MVC and MVP patterns with Play! Framework and Backbone.js

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INTRODUCTION

OUTLINE

TRENDS

- Enterprises's needs lead the market.
- Offering services: SOA wins.
- The web changes the status quo.
- SOA is not web compliant.
- Exposing services through the web requires extra effort.
- The game changes: new possibilities and challenges.

CHALLENGES

- Real time data has to be pushed.
- Huge amounts of data.
- Need for scalability and integration.
- Easy integration and accessibility.
- Interoperability.

ADDRESSING THE CHALLENGES

- Embrace the internet.
  - HTTP Protocol
  - HTML5
  - XML/JSON
  - Javascript
  - CSS
- Paradigm shift: client-side.
- Simplicity.
- A framework to rule them all.
- **Patterns for enterprise applications**.

PLAY! FRAMEWORK

OUTLINE

What is Play! Framework?

- A web framework focused on:
  - Simplicity.
  - Productivity.
  - Scalability.
  - Designed for the modern web.
    - Concentrate on server-side.
    - Delegate AMAP to the client.
  - Embrace internet standards.
  - Java and Scala.
  - RESTful architecture web applications.
  - Model-View-Controller.

RESTful architecture

- Implemented using HTTP and REST principles.
- Representational state transfer (REST) principles:
  - Uniform interface.
  - Stateless.
  - Caching.
  - Layers.
  - Code on demand.
- Goals:
  - Performance.
  - Scalability.
  - Portability.
  - Reliability.
  - SIMPLICITY.

PROJECT LAYOUT

```
app                      → Application sources
 └ assets                → Compiled asset sources
    └ stylesheets        → Typically LESS CSS sources
    └ javascripts        → Typically CoffeeScript sources
 └ controllers           → Application controllers
 └ models                → Application business layer
 └ views                 → Templates
build.sbt                → Application build script
conf                     → Configurations files and other non-compiled resour
 └ application.conf      → Main configuration file
 └ routes                → Routes definition
public                   → Public assets
 └ stylesheets           → CSS files
 └ javascripts           → Javascript files
 └ images                → Image files
project                  → sbt configuration files
 └ build.properties      → Marker for sbt project
 └ plugins.sbt           → sbt plugins including the declaration for Play its
lib                      → Unmanaged libraries dependencies
logs                     → Standard logs folder
 └ application.log       → Default log file
target                   → Generated stuff
 └ scala-2.10.0
    └ cache
    └ classes            → Compiled class files
    └ classes_managed    → Managed class files (templates, ...)
    └ resource_managed   → Managed resources (less, ...)
    └ src_managed        → Generated sources (templates, ...)
test                     → source folder for unit or functional tests
```

Patterns in Play!

Outline

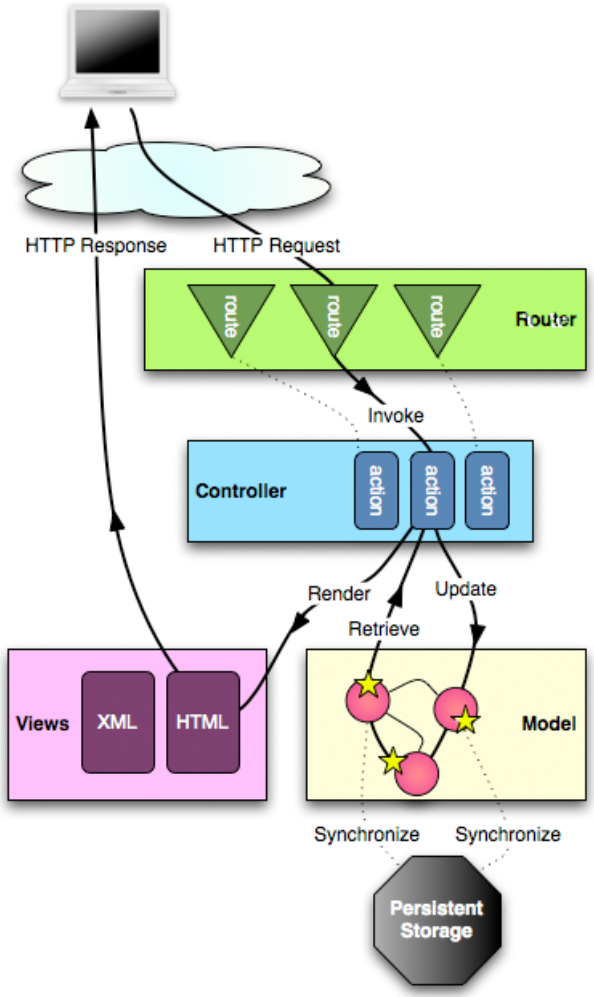
Patterns in Play!

- **Model-View-Controller**.
- Model.
  - Object-Relational Mapping.
- Controller.
  - Front Controller.
- View.
  - Template View.
  - Composite View.

The MVC application model

- Models in app/models
  - Java/Scala classes.
  - Data + Operations, mainly object-oriented.
  - Business logic and storage.
- Views in app/views
  - HTML/XML/JSON/Scala templates.
  - Directives as placeholders for data.
  - Render models to user interfaces.
- Controllers in app/controllers
  - Java/Scala classes.
  - Methods as actions, mainly procedural.
  - Receive requests, act (update models + render views) and response.

REQUEST/RESPONSE FLOW



Object Relational Mapping

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Template View

- a

Composite View

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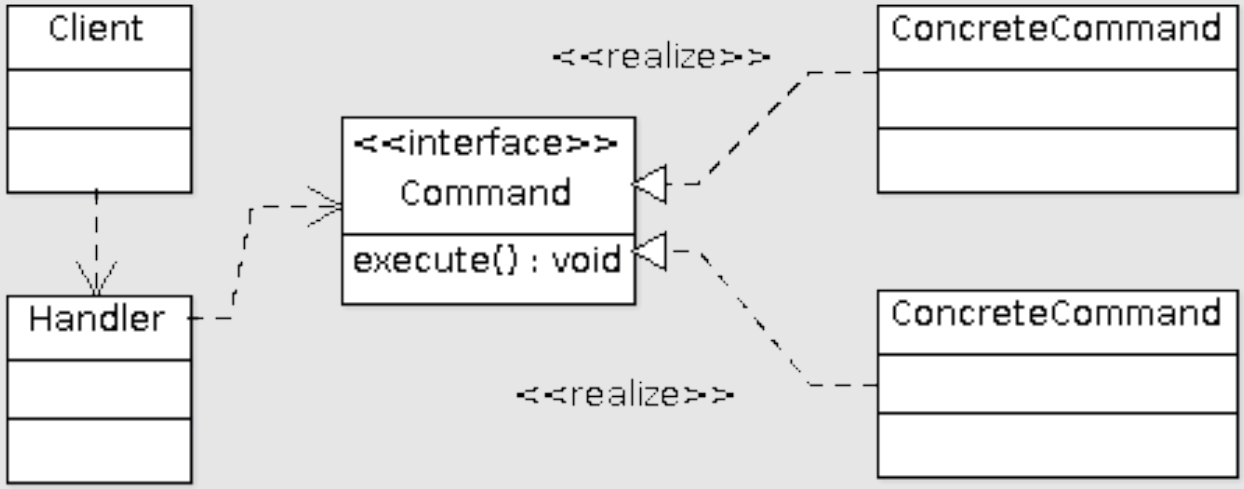
FRONT CONTROLLER PATTERN

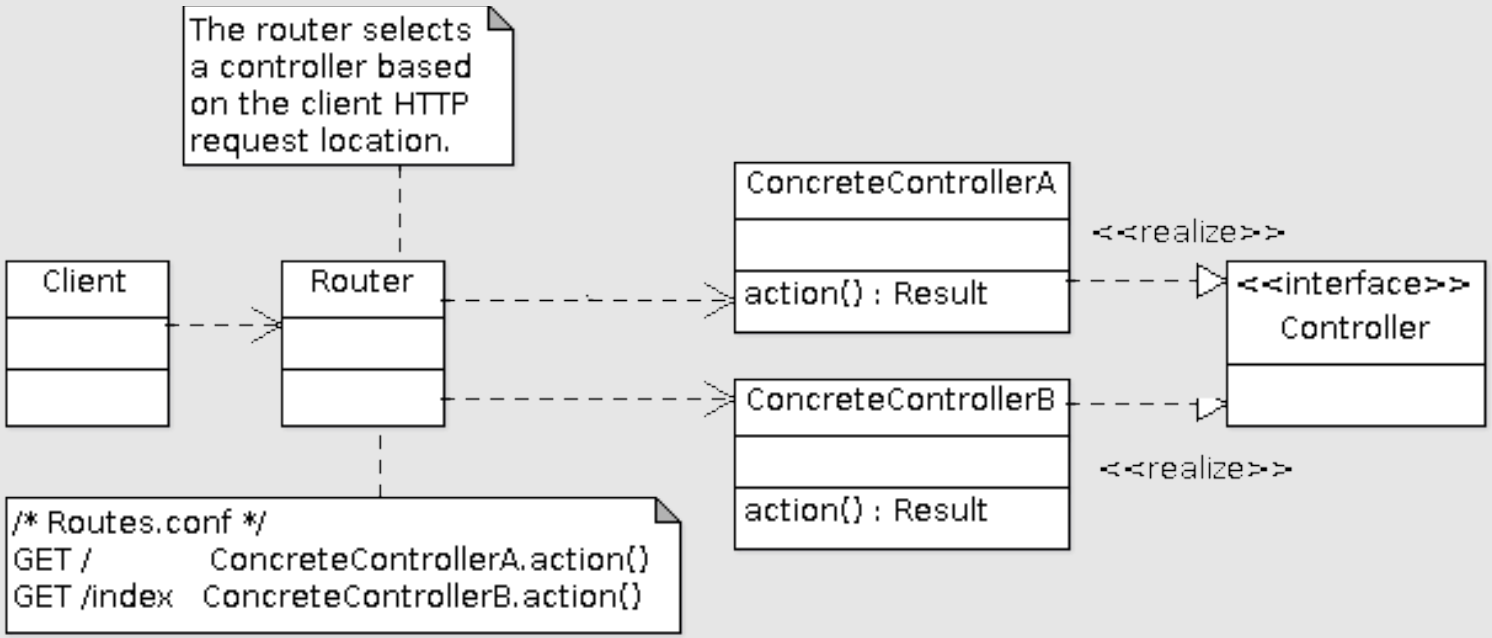
- *"Consolidates all request handling by channeling requests through a single handler object" [Fow02]*



- Pros: Centralized control, Thread safety, Configurability.
- Cons: Possible performance issues, Maintenance costs.

FRONT CONTROLLER IN PLAY!

- The router (handler) selects a controller (command) and a particular action (execute) depeding on the HTTP request.



- Routes.conf file determines the location-action relationship.
- Actions return a result that holds the HTTP Response.

CONCLUSIONS

OUTLINE

CONCLUSIONS

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