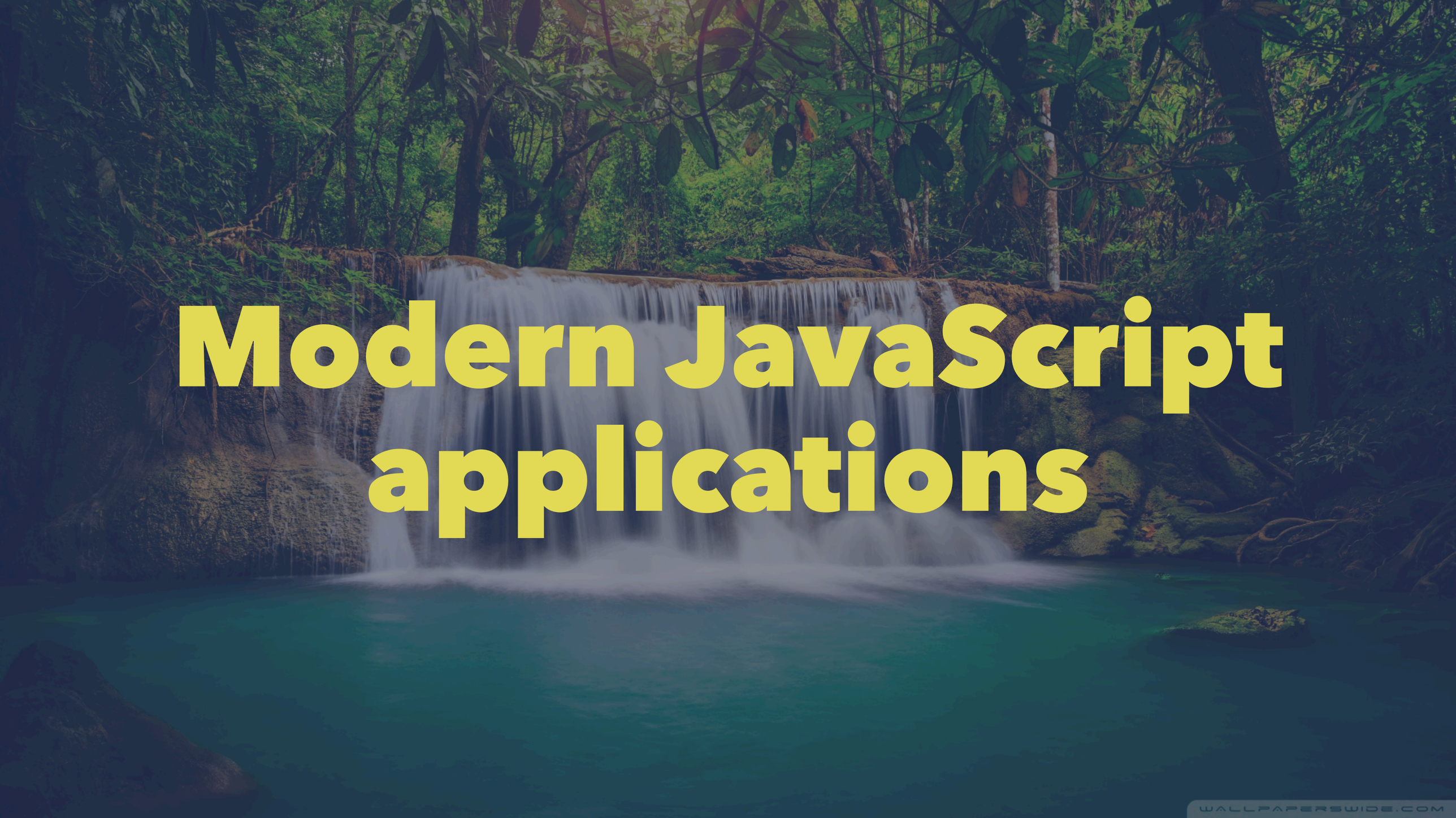
Modern JavaScript
applications

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Working with large-scale JS apps

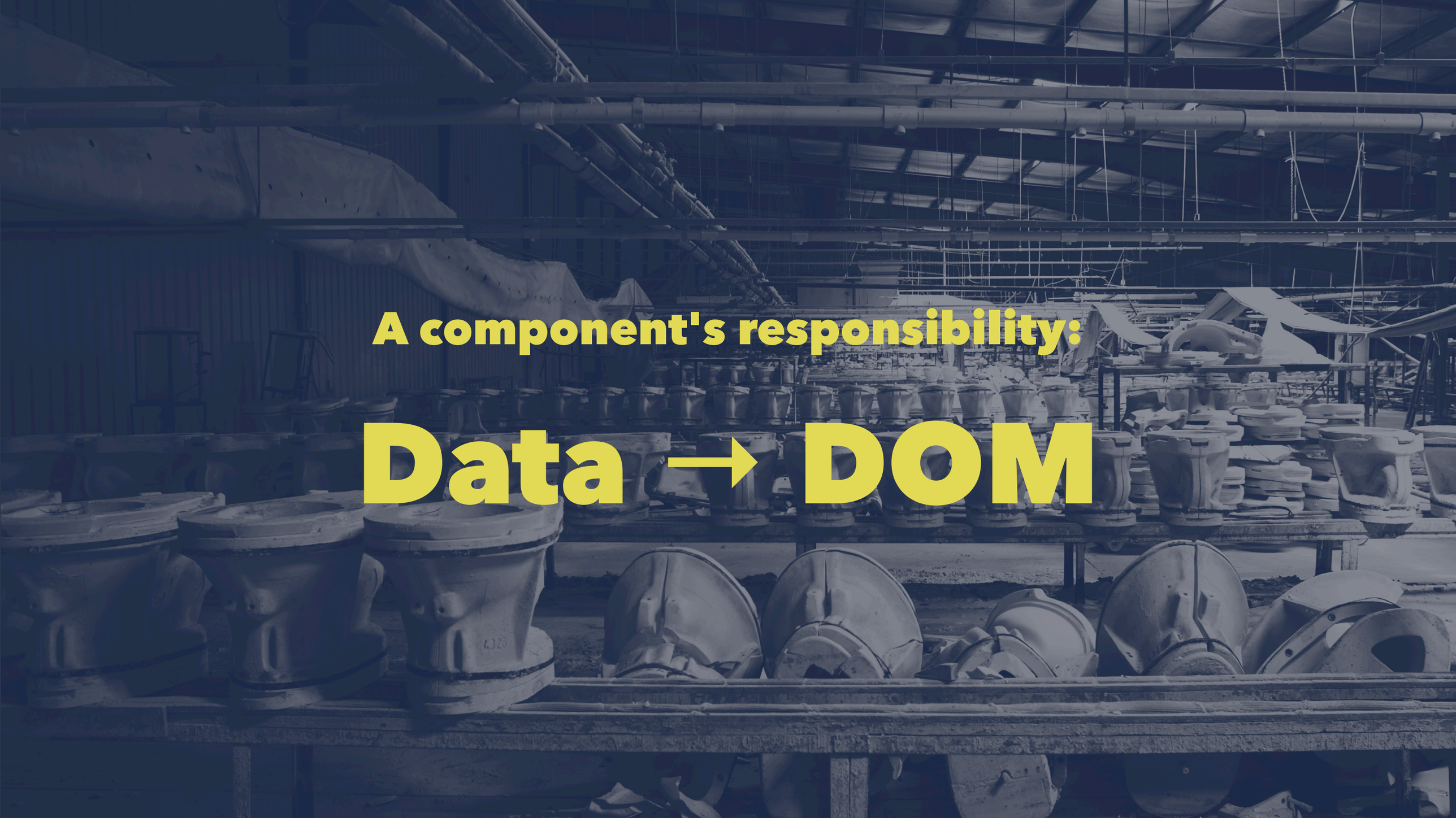
Todays agenda

- React.js - DOM library
- Less - css preprocessor
- Patterns for modern JS apps


React


State

Simple
Declarative over imperative
Reusable components
Inspired by functional programming

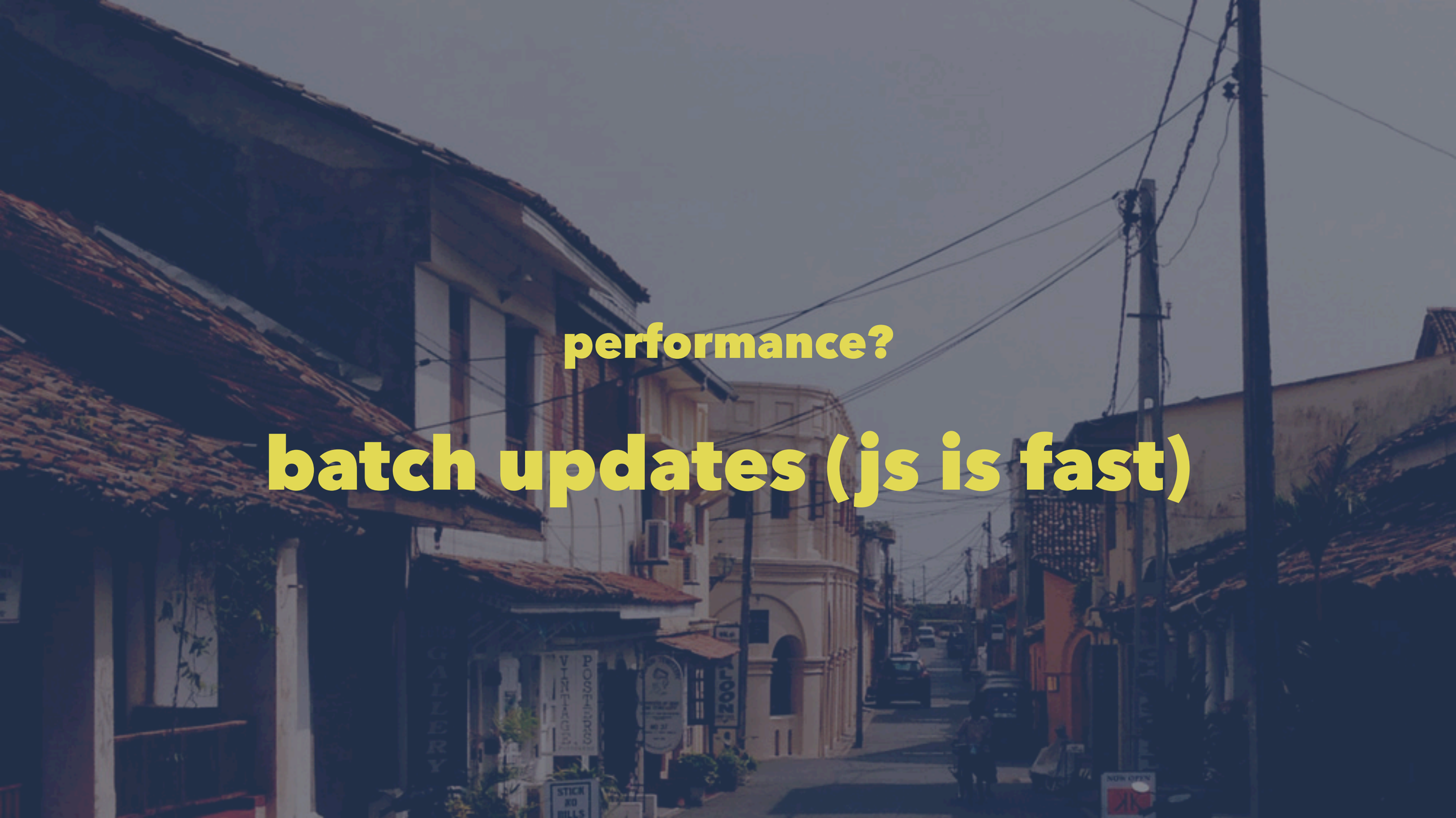


A component's responsibility:

Data → DOM

Virtual DOM

1. When something *could* have changed, re-render everything
2. Diff new output with previous output
3. Update *only* what has changed



performance?

batch updates (js is fast)

render
diff
batch

Components

```
var Example = React.createClass({

    render: function() {
      return React.createElement("div", null, "Hello World");
    }
});

React.render(Example(), document.getElementById('main'));
```

JSX

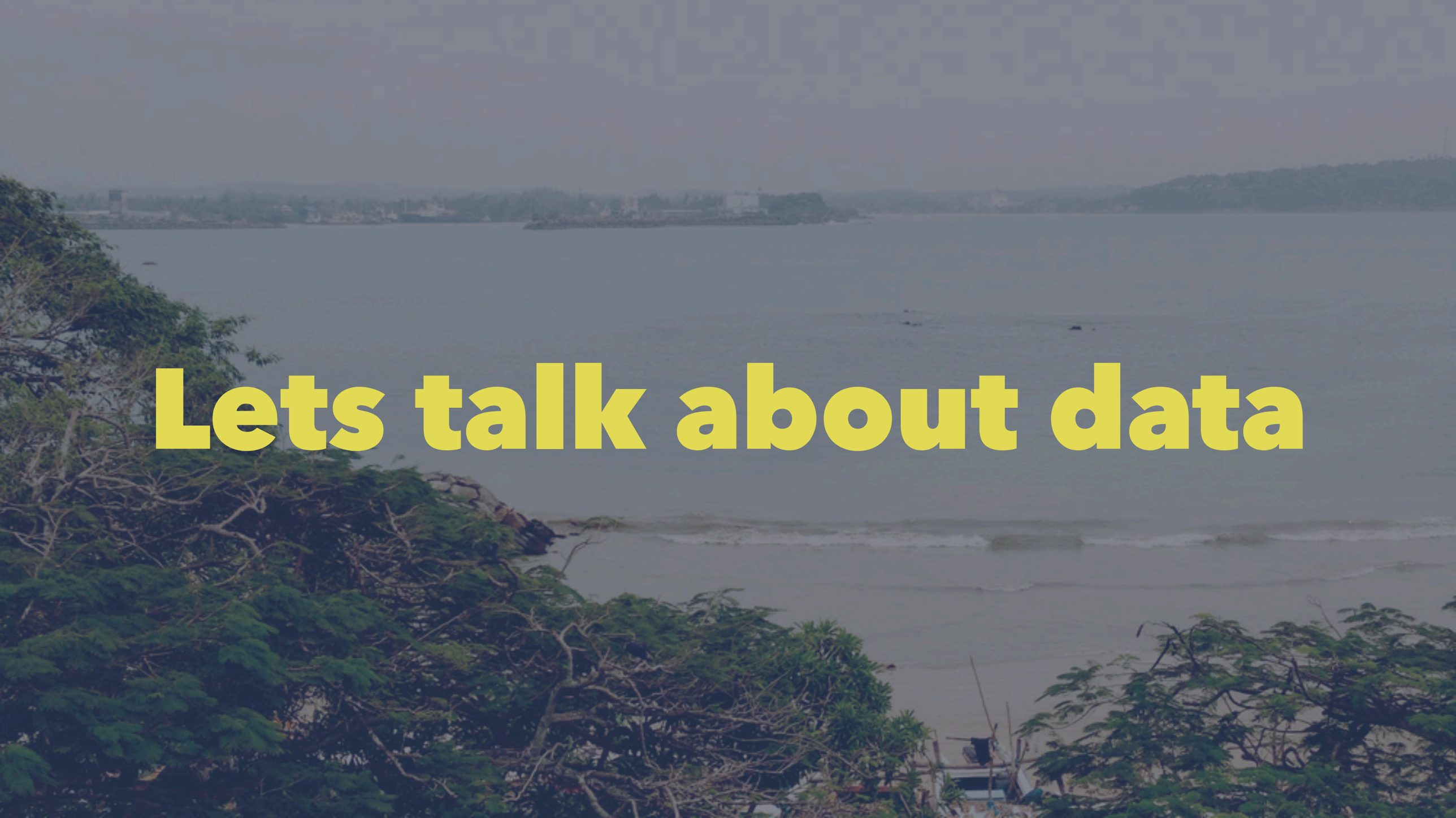
fully optional

```
var Example = React.createClass({

    render: function() {

        return <div>
                Hello World!
                </div>
    }
});

React.render(<Example/>, document.getElementById('main'));
```


Lets talk about data

Props & State

props = immutable
state = changes over time

```
var Comment = React.createClass({
  render: function() {
    return <div>
             {this.props.name} says: {this.props.text}
           </div>;
  }
});

React.render(
  <Comment />,
  document.getElementById('example')
);
```

```
var LikeButton = React.createClass({
  getInitialState: function() {
    return {liked: false};
  },
  handleClick: function(event) {
    this.setState({liked: !this.state.liked});
  },
  render: function() {
    var text = this.state.liked ? 'like' : 'don`t like';
    return (
      <p onClick={this.handleClick}>
        You {text} this. Click to toggle.
      </p>
    );
  }
});
```

Data flow

data downwards, events upwards

Reusability

```
var CommentBox = React.createClass({
    render: function() {
        return (
          <div className="commentBox">
            <h1>Comments</h1>
            <CommentList />
            <CommentForm />
          </div>
        );
    }
});
```

Reusability

```
var CommentList = React.createClass({
    render: function() {
        return (
          <div className="commentList">
            <Comment author="Pete Hunt">This is one comment</Comment>
            <Comment author="Jordan Walke">This is *another* comment</Comment>
          </div>
        );
    }
});
```

Reusability

```
var Comment = React.createClass({
  render: function() {
    return (
      <div className="comment">
        <h2 className="commentAuthor">
          {this.props.author}
        </h2>
        {this.props.children}
      </div>
    );
  }
});
```

React Components

Component name, keyword or similar

Searchable database of React components

How it works

Every module registered on NPM using the keyword ***react-component*** will show up in the list. It really is that simple.

How do I add my component to the list?

1. Ensure your ***package.json*** file contains an array of keywords which includes ***react-component***.
2. Publish your component to NPM (learn how at npmjs.org).
3. Wait for it to show up! Shouldn't take longer than 10-15 minutes.

Missing any features?

Let us know! We're always looking for ways to improve.

Who made this? Can I contribute?

Developed and currently hosted by VaffelNinja, but it's an open-source, MIT-licensed solution.

Contributions are very welcome! Please make sure you read the contribution guidelines.

Latest components

- react-infinity
- react-crouton
- react-anything-sortable
- react-form-data
- react-bootpag
- react-typeahead
- react-form-builder
- react-clipboard
- react-microspreadsheet
- react-formly

Recently updated

- react-visibility-sensor
- react-treeview
- react-anchor
- merry-go-round
- react-markdown-textarea
- react-elements
- plexus-form
- react-googlemaps
- react-widgets
- react-datepicker

Popular

Lifecycle events:

```
function componentDidMount() {...}
function componentWillUpdate() {...}
function componentDidUpdate() {...}
function componentWillUnmount() {...}
...
```

Lifecycle events

```
var Program = React.createClass({

    componentDidMount: function() {
        doSomething();
    }
    ...
}
```

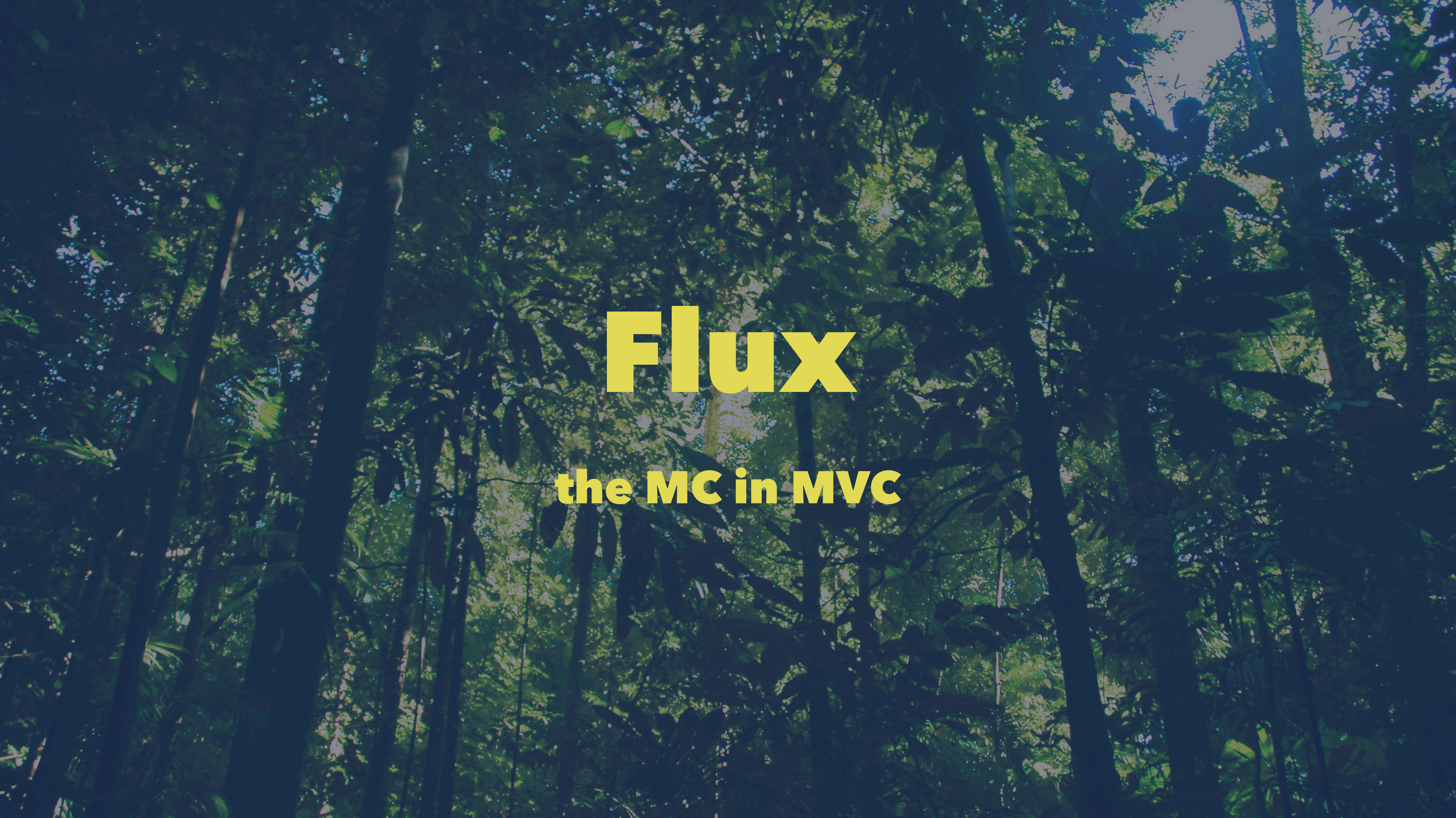
Lifecycle events

```
var Program = React.createClass({

    componentWillUnmount: function() {
        cleanup();
    }
    ...
}
```

Performance

```
shouldComponentUpdate: function(nextProps, nextState) {
  return nextProps.id !== this.props.id;
}
```



Flux

the MC in MVC

Summary

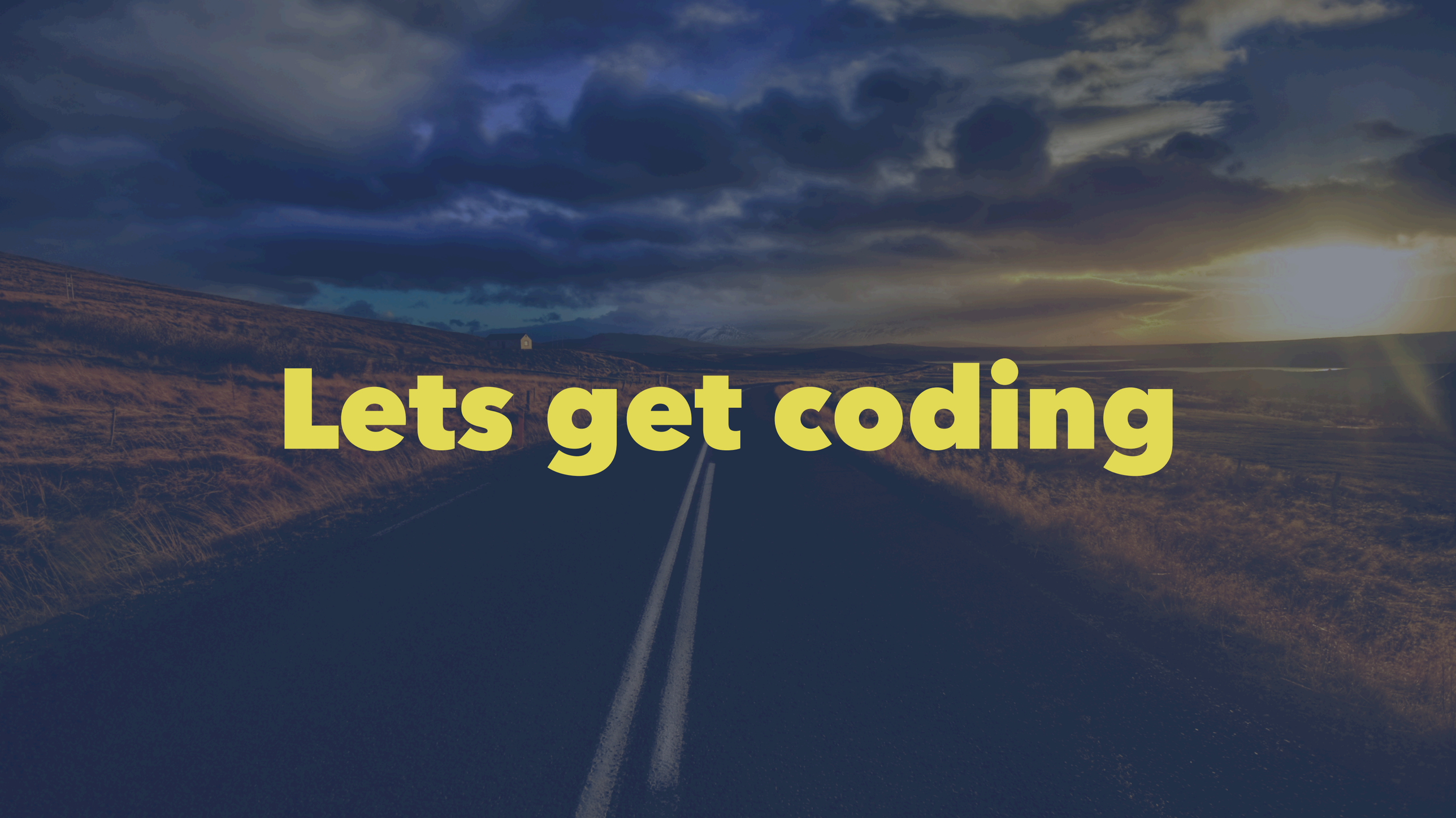
- React is a view library

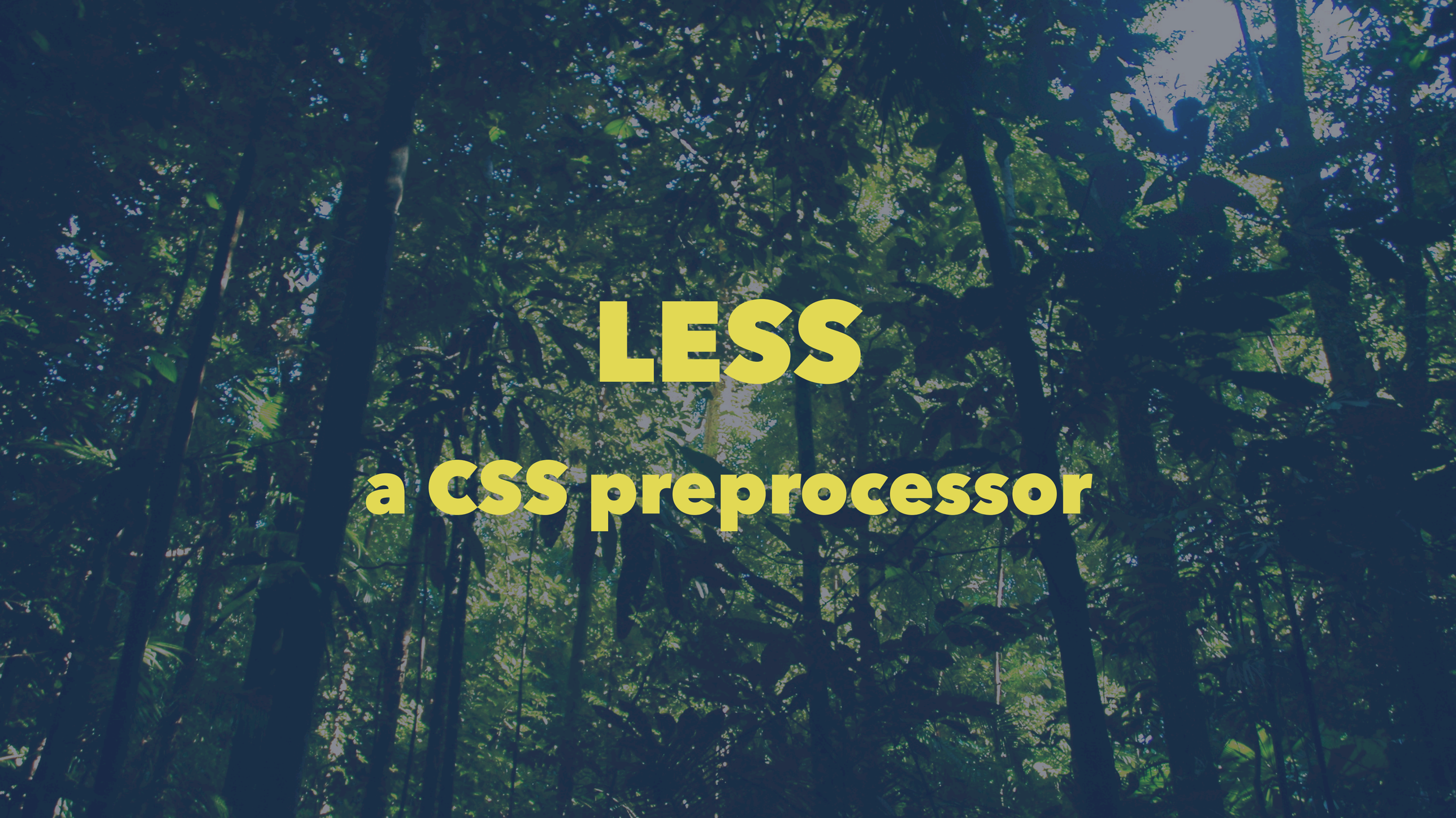
Summary

- React is a view library
- it performs really well

Summary

- React is a view library
- it performs really well
- but the main goal is to *simplify* development


Lets get coding


LESS
a CSS preprocessor

LESS

- extends CSS with new functionality
- allows for variables, mixins, nesting and more
- although useful, it contains some pitfalls

Nesting

```
.main-page .title {
  margin-top: 20px;
}

.main-page .subtitle {
  margin-top: 10px;
}
```

Nesting

```
.main-page {
  .title {
    margin-top: 20px;
  }

  .subtitle {
    margin-top: 10px;
  }
}
```

Nesting: pitfalls

```
.main-page {
  .sub-section {
    .sidebar {
      .selected {
        color: green;
      }
    }
  }
}
```

Nesting: pitfalls

```
.main-page .sub-section .sidebar .selected {
  color: green;
}
```

Variables

- great way to ensure consistency
- simplifies refactoring

```
@base: #f938ab;
@margin: 20px;

.main-page {
  color: @base;
  margin-top: @margin;
}
```

Mixins

allows us to group styles for reuse

```
.box-shadow {
  -webkit-box-shadow: 10px 10px 5px 0px rgba(0,0,0,0.75);
  -moz-box-shadow: 10px 10px 5px 0px rgba(0,0,0,0.75);
  box-shadow: 10px 10px 5px 0px rgba(0,0,0,0.75);
}

.mybox {
  .box-shadow;
}
```

Parametrized mixins

```
.borderRadius(@radius) {
  -webkit-border-radius:  @radius;
  -moz-border-radius:     @radius;
  border-radius:          @radius;
}
```

Mixins with default values

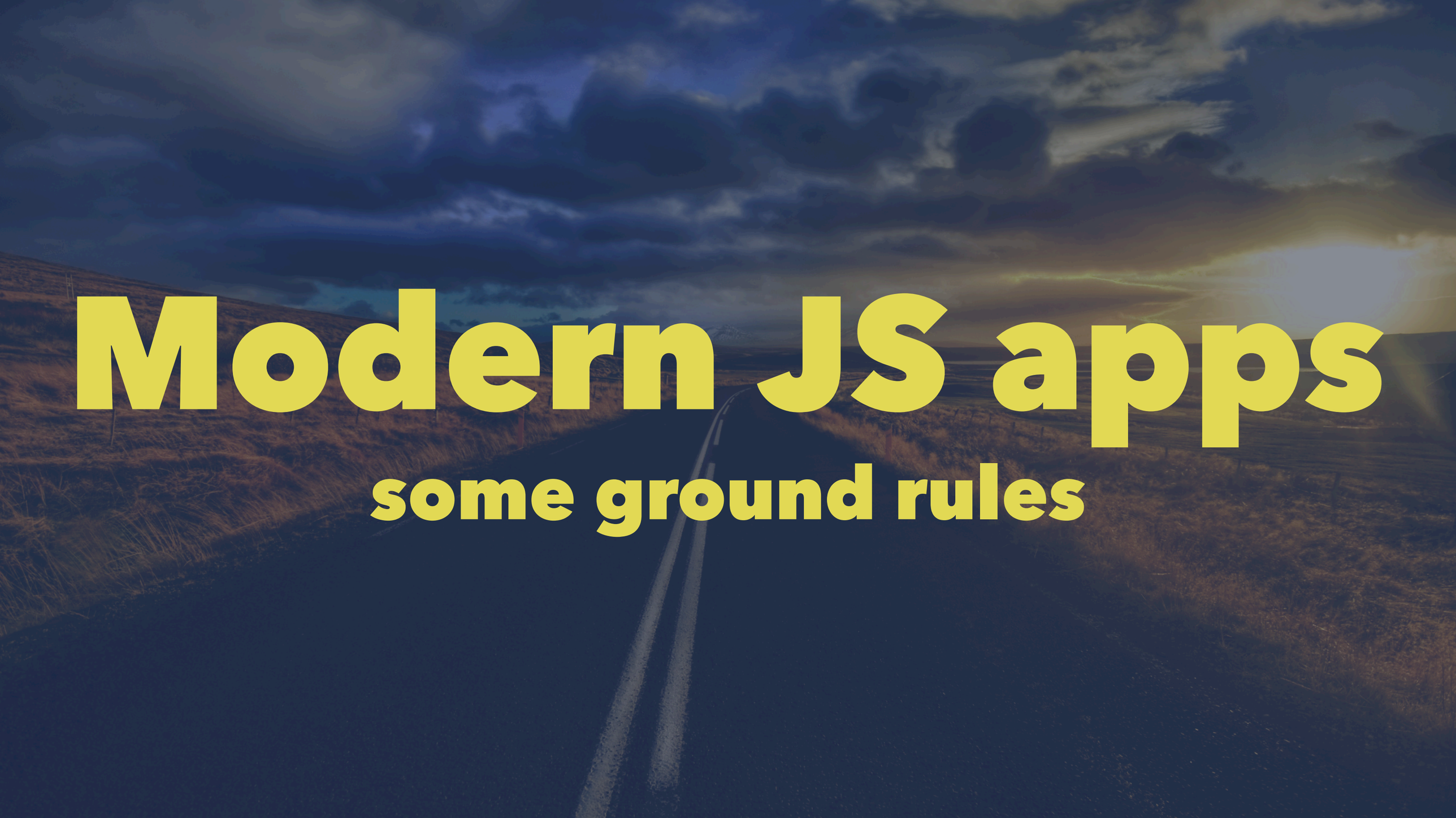
```
.borderRadius(@radius: 5px) {
  -webkit-border-radius:  @radius;
  -moz-border-radius:     @radius;
  border-radius:          @radius;
}
```

Modularity

- less allows for importing styles from other files
- this helps split up "the huge untouchable css file"

Modularity

```
@import "base.less"
@import "icons.less"
@import "fonts.less"
@import "frontpage.less"
@import "otherpage.less"
```


Modern JS apps
some ground rules

1. Seperation of Concerns

one thing handles the DOM

another stores data

2. Files are cheap

Use Browserify to modularize.

3. No Data in the DOM

no!

4. Avoid global variables

```
var a = 12;
```

vs

```
a = 12;
```

5. Find a good home for `state`

if it doesn't change, its `props`

"The secret to building large apps is **never** *to build large apps. Break your applications into* **small** *pieces. Then,* **assemble** *those testable, bites-sized pieces into your big application"*

- Justin Meyer

"The more **tied** *components are to each other, the* **less reusable** *they will be, and the more* **difficult** *it becomes to make changes to one without accidentally affecting another"*

- Rebecca Murphey

Any questions?
Thanks!

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