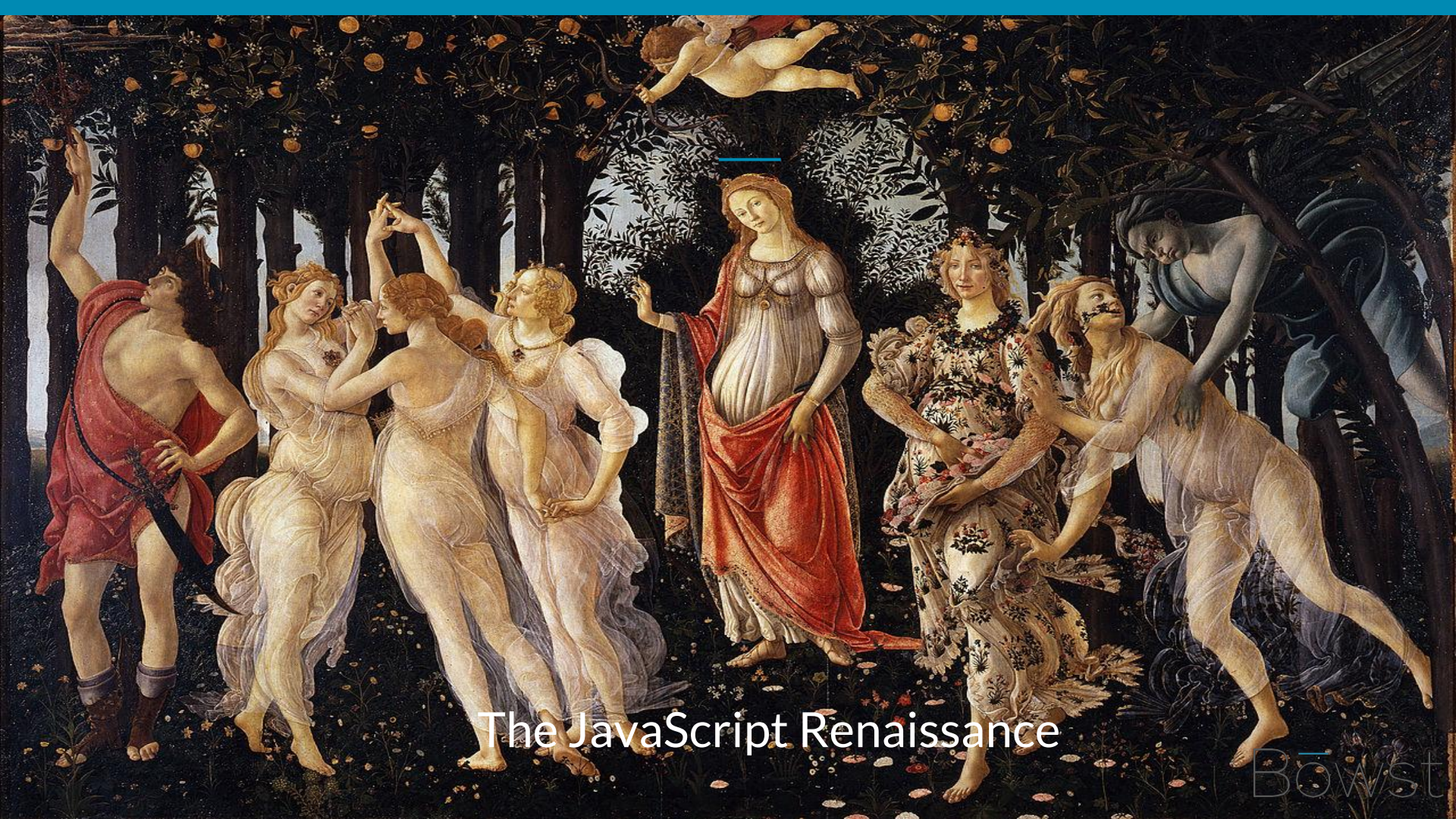
Precision Theming

Leveraging modern technologies for the next generation of Drupal sites

Bōwst

Agenda

- Theming and the JavaScript Renaissance
- Code Splitting and Drupal Precision Asset Loading (DruPAL)
- Why Drupal and ReactJS/Angular are Bromigos


The JavaScript Renaissance

Springtime, for JavaScript, and Web Apps!

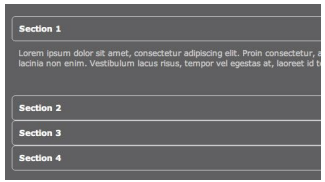
- Alerts
- Form Validation
- Simple Animations

- jQuery
- Dom Manipulation
- Simple Interactive Components

- First frameworks
- Single page apps
- AJAX

- JS breaks free of the browser
- Full Stack JS
- Build Systems

Early 90's



Present Day

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What?!
JavaScript is evolving!

node.js™

React

Gulp

webpack
MODULE BUNDLER

browserify

PhoneGap

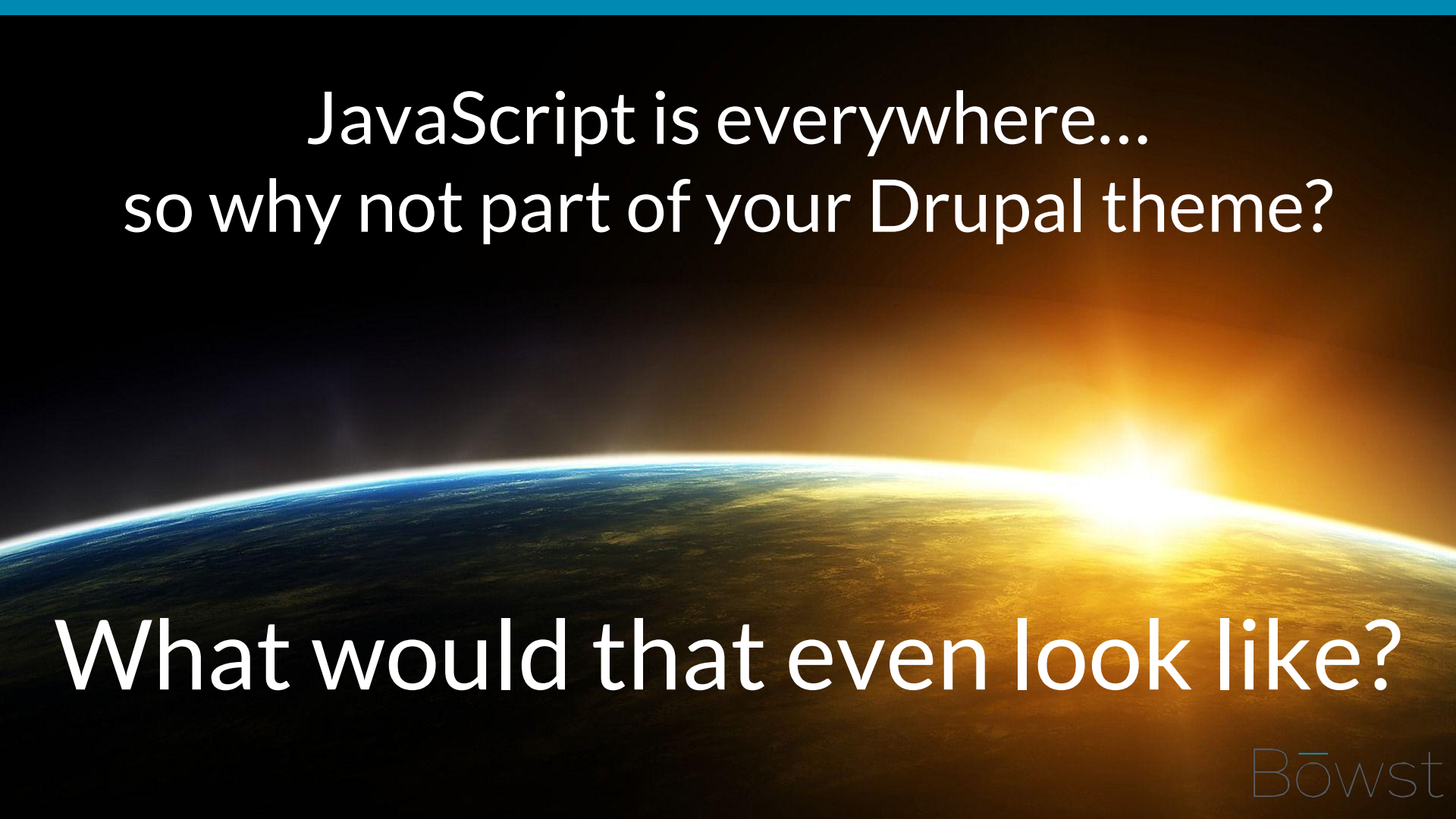
APACHE CORDOVA™

mongoDB

ANGULARJS

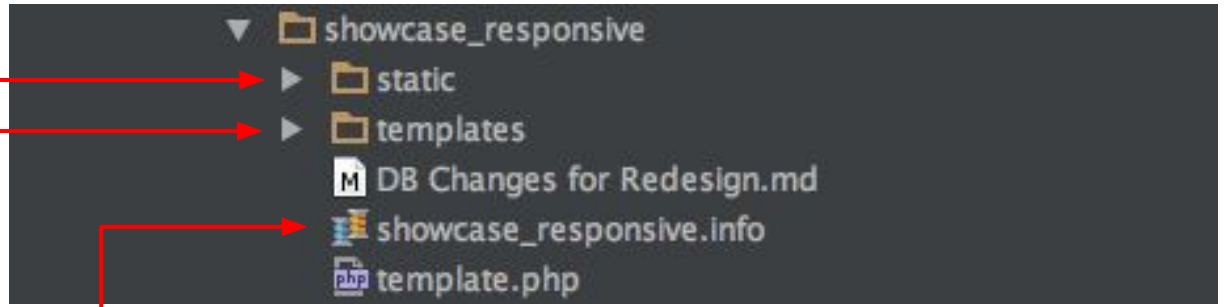
BABEL

Bōwst


JavaScript is everywhere…
so why not part of your Drupal theme?
What would that even look like?
Bōwst

We think it looks pretty sweet!

Static Folder
(Encapsulates all front end assets)

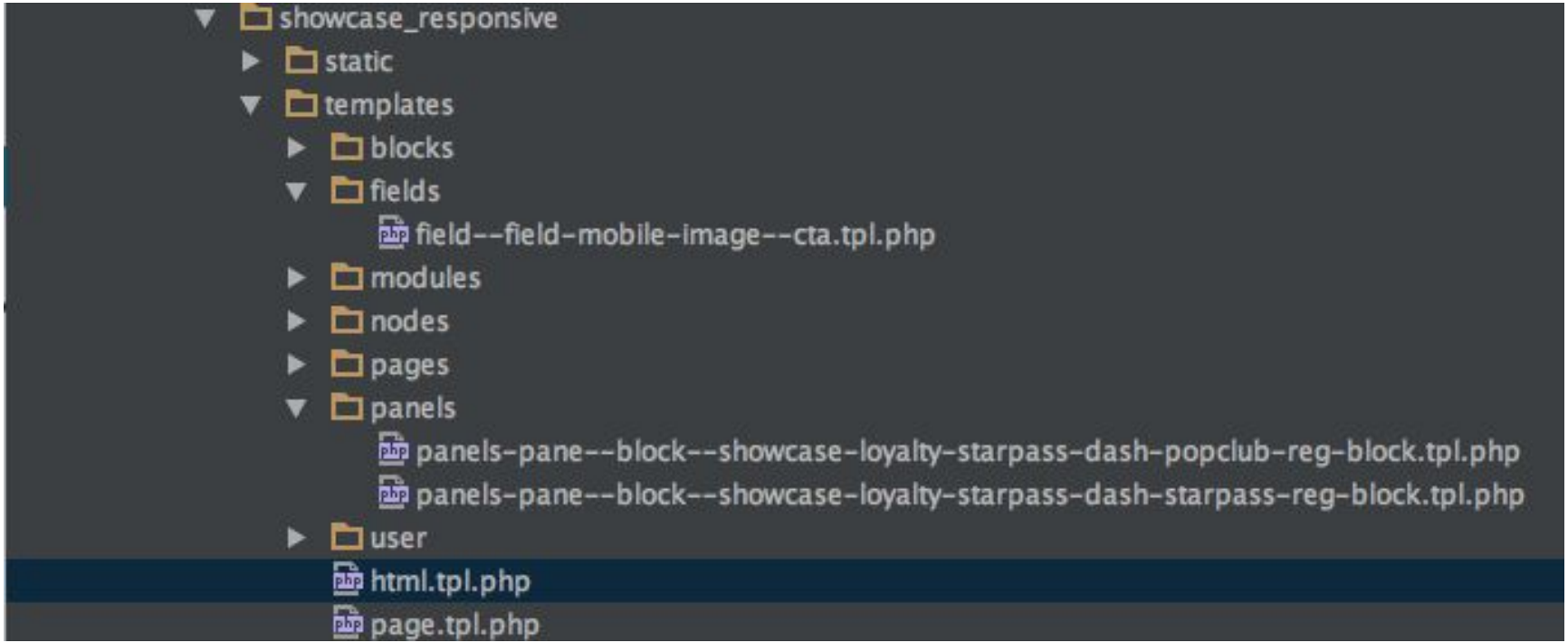


Templates Folder
(Encapsulates server-side templates)

Drupal Configuration
(Required by Theme/Module)

Bōwst

Sweet Templates Folder



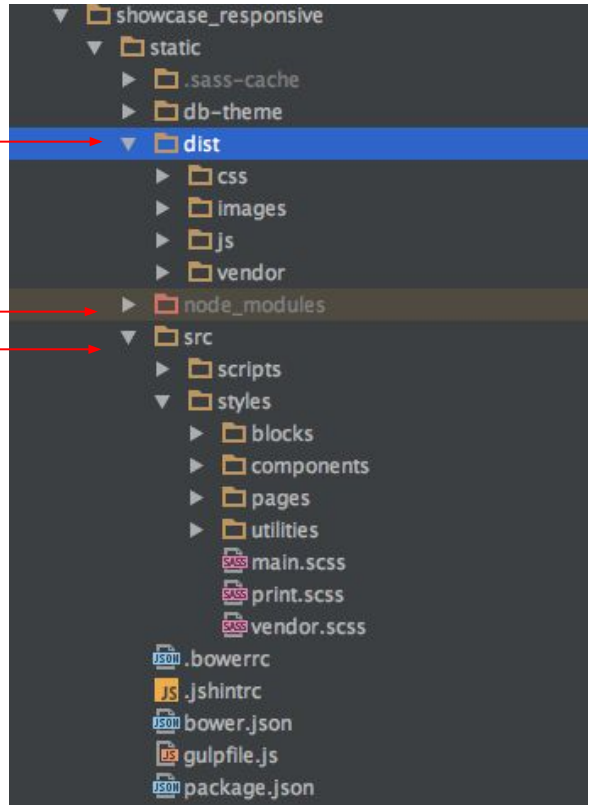
Bōwst

Sweet Static Directory

Dist Folder
(Compiled assets)

Packages

Source Folder
(Uncompiled assets)



Bōwst

Let’s talk benefits

- Better folder structure => Faster development and easier maintainability
- YOL[L/S] - You Obviously Love [LESS/SASS]
- Hate older browsers? Use autoprefixer, compatible minification, etc.
- Finely tuned, precise control of asset build pipeline
- Keep your sanity! Breakout JS files however you want and include with RequireJS, Browserify, Webpack, etc.
- Accelerate styling with watch scripts and livereload/hot reloading

...and so much more

Bōwst

Code Splitting and DruPAL

Here’s what you’re doing now...

WWOWS?

(What would Obi-Wan say?)

Bōwst

Here’s what you’re doing now...

```
▶<style type="text/css" media="all">…</style>
  <link type="text/css" rel="stylesheet" href="https://www.showcasecinemas.com/sites/default/files/css/css_mV99_hCoEiuVwKEBFsYXdQNrbdAiLznk8hyAvCmEGC4.css" media="all">
  <link type="text/css" rel="stylesheet" href="https://www.showcasecinemas.com/sites/default/files/css/css_qRTVoIzwXlTGIe8r4SuiqbcDeeiyHQXysBj3RRZmUT0.css" media="all">
▶<style type="text/css" media="screen">…</style>
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  <script type="text/javascript" src="https://www.showcasecinemas.com/sites/default/files/js/js_3l55moOUHoEu9Kn8yI7t4L5VTULhwBkBEW_LQqkGz3M.js"></script>
▶<script type="text/javascript">…</script>
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  <script type="text/javascript">
  <!--//--><![CDATA[//><!--
  document.createElement( "picture" );
  //--><!]]>
  </script>
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▶<script type="text/javascript">…</script>
  <script type="text/javascript" src="https://secure-a.vimeocdn.com/js/froogaloop2.min.js"></script>
  <script type="text/javascript" src="https://www.showcasecinemas.com/sites/default/files/js/js_rv_BKYv7yieH0IqHddhWHDC-bWGan8yiJbusyOpr0mw.js"></script>
▶<script type="text/javascript">…</script>
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  v=112"></script>
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  v=112"></script>
  <script type="text/javascript" charset="utf-8" async data-requirecontext="_" data-requiremodule="userLocation" src="/sites/all/themes/showcase/bb_js/lib/userLocation.js?
  v=112"></script>
  <script type="text/javascript" charset="utf-8" async data-requirecontext="_" data-requiremodule="MapsUtility" src="/sites/all/themes/showcase/bb_js/lib/MapsUtility.js?
  v=112"></script>
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  v=112"></script>
  <script type="text/javascript" charset="utf-8" async data-requirecontext="_" data-requiremodule="bootstrap" src="/sites/all/themes/showcase/bb_js/lib/bootstrap-min.js?
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  jquery.selectBoxIt.js?v=112"></script>
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  <script type="text/javascript" charset="UTF-8" src="https://maps.googleapis.com/maps-api-v3/api/js/22/10b/util.js"></script>
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```

Only Imperial Stormtroopers are so precise.

Bōwst

No one wants to be an Imperial Stormtrooper.

What you gonna do with all that JS?

- Firstly, it is a LOT more network requests for each page load.
- The browser also has to run through all of it and execute any immediate functionality.
- After that...basically nothing. Most of it won't be used except on a few pages.
- So we're essentially just increasing payload size and slowing down rendering?

Bōwst

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YUUUUUPPPPPPP!!!!!

Bōwst

Let’s be a bit more precise, shall we?

Faster page loads in two simple steps:

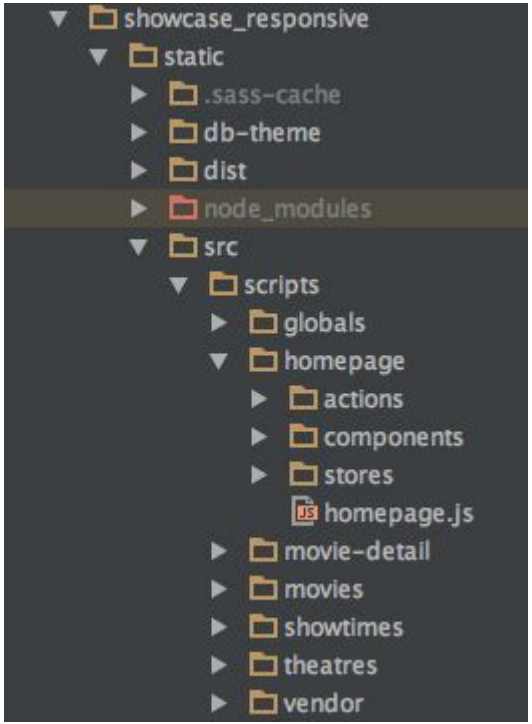
- Step 1 - Use gulp/grunt and browserify or webpack to create page specific JS files (known as code splitting).

- Step 2 - Utilize the `preprocess_page` hook in your theme to load only the JS files necessary.

Step 1 - Page specific bundles (Code Splitting)

```
//Builds all JS entry points
var scripts = function(){
  if(!argv.entry){
    glob('./src/scripts/*/*.js', function (err, files) {
      if (err){
        console.log(err);
      }
      //iterate over all files and bundle each
      var tasks = files.map(function (entry) {
        return browserifyShare(entry);
      });
      //merge all the streams into one!
      return es.merge(tasks);
    });
  }else{
    var entry = "./src/scripts/" + argv.entry + "/" + argv.entry + ".js";
    return browserifyShare(entry);
  }
};

gulp.task('scripts', function(cb) {
  return scripts();
});
```



Bōwst

Step 2 - Precision Asset Loading

```php
/**
 * @param $vars
 * @param $hook
 */
function showcase_responsive_preprocess_page(&$vars, $hook) {

        switch($pageType){
            case "movie":
                drupal_add_js(drupal_get_path('theme', 'showcase_responsive') . '/static/dist/js/movie-detail.bundle.js', array(
                    'scope' => 'footer'//ensure this goes at the end of the page
                ));
                break;
            case "movies":
                drupal_add_js(drupal_get_path('theme', 'showcase_responsive') . '/static/dist/js/movies.bundle.js', array(
                    'scope' => 'footer'//ensure this goes at the end of the page
                ));
                break;
            case "theatre":
                drupal_add_js(drupal_get_path('theme', 'showcase_responsive') . '/static/dist/js/showtimes.bundle.js', array(
                    'scope' => 'footer'//ensure this goes at the end of the page
                ));
                break;
            case "theatre-overview":
                drupal_add_js(drupal_get_path('theme', 'showcase_responsive') . '/static/dist/js/theatres.bundle.js', array(
                    'scope' => 'footer'//ensure this goes at the end of the page
                ));
                break;
            default:
                //always add global scripts
                drupal_add_js(drupal_get_path('theme', 'showcase_responsive') . '/static/dist/js/globals.bundle.js', array(
                    'scope' => 'footer'//ensure this goes at the end of the page
                ));
                break;
        }
    }
```

Bōwst

ahhh, that's better!

```
<script type="text/javascript" src="https://dev.showcasecinemas.com/sites/all/modules/contrib/picture/picturefill2/picturefill.js?v=2.0"></script>
<script type="text/javascript" src="https://dev.showcasecinemas.com/sites/all/modules/contrib/picture/picture.js?v=7.38"></script>
<script type="text/javascript" src="https://d2oh4tlt9mrke9.cloudfront.net/Record/js/sessioncam.js"></script>
<script type="text/javascript" src="https://dev.showcasecinemas.com/sites/all/modules/custom/showcase_gigya/js/gigya_custom.js?nwoxym"></script>
<script type="text/javascript" src="https://dev.showcasecinemas.com/sites/all/modules/custom/showcase_utils/scripts/update_browser.js?nwoxym"></script>
<script type="text/javascript" src="https://dev.showcasecinemas.com/sites/all/themes/showcase_responsive/static/dist/js/homepage.bundle.js?nwoxym"></script>
```

Bōwst

ahhh, that's better!

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<script type="text/javascript" src="https://dev.showcasecinemas.com/sites/all/modules/contrib/picture/picturefill2/picturefill.js?v=2.0"></script>
<script type="text/javascript" src="https://dev.showcasecinemas.com/sites/all/modules/contrib/picture/picture.js?v=7.38"></script>
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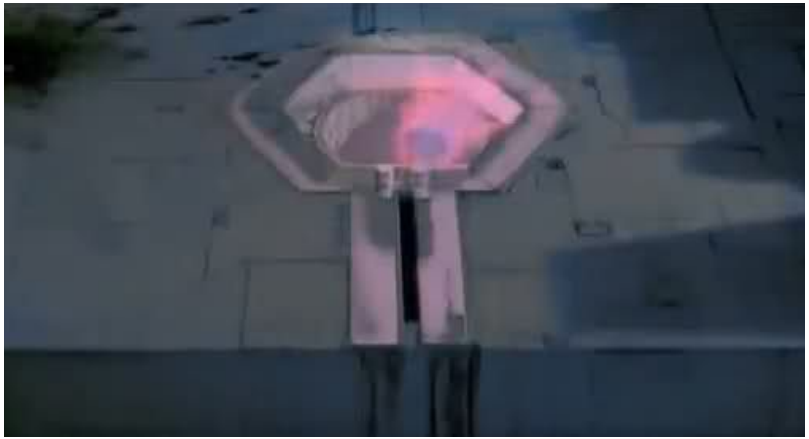
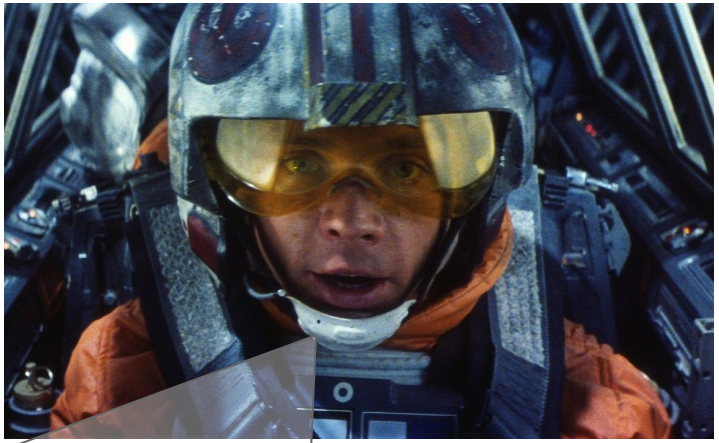
<script type="text/javascript" src="https://dev.showcasecinemas.com/sites/all/modules/custom/showcase_utils/scripts/update_browser.js?nwoxym"></script>
<script type="text/javascript" src="https://dev.showcasecinemas.com/sites/all/themes/showcase_responsive/static/dist/js/homepage.bundle.js?nwoxym"></script>
```





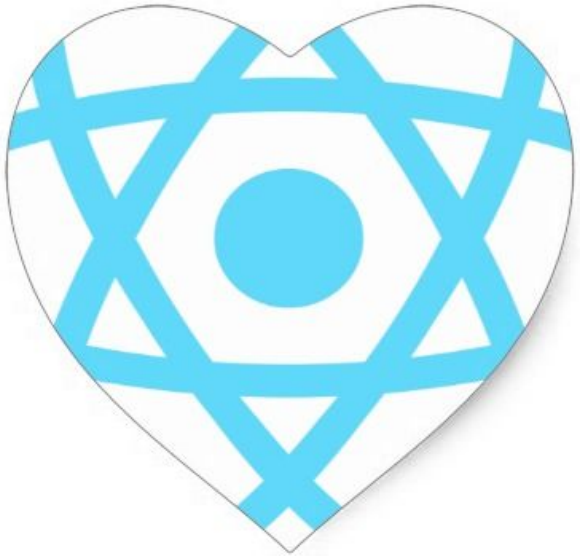
Just like bulls-eyeing womp rats back home in my T-16!

Bōwst

Be a Drupal Jedi.
Use code splitting and DruPAL.

Bōwst

Drupal



React

Bōwst

What's the big idea?

A JavaScript library for building user interfaces

JUST THE UI

Lots of people use React as the V in MVC. Since React makes no assumptions about the rest of your technology stack, it's easy to try it out on a small feature in an existing project.

VIRTUAL DOM

React abstracts away the DOM from you, giving a simpler programming model and better performance. React can also render on the server using Node, and it can power native apps using React Native.

DATA FLOW

React implements one-way reactive data flow which reduces boilerplate and is easier to reason about than traditional data binding.

Bōwst

Wait. JavaScript and markup...together?

What does that even look like?

Bōwst

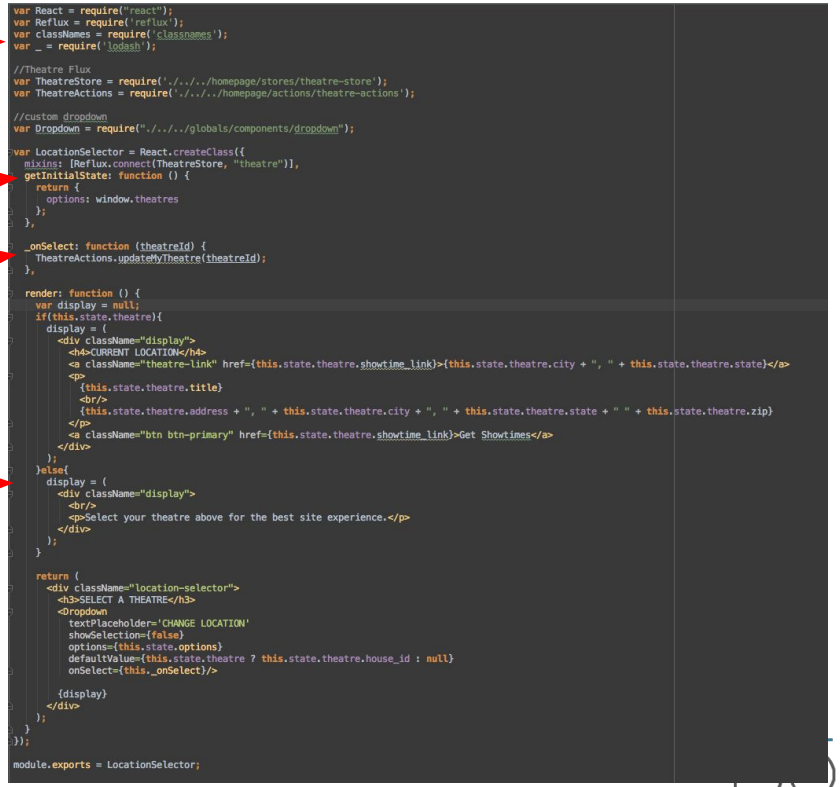
Anatomy of a React Component

Dependencies

Lifecycle Methods

Event Handlers

Render Function



```
var React = require("react");
var Reflux = require('reflux');
var classNames = require('classnames');
var _ = require('lodash');

//Theatre Flux
var TheatreStore = require('./../../homepage/stores/theatre-store');
var TheatreActions = require('./../../homepage/actions/theatre-actions');

//custom dropdown
var Dropdown = require("./../../globals/components/dropdown");

var LocationSelector = React.createClass({
  mixins: [Reflux.connect(TheatreStore, "theatre")],
  getInitialState: function () {
    return {
      options: window.theatres
    };
  },

  _onSelect: function (theatreId) {
    TheatreActions.updateMyTheatre(theatreId);
  },

  render: function () {
    var display = null;
    if(this.state.theatre){
      display = (
        <div className="display">
          <h4>CURRENT LOCATION</h4>
          <a className="theatre-link" href={this.state.theatre.showtime_link}>{this.state.theatre.city + ", " + this.state.theatre.state}</a>
          <p>
            {this.state.theatre.title}
            <br/>
            {this.state.theatre.address + ", " + this.state.theatre.city + ", " + this.state.theatre.state + " " + this.state.theatre.zip}
          </p>
          <a className="btn btn-primary" href={this.state.theatre.showtime_link}>Get Showtimes</a>
        </div>
      );
    }else{
      display = (
        <div className="display">
          <br/>
          <p>Select your theatre above for the best site experience.</p>
        </div>
      );
    }

    return (
      <div className="location-selector">
        <h3>SELECT A THEATRE</h3>
        <Dropdown
          textPlaceholder='CHANGE LOCATION'
          showSelection={false}
          options={this.state.options}
          defaultValue={this.state.theatre ? this.state.theatre.house_id : null}
          onSelect={this._onSelect}/>

        {display}
      </div>
    );
  }
});

module.exports = LocationSelector;
```

Bowst

That can’t be a good idea.

- Doesn’t that seem like mixing business logic and presentation logic? And isn’t that generally a terrible idea?
- On today’s web, **presentation is not just styling...it’s user interaction logic as well**.
- This makes it super easy to determine a control’s behaviour. (No searching through endless jQuery code)
- Plus, any front-end **business logic** is actually encapsulated is separate classes.

Anatomy of a React Component

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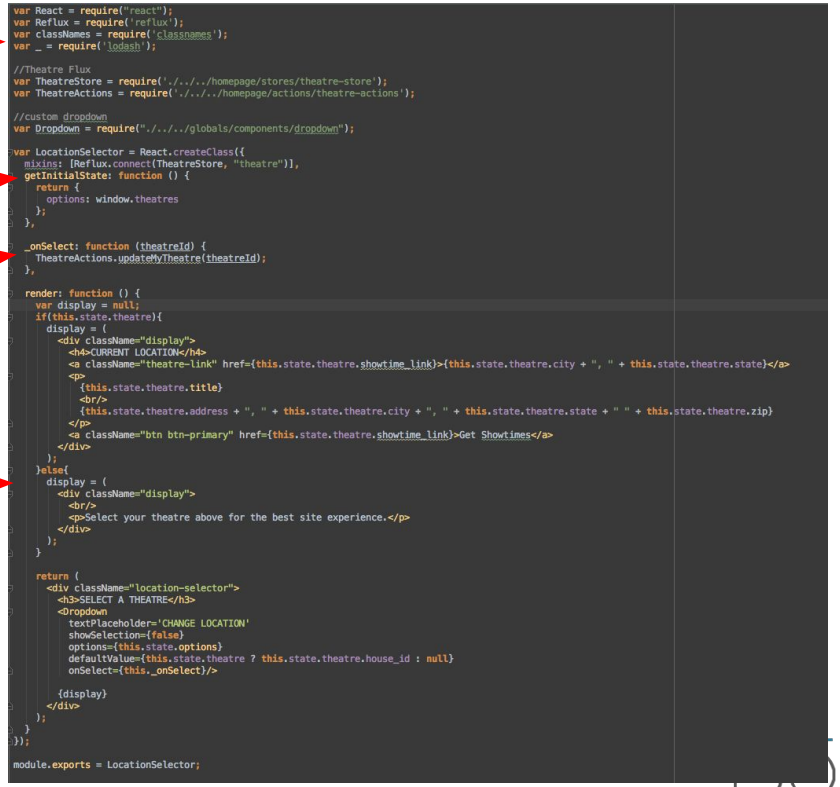
Lifecycle Methods

Event Handlers

Render Function



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            <br/>
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          </p>
          <a className="btn btn-primary" href={this.state.theatre.showtime_link}>Get Showtimes</a>
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          textPlaceholder='CHANGE LOCATION'
          showSelection={false}
          options={this.state.options}
          defaultValue={this.state.theatre ? this.state.theatre.house_id : null}
          onSelect={this._onSelect}/>

        {display}
      </div>
    );
  }
});

module.exports = LocationSelector;
```

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Anatomy of a React Component

Business Logic Layers

Call to Business Logic

```
var React = require("react");
var Reflux = require('reflux');
var classNames = require('classnames');
var _ = require('lodash');

//Theatre Flux
var TheatreStore = require('./../../homepage/stores/theatre-store');
var TheatreActions = require('./../../homepage/actions/theatre-actions');

//custom dropdown
var Dropdown = require("./../../globals/components/dropdown");

var LocationSelector = React.createClass({
  mixins: [Reflux.connect(TheatreStore, "theatre")],
  getInitialState: function () {
    return {
      options: window.theatres
    };
  },

  _onSelect: function (theatreId) {
    TheatreActions.updateMyTheatre(theatreId);
  },

  render: function () {
    var display = null;
    if(this.state.theatre){
      display = (
        <div className="display">
          <h4>CURRENT LOCATION</h4>
          <a className="theatre-link" href={this.state.theatre.showtime_link}>{this.state.theatre.city + ", " + this.state.theatre.state}</a>
          <p>
            {this.state.theatre.title}
            <br/>
            {this.state.theatre.address + ", " + this.state.theatre.city + ", " + this.state.theatre.state + " " + this.state.theatre.zip}
          </p>
          <a className="btn btn-primary" href={this.state.theatre.showtime_link}>Get Showtimes</a>
        </div>
      );
    }else{
      display = (
        <div className="display">
          <br/>
          <p>Select your theatre above for the best site experience.</p>
        </div>
      );
    }

    return (
      <div className="location-selector">
        <h3>SELECT A THEATRE</h3>
        <Dropdown
          textPlaceholder='CHANGE LOCATION'
          showSelection={false}
          options={this.state.options}
          defaultValue={this.state.theatre ? this.state.theatre.house_id : null}
          onSelect={this._onSelect}/>

        {display}
      </div>
    );
  }
});

module.exports = LocationSelector;
```

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Seems cool…but why should I use it for my Drupal project?

- Just the UI layer - React is great at managing interactive views, leaving most/all of the business logic to your Drupal project.
- Component-based development.
- Super easy to tie into template files.
  - Just mounts to an existing DOM node

```
var React = require('react');

var LocationSelector = require("./components/location-selector");


var mount = document.getElementById('location-selector');
if (mount) {
  React.render(React.createElement(LocationSelector), mount);
}
```

- Easy to understand and predictable behaviour, broken out logically into files.
- Super high performance, primarily by minimizing DOM updates which is awesome for mobile.

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What does the future hold?

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Progressively Decoupled Blocks

- Rewrite for Drupal 8 of the framework developed for weather.com
- Goal is to allow custom blocks to be written in ReactJS or Angular2
- Developers would not need to be intimately familiar with Drupal
- Allow for “progressive” decoupling - taking advantage of all of Drupal’s awesome features while leveraging the capabilties of modern JS libraries
- On drupal.org: https://www.drupal.org/sandbox/mrjmd/2664138
- On GitHub: https://github.com/mrjmd/decoupled_blocks

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Wrap up

- There are ton of JavaScript libraries and tools out there - **Use them**!
- DruPAL gives you the power to dynamically add scripts. **Use it, destroy excessive JS load times, and be a Drupal Jedi.**
- Always use the right tool for the right job - **ReactJS is a great tool for giving +10 interactivity to CMS-generated page.**
- There is some really amazing stuff happening right now - **JS and Drupal developers can work together to build incredible things.**

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Fin

Questions?

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