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GETTING TO THE FUTURE OF JSF WITH RICHFACES 4.0

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JBoss, by Red Hat Inc.
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Jay Balunas



- RichFaces Project Lead
- JBoss Core Developer
- JSF 2.2 expert group
- W3C member

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The Plan...

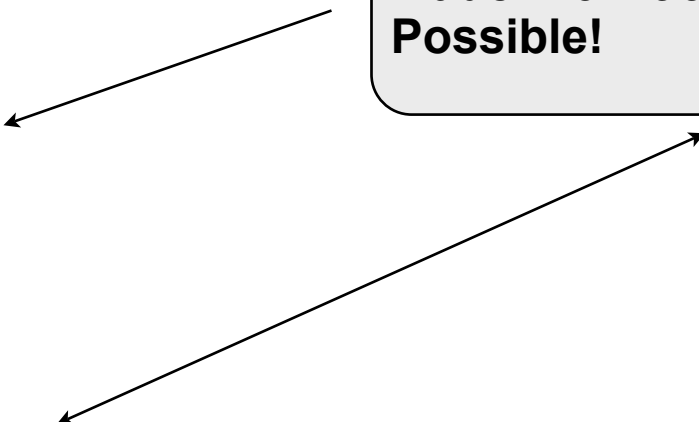
- **Base Info**
- Integrated Ajax
- Validation
- Server-Side Push
- JSF & Project Updates



JavaServer Faces (JSF)

- JSF 1.2
 - EE5
 - Extensible
- JSF 2.0
 - EE6
 - Standardized Adv. Features
 - Still Extensible

Made RichFaces, Seam, Facelets, etc... Possible!



What Features..

Annotation based
configuration

Facelets

Composite components

JSP deprecated

Bookmark GET support

Built in resource handling

Integrated Ajax

Bean validation

Event system

Exception handling

Implicit navigation

Behaviors framework

Project stages

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RichFaces 4.0 Lighting Review

- Advanced framework built on top of JSF
 - Extends JSF core
 - Full set of UI components
 - Resource Handling
 - Component development kit
 - Skinning
- Two tag libraries
 - **a4j**: Page level ajax support & utility components
 - **rich**: Self contained visual components

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The Plan...

- Base Info
- **Integrated Ajax**
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JSF 2.0 Built in Ajax

```
<h:inputText id="name_input" value="#{userBean.name}" />  
  <f:ajax event="keyup"  
    execute="@this"  
    render="name_out" />  
</h:inputText>  
  
<h:outputText id="name_out" value="#{userBean.name}" />
```



Events to trigger the request

```
<h:inputText id="name_input" value="#{userBean.name}" />  
  <f:ajax event="keyup"  
    execute="@this"  
    render="name_out" />  
</h:inputText>
```

```
<h:outputText id="name_out" value="#{userBean.name}" />
```

Component ex.	Default Event	Typically
CommandButton/Link	action	onclick
Input components	valueChange	onblur, onkeyup

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Partial View Processing

```
<h:inputText id="name_input" value="#{userBean.name}" />  
  <f:ajax event="keyup"  
    execute="@this"  
    render="name_out" />  
</h:inputText>
```

```
<h:outputText id="name_out" value="#{userBean.name}" />
```

Accepts: Component Id's, EL, @all, @this, @form, or @none

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Partial View Rendering

```
<h:inputText id="name_input" value="#{userBean.name}" />  
  <f:ajax event="keyup"  
    execute="@this"  
    render="name_out" />  
</h:inputText>  
  
<h:outputText id="name_out" value="#{userBean.name}" />
```

Accepts: Component Id's, EL, @all, @this, @form, or @none

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Execute & Render Keywords

Keyword	Execute/Render
@none	Nothing processed/rendered
@this	Current parent component only
@form	Inputs in form processed/entire form rendered
@view	All components in the view processed, and rendered



RichFaces Extensions

- `<a4j:ajax ...>`
- `<a4j:region ...>`
- `<a4j:outputPanel ...>`
- `<a4j:queue ...>`



<a4j:ajax ...>

```
<h:inputText id="name_input" value="#{userBean.name}" />  
  <a4j:ajax event="keyup"  
            execute="@this"  
            render="name_out" />  
</h:inputText>
```

Why do I need
this you say...?

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Attribute EL Resolution

NW	N	NE
W		E
SW	S	SE

```
<h:selectBooleanCheckbox id="panel_nw"  
                           value="#{panels.nw.select}" />  
  <a4j:ajax execute="@this"  
            render="#{panels.updates}" />  
</h:selectBooleanCheckbox>
```

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Shared Attributes

Attribute	Description
bypassUpdates	Skips update model and invoke application phases.
limitRender	Turns off all auto-rendered panels
status	Hook to configure an Ajax request status display
JavaScript Events	onbegin, onbeforedomupdate, oncomplete



<a4j:region ... >

<!-- Verify Address as part of a large form -->

<a4j:region>

<h:inputText id="credit_num" ... />

<h:inputText id="credit_expr" ... />

<h:inputText id="credit_sec" ... />

...

<h:commandLink action="#{checkoutBean.verifyCreditCard}"

<!--<f:ajax execute="credit_num credit_expr ..."/>-->

<a4j:ajax/>

</h:commandLink>

</a4j:region>

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<a4j:outputPanel ... >

<!-- Will always be updated with any ajax request -->

<a4j:outputPanel ajaxRendered="true">

<h:outputText value="Users : #{siteStatus.onlineUsers}" />

</a4j:outputPanel>

No need to set "render" attribute

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JSF 2.0 Request Queue

- Specification added Ajax requests
- Requests need to be queued to preserve state
- Good, but limited
 - Very few options
 - No client side api
- Can lead to traffic jams...



<a4j:queue ... >

- Logical queue on top of JSF 2
- Tuning features
 - requestDelay
 - ignoreDupResponses
 - requestGrouping
- Queue scoping
- Client side events & API



Request Delay

```
<h:form id="form">  
  <!-- Queue applied to whole form -->  
  <a4j:queue requestDelay="500"/>  
  
  <h:inputText id="username" value="#{userBean.name}" />  
    <a4j:ajax event="keyup" .../>  
  </h:inputText>  
  <h:inputText id="message" value="#{userBean.msg}" />  
    <a4j:ajax event="keyup" .../>  
  </h:inputText>  
  ...  
</h:form>
```

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Global Queue

```
<context-param>  
  <param-name>org.richfaces.queue.enabled</param-name>  
  <param-value>>true</param-value>  
</context-param>
```

View Scoped

```
<f:view>  
  <!-- Applied to whole view -->  
  <a4j:queue  
    requestDelay="500"/>  
  ...
```

Form Scoped

```
<h:form id="form">  
  <!-- Applied to whole form -->  
  <a4j:queue  
    requestDelay="1000"/>  
  ...
```

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Named Queues

```
<!-- Checking availability is costly, so send less often -->  
<a4j:queue name="available_queue" requestDelay="2000"/>  
...  
<h:inputText id="username"  
             value="#{registrationBean.username}" />  
  <a4j:ajax event="keyup" action="checkUsername" >  
    <a4j:attachQueue name="available_queue"/>  
  </a4j:ajax>  
</h:inputText>
```



Client-Side Events & API

- **Events**
 - `complete()`
 - `requestqueue()`
 - `requestdequeued()`
- **API**
 - `queue.getSize()`
 - `queue.isEmpty()`
 - `queue.set/getQueueOptions()`



The Plan...

- Base Info
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- **Validation**
- Server-Side Push
- JSF & Project Updates



What is Bean Validation

- Bean Validation JSR-303
 - Part of Java EE6
- Generic, tier independent constraints
- Custom, and composition constraints possible
- Constraint groups, and object graph validation
- Message localization
- Define constraints once, apply everywhere*



Bean Validation Sample

```
public class User {  
  
    @NotEmpty @Size(max=100)  
    private String name;  
  
    @NotEmpty  
    @Pattern(regexp = "[a-zA-Z0-9]+@[a-zA-Z0-9].*")  
    private String email;  
  
    @ValidProject  
    private String project;  
}
```



JSF 2.0 & Bean Validation

Login:

```
<h:inputText id="login" value="#{user.login}"/>  
<h:message for="login"/>
```

Email:

```
<h:inputText id="email" value="#{user.email}"/>  
<h:message for="email"/>
```

Team:

```
<h:inputText id="team" value="#{user.project}">  
  <f:validateBean disabled="true"/>  
</h:inputText>  
<h:message for="team"/>
```

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RichFaces 4.0 & BV

- Introduces **client-side validation**
 - JSF validators
 - Bean validation constraints
- JavaScript implementations
 - Validators
 - Converters
- rich:message(s) enhanced



RichFaces Client Side Validation

- JSF 2.0 Behavior
- Pairs server-side & JavaScript converter and validator
 - Supports Ajax fallback for unpaired validations
- rich:message(s) updated directly on the client

```
<h:inputText id="login" value="#{user.login}">  
  <rich:validator/>  
</h:inputText>
```

See online demo : http://bit.ly/RF_CSV

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BV Constraints & JSF Validators

Zip Code:

```
<h:inputText id="zip" value="#{addr.zip}">  
  <f:validatorLength min="5"/>  
  <rich:validator/>  
</h:inputText>  
<rich:message for="zip"/>
```

Zip Code:

```
<h:inputText id="zip" value="#{addr.zip}">  
  <rich:validator/>  
</h:inputText>  
<rich:message for="zip"/>
```

```
@NotEmpty  
@Size(min=5)  
private int zip;
```

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Additional Features

- Behavior events
- Ajax fallback
- Custom constraints*

Login:

```
<h:inputText id="login" value="#{user.login}">  
  <rich:clientValidator event="keyup"/>  
</h:inputText>  
<rich:message for="login"/>
```



Full Object Validation

- Validate all fields of a model object
 - Not just current view values
 - Adds method validations
- In the validation phase
 - Not hijacking the lifecycle



Change password

Enter new password:

Confirm the new password:

```
<h:inputSecret id="pwd1" value="#{regBean.pwd1}"/>
```

...

```
<h:inputsecret id="pwd2" value="#{regBean.pwd2}"/>
```

```
@Size(min = 5, max = 15, message = "Wrong size for password")  
private String pwd1="";  
@Size(min = 5, max = 15, message = "Wrong size for confirmation")  
private String pwd2="";
```

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```
<rich:graphValidator value="#{regBean}">
  <h:inputSecret id="pwd1" value="#{reg.pwd1}"/>
  ...
  <h:inputsecret id="pwd2" value="#{reg.pwd2}"/>
</rich:graphValidator>
```

```
@Size(min = 5, max = 15, message = "Wrong size for password")
private String pwd1="";
@Size(min = 5, max = 15, message = "Wrong size for confirmation")
private String pwd2="";

@AssertTrue(message = "Different passwords entered!")
public boolean isPasswordsEquals() {
    return password.equals(confirm);
}
```

RegBean must implement Cloneable, and Serializable

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What Is Server-Side Push

Server-events can **push** updates/data to the the browser

- Polling
 - Short & long
- Streaming
 - iFrames, & XMLHttpRequest
- WebSockets



JavaServer Faces Push

No built in push mechanism
you're on your own

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<a4j:push ...>

- Integrates with Atmosphere
 - Comet/WebSockets
 - Graceful degradation
- Java Messaging Service (JMS)
 - Reliability, flexibility, etc....



<a4j:push ...> JMS Topic

- JMS server setup
 - JNDI name: /topic/<topic>
- web.xml setup
 - JMS factory & topic namespaces
- Topics Initializer
 - Binds topic to richfaces



<a4j:push ...>

Customizable subtopic

Topic configured in JMS

```
<a4j:push address="subtopic@twPush"  
  onerror="alert(event.rf.data)"  
  ondataavailable="processData(event.rf.data)"/>
```

Supports EL as well

```
address="#{twBean.curSearch}@twPush"
```

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<a4j:push ...>

Trigger when data is available

```
<a4j:push address="update@twPush"
          onerror="alert('Error processing push')">
```

```
<a4j:ajax event="dataavailable"
          render="form1 contentPanel"
          execute="@none"/>
```

```
</a4j:push>
```

Render part of the page when called

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<a4j:push ...> Publishing

```
private TopicsContext getTopicsContext() {  
    if (topicsContext == null) {  
        topicsContext = TopicsContext.lookup();  
    }  
    return topicsContext;  
}
```

From Topic Initialization

```
public void publishData(String/Object data) {  
    try {  
        TopicKey topicKey = new TopicKey("twPush", "subtopic" );  
        getTopicsContext().publish( topicKey, data);  
    } catch (MessageException e) {  
        log.error(e.getMessage(), e);  
    }  
}
```

Must be String, or serializable to JavaScript (JSON)

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<a4j:push ...> Direct JMS

- JMS msg types
 - ObjectMessage
 - TextMessage
- Serialized and sent to client
 - Transformed in JSON



<a4j:push ...> Direct JMS

```
//Standard JMS connection setup not shown
```

```
topicConnection = cf.createConnection("guest", "guest");  
Topic topic = (Topic) ic.lookup("/topic/twPush");
```

```
...
```

```
message = session.createTextMessage();  
message.setText(data);
```

```
//Set the subtopic for the message to "foo"  
message.setStringProperty("rf_push_subtopic", "foo");
```

```
producer.send(message);
```

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JavaServer Faces Futures

- JSF 2.0/2.1
 - Released & implemented
- JSF 2.2
 - In JCP now - due end of year
 - Priorities: portals, ease of use, minor features, bugs
- JSF 3.0
 - Part of EE 7
 - No JSR yet

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RichFaces 3.3.X

- JSF 1.2
 - EE5
- Community
 - 3.3.4 SNAPSHOT
 - No release plans at this time
- Enterprise fully supported via
 - Enterprise Application Platform 4/5 (EAP)
 - Enterprise Portal Platform 4/5 (EPP)
 - Web Framework Kit 1.X (WFK)

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RichFaces 4.X

- 4.0.0.Final Released in March!!
 - JSF 2.0/2.1
- Community
 - 4.1.0 in development now
- Enterprise supported via
 - Enterprise Application Platform 6 (EAP)
 - Enterprise Portal Platform 6 (EPP)
 - Web Framework Kit 2 (WFK)

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RichFaces 4.1

- Time-boxed 6 month release plan
 - Fall 2011
- In the works:
 - Git migration
 - Mobile & HTML5 updates
 - New components
 - Seam-forged integration
 - Sandbox & CDK process
 - and more...

Plus of course:
bug fixes &
stabilization

rich:editor
rich:notify
rich:picklist
rich:scheduler
etc....

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Rich Components!

Edit Find Filter Search

Flag	State Name	State Capital	Time Zone
	Maine	Augusta	GMT-5
	Maryland	Annapolis	GMT-5
	Massachusetts	Boston	GMT-5

Available Items:

- Open
- Save
- Save All
- Delete

Currently Active Items:






- Create Folder
- Create Doc
- Find

Copy all, Copy, Remove, Remove All

Daniel Defo, Edgar Allan Poe, Plays, Politian, Short stories, Poetry, Henry Wadsworth Longfellow

First, Up, Down, Last

a

	Atlanta	Georgia
	Augusta	Maine
	Annapolis	Maryland
	Albany	New York
	Austin	Texas

File Links

New, Open, Save As..., Close, Exit

Save, Save All

June, 2010

Sun	Mon	Tue	Wed	Thu	Fri	Sat
23	30	31	1	2	3	4
24	6	7	8	9	10	11
25	13	14	15	16	17	18
26	20	21	22	23	24	25
27	27	28	29	30	1	2
28	4	5	6	7	8	9

Today Apply

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Ajax Action

Ajax Queue

Ajax Output/Containers

Validation newData Iteration new

a4j:repeat

rich:dataTable ✓

rich:extendedDataTable

rich:collapsibleSubTable

rich:dataScroller

rich:list

rich:dataGrid

Trees newOutput/Panels new

Menus

Inputs and Selects

Drag and Drop newMiscellaneous new**Data Table Basic**

Data Table Styling

Data Table Sorting

Data Table Filtering

Data Table Edit

This example shows a simple master-detail table implemented using rich:dataTable and rich:collapsibleSubTable components.

	Expenses			subtotals
	Meals	Hotels	Transport	
San Jose				
25-Aug-97	\$37.74	\$112.00	\$45.00	
26-Aug-97	\$27.28	\$112.00	\$45.00	
	\$65.02	\$224.00	\$90.00	\$379.02
Seattle				
27-Aug-97	\$96.25	\$109.00	\$36.00	
28-Aug-97	\$35.00	\$109.00	\$36.00	
	\$131.25	\$218.00	\$72.00	\$421.25
Totals	\$196.27	\$442.00	\$162.00	\$800.27

[View Source](#)[View ReportBean Source](#)[View ExpenseReport Source](#)[View ExpenseReportRecord Source](#)[View ExpenseReportRecordItem Source](#)<http://richfaces.org/showcase>

Getting Started

- Project Page: <http://richfaces.org>
- 4.0.0.Final Downloads
 - http://bit.ly/RF_Downloads
- Getting Started Guide
 - http://bit.ly/RH_Getting_Started
- User Forums & Wiki
 - http://bit.ly/RF_User_Space
- RichFaces Bug Tracker
 - http://bit.ly/RF_Jira

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Getting Involved

- Developer Forums & Wiki
 - http://bit.ly/RF_Dev_Space
- Development Guide
 - http://bit.ly/RF_Dev_Setup
- Anonymous SVN
 - http://bit.ly/RF_SVN
- Build Options
 - http://bit.ly/RF_Build_Options
- Hudson CI Server
 - http://bit.ly/RF_Hudson_CI

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More Way To Connect

- Project Twitter Account
 - <http://twitter.com/richfaces>
- Project Calendar
 - http://bit.ly/RF_Calendar
- IRC
 - #richfaces @ irc.freenode.net
- Team Meetings (open to all)
 - http://bit.ly/RF_Team_Mtgs

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Wrap up and Q&A

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