



Zach Gardner

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- [News Feed](#) 1
- [Messages](#) 3
- [Events](#) 2

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- [Games](#) 1
- [On This Day](#)
- [FarmVille 2](#)
- [Trivia Crack](#)
- [Notes](#)
- [Pokes](#)
- [Photos](#)
- [Games Feed](#) 20+

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- [Grace Pearson Hall...](#) 4
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- [Fiddlesticks](#) 20+
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- [Tanner](#)
- [New Groups](#) 1
- [Create Group](#)

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- [Pages and Public ...](#)

**Zach Gardner**
July 22nd, 2015 · [·](#)

Lessons from Facebook: Flux/React

by Zach Gardner

This presentation is about Facebook's Flux pattern and their React framework. If you're curious about Flux/React, or have seen the buzz and want to know what it's about, then this is the presentation for you.

The template for this PowerPoint makes it seem like this is just another Facebook post. Yeah, a little kitschy, I know. But it seemed like a good idea at the time.

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Carrie J. McCann Great presentation, tell me more!

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Megan Jones Peterson I don't speak the codes.

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Madhumitha Rajagopal I prefer a mess of jQuery selectors to a MVC framework any day.

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EatthisinkcMatt Murdick Where is the free beer?

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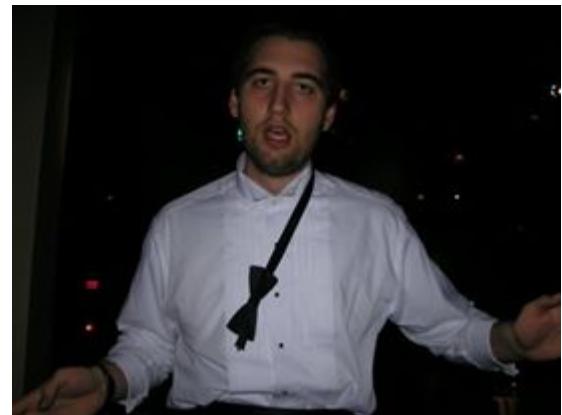
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Who is Zach Gardner? Why is he talking?

- HTML5/JavaScript consultant for Keyhole Software
- From Lawrence, KS
- Craft web applications that scale
- Traditional MVC applications for enterprises
- Health systems, financial companies





My #1 Goal - Scale

- Software that runs on 5 servers as well as 500
- Supports any range between 3 and 100 devs
- Active development can scale back to support mode
- UIs have a 3 to 5 year life span
- APIs have a 15 to 20 year life span



Why Facebook?

- Facebook is HUGE
- Everyone is on Facebook
- My Grandma is on Facebook
- They have to do things that scale
- I always consider research/code the publish for gold

Why Facebook?

- Facebook is HUGE
- Everyone is on Facebook
- My Grandma is on Facebook (Dorothy Gardner, right)
- They have to do things that scale
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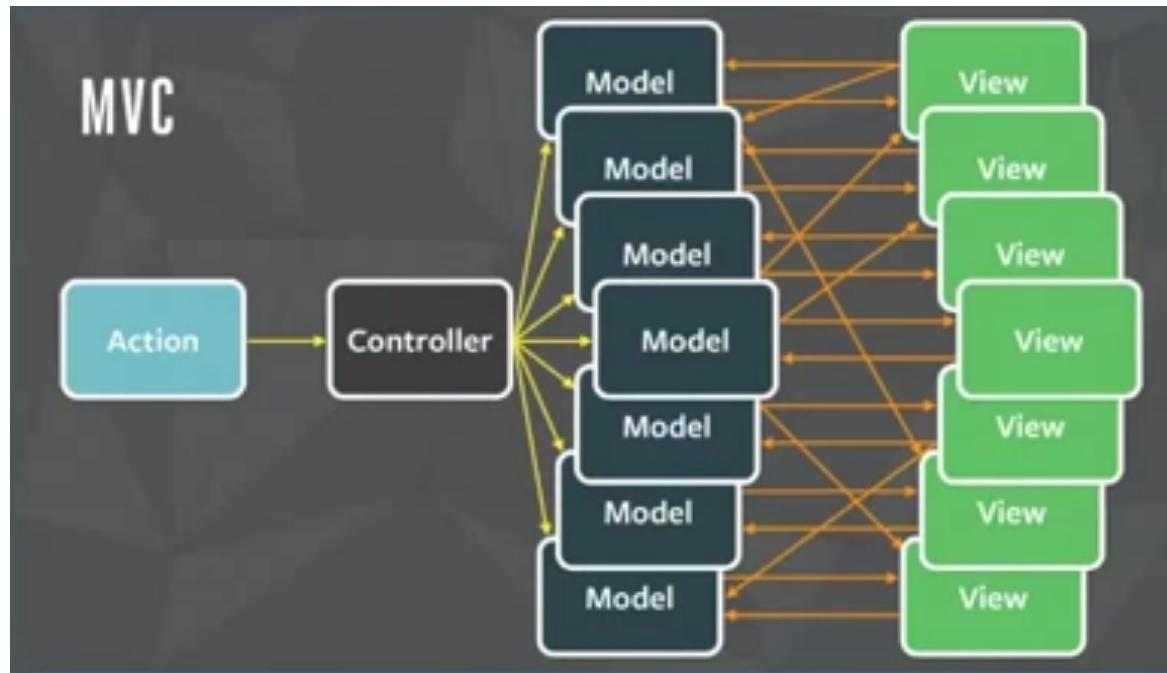




Flux/React

- Started hearing about it in the Summer of 2014
- Mostly on Hacker News
- Main claim: MVC does not scale

“MVC does not scale”

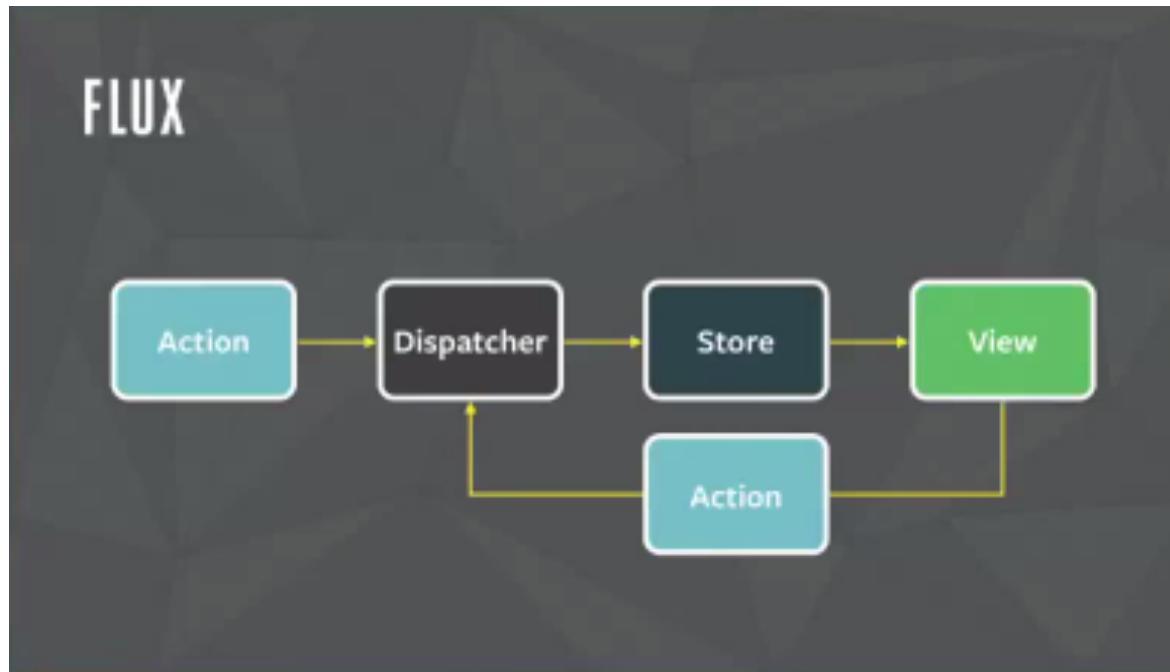




Flux/React - MVC Drawbacks

- Independent widgets have unpredictable flows
- JavaScript is cheap, DOM writes are expensive
- Applications not composed of black boxes

Flux





Flux/React

- Flux is the philosophy
- React is the implementation



Flux/React

- React is the JavaScript implementation of the Flux View
- Defines what to show the user
- Does not do DOM updates directly - virtual DOM
- Unidirectional flow



React Sample App



⌚ Solution ⚡ Question 🌐 Grokme 📄 References ❤️ About 🏁 Profile

Add Solution

Reference:

Description:

Grok:

Notes:

Save

Cancel



<https://github.com/zgardner/react-grokola>



React Sample App - Basics

- HTML is defined with JavaScript
- File extension is .jsx, not .js
- Only base class is React.createClass, no View, Controller, Model, etc.



React Sample App - Code - Props and State

```
NS.Solution = React.createClass({  
  propTypes: {  
    onComplete: React.PropTypes.func.isRequired,  
    onCancel: React.PropTypes.func.isRequired  
  },  
  getInitialState: function () {  
    return {  
      description: '',  
      grok: '',  
      grokNotes: ''  
    };  
  },  
});
```





React Sample App - Code Review

- Props - external - to use this component, need to meet requirements
- State - internal - like it sounds



React Sample App - Code - Render

```
render: function () {
  return (
    <div className="solution">
      <h2 className="title">
        Add Solution
      </h2>
      <strong className="fieldlabel">
        Reference:
      </strong>
      <ReferenceSelect ref="referenceSelect" /><br />
      <br />
      <strong className="fieldlabel">
        Description:
      </strong><br />
```



React Sample App - Code Review

- HTML is defined with JavaScript
- Pulled in definition of the ReferenceSelect class through local variable



React Sample App - Code - State and Bind

```
<input type="text" name="description" className="description" value={this.state.description} onChange={this._onDescriptionChange} /><br />
<br />
<div className="grokandnotescontainer">
    <div className="grokcontainer">
        <strong className="fieldlabel">
            Grok:
        </strong><br />
        <textarea className="grok" name="grok" value={this.state.grok} onChange={this._onGrokChange}></textarea>
    </div>
    <div className="groknotescontainer">
        <strong className="fieldlabel">
            Notes:
        </strong><br />
```



React Sample App - Code Review

- Listeners for the event X are bound through onX attribute
- Pull state out of this.state.XYZ



React Sample App - Code - Methods

```
_onClickCancel: function () {
  this.props.onCancel();
},
_onDescriptionChange: function (e) {
  this.setState({
    description: e.target.value
  });
},
_onGrokChange: function (e) {
  this.setState({
    grok: e.target.value
  });
},
```



React Sample App - Code Review

- Communicate to consumers through props
- Update state in callbacks, issues rerender, only renders deltas



React - Pros

- Clear difference between external requirements and internal state
- Does not directly modify DOM
- Predictable flow
- Have to ask components for state
- Isomorphic JavaScript



React - Cons

- A React View is really a View + Model + Controller
- Model is just a {}, no abstraction
- No OO extension



React Native

- Different take on Hybrid apps than Cordova/PhoneGap
- Wraps the native UI components
- Write React JavaScript, compile directly to Objective C, Java





React Native - Pros

- Developers learn JavaScript, can compile Objective C, Java
- Front-end team learns React, can create native apps
- Share code between web app and native app



React Native - Cons

- Have to rely on Facebook to translate React to native language
- Not as fast as hand rolling own application
- Still have to handle different UI flavors for each mobile OS



React - My Take

- JS and HTML in the same file is strike #1
- No OO inheritance is strike #2
- React View = View + Model + Controller is strike #3



This is what JavaScript that scales looks like



BACKBONE.JS





This is what JavaScript that scales looks like

```
-- MyRepo.git/src/js/feature/module/moduleController.js --  
  
// Dependencies  
var Backbone = require('backbone');  
var BaseController = require('../..../utils/baseController');  
var ModuleModel = require('./moduleModel');  
var ModuleView = require('./moduleView');  
var SubModuleController = require('./subModule/subModuleController');
```



This is what JavaScript that scales looks like

```
// Definition
/**
 * The ModuleController is responsible for the orchestration of the module view.
 *
 * @class
 */
var ModuleController = BaseController.extend({
    /**
     * Perform some operation, and execute the callback when finished.
     *
     * @protected
     * @param {ModuleModel} model
     * @param {Function} callback
     */
    _someFunction: function (model, callback) {
```





This is what JavaScript that scales looks like

```
// Exports  
module.exports = ModuleController;
```





JavaScript that scales

- Controller responsible for orchestration (URL routing)
- View responsible for the UI
- Model responsible for the data between the client and the API
- Controllers can delegate functionality to sub-controllers
- Controllers only talk to controllers



Fin

Questions?

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