

## Software Engineering 2 (SWT2)

Chapter 2:  
Introduction into Ruby on Rails

# Agenda

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- **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?

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- 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/>

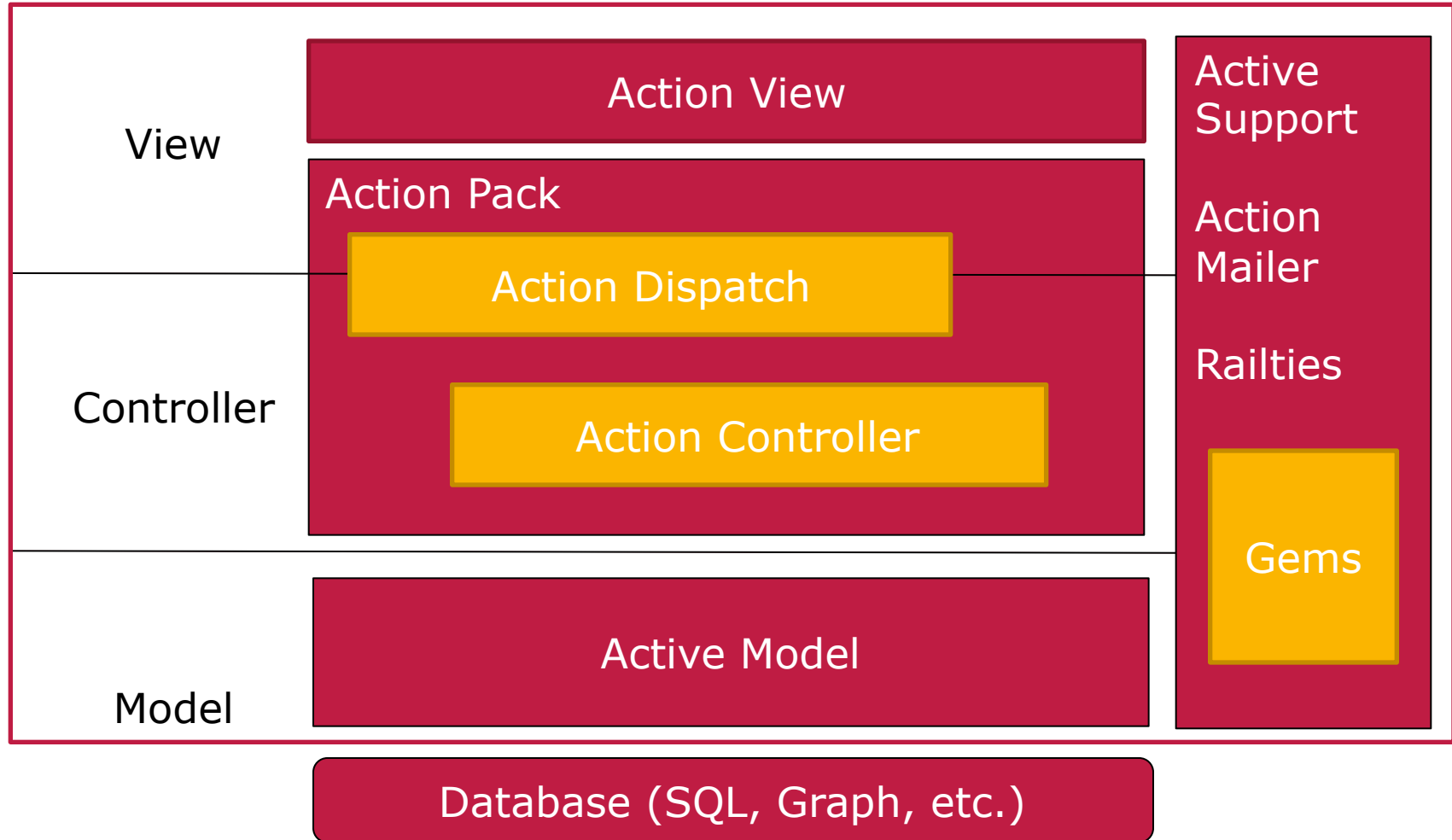
# A few words about Ruby

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- 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

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# RESTful Architecture

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- 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

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- 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

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- 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 =&gt; :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](http://guides.rubyonrails.org/association_basics.html)
- Validations: [http://guides.rubyonrails.org/active\\_record\\_validations\\_callbacks.html](http://guides.rubyonrails.org/active_record_validations_callbacks.html)
- Datatypes & Migrations: <http://guides.rubyonrails.org/migrations.html>



# How to start?

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- 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

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- 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!

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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

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- 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](mailto: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

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- 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

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What are we going to do?

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

# Agenda

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- 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

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## 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://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

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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](mailto:swt2_2014_orga@lists.myhpi.de) until Oct 24, 23:59 CET
4. Problems?
  - Ask your colleagues: [swt2\\_2014@lists.myhpi.de](mailto:swt2_2014@lists.myhpi.de)
  - Mail us: [swt2\\_2014\\_orga@lists.myhpi.de](mailto:swt2_2014_orga@lists.myhpi.de)
5. Finish the exercise until Nov 2, 23:59 CET

# Documentation and Additional Literature

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

# Outlook

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- Project Infrastructure
- GIT Introduction
- Lego Exercise