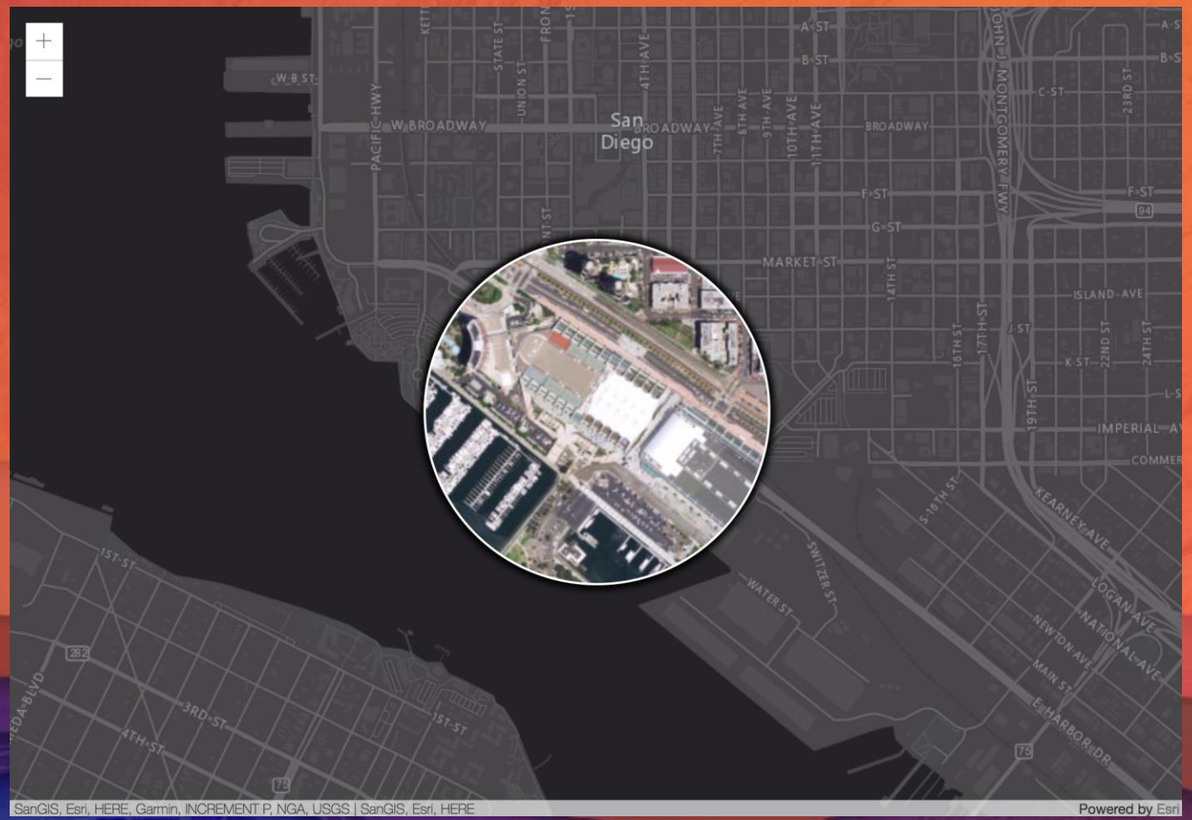
- @subclass + declared
- @property
  - autocast
  - computed
  - read-only
  - aliased
- @aliasOf
- @renderable
- @accessibleHandler

Recap

- Views + ViewModels
- esri/widgets/Widget
- TypeScript

Let's build a widget!

Magnifier



Let's build a widget!

- Demo Start HTML
- Steps ViewModel
- Steps View Steps
- Sass Steps
-

Let's Recap

- Widgets are single functionality UI components We
- use them for reusability/interchangeability Widget
- Themes
  - SASS
- Widget Framework
- Constructing a widget
  - ViewModels
  - Views

Suggested Session

- ArcGIS API for JavaScript: Customizing Widgets

Additional Resources

- Styling
- Implementing Accessor
- Setting up TypeScript
- Widget Development JS
- API SDK

Use the source, Luke

esriurl.com/buildwidgetsuc2017

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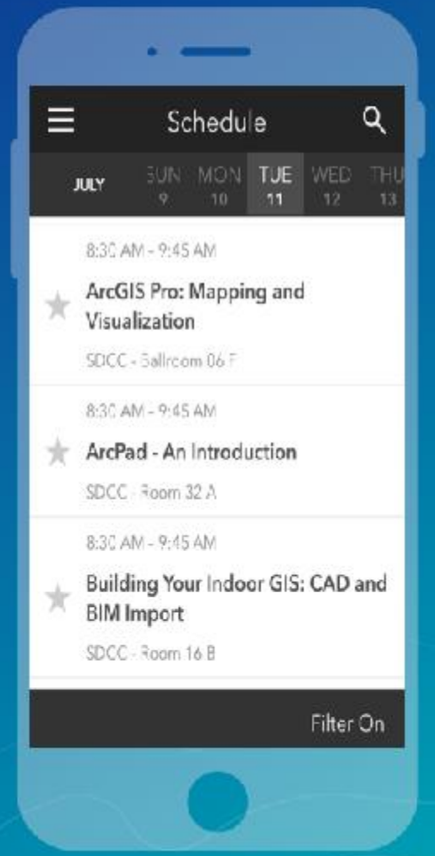
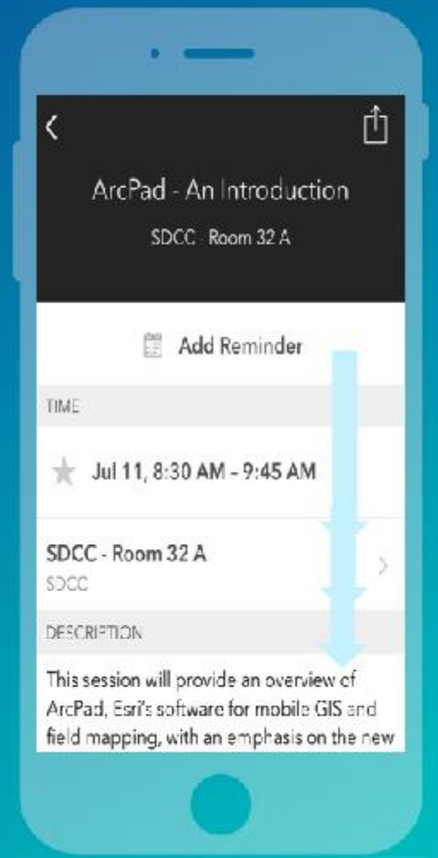


Scroll down to find the survey



Complete Answers and Select "Submit"

Questions?

Thank you!

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