EMBULARACTYMERBONE

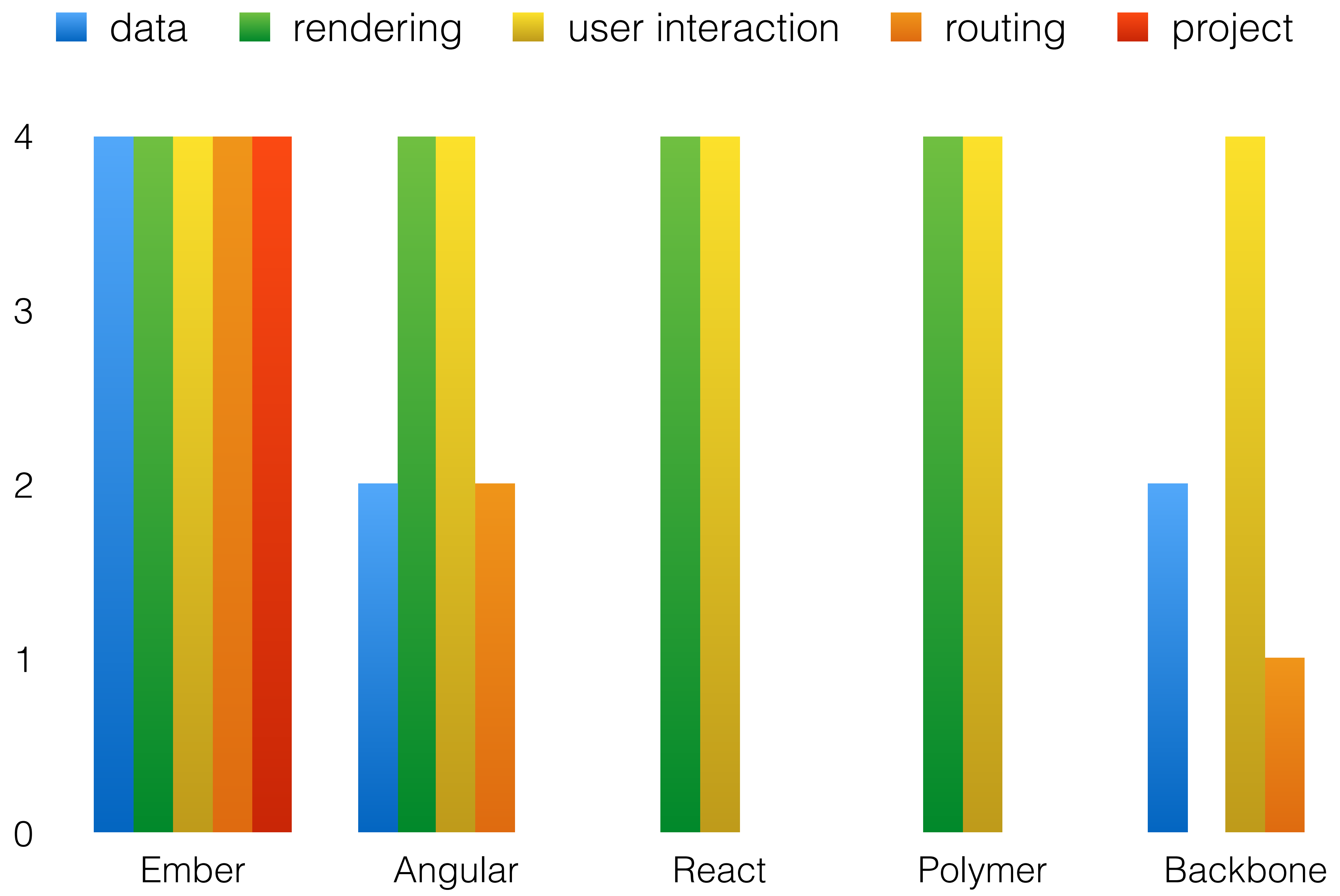
@ryanflorence

Jenn wants to know

“Polymer or Parallax?”

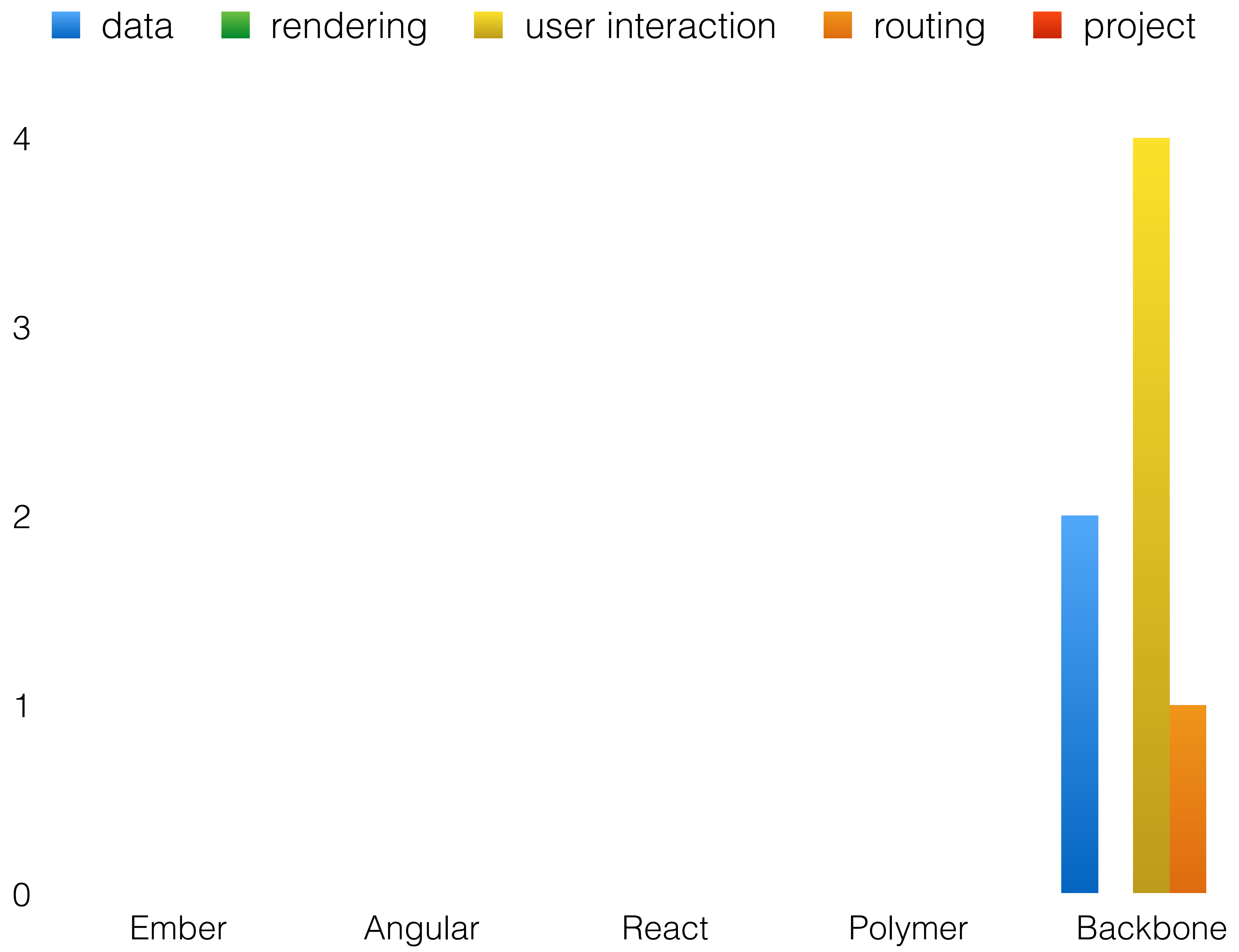
Boiled Down Browser Dev

- Interacting with data stores
- Rendering data to ui
- Responding to user interaction
- Routing + URLs
- Project stuff: file organization, build etc.



How concerned the library is with the task, not an opinion on how good it is at it

Master Detail



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user interaction
routing
project
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Ember
Angular
React
Polymer
Backbone

Give your JS app some Backbone with Models, Views, Collections, and Events.

Backbone.js gives structure to web applications by providing models with key-value binding and custom events, collections with a rich API of enumerable functions, views with declarative event handling, and connects it all to your existing API over a RESTful JSON interface.

BACKBONE.JS

Why did you create Backbone?

“[…] I can't help out with answers”

Jeremy Ashkenas

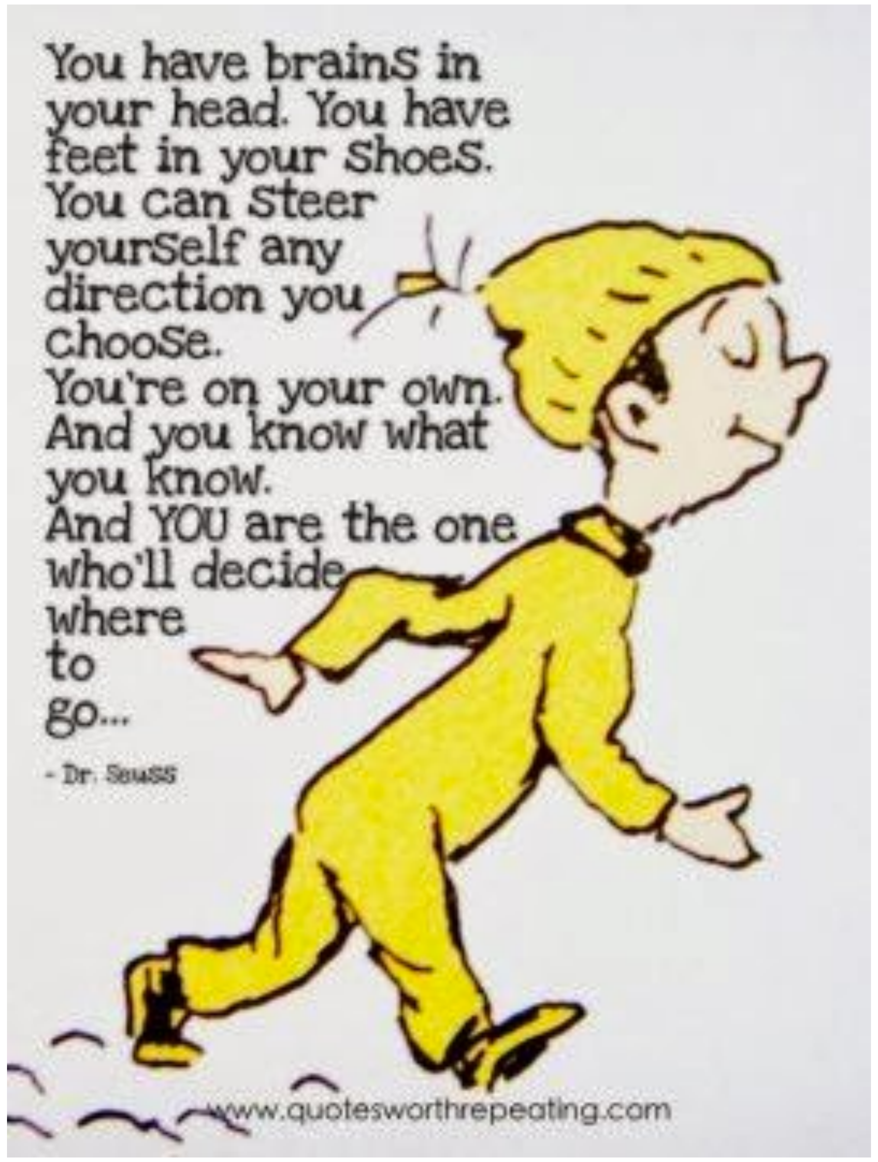
Data (2)

- Backbone.Model is probably the most interesting part of the library
- Works great with a lot of REST-ish APIs out-of-the-box
- Is easy to make work with nutty services (simple url creation overrides, hook for parsing data)
- pub/sub to connect models to view rendering
- collections: groups of models with convenient array methods built in (from underscore)

BACKBONE.JS

Rendering (0)

Backbone.View.prototype.render = function(){};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- Dr. Seuss
www.quotesworthrepeating.com

BACKBONE.JS

Rendering (0)

- _.template with <script type=“text/template”/>
- handlebars
- Manual DOM
- React

BACKBONE.JS

User Interaction (4)

- Provided by Backbone.View
- declarative `selector:handler` configuration
- delegates events for the current view

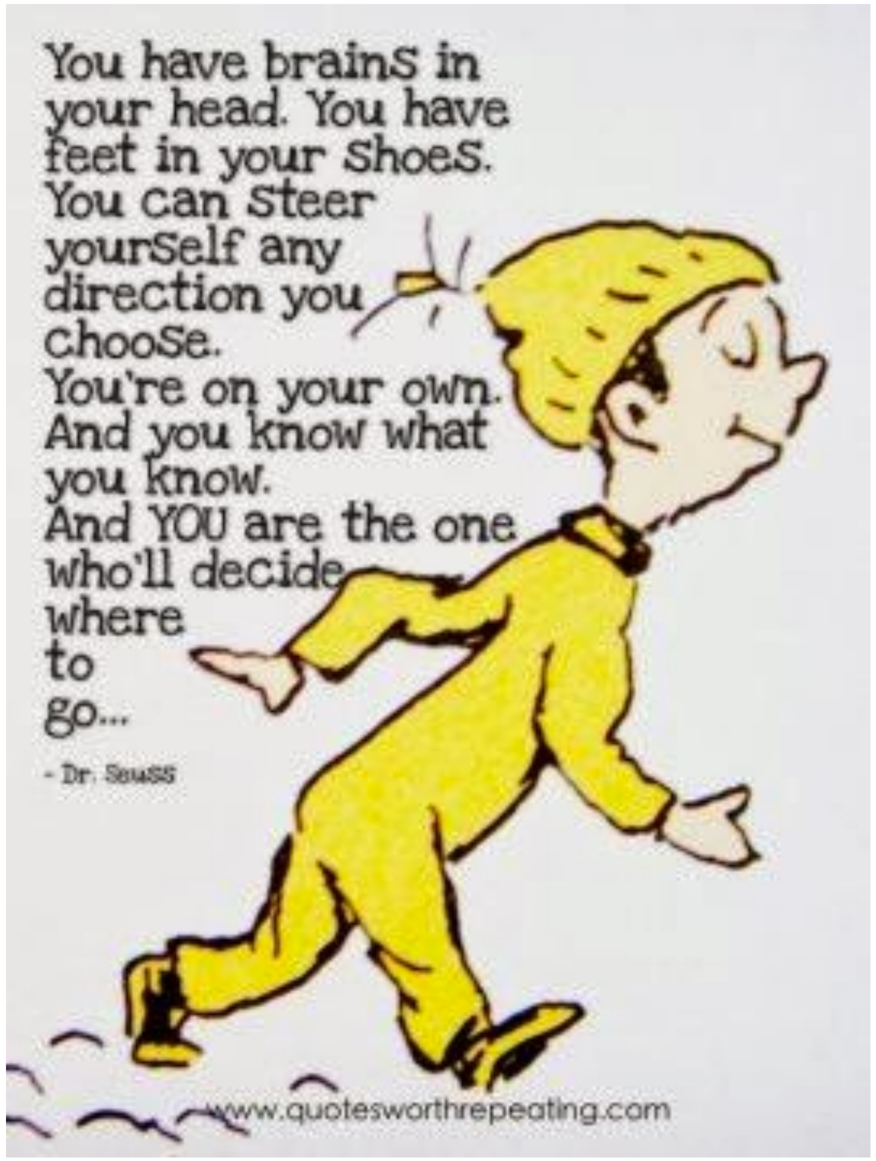
BACKBONE.JS

Routing (1)

- Backbone.Router
- declarative `route:handler` configuration
- hash and history support
- programmatic transitions only
- you control setup/teardown during transitions

BACKBONE.JS

Project Stuff (0)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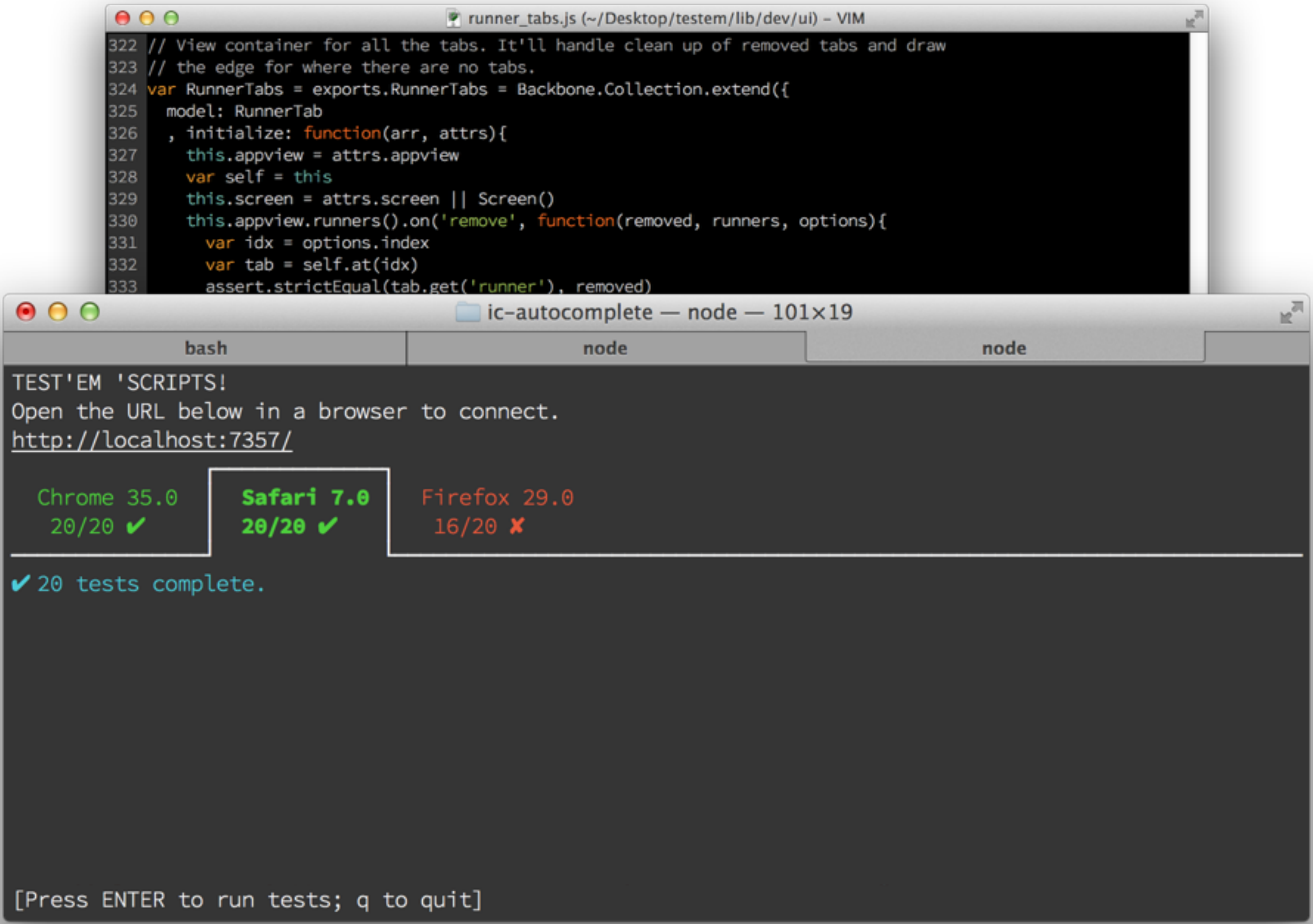
BACKBONE.JS

Backbone played a critical role ushering in the era of browser applications

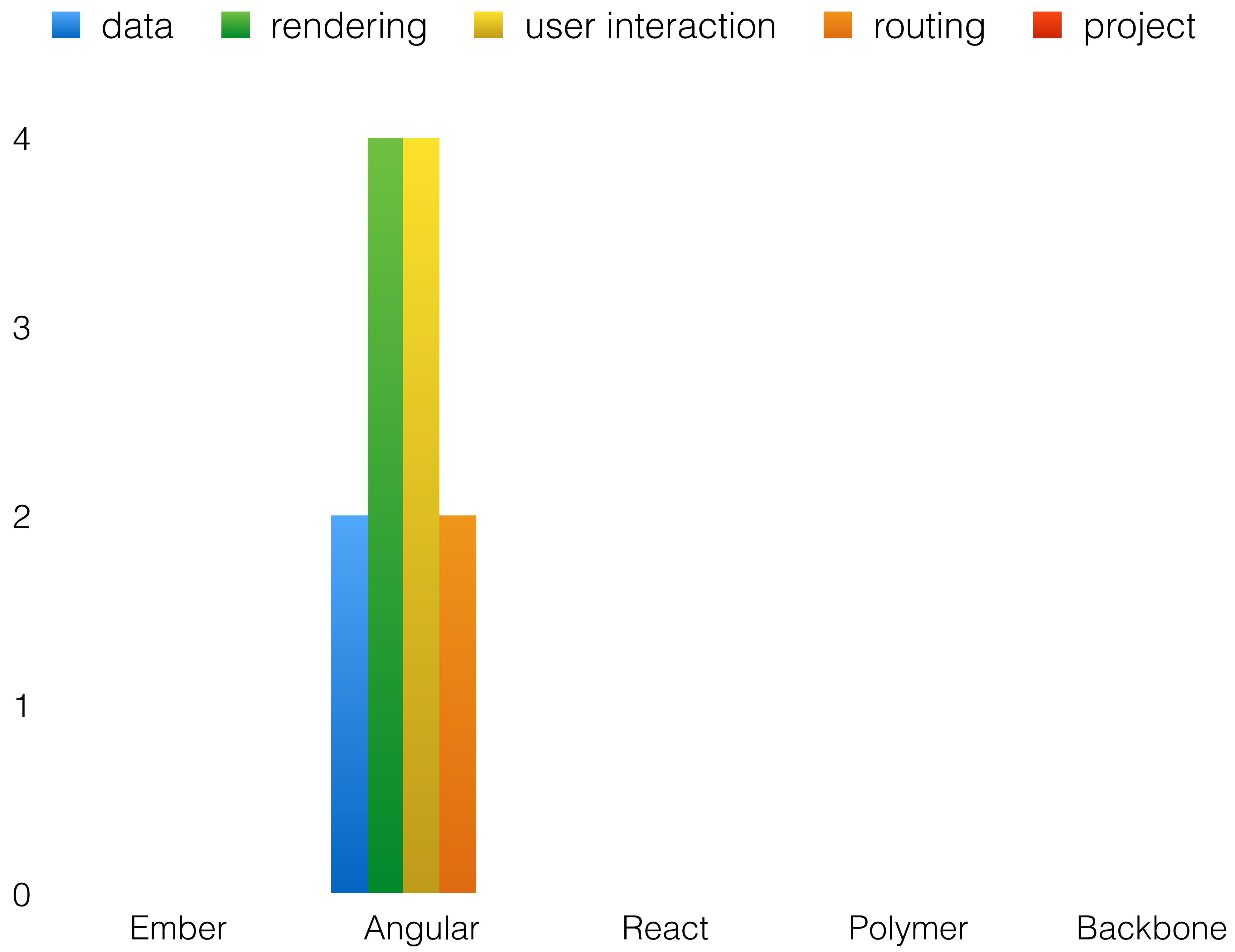
BACKBONE.JS



```
// View container for all the tabs. It'll handle clean up of removed tabs and draw
// the edge for where there are no tabs.
var RunnerTabs = exports.RunnerTabs = Backbone.Collection.extend({
  model: RunnerTab
  , initialize: function(arr, attrs){
    this.appview = attrs.appview
    var self = this
    this.screen = attrs.screen || Screen()
    this.appview.runners().on('remove', function(removed, runners, options){
      var idx = options.index
      var tab = self.at(idx)
      assert.strictEqual(tab.get('runner'), removed)
```

```
TEST'EM 'SCRIPTS!
Open the URL below in a browser to connect.
http://localhost:7357/

 Chrome 35.0     Safari 7.0     Firefox 29.0
  20/20 ✔        20/20 ✔         16/20 ✘

✔ 20 tests complete.




[Press ENTER to run tests; q to quit]
```

BACKBONE.JS



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Superheroic JavaScript MVW Framework

AngularJS lets you extend HTML vocabulary for your application. AngularJS is a toolset for building the framework most suited to your application development.

[W is for Whatever]

Why did you create Angular?

“I wanted to make it easy for web-designers (non-developers) to build web apps. Original idea was directives only with a firebase-like backend. It morphed into a real framework later and we dropped the backend.”

Miško Hevery

What development problems does it solve?

“Decoupling DOM manipulation from application logic. Making apps easy to test, provide easy assembly for application. Create your own DSL in HTML.”

Miško Hevery

What features are you most excited about?

“Directives, which allow the user to create their own DSL.”

Miško Hevery

Sales Pitch

"Angular is what the web-browser would have been, had it been designed for dynamic applications rather than static documents."

Miško Hevery

Rendering (4)

- The UI stays up-to-date with the magical $scope object's properties (a lot like CSS, actually) via dirty-checking
- Directives allow you extend HTML with behavioral hooks (usually by element name or an attribute)
- Composing attribute directives is powerful
- Ridiculously easy to get started and feel like you can build anything in the browser

Rendering (4)

- HTML DSL is fantastic
- $scope API is fantastic
- Directive API is COMPLETELY NUTS
- https://github.com/angular-ui/bootstrap/blob/master/src/accordion/accordion.js#L57-L90

Data (1)

- $http - simple xhr module, mostly exists for dirty checking to just work™

- $resource - declarative, model-like module to hook up an HTTP API

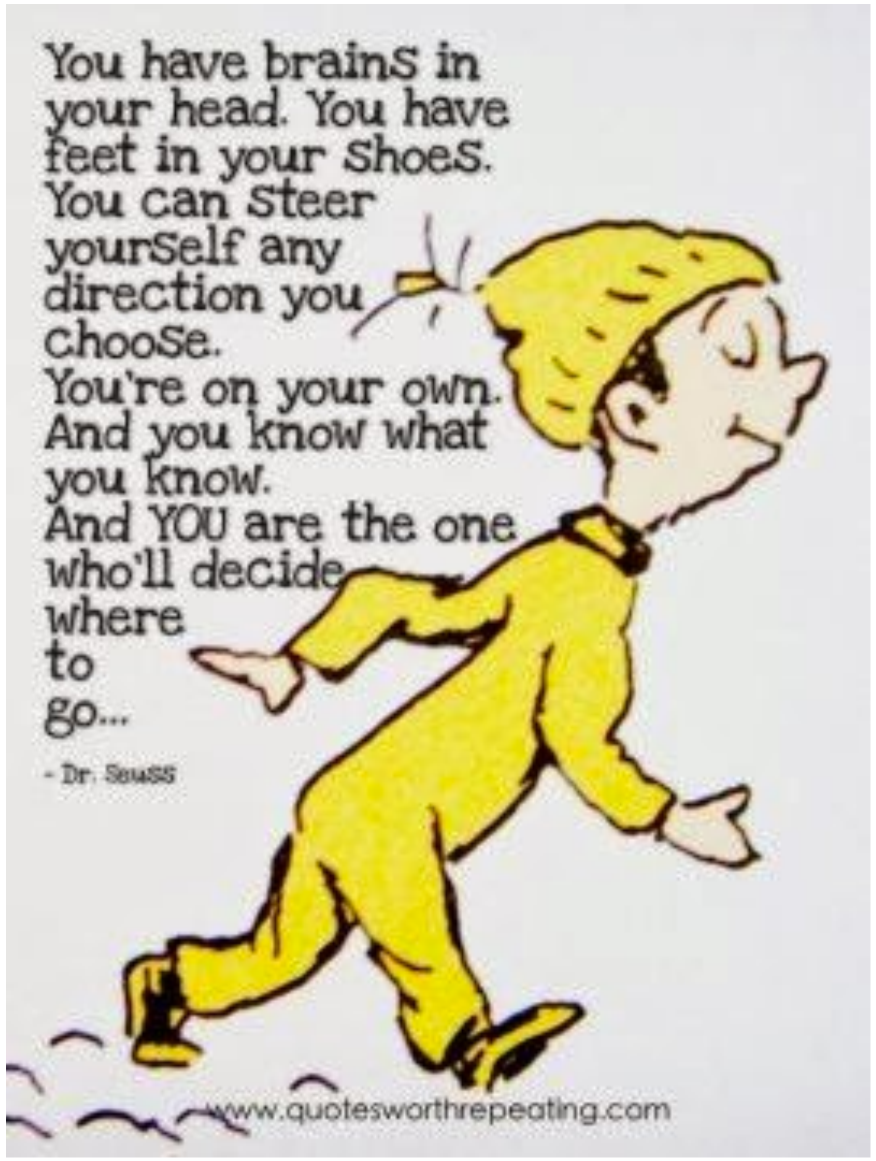
User Interaction (4)

- Same paradigm as rendering, use HTML and $scope
- Uses declarative attribute directives (ng-click, ng-submit and friends)
- maps an event to a method on $scope with arguments called from the HTML attribute
- No delegation, events live with the element.

Routing (2)

- ng-view directive provides a single rendering outlet on the page
- Configure matching routes to a template and controller to drive it
- Pretty limited since you can’t nest it
- They are rethinking their router completely, there’s also ui-router in the meantime that supports nesting

Project Stuff (0)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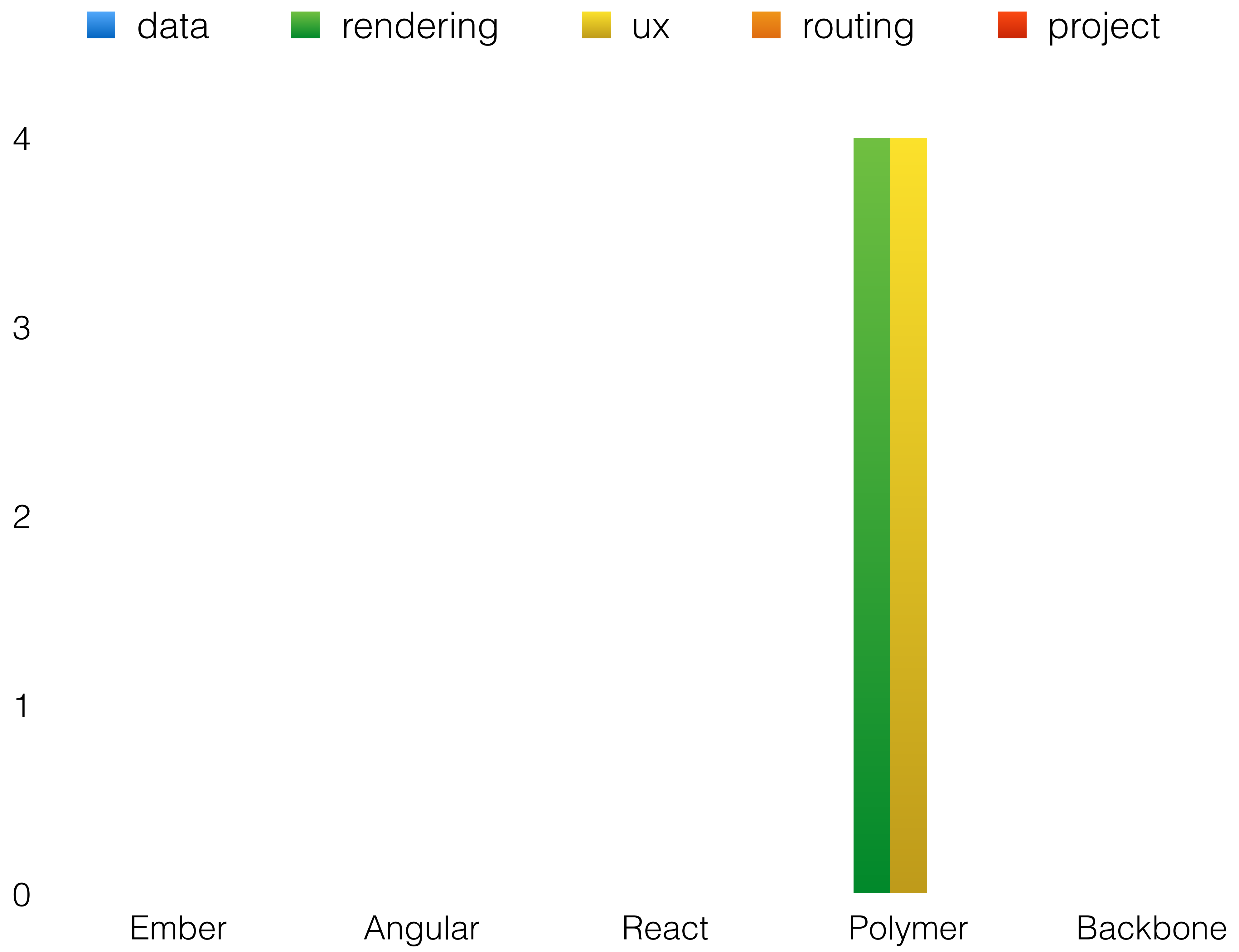

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Polymer: Building blocks for the web

Polymer is a library that uses the latest web technologies to let you create custom HTML elements. Build anything from a button to a complete application as an encapsulated, reusable element that works across desktop and mobile.

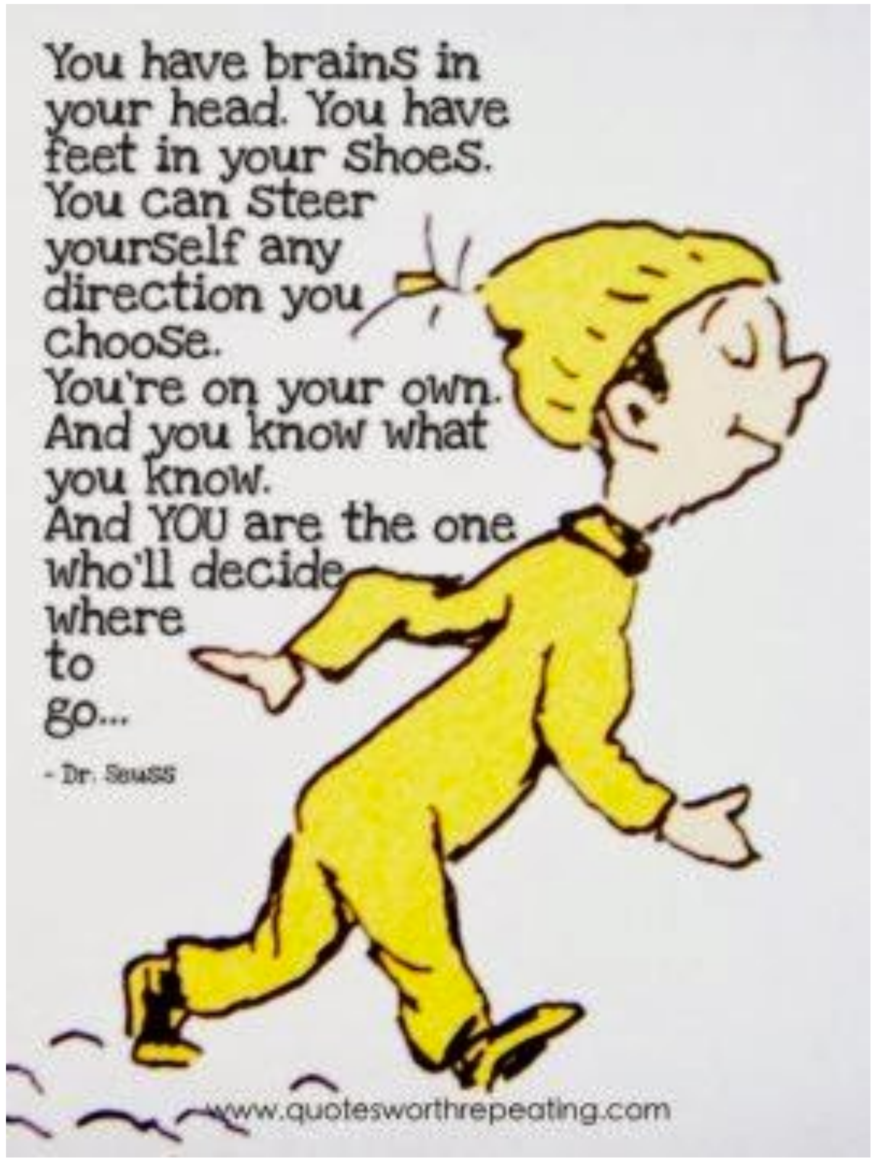
polymer

“Polymer puts elements back at the center of web development. With Polymer, you can craft your own HTML elements and compose them into complete, complex applications that are scalable and maintainable.”

–Polymer Website

polymer

Data (0)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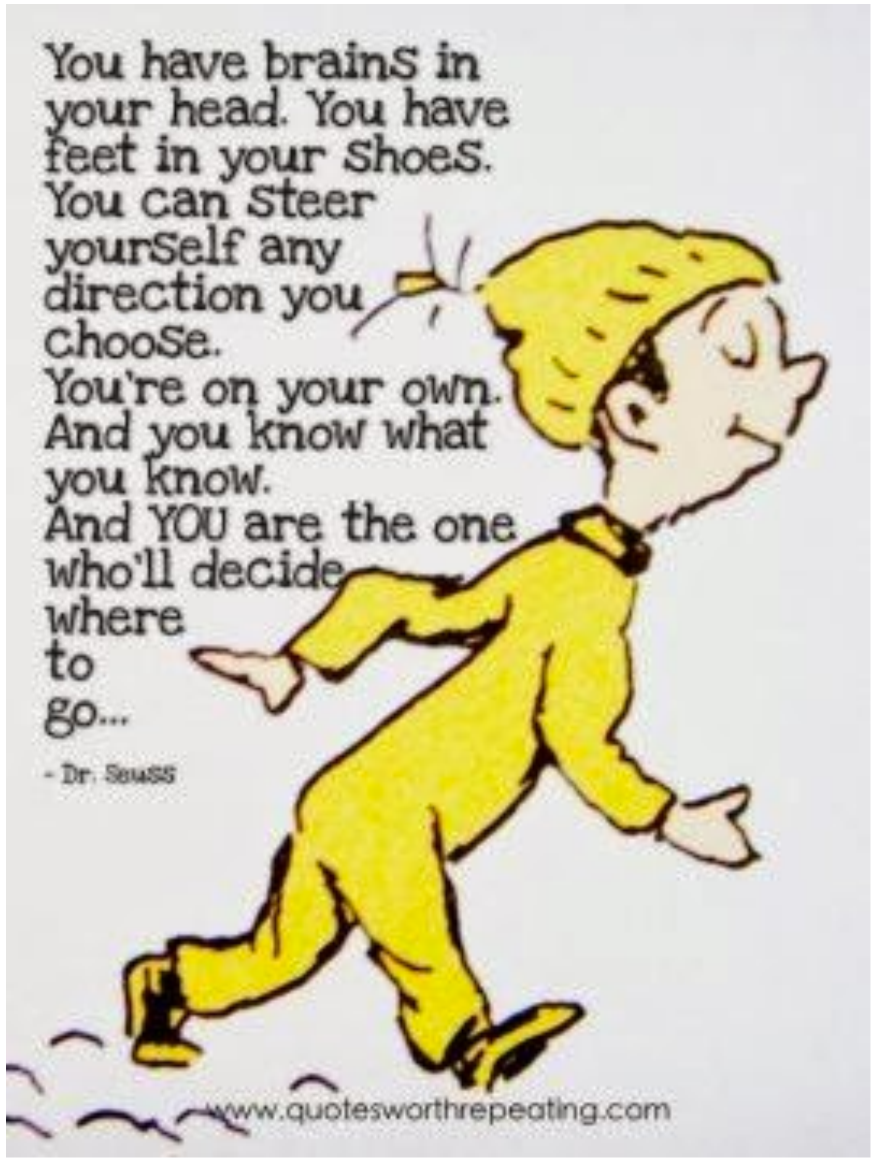
Routing (0)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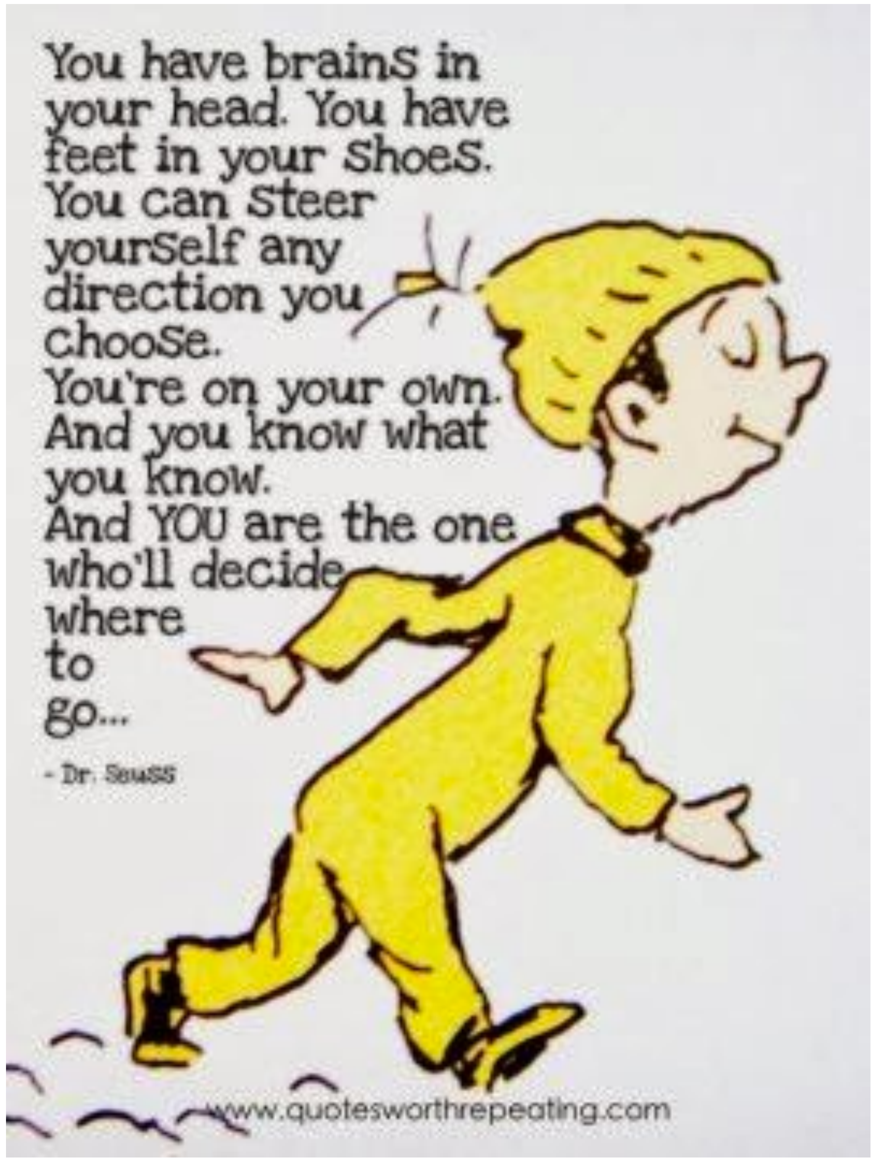
polymer

Project Stuff (0)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“complex applications that are scalable and maintainable with just elements?”

–Me

Rendering (4)

- Everything is an element.
- Uses shadow DOM when available (new paradigm for application CSS since styles are scoped to elements)
- Two-way binding of properties to element content and attributes
- “Published” properties for granular control of what the outside world can pass in
- Really nice {{mustached}} syntax for content and attributes

polymer

User Interaction (4)

- Declarative events (on-click, on-submit) that map to methods on the component definition.

polymer

Polymer v. Platform

- “The lowest layer of Polymer is platform.js: a collection of libraries (or “polyfills”) for new web technologies that haven’t shipped yet across all browsers.”

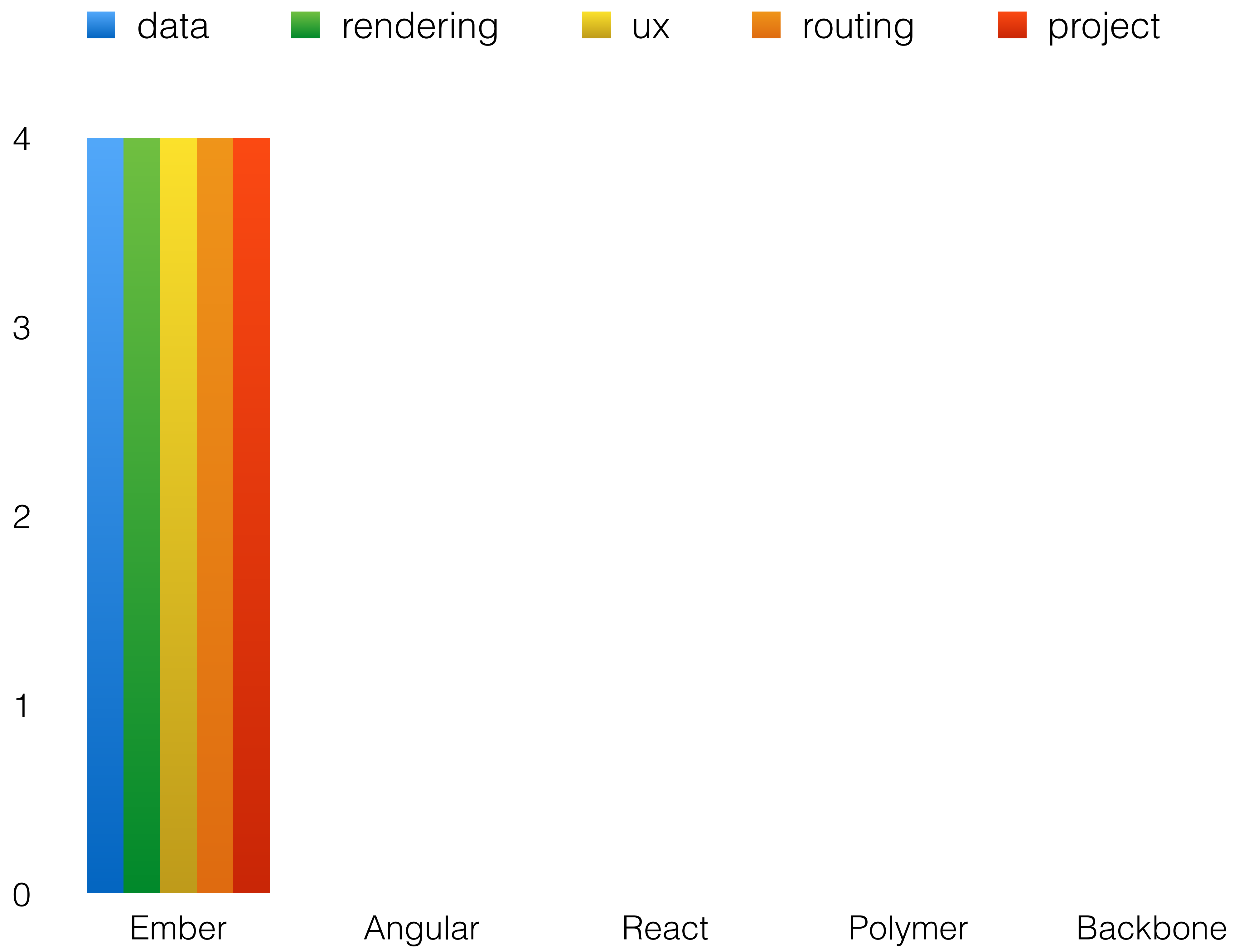
- Creating elements in Polymer is similar to how it is/will be with web components, but it adds a lot of its own things.

polymer

HTML Imports

```
<link rel="import"
  href="//cdn.example.com/bootstrap.html"/>
```

polymer



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Ember: A framework for creating ambitious web applications.

Ember.js incorporates common idioms so you can focus on what makes your app special.

Why did you create Ember?

“We created Ember because we knew that the browser was becoming competitive with native as not just a document viewer but an application runtime, and web developers didn't have the tools (or even the vocabulary) to take advantage of it.”

What development problems does it solve?

“Ember helps you manage complexity as the size of your application (and the team building it) increases, by reducing boilerplate and nudging developers in the direction of making good architectural decisions.”

React

What features are you most excited about?

"I'm most excited about routing, because we've had to put up with JavaScript that felt broken for too long. No other router comes close to the sophistication of Ember's, and Ember apps tend to have amazing URL support because of it."

Any common misconceptions you'd like address?

"If you've heard the documentation is bad or that the learning curve is hard, I'd urge you to take a look for yourself. The core concepts in Ember are simple and well-documented, and there is now a wealth of examples and up-to-date documentation out there."

What is your favorite public facing website built with Ember?

http://vine.com

React

Sales pitch

"Ember will grow with you. We spent time getting our 1.0 version right, and we have a roadmap for the next many years to take advantage of the future of the web platform. We're community-run, so the best ideas make it into the framework, no matter which person or company they come from. Finally, no other framework makes developers of large apps as productive, and the proof is in the pudding if you look at apps in the wild."

React

Routing (4)

- Arguably the best router available (also available as a standalone lib, tildeio/router.js)
- Nested routes config couple to nested views, manages setup/teardown of views
- Routes provide the data or “model” for a template
- Can pause, retry, and cancel transitions
- Declarative {{link-to}} helper to link to specific routes
- Harder to break the URL than to support it

Rendering (4)

- Bound templates + two-way binding to components
- Components - all API decisions attempt to be future compatible with web components (work nearly the same as polymer elements)
- Likes Ember’s observable objects but supports POJOs as well.
- Optimizations (run loop batches DOM updates, etc.)
- Transitioning to HTMLBars, which promises huge performance gains, Handlebars is kinda slow for some apps right now

User Interaction (4)

- Declarative events call application actions on views, controllers, or routes
- Imperative view/component events
- Event handlers are free (there's only one event per type that delegates to the whole app)

Data (4)

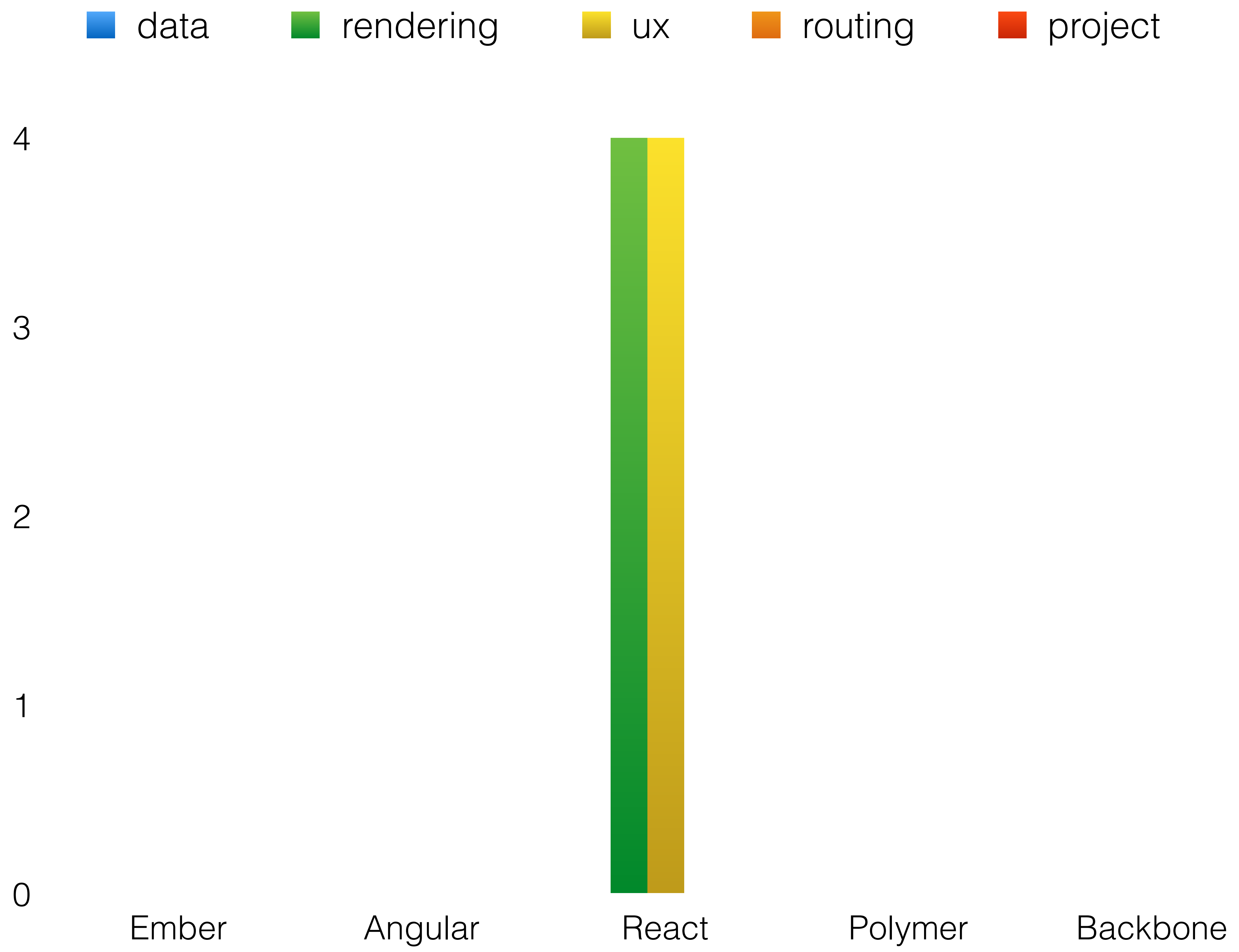
- Ember-Data is a separate lib, but part of the project, don’t have to use it
- Models, serializers, and adapters
- In-memory cache (same object in different templates will receive updates w/o any extra work)
- RESTAdapter, ActiveModelAdapter

Project Stuff (4)

- Ember CLI
- Boilerplate project
- Prescribed file organization
- Tests
- Build/deploy tools
- Generators

“Whiplash-Drive Development.”

–Instructure Employees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React: A JavaScript library for building user interfaces.

Lots of people use React as the V in MVC.

React uses a virtual DOM diff implementation for ultra-high performance. It can also render on the server using Node.js

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

Why did you create React?

“We used to have an observable MVC system at Facebook that was somewhat like Polymer + Backbone. We found that registering the observables was too difficult so we set out to write a system that did this part automatically. After it evolved over a year, we had React.”

What development problems does it solve?

“React lets you use plain old JavaScript to express your UI at any point in time, rather than specifying the initial state + data binding using a domain-specific language. It also focuses on composition more than competitors -- even web components.”

React

What features are you most excited about?

“I like that composition is so flexible and easy and that your render code is treated like a black box. You don't have to worry about any sort of data binding whatsoever.”

Any common misconceptions you'd like to address?

"JSX is the least interesting part of React.

"The 'virtual DOM' is about treating your render code like a black box, not about performance. It will never end up in browsers.

"React is more of a jQuery competitor than an Angular or Ember competitor."

React

What is your favorite public facing website built with React?

http://www.facebook.com

React

Sales Pitch

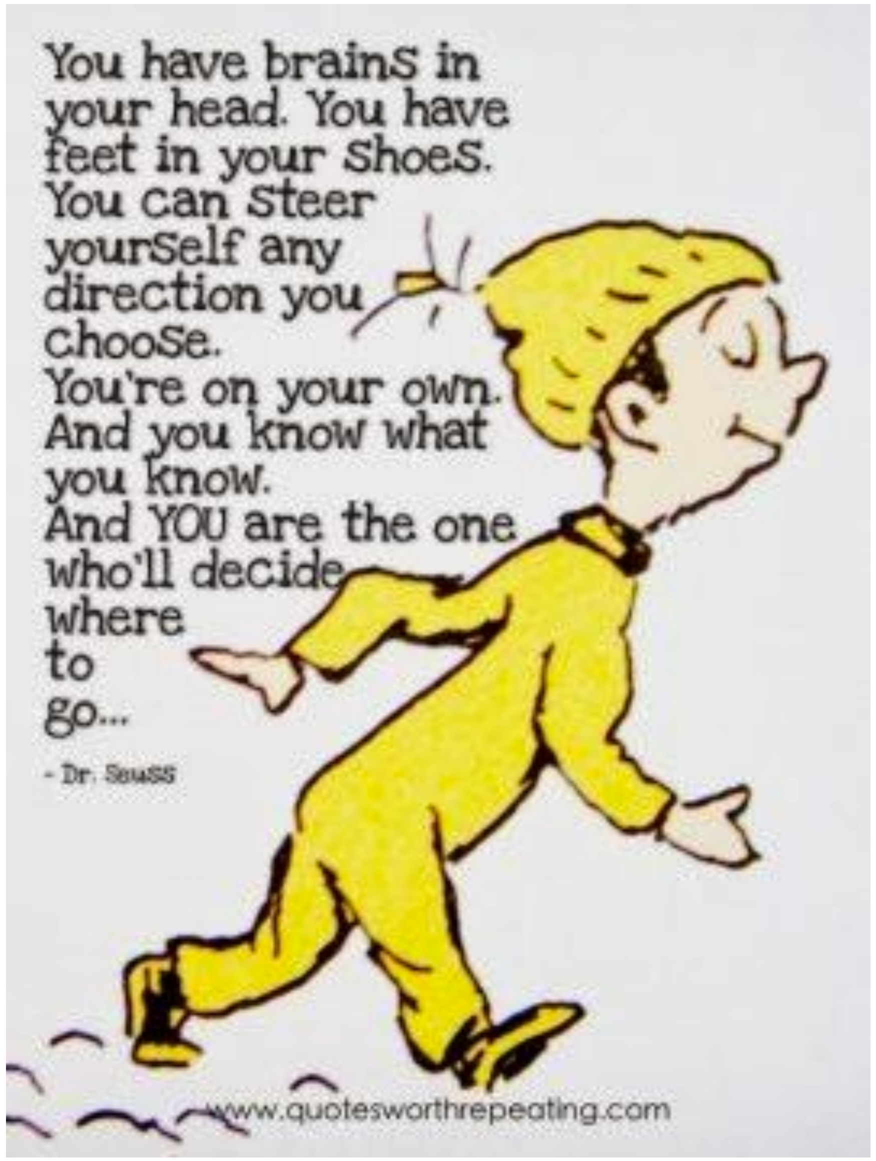
“- Express your UI at any point in time

“- Data binding has problems with composition, expressivity, and performance-in-the-large

“- React is the most expressive way to build (complex) user interfaces in the browser bar none.”

React

Data (0)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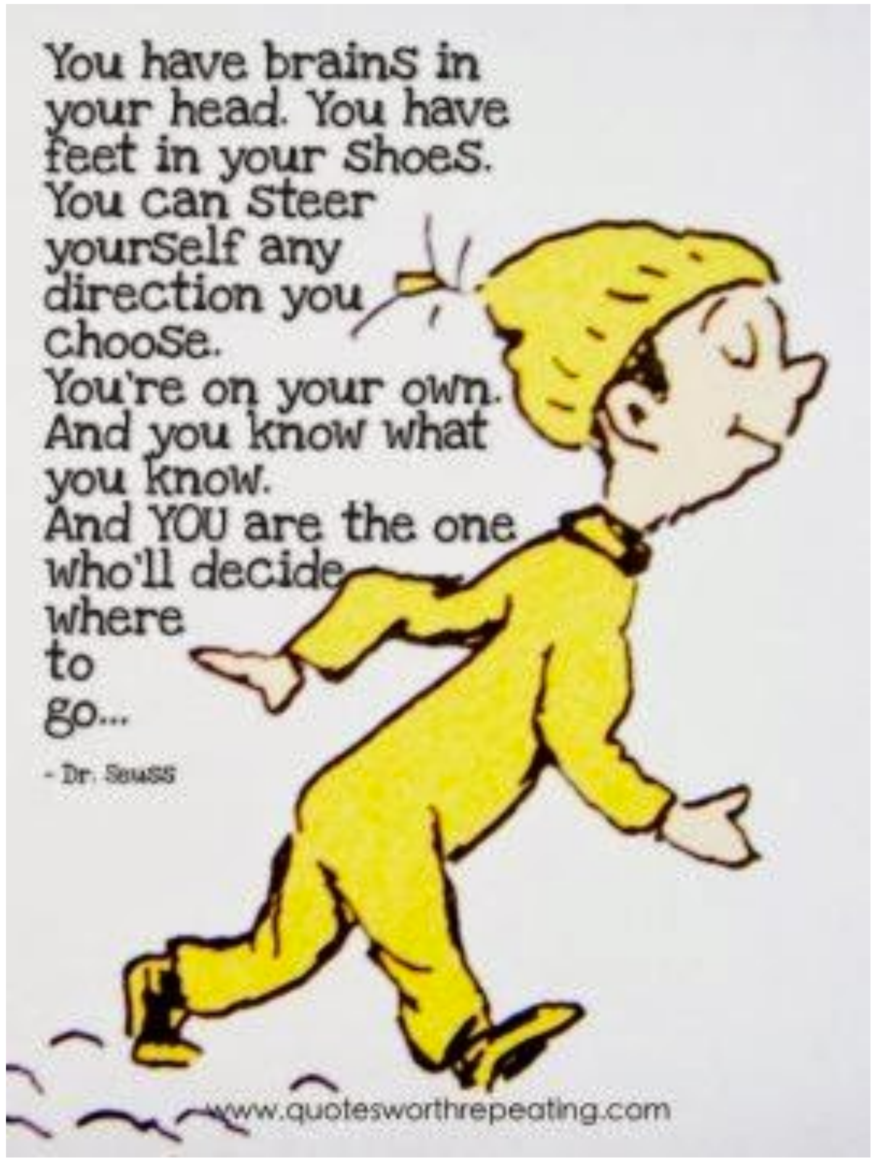
Routing (0)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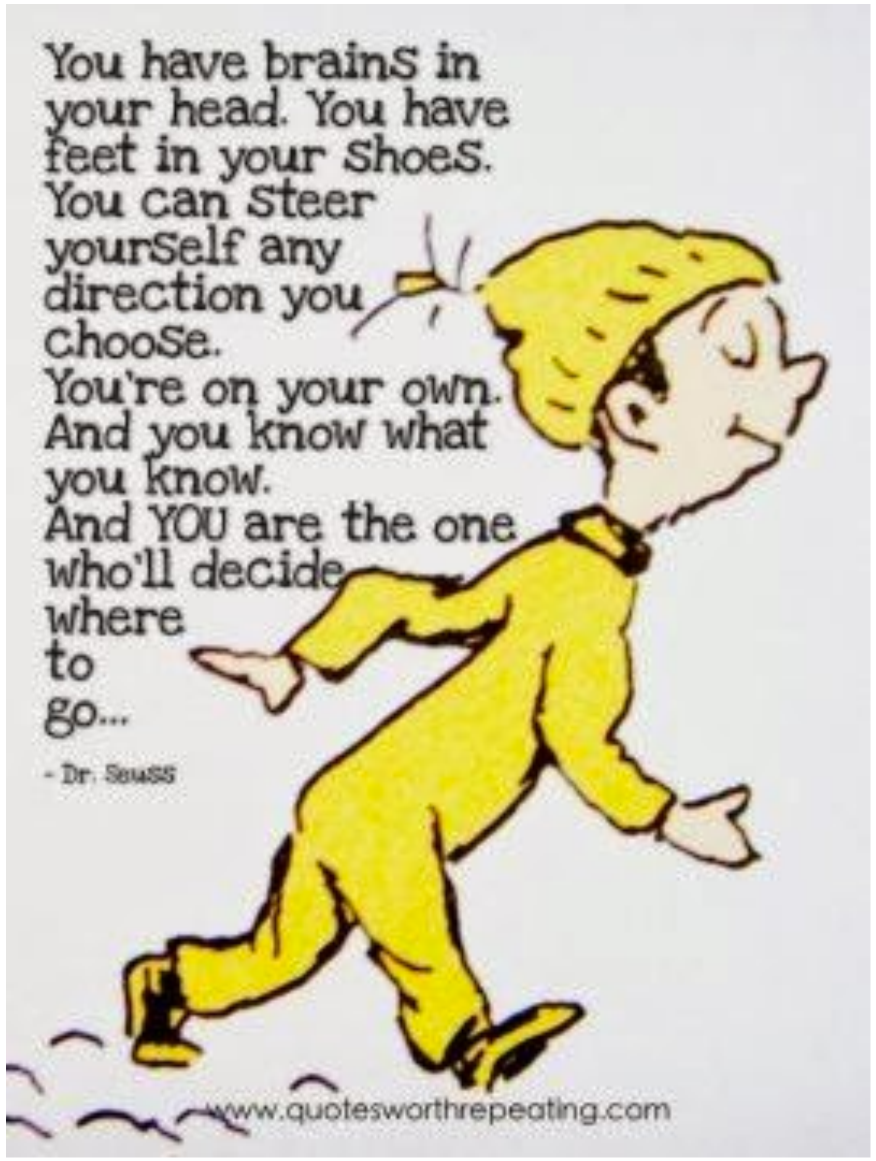
Project Stuff (0)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Rendering (4)

- Very different paradigm
- KVO and State management are the enemies
- Render is treated as a “black box”, virtual DOM makes sure updates are efficient
- Feels a lot like server-side rendering
- (Can actually be server-side rendering)
- Everything is Input/Output at any time
- Components/elements are just functions, JSX for convenience
- https://gist.github.com/jordwalke/6350319

User Interaction (4)

- Declarative events
- Components are just functions, so you just map a handler to an event in the attributes object

React

Introspection