

Software Engineering 2 (SWT2)

Chapter 2:
Introduction into Ruby on Rails

Agenda

2

- **Ruby & Ruby on Rails**
 - What is Ruby on Rails?
 - A few words about Ruby
 - Core components
 - RESTful architecture
 - Active Record
- Your introductory Rails exercise
- What else do you need to know?
- Additional Literature

What is Ruby on Rails?

3

- Web application development framework written in **Ruby**
- Philosophy
 - “Don’t repeat yourself” – DRY
 - Convention over Configuration – there is “the Rails way”
 - RESTful architecture
 - Everything in its place



Rails 1
2003

Rails 2
2006

Rails 3
2009

Rails 4
2013

- Used by Github, Groupon, Twitter (partially)
- <http://rubyonrails.org/>

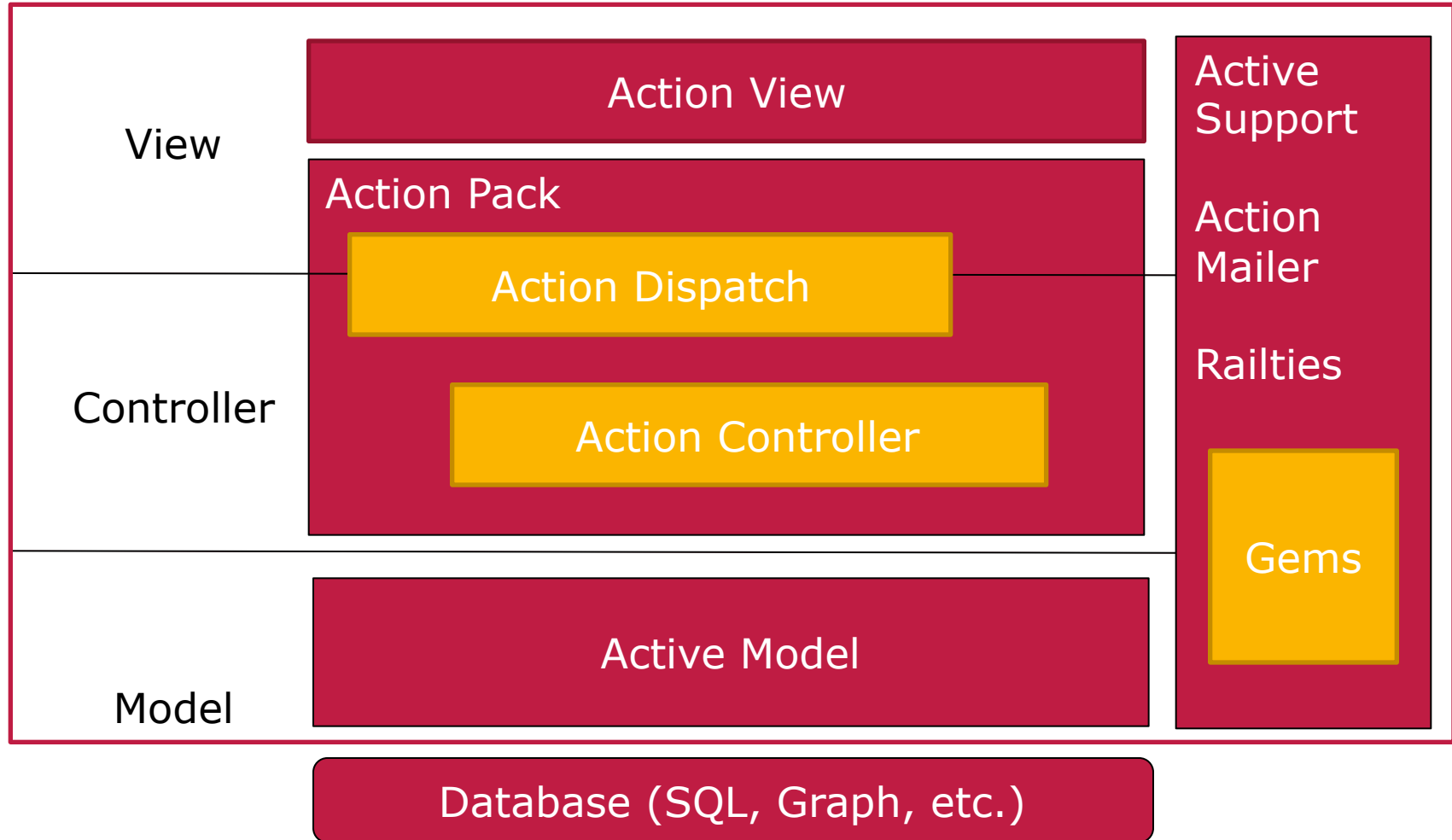
A few words about Ruby

4

- Dynamic, reflective, general-purpose, object-oriented
- Influenced by Perl, Smalltalk, Eiffel, and Lisp
- Open-source
- Matz's Ruby Interpreter (MRI) Versions
 - Ruby 1.0: 1996
 - Ruby 1.8.7 >p249: 2010
 - Ruby 1.9.2: Aug 2010
 - Ruby 1.9.3: Oct 2011
 - Ruby 2.0.0: Feb 2013
 - Ruby 2.1.0: Dec 2013
 - Additionally different VMs available (JRuby, Rubinius, IronRuby, Maglev, etc.)
- <http://www.ruby-lang.org/>

Rails Core Components

5



RESTful Architecture

6

- Representational State Transfer (REST) is a software architecture style for distributed systems
- Principles
 - Clients and servers
 - Stateless
 - Cacheable
 - Layered System
 - Code on Demand (optional)
 - Uniform Interface
- Largest RESTful implementation: World Wide Web

RESTful Architecture

7

- REST leverages all 4 HTTP 1.1 verbs: GET, PUT, POST, DELETE
- Differentiation of collections and individual elements

Resource	GET	PUT	POST	DELETE
Single element http://localhost:3000/authors/1	Retrieve	Update or create	Create	Delete
Collection http://localhost:3000/authors	List	Replace	Create	Delete

ActiveRecord

8

- Associations

ActiveRecord Association	Meaning
<code>has_many :models</code>	One-to-many relationship, foreign key in <model> table
<code>has_one :model</code>	One-to-one relationship, foreign key in <model> table
<code>belongs_to :model</code>	One-to-one relationship, foreign key in own table
<code>has_and_belongs_to_many :models</code>	Many-to-many relationship with implicit join model
<code>has_many :association, :through => :joinmodel</code>	Many-to-many relationship with explicit join model (i.e. Student has_many teachers through courses)

- http://guides.rubyonrails.org/association_basics.html
- Validations: http://guides.rubyonrails.org/active_record_validations_callbacks.html
- Datatypes & Migrations: <http://guides.rubyonrails.org/migrations.html>

How to start?

9

- Option 1: you use Mac or Linux and use Ruby on Rails on your OS
- Option 2: you have Windows or want to use a VM
 - We prepared one for you via Vagrant
 - ◇ Install VirtualBox and Vagrant
 - <https://www.virtualbox.org/> (free for all platforms)
 - <http://www.vagrantup.com/>
 - ◇ Follow the instruction from README.md
- Option 3: you have Windows and install Ruby on Rails on your OS
 - probably the worst option
 - Support from our side very limited...

Rails installation and prerequisites

10

- Ruby 2.1 and PostgreSQL are installed and configured in the VM
- Otherwise: <http://wiki.rubyonrails.org/getting-started/installation>
 - Mac
 - Windows
 - Linux
- You already have Ruby installed and need 2.1?
 - Use a Ruby version manager
 - Mac/Linux → RVM: <http://rvm.beginrescueend.com/>
 - Windows → RVM + Cygwin:
<http://blog.developwithpassion.com/2012/03/30/installing-rvm-with-cygwin-on-windows/>
- Rails is installed through bundler in your application

Let's try this!

11

What are we going to do?

- Create a Rails application
- Start the Rails app
- Understand the Rails application layout
- Create a resource
- Review the source code
- Play around with routing
- Create a connected resource

Introductory Exercise

12

- Goals
 - Get familiar with Ruby on Rails
 - Create necessary account for the project
- Tasks
 - Create a Github account
 - Complete Rails For Zombies: <http://railsforzombies.com>
 - Do the git tutorials:
 - ◇ <http://try.github.io>
 - ◇ <http://pcottle.github.io/learnGitBranching/>
 - Download the application and get it running!
<https://github.com/hpi-swt2/event-und-raumplanung>
- Evaluation
 - Mail us your profile page URL -> swt2_2014_orga@lists.myhpi.de
 - Keep Report Card Private?**
- Due Dates:
 - November 2, 23:59 CET (POs: November 16 23:59 CET)

Git Installation

13

- How to install GIT:
 - apt-get install git-core
 - <http://git-scm.com/> (Installers for all systems)
- Setting up user name and email
 - Mandatory to commit changes
 - Use your github credentials!

```
$> git config --global user.email "name@student.hpi-uni-potsdam.de"  
$> git config --global user.name "Max Mustermann"
```

- Alternative: setting parameters only for one project:

```
$> cd /path/to/your/project  
$> git config user.email "name@student.hpi-uni-potsdam.de"  
$> git config user.name "Max Mustermann"
```

Getting started with the application

14

What are we going to do?

- Clone the remote repository
- Create a VM
- Have a look around

Agenda

15

- Ruby & Ruby on Rails
- Your introductory Rails exercise
- **What else do you need to know?**
 - Resources to help yourself
 - Let's get it started
- Documentation and Additional Literature

Resources to help yourself

16

Directly related to the exercise

- <http://rubyonrails.org>
- <http://guides.rubyonrails.org/>
- <http://www.ruby-lang.org>
- http://guides.rubyonrails.org/getting_started.html
- <http://www.virtualbox.org>
- <http://www.vagrantup.com>
- <http://wiki.rubyonrails.org/getting-started/installation>
- <http://rvm.io/>
- <http://github.com/vertiginous/pik>
- <http://git-scm.com/>

Let's get it started

17

1. Enroll until Oct 24
2. Add yourself to our course-wide mailing list (link via email)
3. Form teams of 5-8 people
 - Send your team preferences to swt2_2014_orga@lists.myhpi.de until Oct 24, 23:59 CET
4. Problems?
 - Ask your colleagues: swt2_2014@lists.myhpi.de
 - Mail us: swt2_2014_orga@lists.myhpi.de
5. Finish the exercise until Nov 2, 23:59 CET

Documentation and Additional Literature

18

- <http://rubyonrails.org/documentation> (API, Guides, ...)
- <http://beta.gotapi.com/>
- <http://www.ruby-doc.org/>
- Agile Web Development with Rails 4

Outlook

19

- Project Infrastructure
- GIT Introduction
- Lego Exercise