WEBINAR

Single Page Apps with Grails & Vue.js

Zachary Klein, Senior Software Engineer

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Speaker

Zachary Klein is a Senior Software Engineer at OCI. He has been practicing web development since 2010 and frontend development since 2015. He's a contributor to both the Grails and Micronaut frameworks, a conference speaker and an instructor in OCI's training practice. Zachary's home base is in St Louis, MO, along with his wife, Beth, and their three children.

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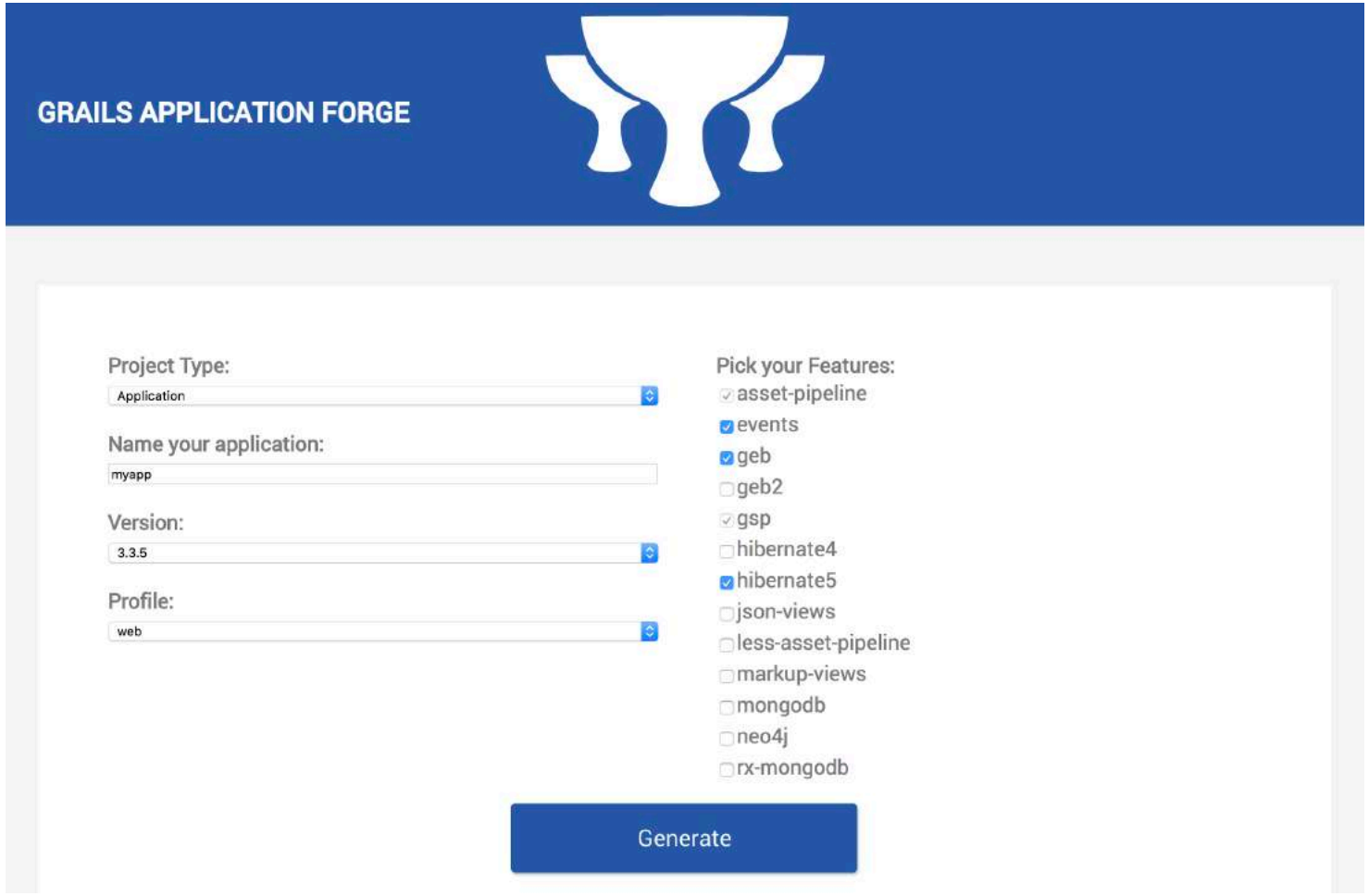
Grails Application Forge: http://start.grails.org



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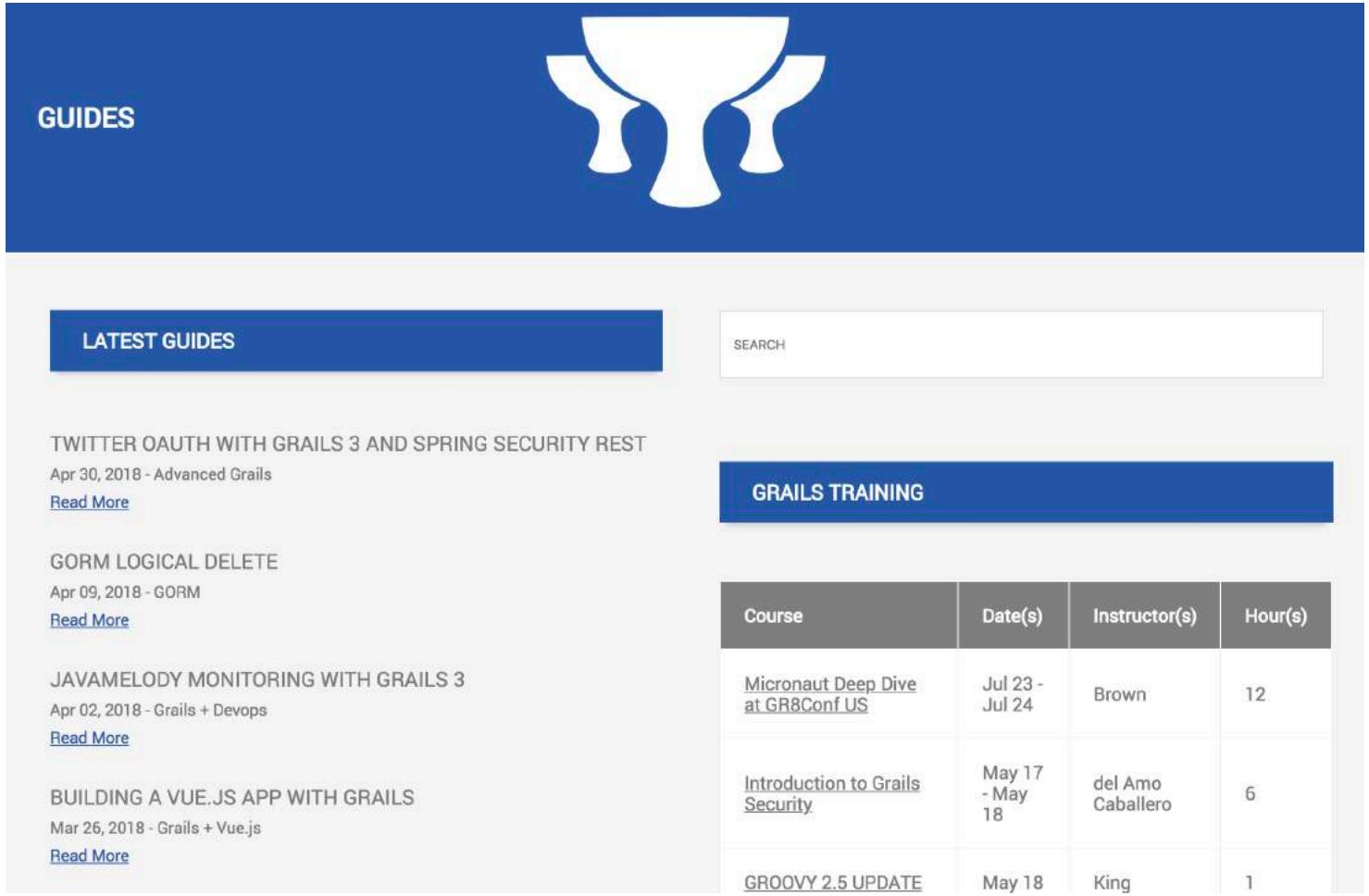
Grails Guides: http://guides.grails.org



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Introduction to Vue.js

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What is Vue?

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- Small, performant view library
- Mature ecosystem
- Powerful devtools
- Active community
- vs Angular vs React…

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Getting Started with Vue

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- Install vue-cli (v3):
  1. `npm install -g @vue/cli`
  2. vue create my-project

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Getting Started with Vue

```
<script src="https://unpkg.com/vue"></script>

<div id="app">
  {{ text }}
</div>

<script>

  var app = new Vue({
    el: '#app',
    data: {
      text: 'Hello World!'
    }
  })

</script>
```

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The Vue Instance

- Ground zero for a Vue.js app
- Accepts an object containing the Vue **Instance definition**
- Most definitions shared between instance and **components**

Vue Instance

```
new Vue({
  el: '#app',
  data: {...},
  computed: {...},
  methods: {...},
  template: '<App/>'
})
```

Vue Component

```
export default {
  name: 'component',
  data () { return {...} },
  methods: {...}
}
```

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The Vue Instance

- `el` - Specifies the DOM element where the app will be rendered

```
new Vue({
  el: '#app'
})
```

```
<div id="app"></div>
```

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The Vue Instance

- `data` - An object describing the state of the app/component
  - An object describing the state of the app/component
  - Properties are subject to reactive rendering within the app/component (one-way & two-way)
  - New properties can be added, but will not be subject to reactive behavior
  - Components must use a **data()** function that returns state

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The Vue Instance

- `data` - An object for standalone Vue instances, function for components

Vue Instance

```
new Vue({
  data: {
    myValue: 3,
    myObject: {
      prop: 'abc'
    }
  }
})
```

Vue Component

```
export default {
  data () {
    return {
      myValue: 3,
      myObject: {
        prop: 'abc'
      }
    }
  }
}
```

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The Vue Instance

- `methods` - Arbitrary functions that can access/manipulate data, and be called from templates or other methods.
- `computed` - Functions that return dynamic (cacheable) values and are accessed as data variables.
- **Lifecycle Methods -** Functions that are called at specific points in the app/component lifecycle (e.g, `created`)

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Templates

```
<template>
  <div class="form">
    <div class="title cell">
      <label>Title</label>
      <input ref="bookTitle" v-model="book.title" type="text"/>
    </div>
    <div class="pages cell">
      <label>Pages</label>
      <input v-model="book.pages" type="text"/>
    </div>
    <div class="author cell">
      <label>Author</label>

      <select v-model="book.author">
        <option disabled selected value="">Choose Author</option>
        <option v-if="author !== null"
                v-bind:value="{ id: author.id }"
                v-for="author in authors">{{author.name}}</option>

      </select>
    </div>
    <div class="save cell">
      <button @click="submitNewBook()" >Add Book</button>
    </div>
  </div>
</template>
```

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Components (*.vue files)

- Nested component hierarchy
- Each component renders either a template or returns createElement() calls (JSX is supported)
- Components typically defined as **Single File Component** with <**template**>, <**script**>, and <**style**> sections

HELLOWORLD.VUE

```
<template>
  <div class="hello">
    <h1>{{ msg }}</h1>
  </div>
</template>
```

Template Section

```
<script>
export default {
  name: 'HelloWorld',
  data () {
    return {
      msg: 'Welcome to Your Vue.js App'
    }
  }
}
</script>
```

Script Section

```
<style scoped>
h1 {
  font-color: blue;
}
</style>
```

Style Section

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Demo

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Vue vs Angular

- A cleaner, simpler way to build apps
- Similar concepts/syntax: directives, templates, v-model
- More understandable, readable code
- A rich, featureful API that you can grow into
- Not a framework - you'll still need to add packages

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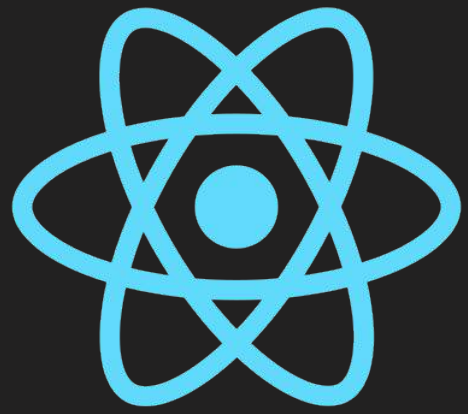
Vue vs React

- Adds a bit more magic
- Similar conceptually: components, virtual DOM, lifecycle methods
- Supports JSX, createElement API, render functions
- Less code… sometimes
- Favors pragmatism over “pure” simplicity



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Vue Profile for Grails

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Why Use Vue (and other JavaScript frameworks) with Grails?

- Convention over Configuration
- Spring Boot compatibility
- Profiles & Plugins
- Gradle
- RESTful controllers & URL mappings
- JSON Views
- GORM (including GraphQL)

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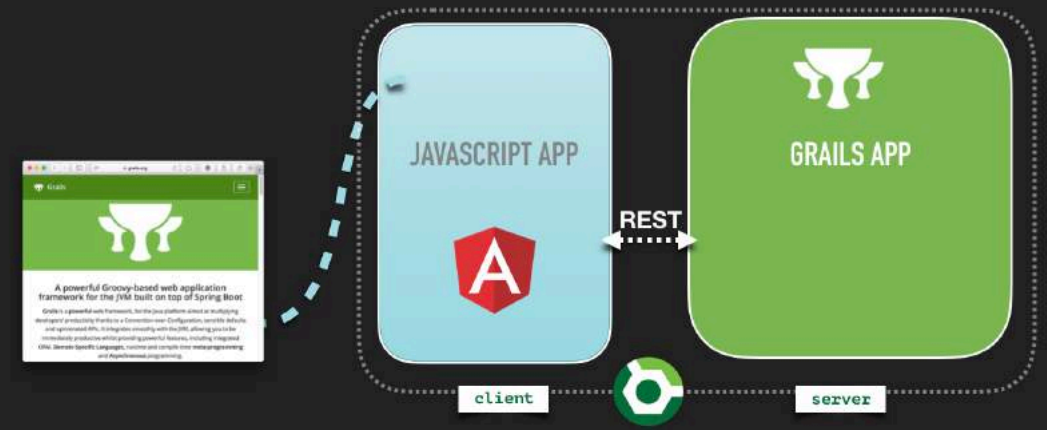
Approaches to using JavaScript Frameworks with Grails

Asset Pipeline **Hybrid Webapp**



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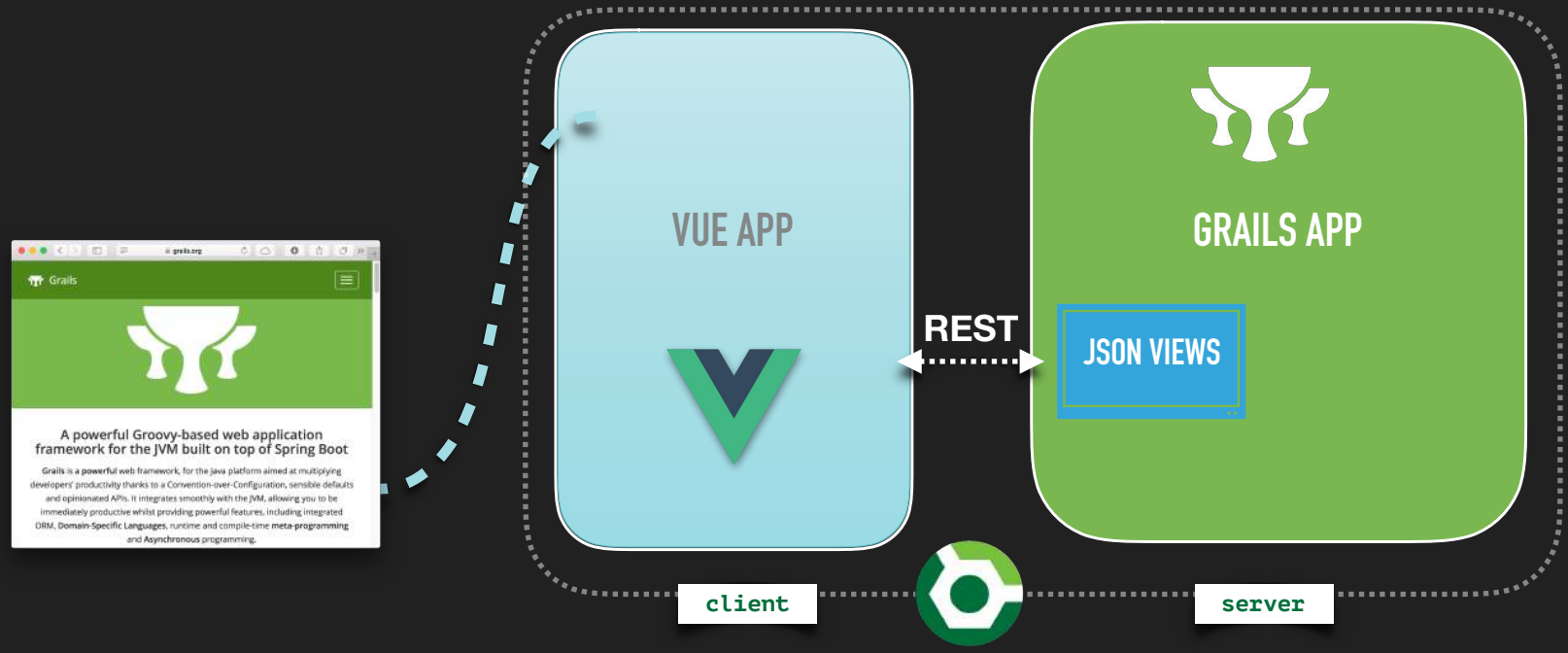
Multi-project Build Approach



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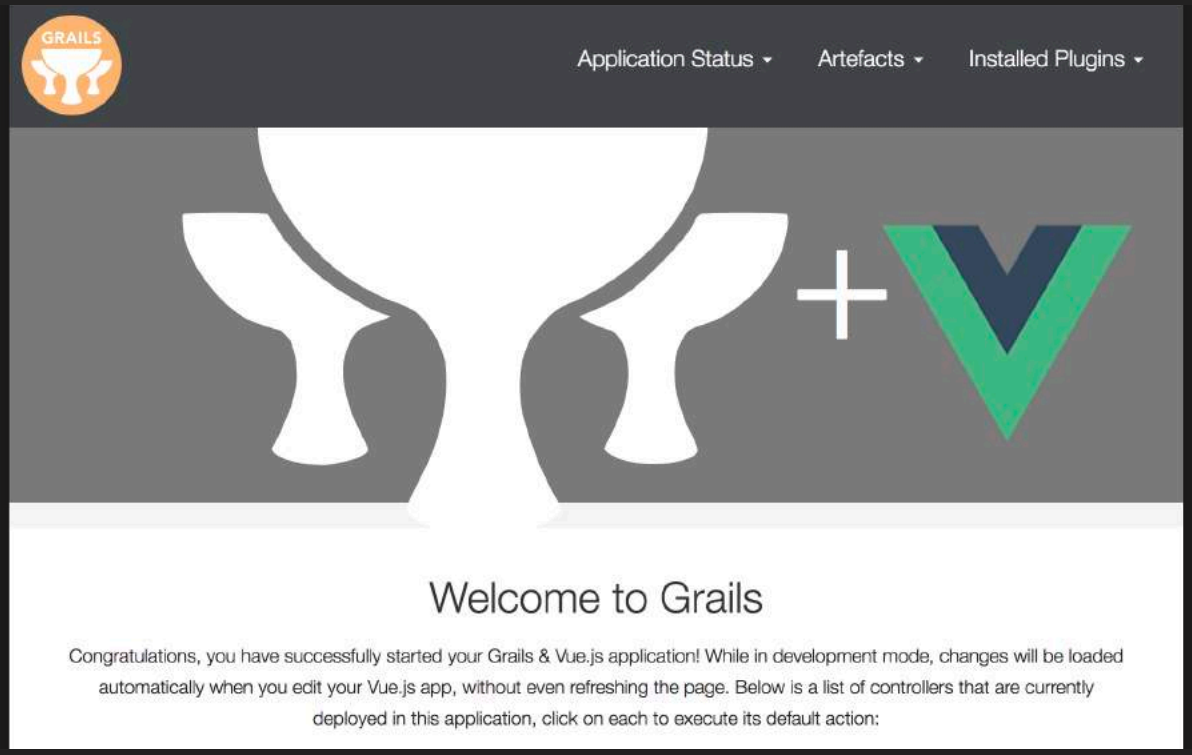
Vue Profile for Grails

https://grails-profiles.github.io/vue/latest/guide/index.html



> grails create-app myapp -profile vue

> curl -O start.grails.org/myapp.zip -d profile=vue

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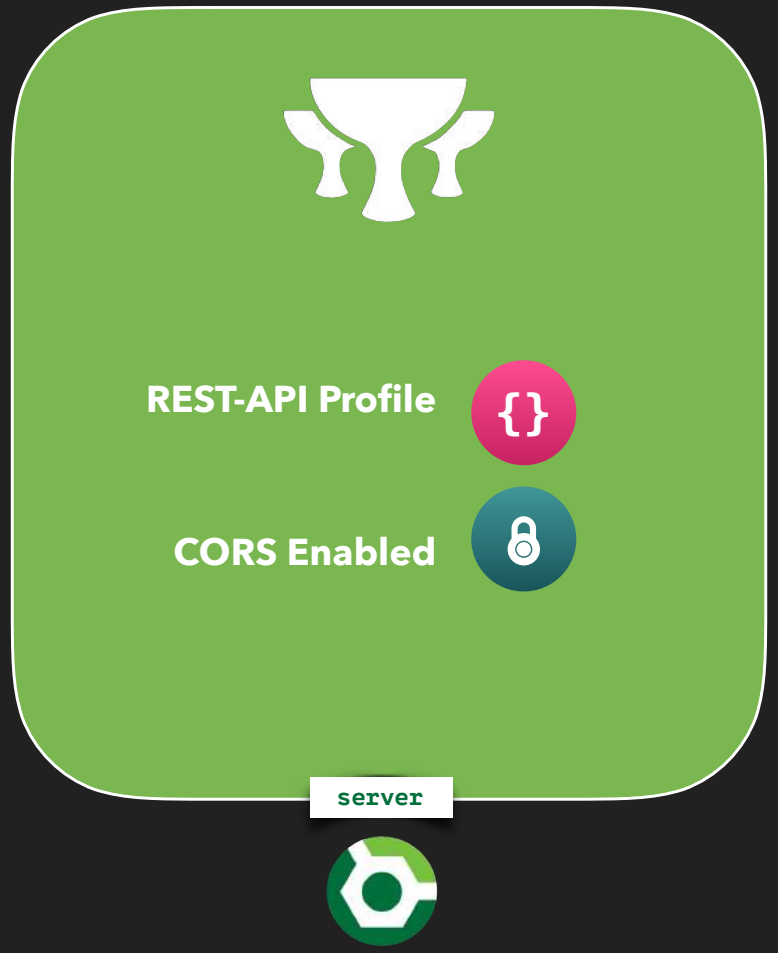
Vue Profile for Grails



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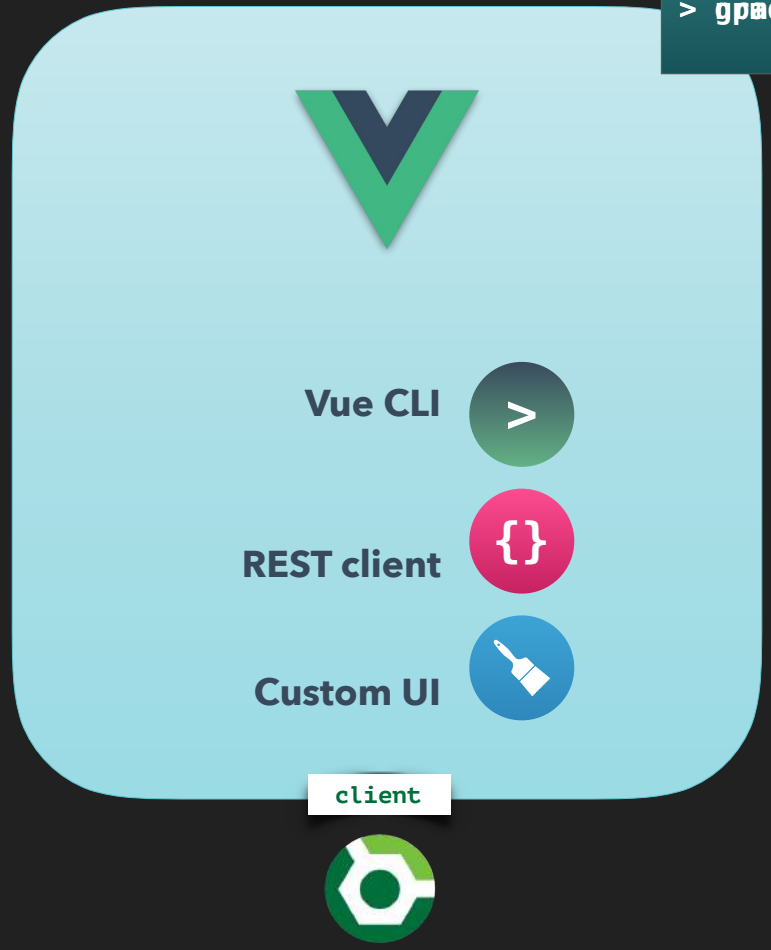
Vue Profile for Grails

```
> gradle client:start    dev server
> gradle client:test     tests
> gradle client:build    dist.
```



- Standardize Node versions
- Project-local installation
- Handles npm/yarn tasks

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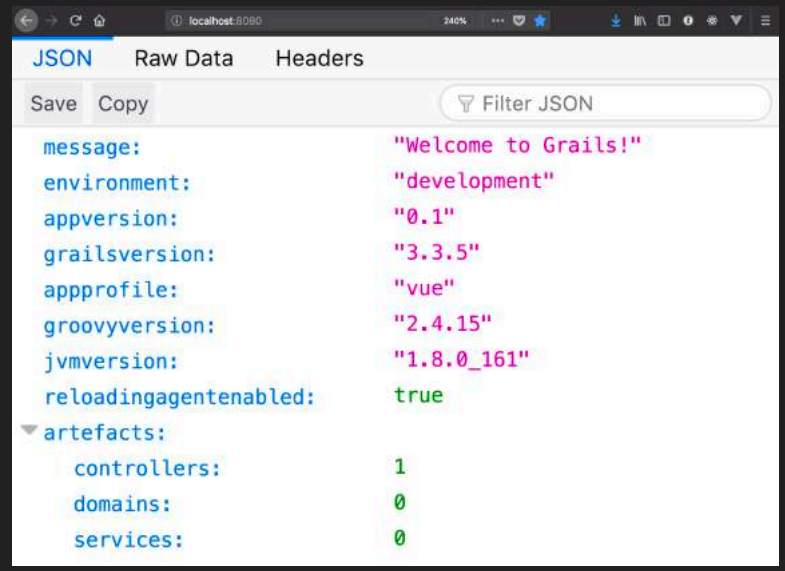
Vue Profile for Grails

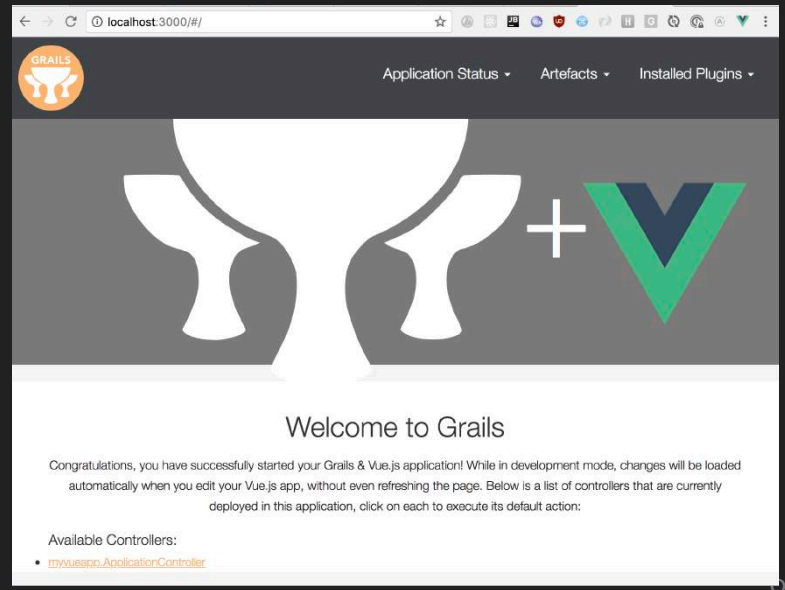
```
> gradle bootRun//or grails run-app

Grails application
running at http://localhost:8080
```

```
> gradle start //or npm start

Your application is running here:
http://localhost:3000
```





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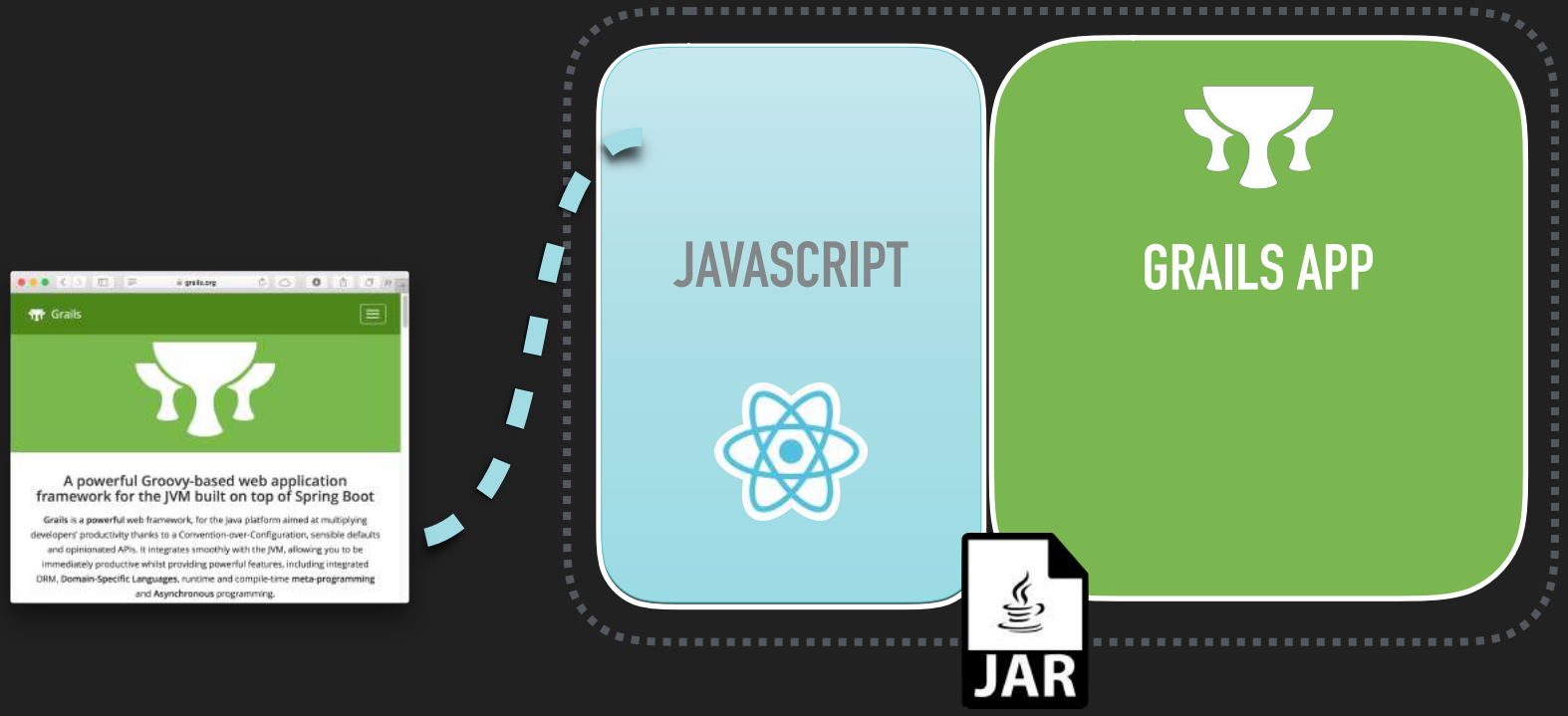
Combined JAR Deployment




```
java -jar myapp.jar
```

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Vue with JWT (Spring) Security

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Spring Security REST

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- Extends Spring Security Core
- OCI-supported
  - Adds support for stateless token-based authentication
  - Designed to secure restful APIs
  - Supports multiple token types/storage: JWT, GORM, Redis, etc

```
compile 'org.grails.plugins:spring-security-rest:3.0.0.RC1'
```

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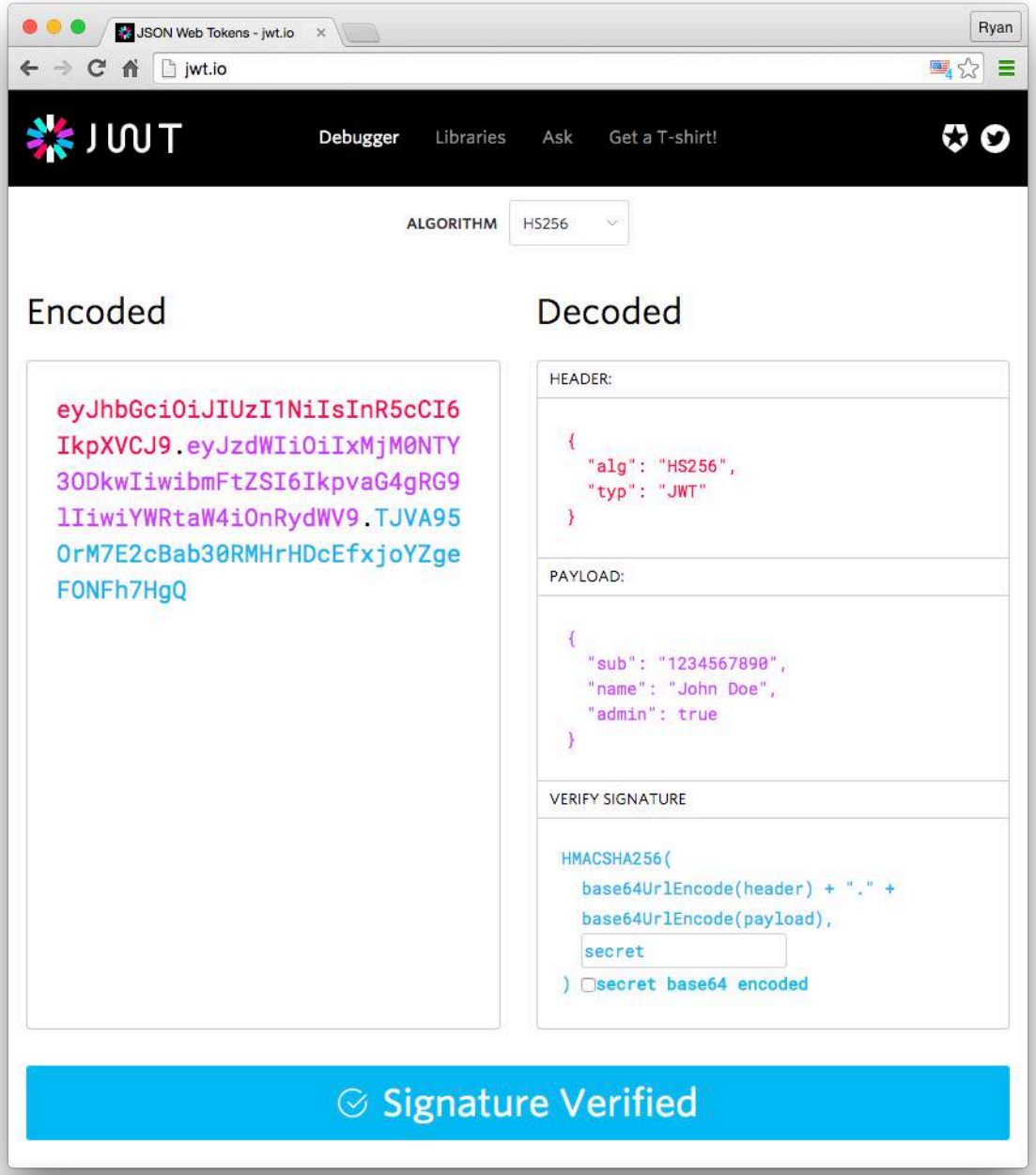
JSON Web Token

- https://jwt.io
- Open, industry-standard method for representing claims securely between two parties
- Consist of a header, payload, and signature



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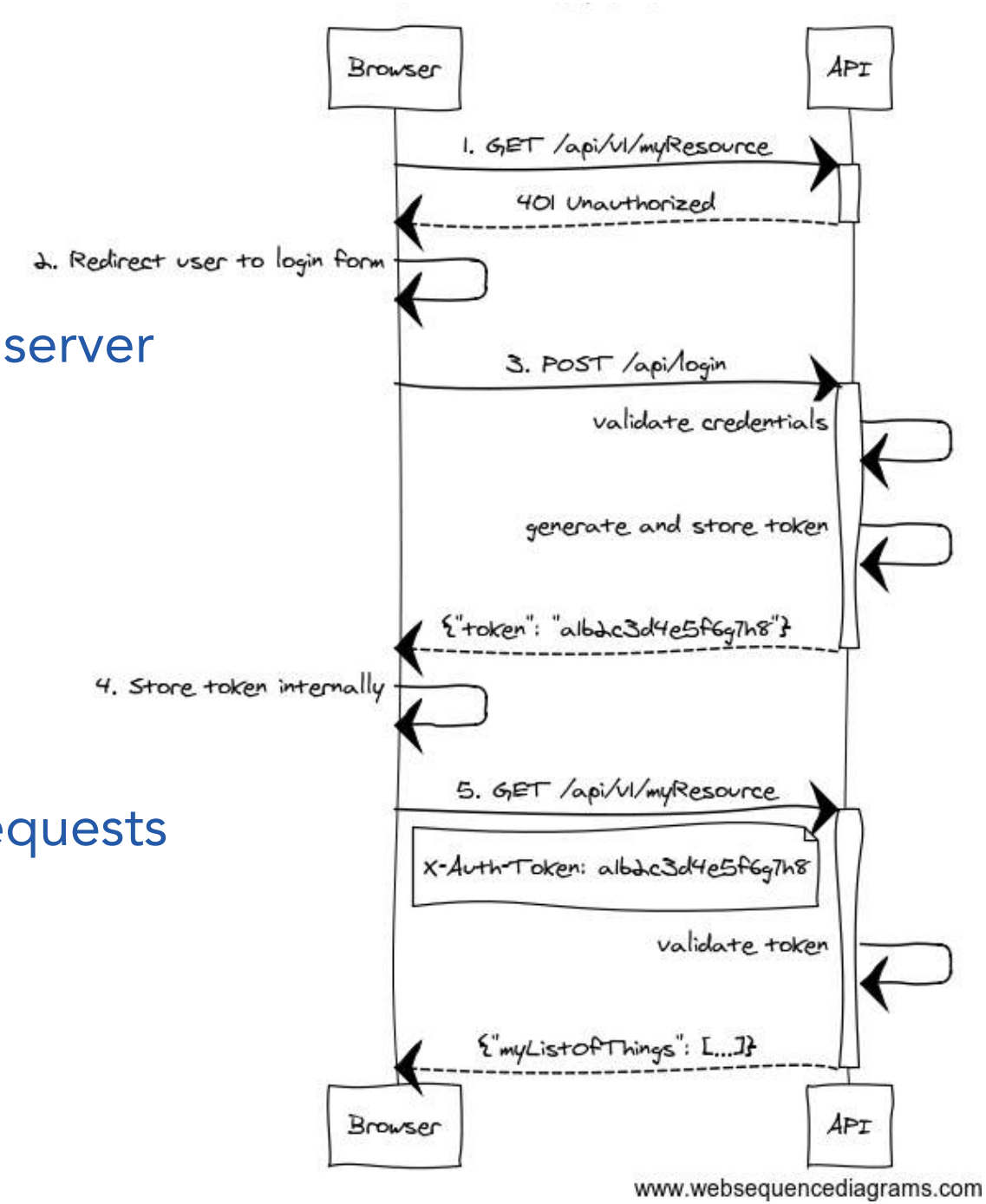
JWT Authentication

- Client makes unauthorized request to server
- Server responds with 401
- Client POSTs to /login endpoint
- Server responds with token
- Client includes token in subsequent requests
- Server responds with resource



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Demo

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Grails & Vue Links

- Vue Profile docs: https://grails-profiles.github.io/vue/latest/guide/
- Building a Vue App: http://guides.grails.org/building-a-vue-app/guide
- Combined Build: https://guides.grails.org/grails-vue-combined/guide
- Using the Vue Profile: http://guides.grails.org/using-the-vue-profile/guide

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Thank you!

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