

JAMES MARTINEZ (@JAMESMARTINEZ)

ARCHITECTING A MODERN WEB APP

SR. WEB ENGINEER @



HUMAN INTERFACE TEAM (HIT TEAM)

frankenware-staging · Resources

Heroku, Inc. [US] https://dashboard.heroku.com/apps/frankenware-staging/resources

Dashboard

jmar910@gmail.com

FAVORITES

audioheads-api-staging

audioheads-marketing-101

firedancer-staging

phppgadmin-ah-marketing-101

Personal apps

< Apps frankenware-staging




Resources Deploy Metrics Activity Access Settings

Free Dynos [upgrade to Hobby](#)

web	bundle exec puma -C config/puma.rb	<input type="checkbox"/>	\$0.00	
worker	bundle exec sidekiq	<input type="checkbox"/>	\$0.00	

Add-ons [FIND MORE ADD-ONS](#)

Quickly add add-ons from Elements

	Heroku Postgres :: Database	Hobby Dev	Free	
	Papertrail	Choklad	Free	
	Redis To Go	Nano	Free	

Estimated Monthly Cost \$0.00

A 'MODERN' WEB APP



A REFRESHER IN ARCHITECTURE

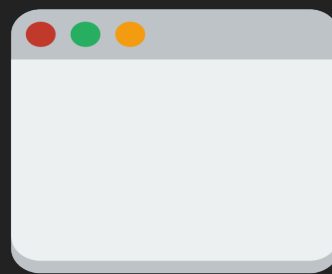


WEB APP

UI LOGIC

Server

Client





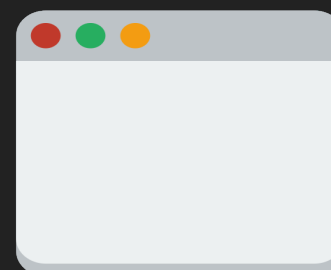
WEB APP

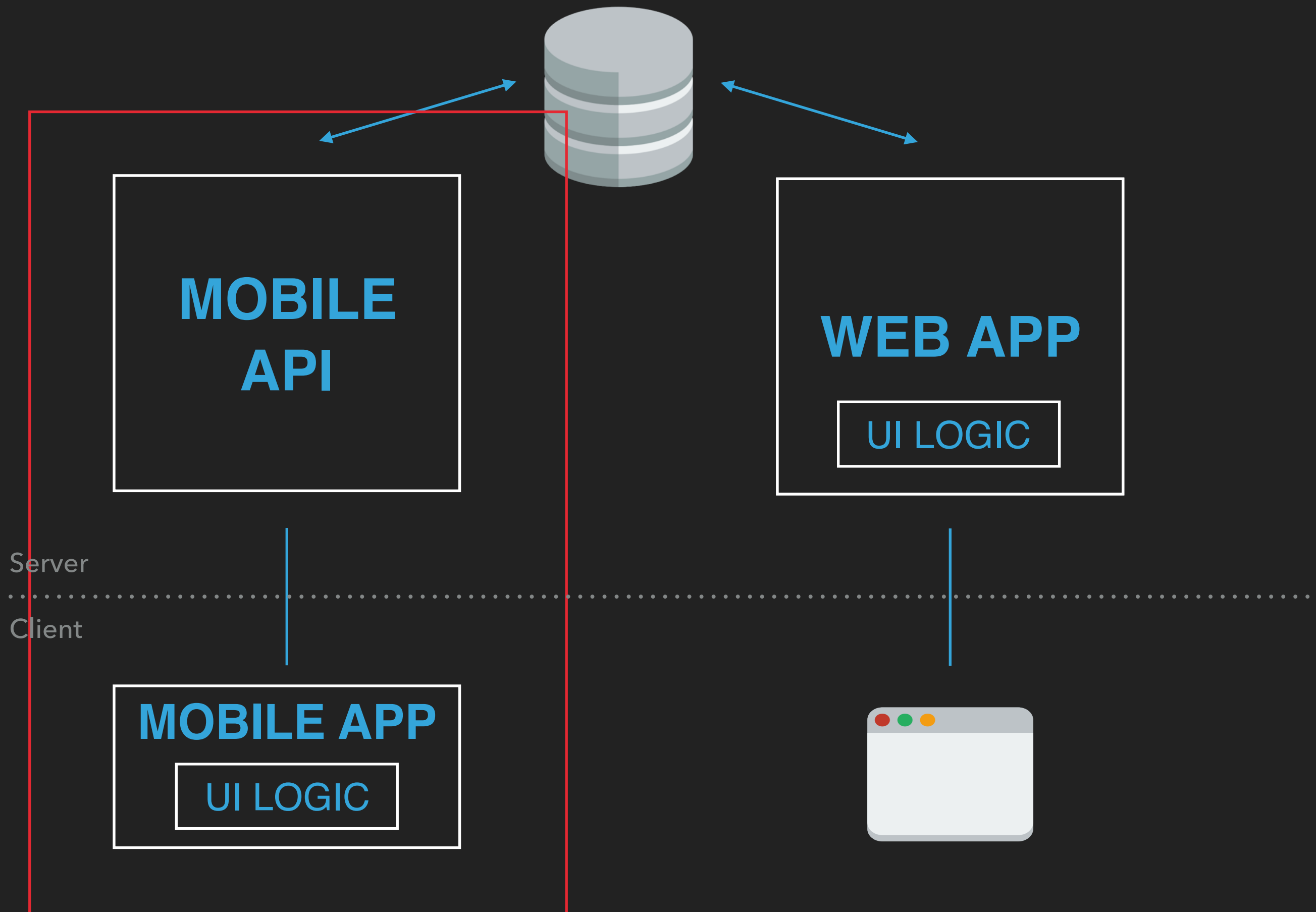
MOBILE API

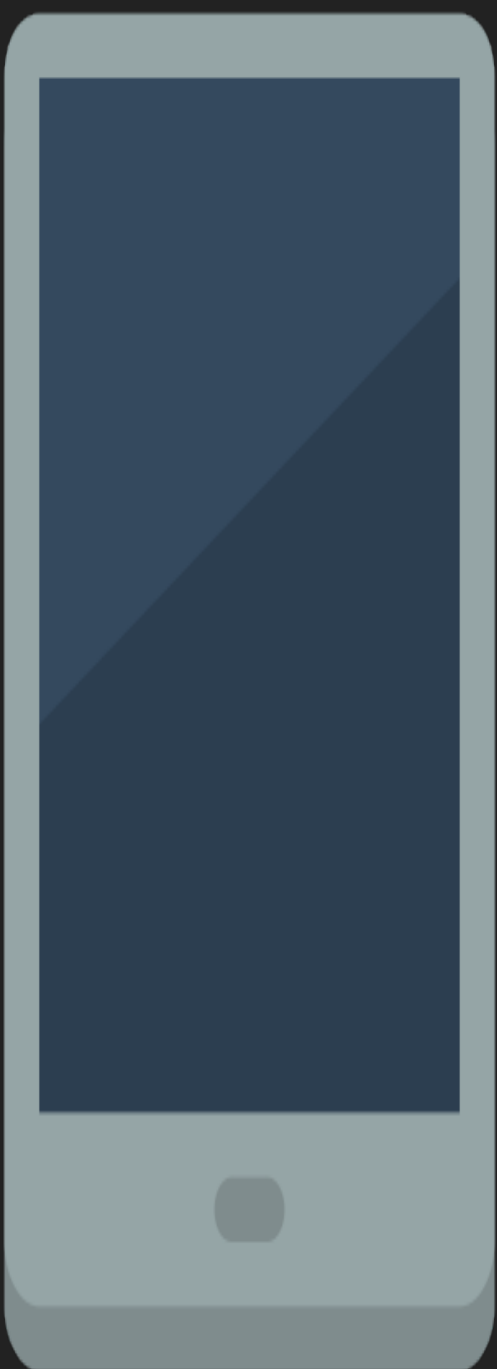
UI LOGIC

Server

Client







DOWNLOAD

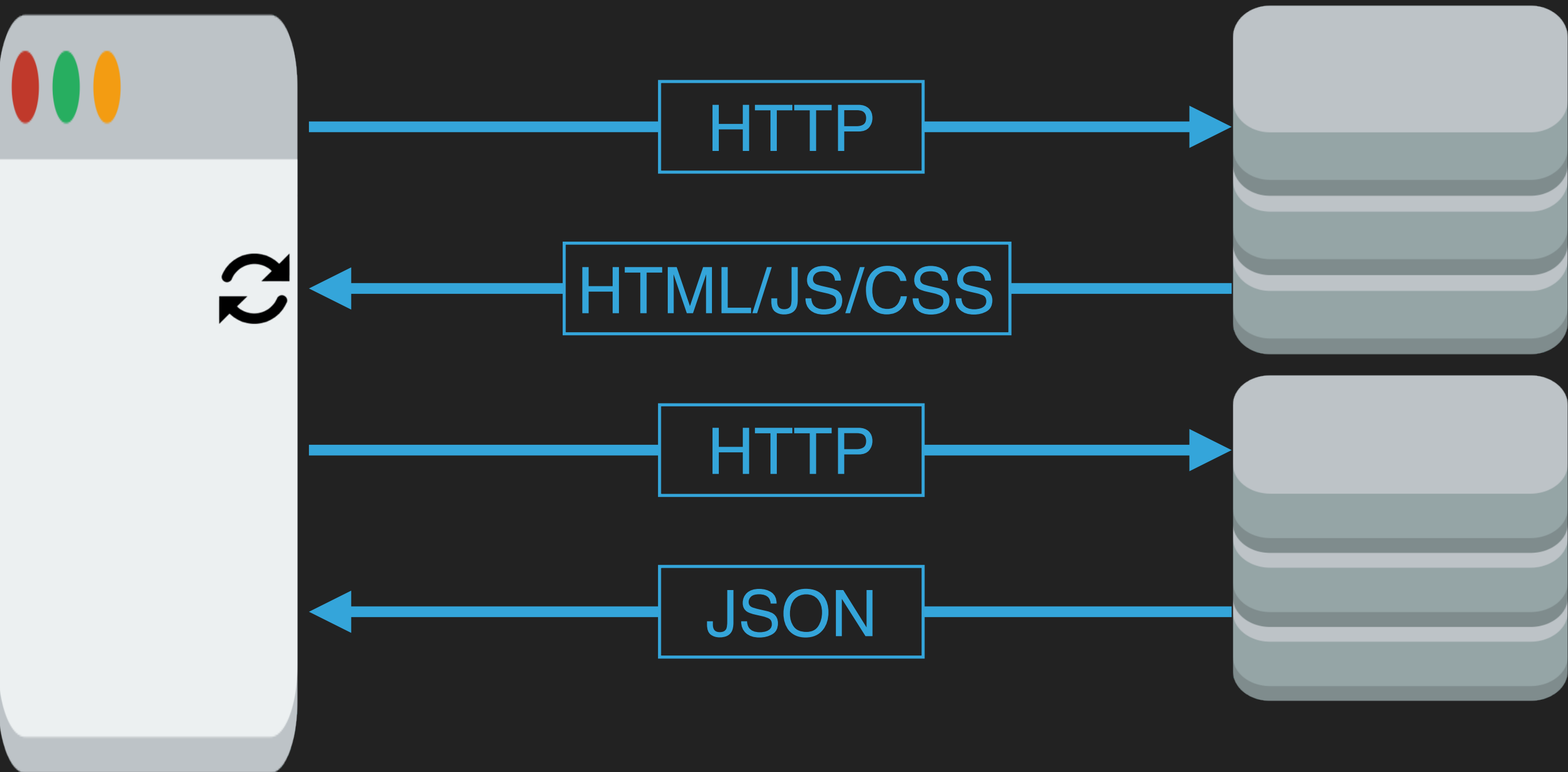


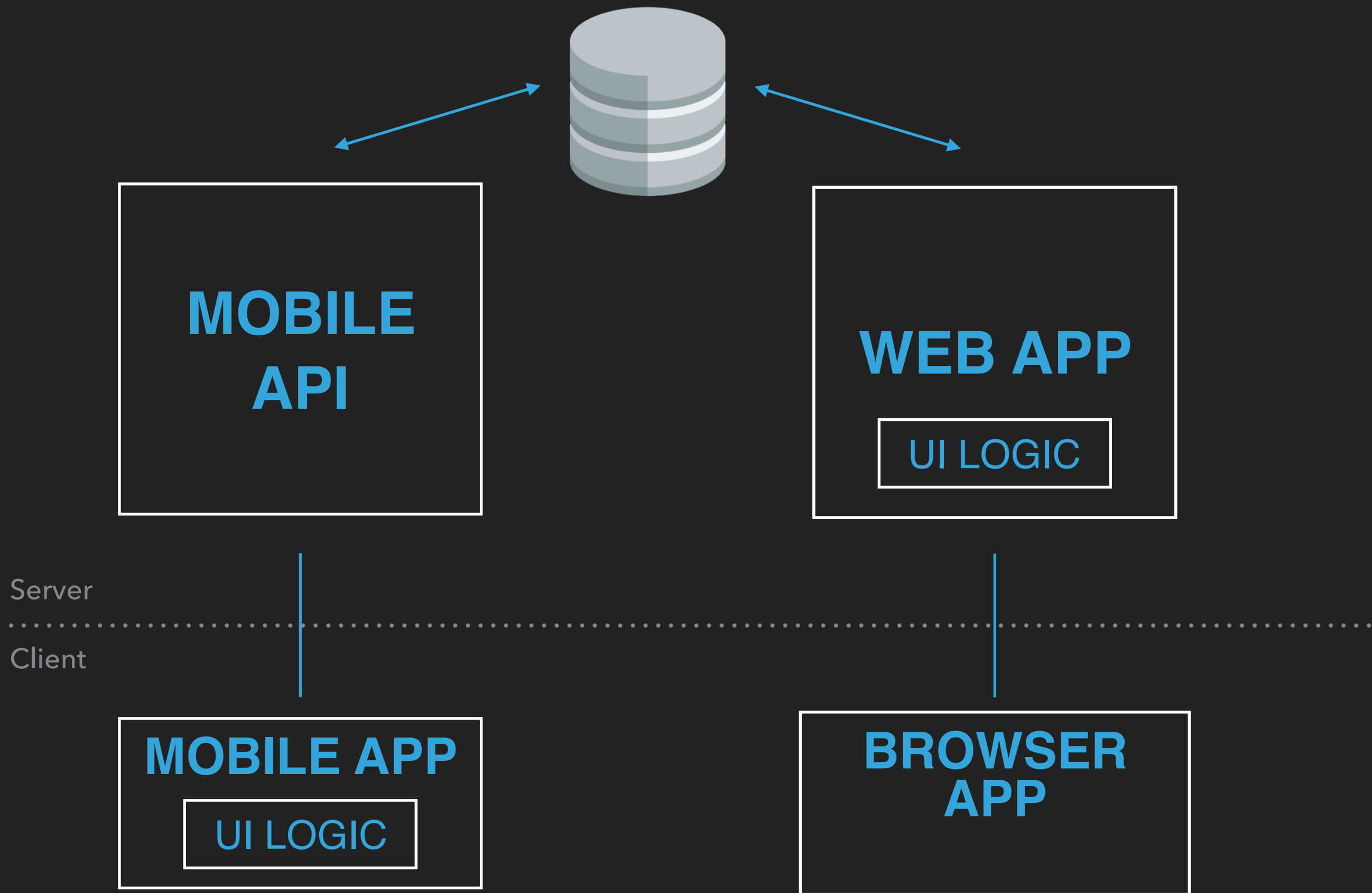
APP

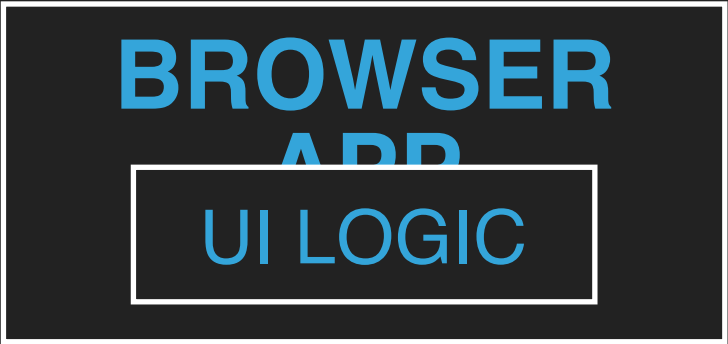
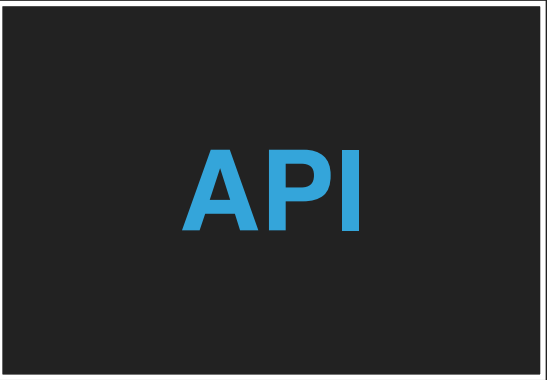
HTTP



JSON







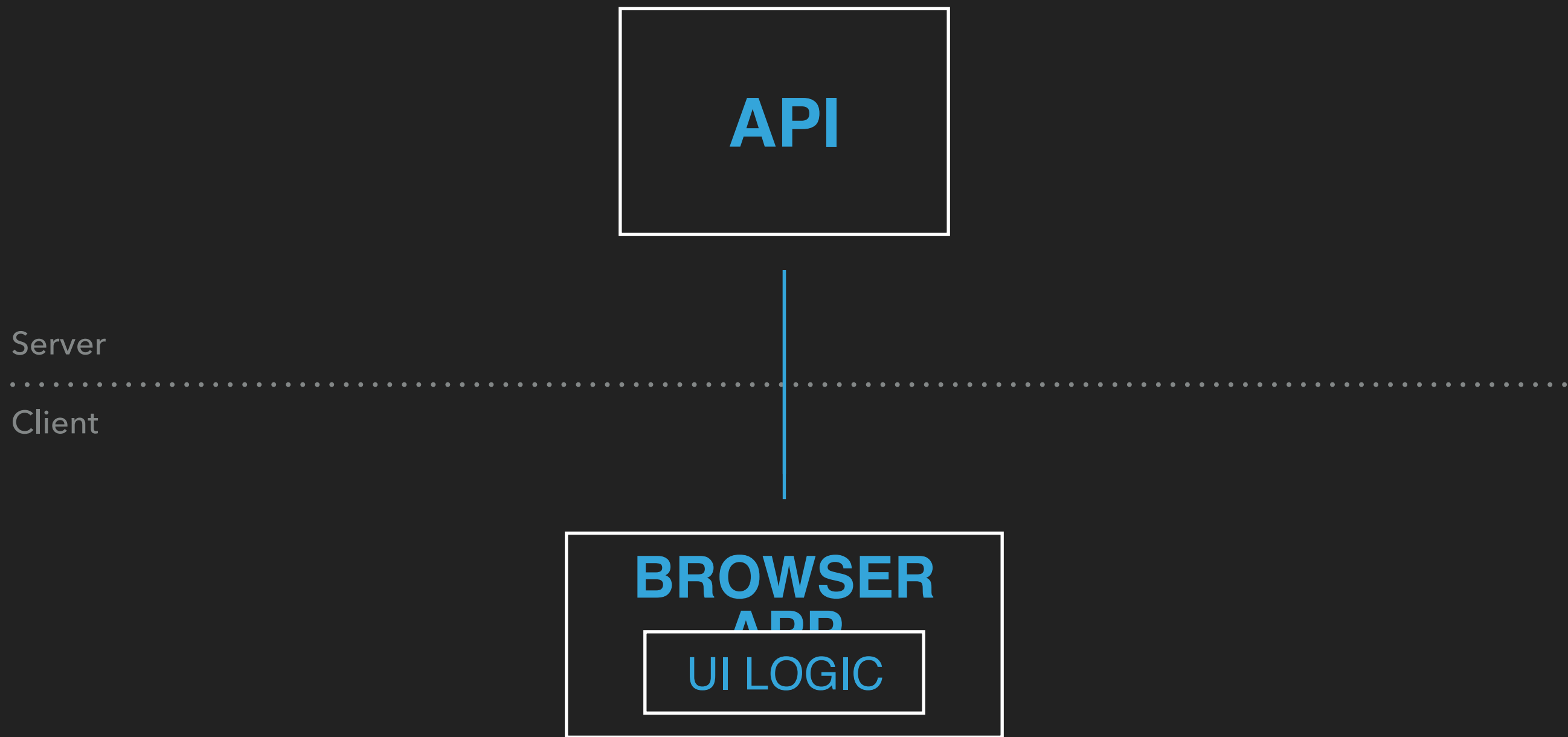
API

Server

Client

**BROWSER
APP**

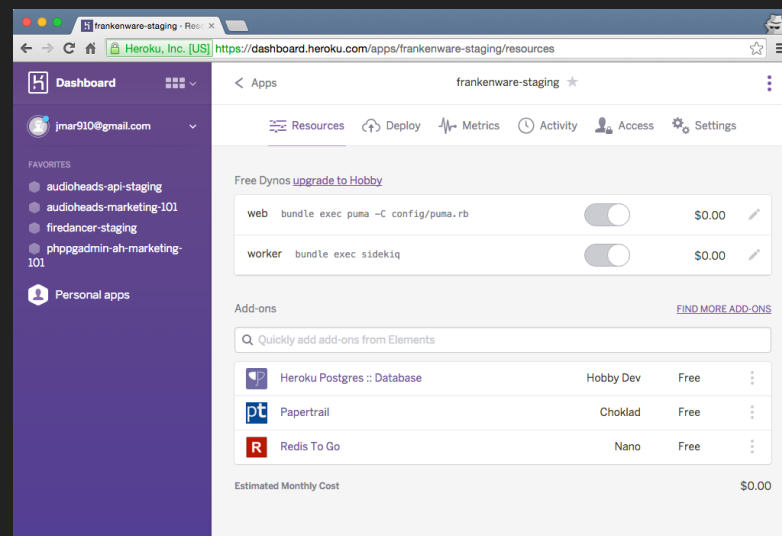
UI LOGIC



API

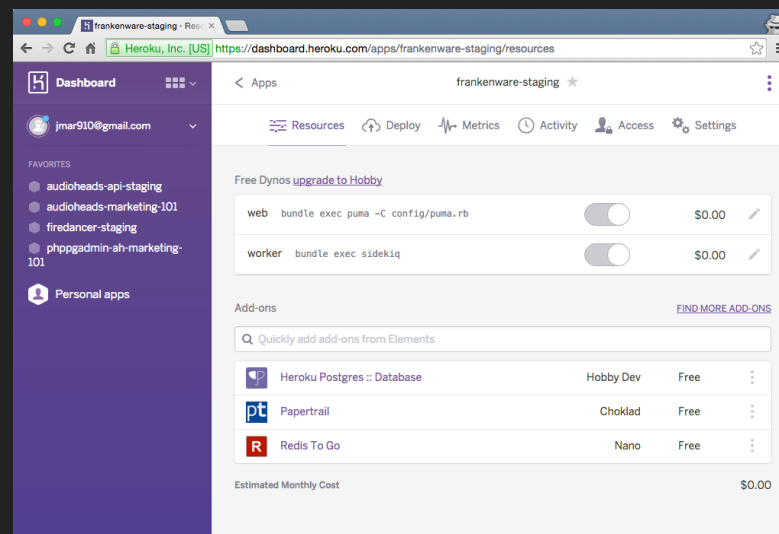
Server

Client

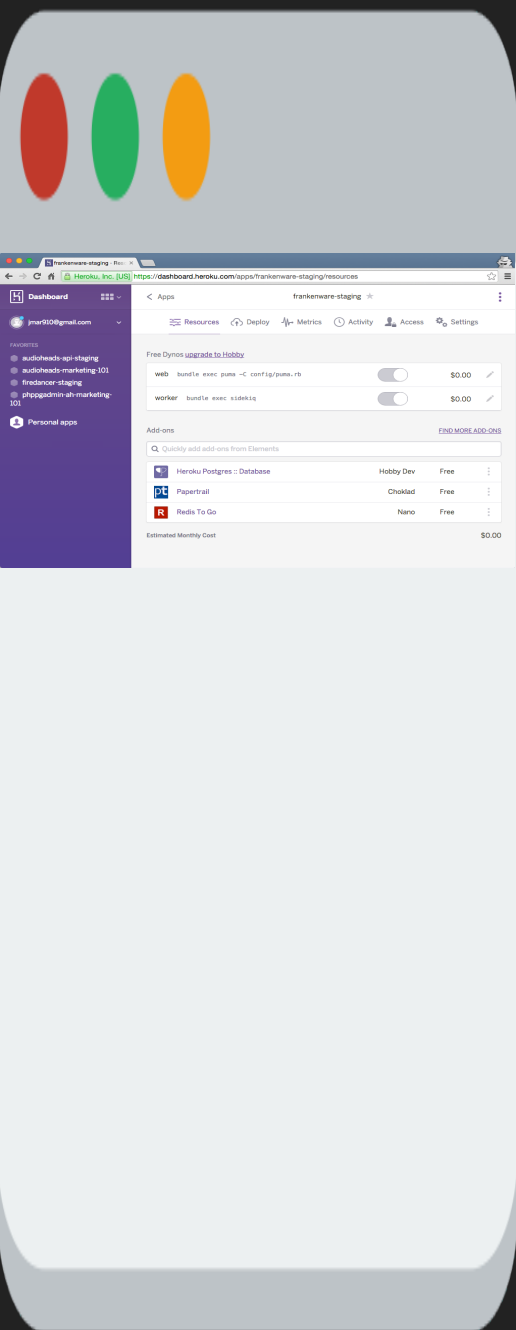




API



MOCK
API

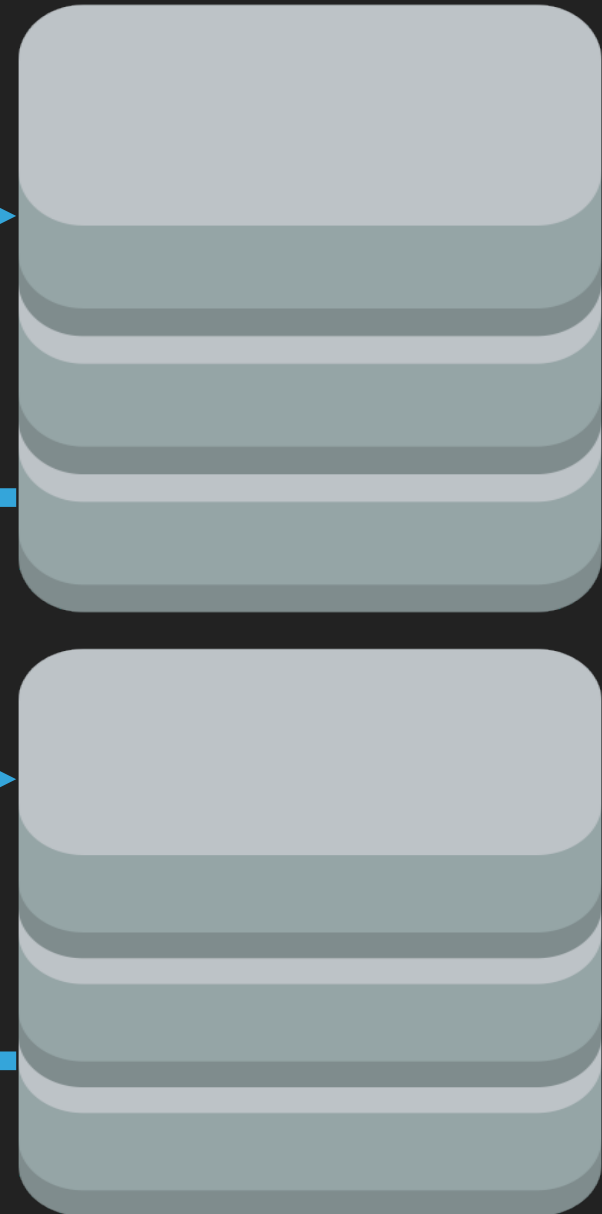


HTTP

HTML/JS/CSS

HTTP

JSON



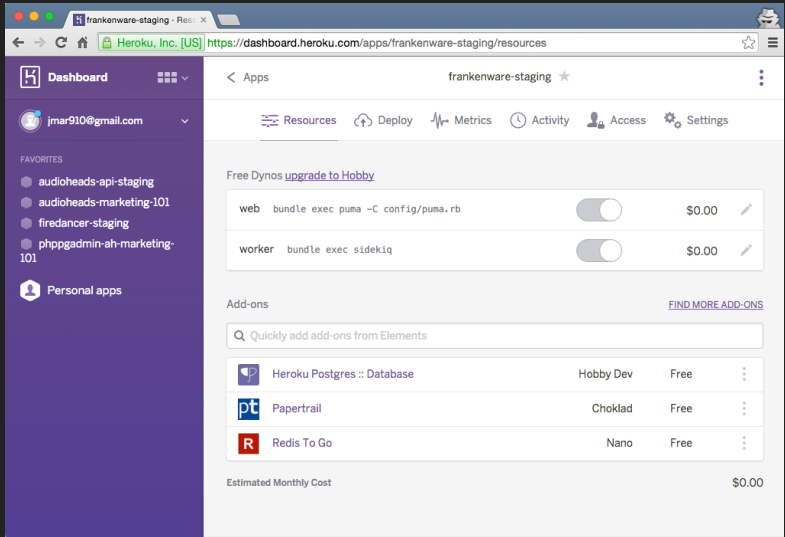
API

API

API

Server

Client





A SPECIFICATION FOR BUILDING APIS IN JSON

[View the specification](#)[Contribute on GitHub](#)

If you've ever argued with your team about the way your JSON responses should be formatted, JSON API can be your anti-bikeshedding tool.

By following shared conventions, you can increase productivity, take advantage of generalized tooling, and focus on what matters: your application.

Clients built around JSON API are able to take advantage of its features around efficiently caching responses, sometimes eliminating network requests entirely.

Here's an example response from a blog that implements JSON API:

enable cross-origin resource sharing

Cross-Origin Resource Sharing (CORS) is a [specification](#) that enables truly open access across domain-boundaries. If you serve public content, please consider using CORS to open it up for universal JavaScript/browser access.

[\[more...\]](#)

Why is CORS important?

JavaScript and the web programming has grown by leaps and bounds over the years, but the [same-origin policy](#) still remains. This prevents JavaScript from making requests across domain boundaries, and has spawned various hacks for making cross-domain requests.

CORS introduces a standard mechanism that can be used by all browsers for implementing cross-domain requests. The spec defines a set of headers that allow the browser and server to communicate about which requests are (and are not) allowed. CORS continues the spirit of the open web by bringing API access to all.

MAJOR COMPONENTS

- ▶ Back end
 - ▶ Service(s)
 - ▶ API
 - ▶ Data Persistence
- ▶ Front end
 - ▶ Client App

**USER INTERFACE:
WHAT'S INSIDE?**

JAVASCRIPT!

AT THE VERY MINIMUM...

- ▶ Javascript
- ▶ HTML

RECOMMENDED

- ▶ *Javascript Framework OR Library*
- ▶ Templating Language
- ▶ Routing
- ▶ CSS/SCSS/etc.
- ▶ Build tools
 - ▶ Preprocessors
 - ▶ Compilers/Transpilers
 - ▶ and more...



Donald JavaScript T.

@realDonaldTrumpJS



Following

JavaScript needs all the tools it can get. And it needs them fast. In 2016, strive to build as many tools as possible. Shrug off complexity.

RETWEETS

10

LIKES

26



3:01 PM - 8 Jan 2016



SPECTRUM OF TOOLS



JUST A
LIBRARY

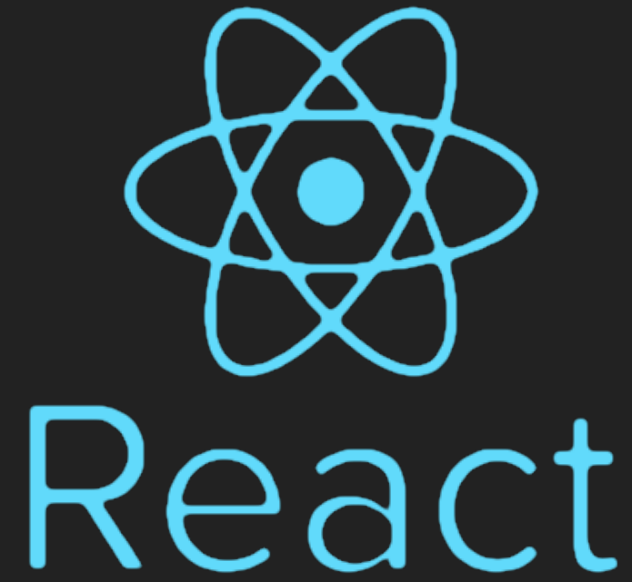
LOOSELY COUPLED
SET OF TOOLS
WORKING TOGETHER

OPINIONATED &
CONVENTIONAL
FRAMEWORK



NO
APPLICATION
ARCHITECTURE

ENFORCED
APPLICATION
ARCHITECTURE



Vue.js



polymer

ALWAYS USE EMBER



**CHOOSE THE RIGHT TOOL FOR
THE JOB**

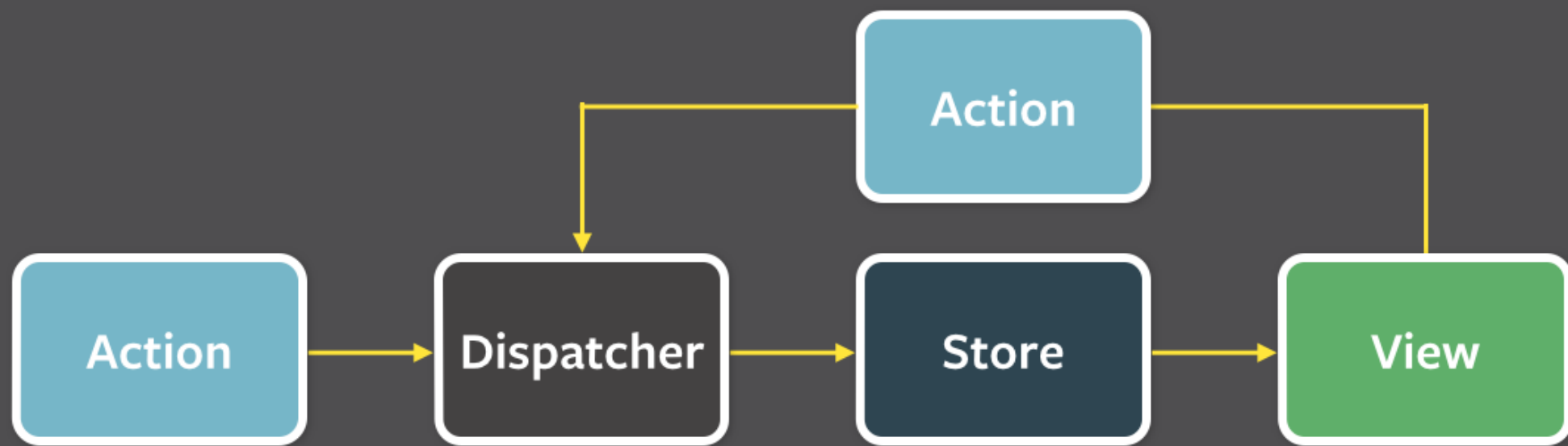
USER INTERFACE: ARCHITECTURE

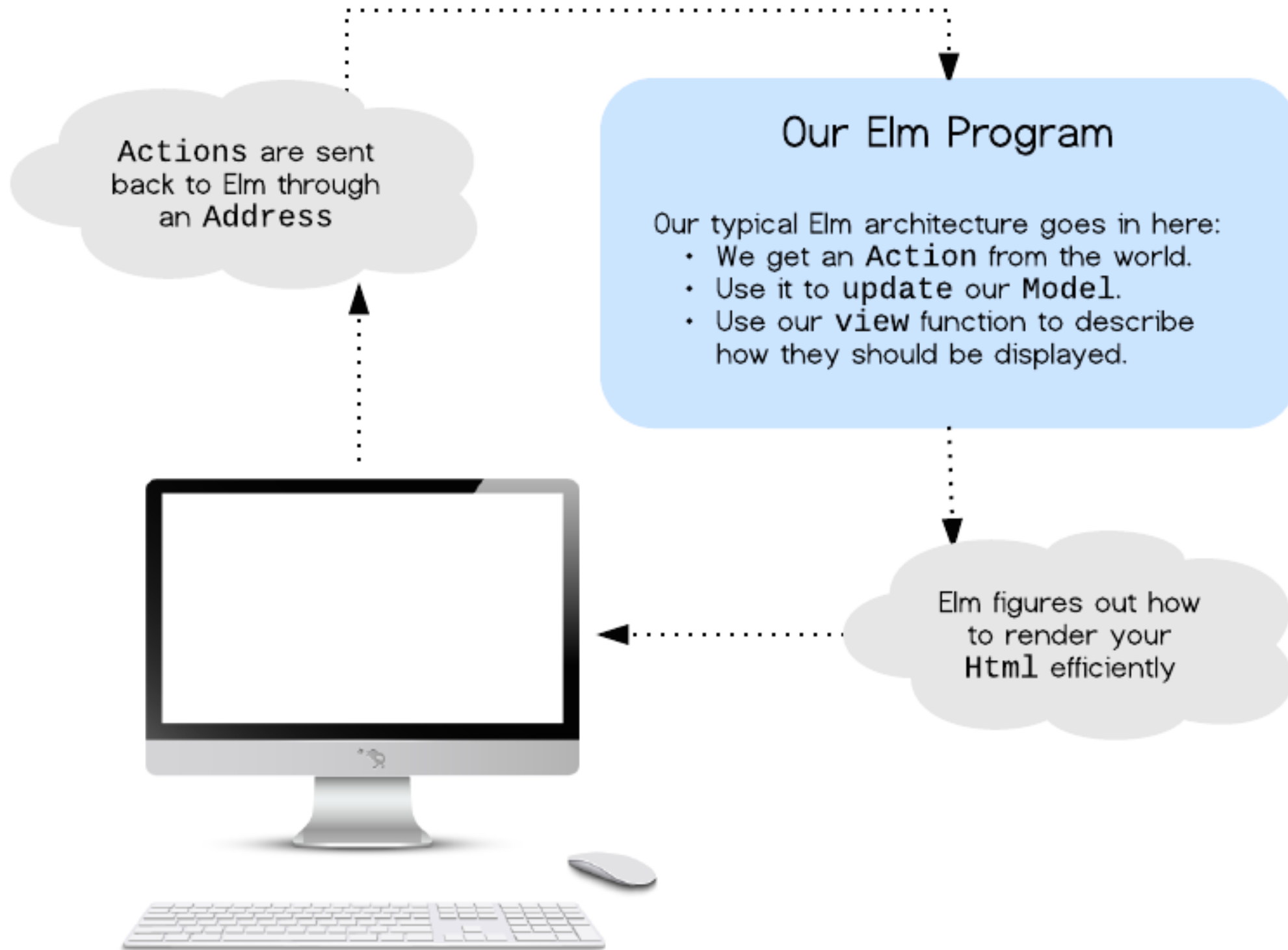
IMPERATIVE => DECLARATIVE

**THE WHAT,
NOT THE HOW**

**BITTEN BY 2 WAY
BINDINGS?**

ONE WAY DATA FLOW

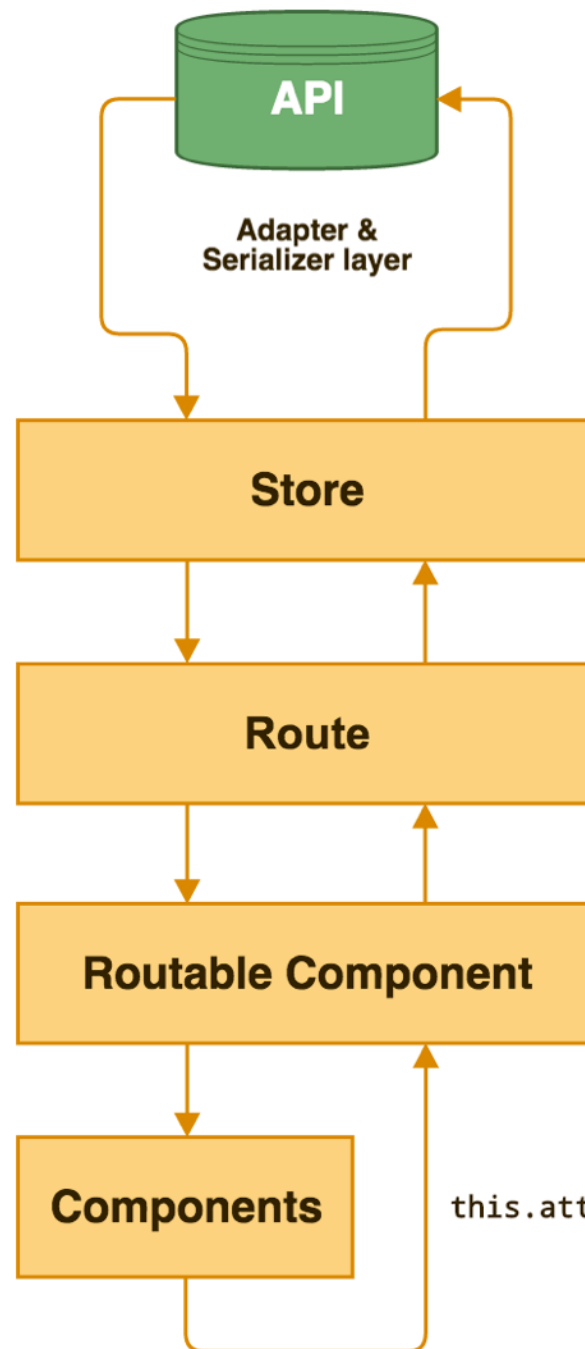




Ember 2.0

Data Down, Actions Up

by @sugarpirate_



```
export default Route.extend({
  attributes(params, queryParams) {
    return {
      save: this.actions.save
    };
  },
  actions: {
    save(name) { ... }
  }
});
```

{{foo-bar save=(action "save")}}

this.attrs.save('foo');



REACTIVE PATTERNS

```
1  var CommentBox = React.createClass({
2    getInitialState: function() {
3      return {data: []};
4    },
5    componentDidMount: function() {
6      $.ajax({
7        url: this.props.url,
8        dataType: 'json',
9        cache: false,
10       success: function(data) {
11         this.setState({data: data});
12       }.bind(this),
13       error: function(xhr, status, err) {
14         console.error(this.props.url, status, err.toString());
15       }.bind(this)
16     });
17   },
18   render: function() {
19     return (
20       <div className="commentBox">
21         <h1>Comments</h1>
22         <CommentList data={this.state.data} />
23         <CommentForm />
24       </div>
25     );
26   }
27 });
28
```

```
1  Person = Ember.Object.extend({  
2    // these will be supplied by `create`  
3    firstName: null,  
4    lastName: null,  
5  
6    fullName: Ember.computed('firstName', 'lastName', function() {  
7      return `${this.get('firstName')} ${this.get('lastName')}`;  
8    })  
9  });  
10  
11  var forceUser = Person.create({  
12    firstName: 'Anakin',  
13    lastName: 'Skywalker'  
14  });  
15  
16  forceUser.get('fullName'); // "Anakin Skywalker"  
17  
18  forceUser.set('firstName', 'Luke');  
19  
20  forceUser.get('fullName'); // "Luke Skywalker"  
21
```

COMPONENTS

COMPONENTS

- ▶ Encapsulated/Isolated
- ▶ Reusable
- ▶ Promotes separation of concerns
- ▶ Composable

```
1  var CommentBox = React.createClass({
2    getInitialState: function() {
3      return {data: []};
4    },
5    componentDidMount: function() {
6      $.ajax({
7        url: this.props.url,
8        dataType: 'json',
9        cache: false,
10       success: function(data) {
11         this.setState({data: data});
12       }.bind(this),
13       error: function(xhr, status, err) {
14         console.error(this.props.url, status, err.toString());
15       }.bind(this)
16     });
17   },
18   render: function() {
19     return (
20       <div className="commentBox">
21         <h1>Comments</h1>
22         <CommentList data={this.state.data} />
23         <CommentForm />
24       </div>
25     );
26   }
27 });
28
```

```
1  let CommentBox = Ember.Component.extend({
2    tagName: 'div',
3    classNames: ['commentBox'],
4    data: [],
5
6    didInsertElement: function() {
7      Ember.$.ajax({
8        url: this.get('url'),
9        dataType: 'json',
10       cache: false,
11       success: (data) => {
12         this.set('data', data);
13       },
14       error: (xhr, status, err) => {
15         console.error(this.get('url'), status, err.toString());
16       }
17     });
18   });
19 });
```

```
1  <h1>Comments</h1>
2  {{comment-list data=data}}
3  {{comment-form}}
```


PARENT COMPONENT

**CHILD
COMPONENT**

DATA



**ROUTING IS
IMPORTANT**

"THE URL IS THE UI OF THE WEB"

Tom Dale

Reso X

[US] <https://dashboard.heroku.com/apps/frankenware-staging/resources>

< Apps

frankenware-staging ★

audioheads-marketing-101

firedancer-staging

phppgadmin-ah-marketing-101

Personal apps

web bundle exec puma -C config/puma.rb



\$0.00



worker bundle exec sidekiq



\$0.00



Add-ons

[FIND MORE ADD-ONS](#)

🔍 Quickly add add-ons from Elements



Heroku Postgres :: Database

Hobby Dev

Free



Papertrail

Choklad

Free



Redis To Go

Nano

Free



Estimated Monthly Cost

\$0.00

EMBRACE ASYNC

**LEAN ON YOUR API
FOR VALIDATION**

DASHBOARD & LONGBOARD: A LOVE STORY

IDENTITY

PLATFORM

DROPI

TELEX

VAULT

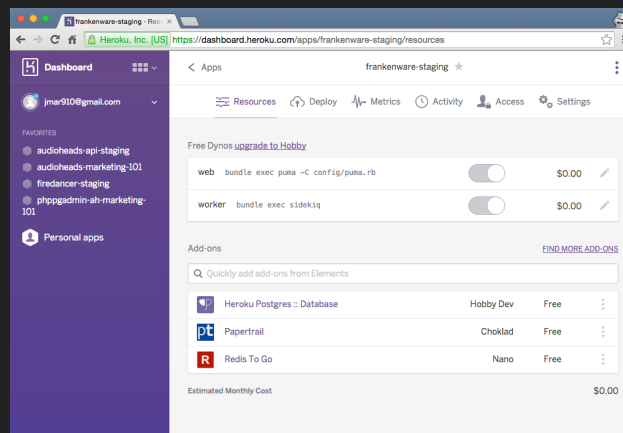
KOLKRABBI

IDENTITY

PLATFORM

VAULT

NODE





LONGBOARD

AUTH PLUGIN

BILLING PLUGIN

GH PLUGIN

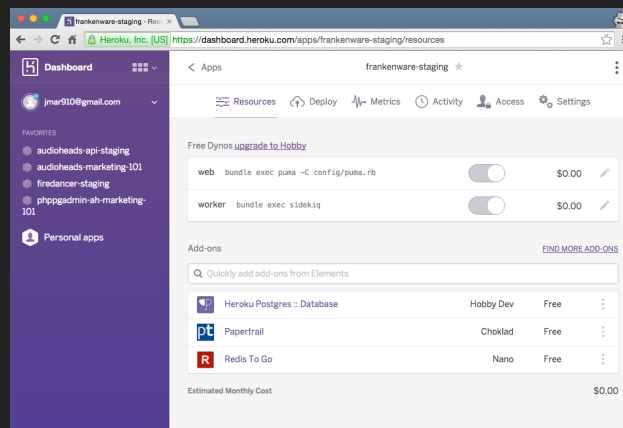
ETC.

VAULT

IDENTITY

KOLKRABBI

LONGBOARD





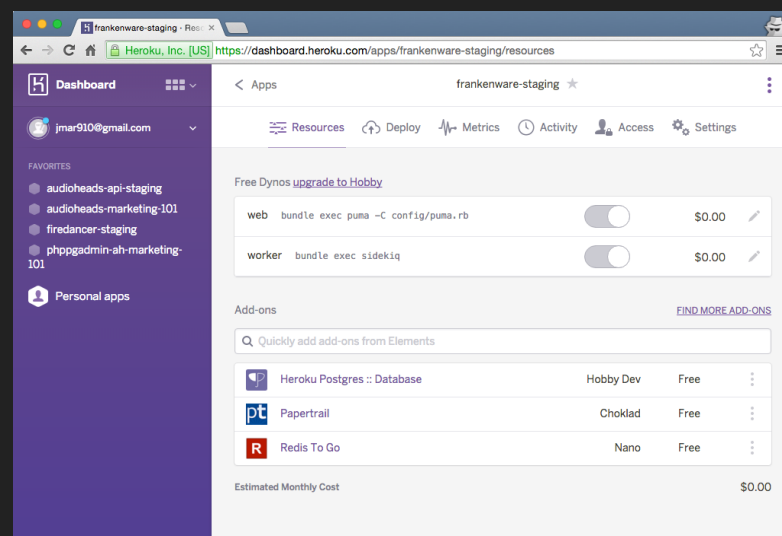
SECRET KEYS

=

SERVER COMPONENTS



PLATFORM



LONGBOARD

IN SUMMARY

- ▶ Embrace the browser as an interface platform
- ▶ Identify your needs when it comes to choosing a library or framework
- ▶ Always think big picture; it's easy to get caught up in the implementation details
- ▶ Understand the why, and not just the how
- ▶ CHOOSE THE RIGHT TOOL FOR THE JOB



Donald JavaScript T.

@realDonaldTrumpJS



Following

JavaScript's been great to me. I want to be great to JavaScript. I want to make JavaScript great again.

#MakeJavaScriptGreatAgain

RETWEETS

15

LIKES

14



9:27 AM - 20 Jan 2016



THANK YOU!