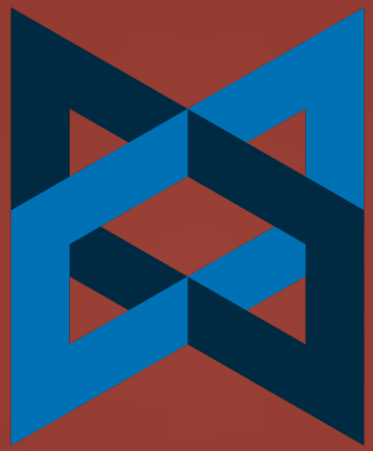
Structuring web applications with Backbone.js



Diego Cardozo

github.com/diegocard/backbone-presentation

Goals

- This presentation isn't only a Backbone tutorial
- We'll focus on complex client design
- Using Backbone as the main tool
- Most concepts won't be tool-specific
- Can be applied to other tools like Angular or Knockout
- We'll learn Backbone through examples

What do I want you to learn?

- Useful concepts for complex web client design
- Basic Backbone knowledge
- Motivation to keep learning

For those who already know Backbone

- Good practices
- Combination with other tools

Agenda

1. Introduction
2. Architecture
3. Example
4. Backbone components
5. Structuring a web application

Introduction (1)

- Web clients have better resources every day
- We can now build smart clients
- But complex applications with jQuery...
  - Are hard to build
  - Lack structure
  - Do not favor reutilization
  - Creating your own structure is reinventing the wheel

Introduction (2)

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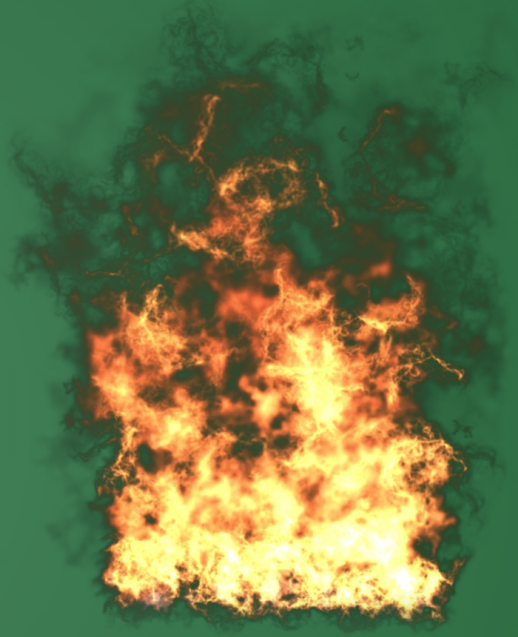
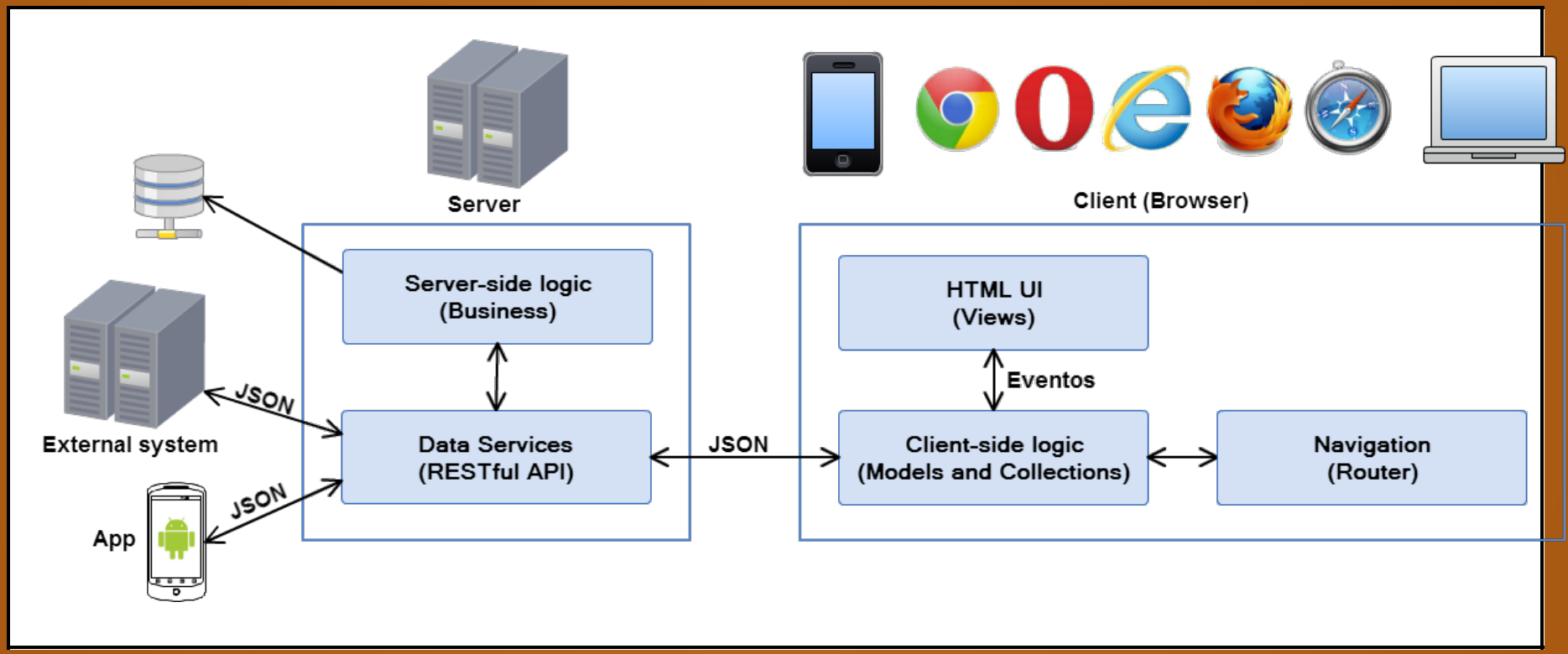


Introduction (3)

- Backbone gives us
  - Structure for our client-side JavaScript code
  - Several utilities
- Basically, it is a MV* framework
- We organize code in different components
  - Models
  - Collections
  - Views
  - Templates
  - Routers

Architecture (1)



Architecture (2)

Advantages

- Maintainability
- Load distribution
- Quicker start to the development process
- UI is only another client
- Great for testing
- Perfect for combining with mobile apps

Example

github.com/diegocard/backbone-presentation/demo

Components (1)

Model

```
var User = Backbone.Model.extend({
      urlRoot: '/users'
});
```

Components (2)

Collection

```
var Users = Backbone.Collection.extend({
        url: '/users'
});
```

Components (3)

View

```
var UserListView = Backbone.View.extend({
    el: '.page',
    render: function () {
        var that = this;
        var users = new Users();
        users.fetch({
            success: function (users) {
                var template = _.template(
                    $('#user-list-template').html(),
                    {users: users.models}
                );
                that.$el.html(template);
            }
        })
    }
});
```

Components (4)

Event handling

```
var UserEditView = Backbone.View.extend({
    el: '.page',
    events: {
        'submit .edit-user-form': 'saveUser',
        'click .delete': 'deleteUser'
    },
    saveUser: function (ev) {
        var userDetails = $(ev.currentTarget).serializeObject();
        var user = new User();
        user.save(userDetails, {
            success: function (user) {
                router.navigate('', {trigger:true});
            }
        });
    }
});
```

Components (5)

Template

```
<script type="text/template" id="user-list-template">
  <a href="#/new" class="btn btn-primary">New</a>
  <hr />
  <table class="table striped">
    <thead>
      <tr>
        <th>First Name</th><th>Last Name</th><th>Age</th><th></th>
      </tr>
    </thead>
    <tbody>
      <% _.each(users, function(user) { %>
        <tr>
          <td><%= htmlEncode(user.get('firstname')) %></td>
          <td><%= htmlEncode(user.get('lastname')) %></td>
          <td><%= htmlEncode(user.get('age')) %></td>
          <td><a class="btn" href="#/edit/<%= user.id %>">Edit</a></td>
        </tr>
```

Components (6)

Router

```
var Router = Backbone.Router.extend({
    routes: {
        "": "home",
        "edit/:id": "edit",
        "new": "edit",
    }
});
```

Structure (1)

- Using backbone doesn't guarantee good practices
- We need to organize and modularize our application
- We can use Require.js to achieve this
- I found a great example at:
  - backbonetutorials.com/organizing-backbone-using-modules

Structure (2)

Suggested structure

```
Root
├── imgs
├── css
│   └── style.css
├── templates
│   ├── projects
│   │   ├── list.html
│   │   └── edit.html
│   └── users
│       ├── list.html
│       └── edit.html
├── js
│   ├── libs
│   │   ├── jquery
│   │   │   ├── jquery.min.js
│   │   ├── backbone
```

Structure (3)

Example: Proyect list

```
define([
  'jquery',
  'underscore',
  'backbone',
  // Using the text! plugin for Require.js,
  // we can load templates as plain text
  'text!templates/project/list.html'
], function($, _, Backbone, projectListTemplate){
  var ProjectListView = Backbone.View.extend({
    el: $('#container'),
    render: function(){
      // Compile the template with underscore
      // and add the template to the view element
      var data = {};
      var compiledTemplate = _.template(projectListTemplate, data);
      this.$el.append(compiledTemplate);
    }
  });
  return ProjectListView; // Return the view
});
```

Resources

- backbonejs.org
- backbonetutorials.com
- addyosmani.github.io/backbone-fundamentals
- github.com/diegocard/backbone-presentation

¿Questions?