

# Behind Myths

Revealing JSF 2 and RichFaces 4

# JBoss Community



Lukáš Fryč  
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# Agenda

- JavaServer Faces 2.0
  - De-mystification
  - Newsworthy in 2.0
- RichFaces 4.0
  - Conceptual Overview
  - New-comings in 4.0
- Question & Answers

# **JSR-314**

## **JavaServer Faces**

# **De-mystification**

# JavaServer Faces 2.0

- Standard Face for JavaEE 6
- Component-Oriented
- Strict MVC

# Component Tree



```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
```

```
<html xmlns="http://www.w3.org/1999/xhtml"
xmlns:h="http://java.sun.com/jsf/html"
xmlns:f="http://java.sun.com/jsf/core"
xmlns:ui="http://java.sun.com/jsf/facelets">
```

```
<h:head>
```

```
...
```

```
</h:head>
```

```
<h:body>
```

```
<h:form ...>
```

```
<h:selectOneMenu ... >
```

```
<f:selectItems ... />
```

```
</h:selectOneMenu>
```

```
</h:form>
```

```
<ui:repeat ...>
```

```
<h:outputText ... />
```

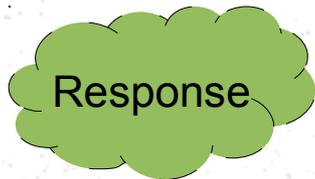
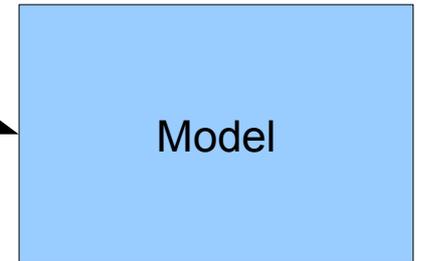
```
</ui:repeat>
```

```
</h:body>
```

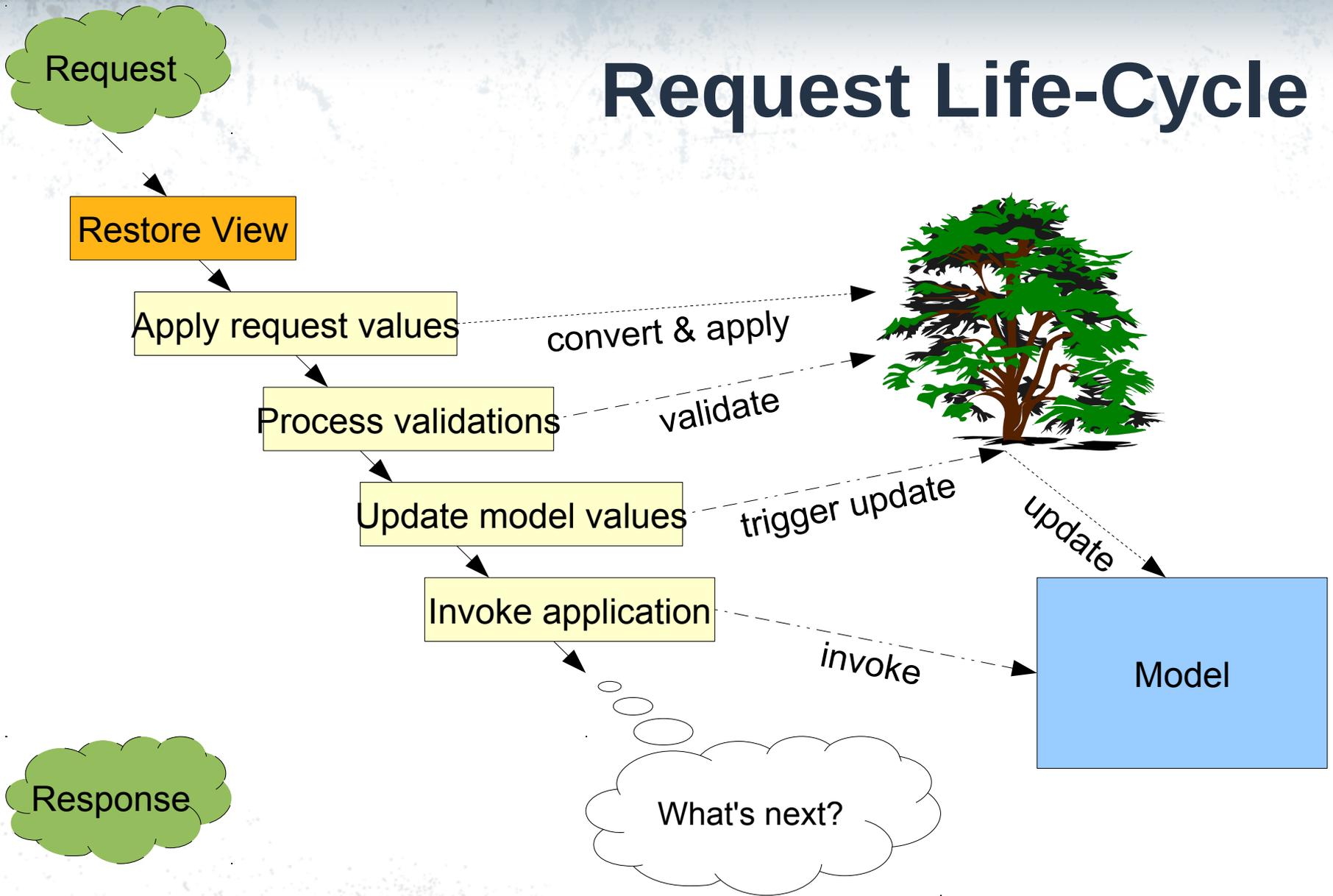
```
</html>
```

# View Selection

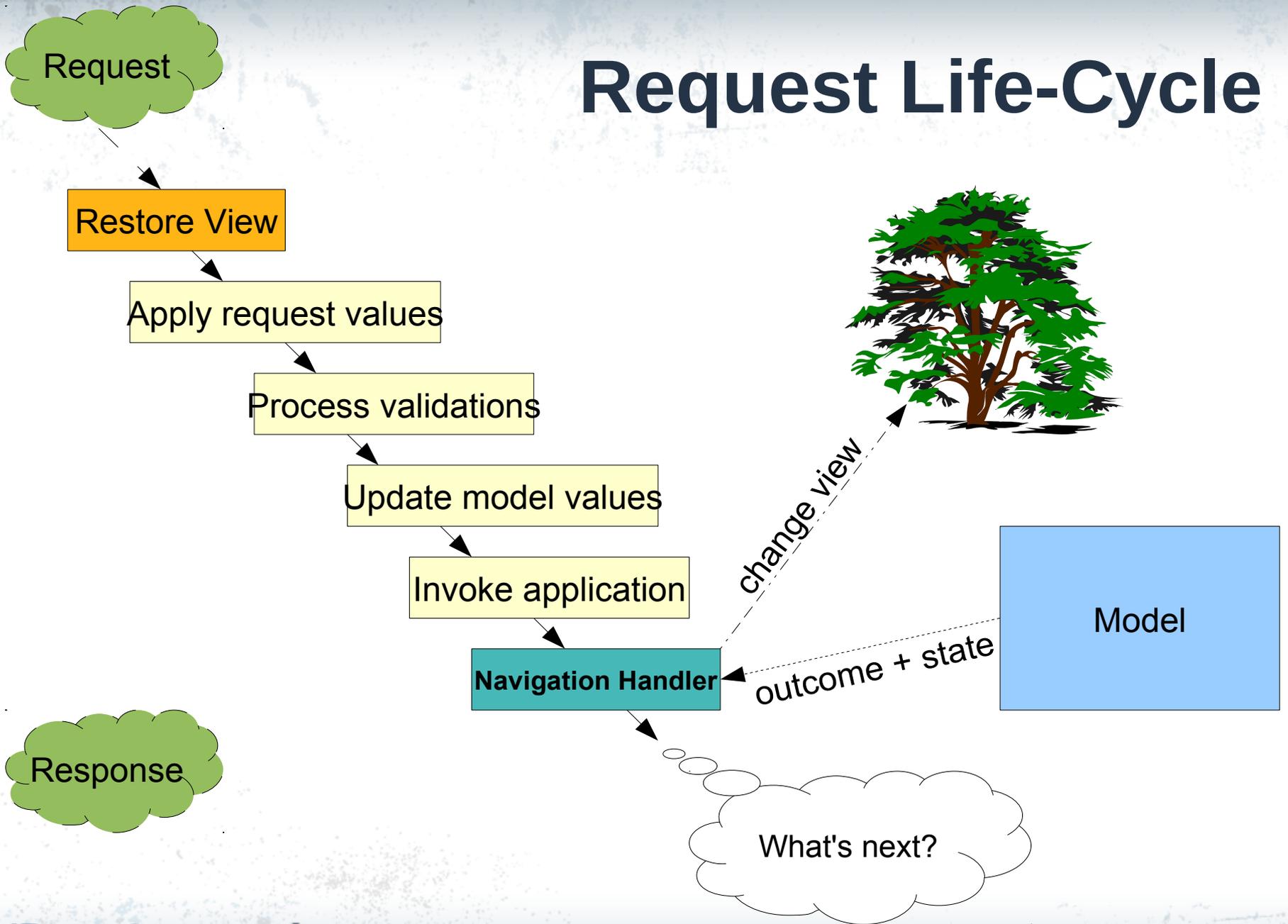
<http://localhost:8080/practice02-jsf/detail.jsf?auctionId=23>



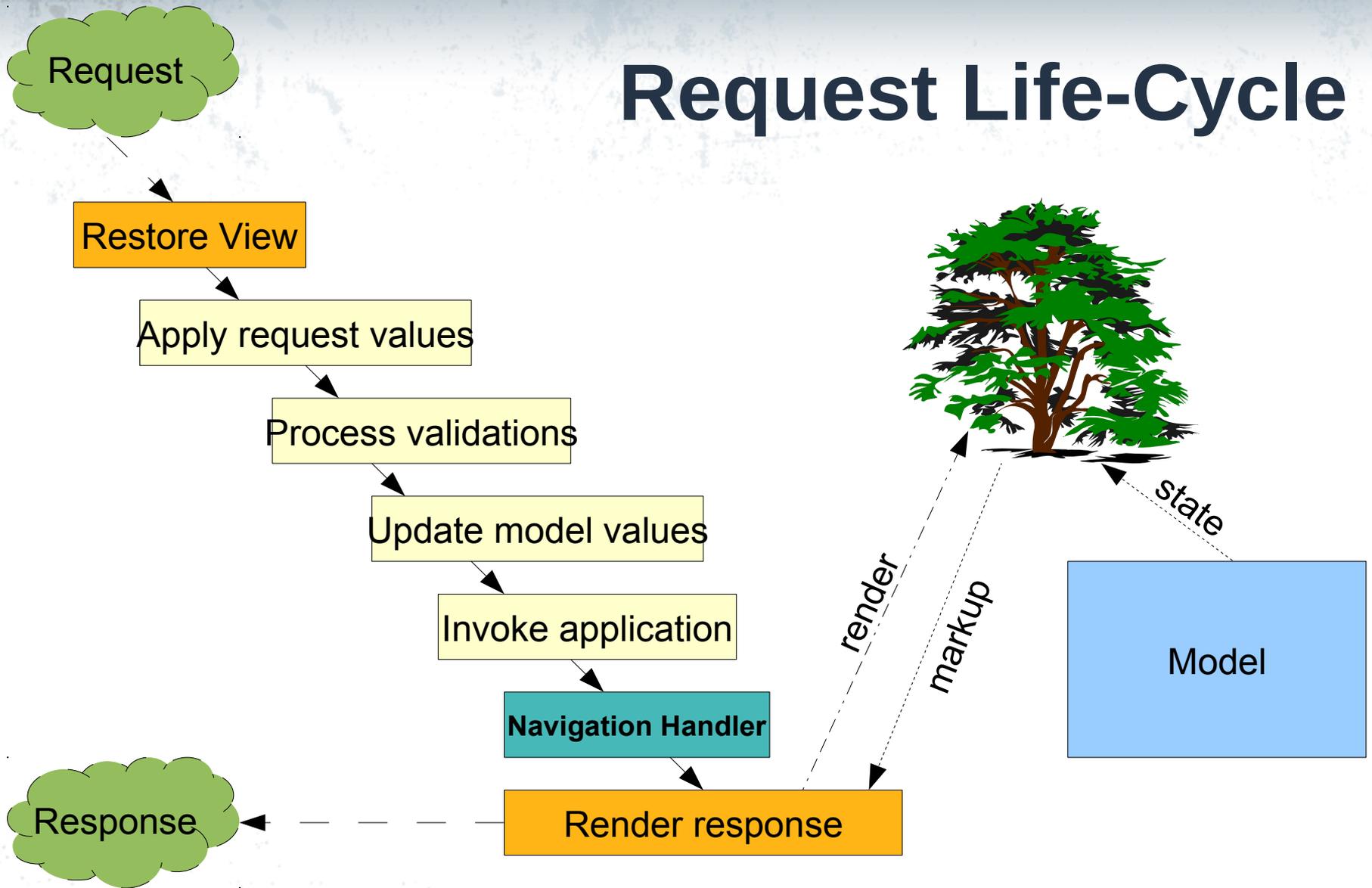
# Request Life-Cycle



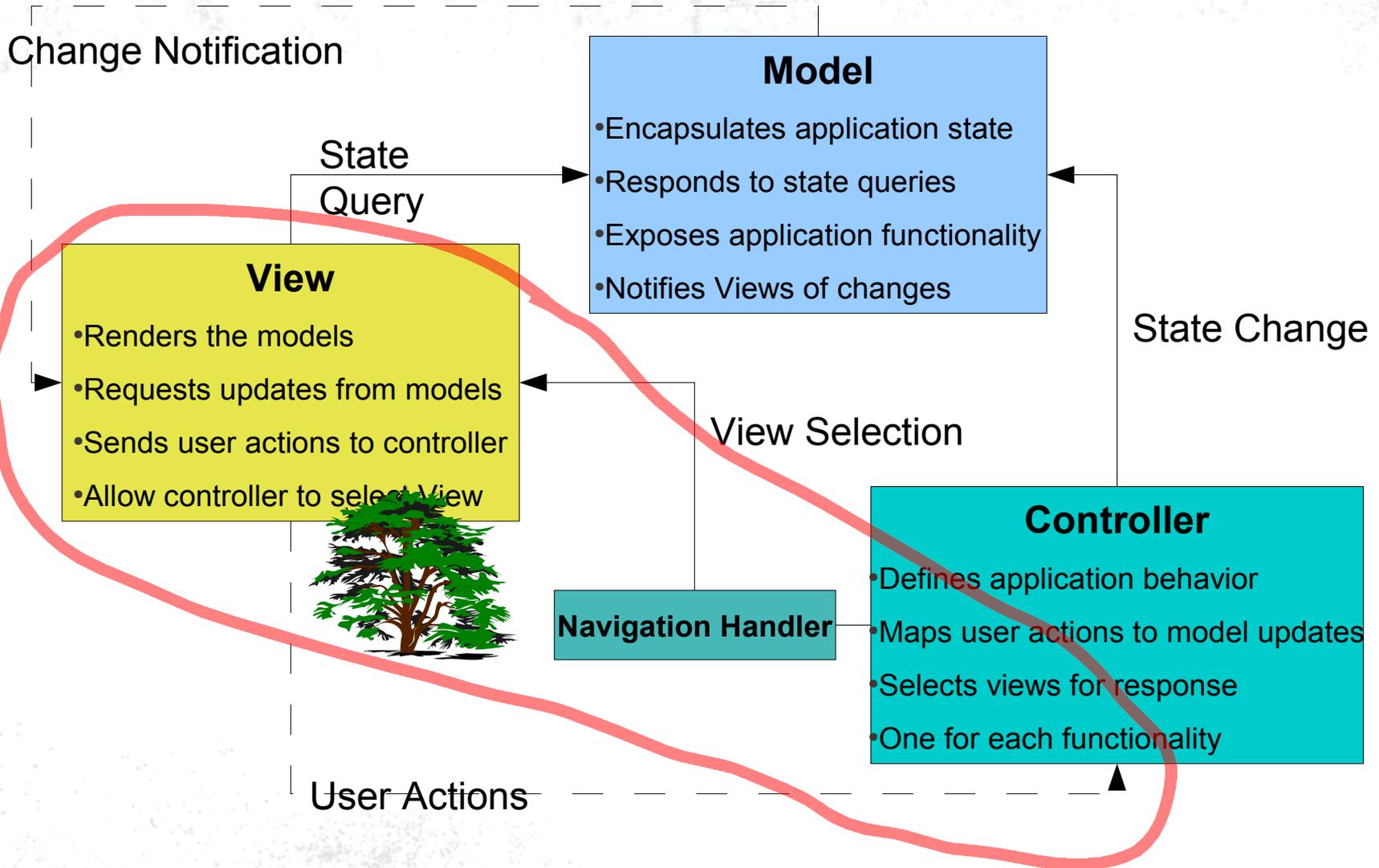
# Request Life-Cycle



# Request Life-Cycle



# JSF ~ View + Controller



# Model & View

```
@Named
@SessionScoped
public class User implements Serializable {

    private static final long serialVersionUID = -8082147816398046820L;

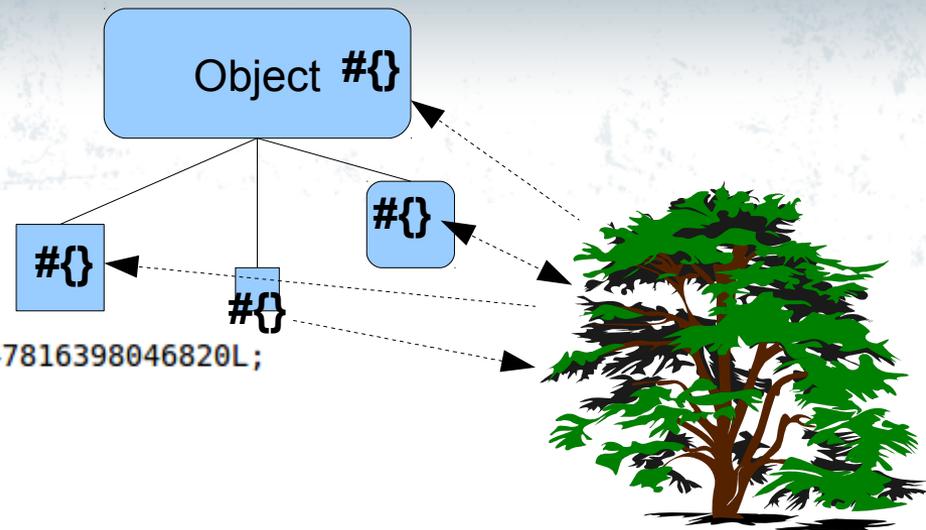
    private String name = null;

    public String getName() {
        return name;
    }

    public boolean isLoggedIn() {
        return name != null;
    }

    public void login(String name) {
        System.out.println("login: " + name);
        this.name = name;
    }

    public void logout() {
        this.name = null;
    }
}
```

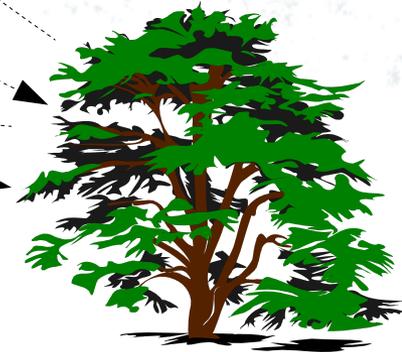


```
<h:form>
    <h:panelGrid columns="1" style="width: 95%">
        <h:outputText value="#{user.name}" rendered="#{user.logged}" />
        <h:inputText id="username" value="#{username}"
            rendered="#{not user.logged}"
            validatorMessage="Uzivatelske jmeno musi byt neprazdne"
            <f:validateRequired />
            <f:validateRegex pattern="[a-z]+" />
        </h:inputText>
    </h:panelGrid>

    <h:commandButton id="loginButton" value="Prihlasit se"
        action="#{user.login(username)}" rendered="#{not user.logged}" />

    <h:commandButton id="logoutButton" value="Odhlasit se"
        action="#{user.logout}" rendered="#{user.logged}" />
</h:form>
```

# Model & View



```
@Named  
@SessionScoped  
public class User implements Serializable {
```

```
private static final long serialVersionUID = -8082147816398046820L;
```

```
private String name = null;
```

```
public String getName() {  
    return name;  
}
```

```
public boolean isLoggedIn() {  
    return name != null;  
}
```

```
public void login(String name) {  
    System.out.println("login: " + name);  
    this.name = name;  
}
```

```
public void logout() {  
    this.name = null;  
}
```

```
<h:form>  
    <h:panelGrid columns="1" style="width: 95%">  
        <h:outputText value="#{user.name}" rendered="#{user.logged}" />  
        <h:inputText id="username" value="#{username}"  
            rendered="#{not user.logged}"  
            validatorMessage="Uzivatelske jmeno musi byt neprazdne"  
            <f:validateRequired />  
            <f:validateRegex pattern="[a-z]+" />  
        </h:inputText>  
    </h:panelGrid>  
  
    <h:commandButton id="loginButton" value="Prihlasit se"  
        action="#{user.login(username)}" rendered="#{not user.logged}" />  
  
    <h:commandButton id="logoutButton" value="Odhlasit se"  
        action="#{user.logout}" rendered="#{user.logged}" />
```

@Named

Expression Language

# Bean Scope

t



Application

Session

Session

Conversations

View

View

View

View

View

View

Render

Request

index.xhtml

xhtml

xhtml

xhtml

index.xhtml

xhtml

# JSF & Model

Change Notification

State Query

## View

- Renders the models
- Requests updates from models
- Sends user actions to controller
- Allow controller to select View



Navigation Handler

View Selection

User Actions

## Model

- Encapsulates application state
- Responds to state queries
- Exposes application functionality
- Notifies Views of changes

Object

State Change

## Controller

- Defines application behavior
- Maps user actions to model updates
- Selects views for response
- One for each functionality

# **JSR-314**

## **JavaServer Faces**

**Newsworthy in 2.0**

# **View Declaration Language**

(aka Facelets)

# VDL

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
    "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">

<html xmlns="http://www.w3.org/1999/xhtml"
    xmlns:h="http://java.sun.com/jsf/html"
    xmlns:f="http://java.sun.com/jsf/core"
    xmlns:ui="http://java.sun.com/jsf/facelets">

<f:view>
    <ui:insert name="view"></ui:insert>

    <h:head>
        <meta http-equiv="Content-Type" content="text/html; charset=UTF-8" />
        <meta http-equiv="X-UA-Compatible" content="IE=EmulateIE7" />
        <title><ui:insert name="title">Auction</ui:insert></title>
        <link rel="stylesheet" href="style.css" type="text/css" media="screen" />
    </h:head>

    ...

</f:view>
```

# VDL ~ ui:insert

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
    "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">

<html xmlns="http://www.w3.org/1999/xhtml"
    xmlns:h="http://java.sun.com/jsf/html"
    xmlns:f="http://java.sun.com/jsf/core"
    xmlns:ui="http://java.sun.com/jsf/facelets">

<f:view>
    <ui:insert name="view"></ui:insert> ◆

    <h:head>
        <meta http-equiv="Content-Type" content="text/html; charset=UTF-8" />
        <meta http-equiv="X-UA-Compatible" content="IE=EmulateIE7" />
        ◆ <title><ui:insert name="title">Auction</ui:insert></title>
        <link rel="stylesheet" href="style.css" type="text/css" media="screen" />
    </h:head>

    ...

</f:view>
```

# VDL ~ ui:include

```
<h:body>
```

```
  <div class="content">
    <div id="top">
      <h1><a href="#"><ui:insert name="header">Auction</ui:insert></a></h1>
      <h2><ui:insert name="subtitle">Buy and sell...</ui:insert></h2>
    </div>
  </div>

  <div id="prec">
    <div id="wrap">
      <div id="pic">
        <div id="slogan">
          <h1>Auction</h1>
          <h2>Try RichFaces 4, Seam 3, Ajocado and other cool technologies!</h2>
        </div>
      </div>
      <div id="menu">
        <ul>
          <ui:include src="menu.xhtml" /> ◆
        </ul>
      </div>
    </div>
  </div>
```

```
...
```

```
</h:body>
```

# VDL ~ ui:composition

```
◆ <ui:composition template="templates/home.xhtml">  
  
  <ui:param name="activeTab" value="myAuctions" />  
  <ui:param name="requiredLogin" value="true" />  
  
  <ui:define name="content">  
  
    <h2>My Auctions</h2>  
  
    <a:auctionList auctions="#{currentUser.auctions}" />  
  
    <h2>My Favorites</h2>  
  
    <a:auctionList auctions="#{currentUser.favorites}" />  
  
  </ui:define>  
  
</ui:composition>
```

# VDL ~ ui:param

```
<ui:composition template="templates/home.xhtml">  
  ◆ <ui:param name="activeTab" value="myAuctions" />  
  <ui:param name="requiredLogin" value="true" />  
  
  <ui:define name="content">  
    <h2>My Auctions</h2>  
  
    <a:auctionList auctions="#{currentUser.auctions}" />  
  
    <h2>My Favorites</h2>  
  
    <a:auctionList auctions="#{currentUser.favorites}" />  
  
  </ui:define>  
</ui:composition>
```

# VDL ~ ui:define

```
<ui:composition template="templates/home.xhtml">  
  
    <ui:param name="activeTab" value="myAuctions" />  
    <ui:param name="requiredLogin" value="true" />  
  
    ◆ <ui:define name="content">  
  
        <h2>My Auctions</h2>  
  
        <a:auctionList auctions="#{currentUser.auctions}" />  
  
        <h2>My Favorites</h2>  
  
        <a:auctionList auctions="#{currentUser.favorites}" />  
  
    </ui:define>  
  
</ui:composition>
```

**Is it enough?**

# Composite Components

# CC ~ interface

```
<composite:interface>  
    <composite:attribute name="auctions"  
                        type="java.util.List"  
                        required="true" />  
</composite:interface>
```

# CC ~ implementation

```
<composite:implementation>
```

```
  <rich:dataTable id="auctionsTable" value="#{cc.attrs.auctions}" var="auct" rows="10">
```

```
    <f:facet name="header">
```

```
      <rich:dataScroller forComponent="auctionsTable" />
```

```
    </f:facet>
```

```
    <rich:column sortBy="#{auct.name}" sortOrder="ascending" >
```

```
      <h:link outcome="detail" includeViewParams="true">#{auct.name}</h:link>
```

```
    </rich:column>
```

```
    <h:column>
```

```
      <f:facet name="header">Owner</f:facet>
```

```
      #{auct.owner.name}
```

```
    </h:column>
```

```
    <h:column>
```

```
      <f:facet name="header">Original Price</f:facet>
```

```
      #{auct.originalPrice}
```

```
    </h:column>
```

```
    ...
```

```
  </rich:dataTable>
```

```
</composite:implementation>
```

# CC ~ usage

```
<ui:composition template="templates/home.xhtml">  
  
  <ui:param name="activeTab" value="myAuctions" />  
  <ui:param name="requiredLogin" value="true" />  
  
  <ui:define name="content">  
  
    <h2>My Auctions</h2>  
  
    ◆ <a:auctionList auctions="#{currentUser.auctions}" />  
  
    <h2>My Favorites</h2>  
  
    ◆ <a:auctionList auctions="#{currentUser.favorites}" />  
  
  </ui:define>  
  
</ui:composition>
```

# Client Behaviors

# Client Behaviors

- Declarative Validation
- Request Queues
- DOM and Style Manipulation
- Visual Effects and Animations
- Tooltips and Hover Content
- Drag-n'-Drop
- Keyboard Shortcuts
- Deferred Data Fetching

# Project Stages

(development, testing, production)

```
<context-param>  
  <param-name>javax.faces.PROJECT_STAGE</param-name>  
  <param-value>Development</param-value>  
</context-param>
```

# Resource Loading

# Resource Loading

- `{war}/resources`
- `{jar}/META-INF/resources`

# Resource Loading

[**locale/**][**library/**][**version/**]**resource**[/**version**]

```
resources/images/image1.png  
resources/images/image2.png/v2  
resources/de/images/image2.png  
resources/de_AT/images/image2.png  
resources/styles/header.css/v11  
resources/scripts/1.0.0.Final/common.js  
META-INF/resources/jquery/1.4.4/jquery-min.js
```

# System Events

Event object	Context	Description
SystemEvent	all	All events
ComponentSystemEvent	component	All component events
PostAddToViewEvent	component	After a component was added to the view
PostConstructViewMapEvent	component	After a view map was created
PostRestoreStateEvent	component	After a component has its state restored
PostValidateEvent	component	After a component has been validated
PreDestroyViewMapEvent	component	Before a view map has been restored
PreRemoveFromViewEvent	component	Before a component has been removed from the view
PreRenderComponentEvent	component	After a component has been rendered
PreRenderViewEvent	component	Before a view has been rendered
PreValidateEvent	component	Before a component has been validated
ExceptionQueuedEvent	system	When an exception has been queued
PostConstructApplicationEvent	system	After the application has been constructed
PostConstructCustomScopeEvent	system	After a custom scope has been constructed
PreDestroyApplicationEvent	system	Before the application is destroyed
PreDestroyCustomScopeEvent	system	Before a custom scope is destroyed

# Exception Handling

- **ExceptionHandler** deals all exceptions
  - Not caught in JSF life-cycle
  - Published by system event `ExceptionQueuedEvent`

# Built-In Ajax

# f:ajax

```
<h:panelGrid columns="3">
  <h:outputLabel value="Auction Name:" />
  <h:inputText id="auctionName" value="#{newAuctionWizard.auction.name}">
    ◆ <f:ajax event="keyup" render="auctionNameMessages" />
  </h:inputText>
  <rich:message id="auctionNameMessages" for="auctionName" />
  ...
</rich:panelGrid>
```

Name:

Email

Age

I agree the terms

# @execute

Name:

Email

Age

I agree the terms



# @render

Name:

Email

foo

Age

I agree the terms

✘ Bad email

# @execute



## Current Selection

Name: Big Willie style

Details

**Country:** USA

**Company:** Columbia

**Artist:** Will Smith

**Price:** \$9.90

**Year:** 1997

# @render



**Current Selection**

Name: Big Willie style  
Details

<b>Country:</b>	USA
<b>Company:</b>	Columbia
<b>Artist:</b>	Will Smith
<b>Price:</b>	\$9.90
<b>Year:</b>	1997

# @execute + @render

- Specific component ID
- Keywords: @none, @this, @form, @all



**RichFaces**

## Conceptual Overview

# Extended Execution and Rendering

# Extended Rendering

- `@ajaxRendered`
- `@limitRender`

Name:

Email

Age

I agree the terms

✘ Bad email

# Extended Execution

- `<a4j:region />`
- New keyword: `@region`

Name:

Email

Age

I agree the terms



# Request Queues

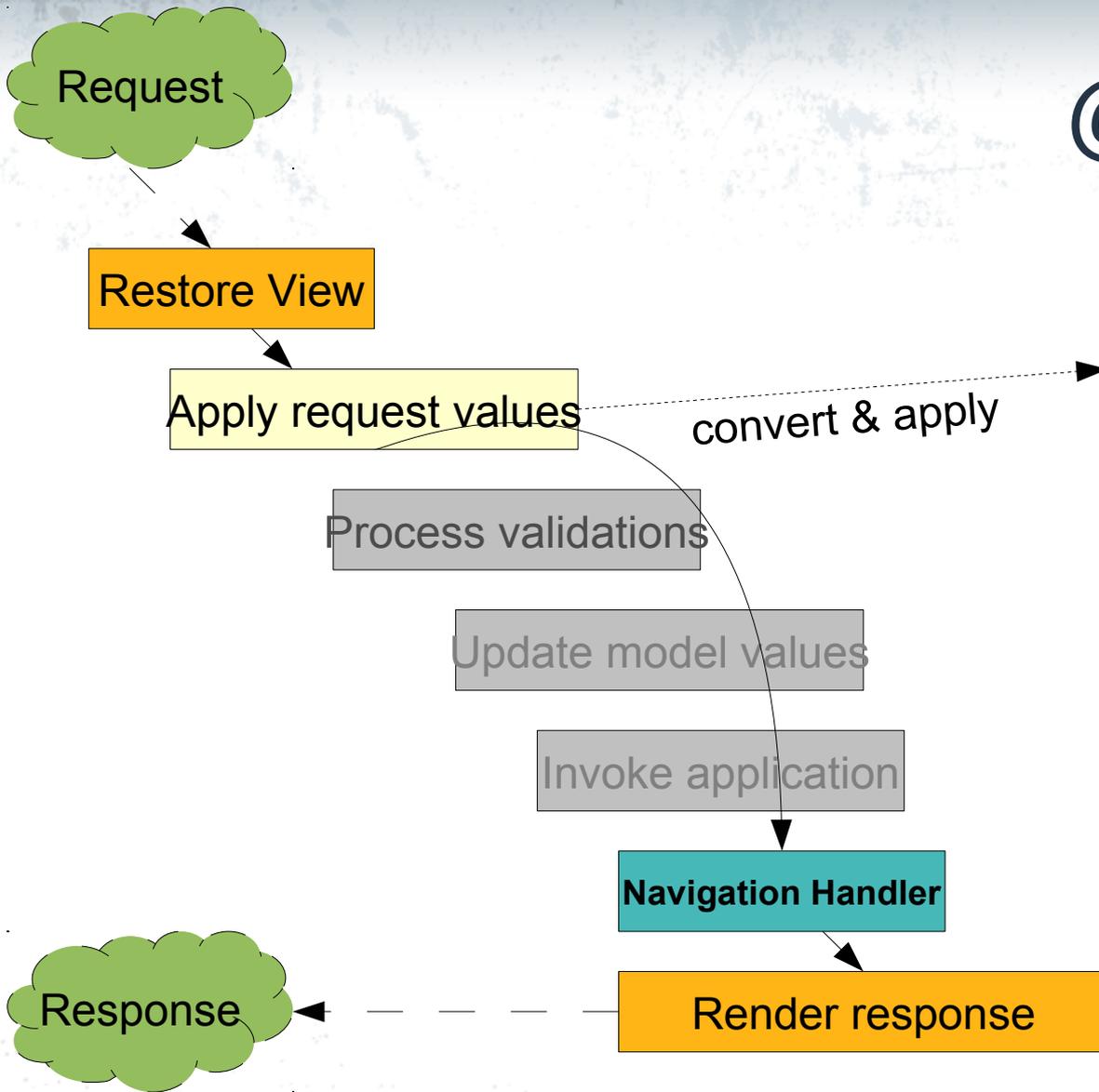
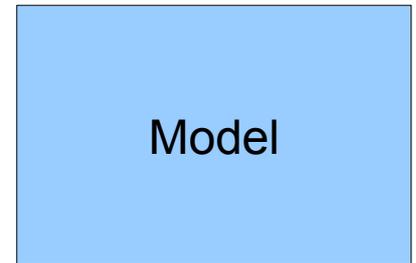
```
<a4j:queue name="queue1" requestDelay="500" />
```

```
<h:inputText value="#{userManager.searchName}">  
  <a4j:ajax event="keyup" render="searchResult">  
    ◆ <a4j:attachQueue name="queue1" />  
  </a4j:ajax>  
</h:inputText>
```

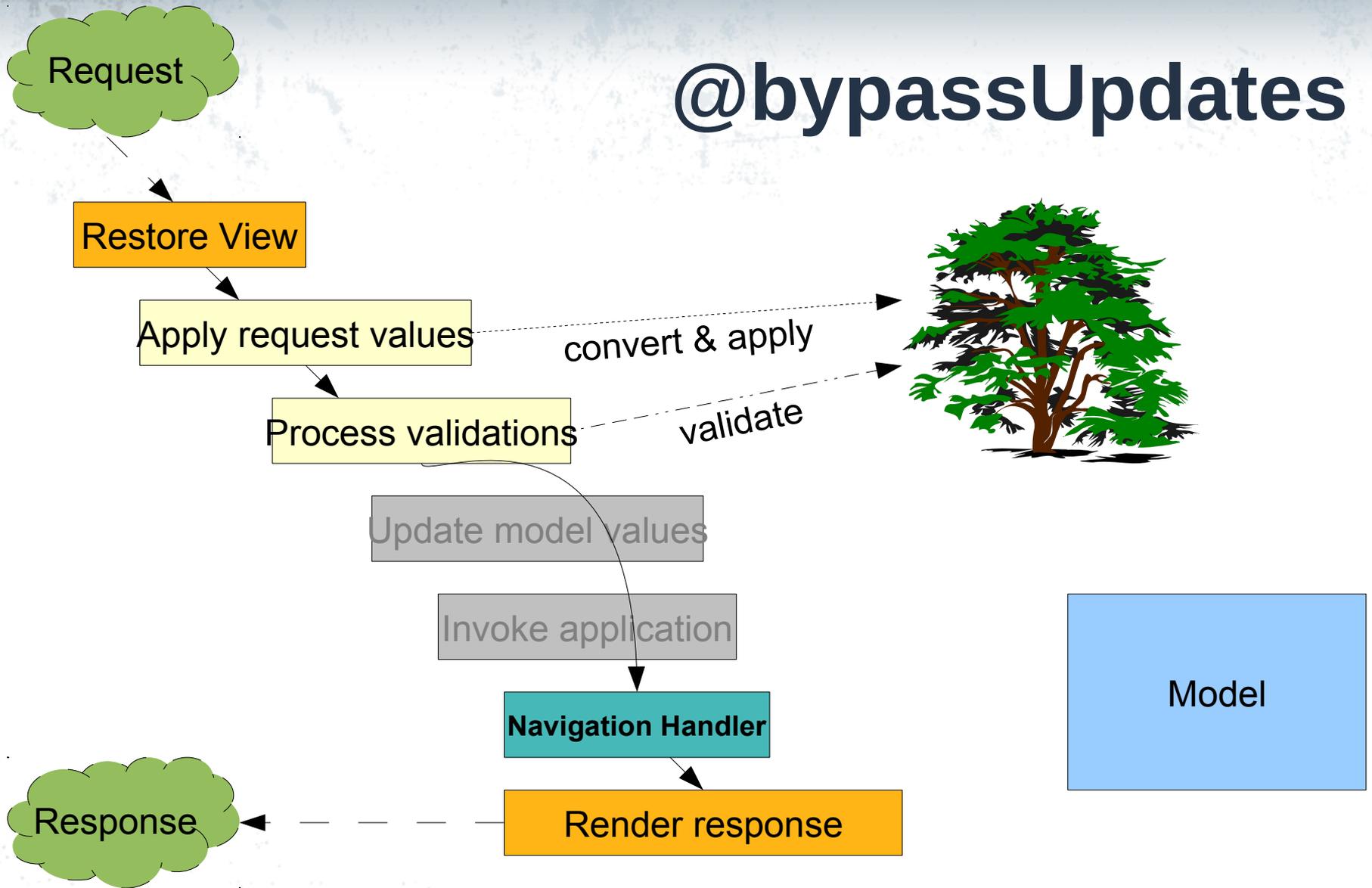
```
◆ <a4j:attachQueue name="queue1">  
  <rich:autocomplete ... />  
</a4j:attachQueue>
```

# Limiting Life-Cycle

# @immediate



# @bypassUpdates



# Rich-Component Set

- arizona
- Alabama
- Alaska
- Arizona**
- Arkansas

- File
- Links
- New
- Open
- Save As...
- Close
- Exit

- Group 1
  - Item 1.1
  - Item 1.2
  - Item 1.3
- Group 2
- Group 3

- USA
- United Kingdom
- CBS Records
- Virgin records
- Polydor
  - Bee Gees - One night only - 1998
  - Andrea Bocelli - Romanza - 1996
  - Van Morrison - Tupelo Honey - 1971

#	Vendor	Model	Price	Mileage	VIN	
45	Nissan	Maxima	21547	61689.0	HRSWGTRLSJZTXEPJJ	✗
			43972	6697.0	CVLTRXKVPYIAMDBAS	✗
			26281	56112.0	BNVJTCSJHSFNUJEKY	✗
			49672	12228.0	XQSOALXBZWWUIWQBA	✗
			20853	66615.0	FMEGMSCSBXEELHREG	✗
			37519	72882.0	HRPFMUMRPVHROFCCG	✗
			19512	77042.0	FOKMLWKSJHOJKNFEV	✗
			48435	12823.0	SBYWATLHJNHYZXZWS	✗
			41296	50733.0	NIUKTZTFEHCBRFFEB	✗
			26189	37500.0	KQSTMNDWPTPQJREW	✗
			28645	73694.0	GAGHJYMWQFRWEOGAY	✗
			32838	40197.0	CHFPQDCTCKPTBLQOW	✗
			41262	59568.0	BGPPWUBCQKWSKXZCK	✗
			32622	28724.0	NHZVKRWPVNMUJUNUU	✗
			59	34937.0	TBVOGSDJQBQWCZPF	✗

Cars marketplace				
vendor	Model	Mileage	VIN Code	Items stock
Chevrolet	Tahoe	18922.0	MRCVNYSEKWJLC	RXVXKIM
Chevrolet	Tahoe	16603.0	JGWHWTNXGRKE	INLJNQ
Chevrolet	Tahoe	36601.0	ENFWJBKDCQYM	UBFUEIT
Chevrolet	Tahoe	49508.0	IJOIMKRLSFKCCL	JXJOIYS
Ford	Taurus	30436.0	KOVVYNYZZHBWS	RWTDPZ
Ford	Taurus	23624.0	PHEIGWXTXRISYH	JYEYWAG
<b>Ford</b>	<b>Taurus</b>	<b>7274.0</b>	<b>YYWBTHJGQQDH</b>	<b>EONBOEI</b>
Ford	Taurus	19031.0	ESOCQVNZEKSXV	JMOQTYP
Ford	Taurus	10525.0	CMZMINTCMGTJC	NQBHRK
Ford	Taurus	56563.0	LTJWCKRLUIQIZD	BSEDAHQ
Ford	Taurus	35988.0	IXUQYXKVACQXB	AYTTNJH
Ford	Taurus	55664.0	YVBL SYRKVNPTZ	RI MPVZ

0 73 100 73

# Rich-Component Set

- Server-Side
  - Listeners
- Client-Side
  - Event Handlers
  - JavaScript API
  - Component Control

# Rich-Component Set

- Skinnability
  - Components richly marked by CSS classes
  - Additional classes definition
- Standard Component Skinning

Standard components skinning

*All the controls below is just standard JSF components skinned with Rich Faces:*

---

Enter Name:

Enter you interests:

Choose your favourite color

---

[Action Link](#)



## Newcomings in 4.0

# Push

```
@Qualifier  
@JmsDestination(jndiName = "jms/chat")  
public @interface ChatTopic {}
```

```
@Inject @ChatTopic  
TopicPublisher chat;
```

```
void sendMessage() {  
    chat.publish(new Message(...));  
}
```

```
<a4j:push address="chat" render="chatPanel" />
```

# Bean Validation Integration (JSR-303)

```
@Entity
public class Person {

    @Size(min=3, max=12)
    private String name = null;
    @Email
    private String email = null;
    @Min(value = 18)
    @Max(value = 99)
    private Integer age;

    ...

}
```

# Client-Side Bean Validation

```
<h:outputText value="Name:" />  
<h:inputText value="#{person.name}" id="name">  
  ◆ <rich:validator />  
</h:inputText>  
<rich:message for="name" />
```

Name:	<input type="text" value="Me"/>	✘ size must be between 3 and 12
Email	<input type="text" value="bad@email"/>	✘ Bad email
Age	<input type="text"/>	
I agree the terms	<input checked="" type="checkbox"/>	

# Google App Engine

<http://richfaces-showcase.appspot.com/>

# Component Development Kit

# CKD ~ Best Way of Developing Custom Components

- Processes component class annotations
- Generates descriptors
  - `faces-config.xml`
  - `taglib.xml`
- Validates descriptors
- `maven-cdk-plugin`

# Contribute & Follow

- Project Page: [www.jboss.org/richfaces](http://www.jboss.org/richfaces)
- IRC on Freenode: `#richfaces`
- Source: <http://anonsvn.jboss.org/repos/richfaces/>
- User forum:
  - <http://community.jboss.org/en/richfaces?view=discussions>

# Czech JBoss User Group

Now in your city!

Come to the first session on March 2<sup>nd</sup>  
at 6 p.m., FI MU



Kick-off planned: RESTeasy

# Questions & Answers

Lukáš Fryč  
12.2.2011

# **JBoss Community**

**Thank you for attention!**

Lukáš Fryč  
12.2.2011