Component Reference

A reference guide to the components of the RichFaces 4 *(draft)* framework

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Introduction

This book is a guide to the various components available in the RichFaces 4.0 framework. It includes descriptions of the role of the components, details on how best to use them, coded examples of their use, and basic references of their properties and attributes.

For full in-depth references for all component classes and properties, refer to the *API Reference* available from the RichFaces website.

1.1. Libraries

The RichFaces framework is made up of two tag libraries: the `a4j` library and the `rich` library. The `a4j` tag library represents Ajax4jsf, which provides page-level Ajax support with core Ajax components. This allows developers to make use of custom Ajax behavior with existing components. The `rich` tag library provides Ajax support at the component level instead, and includes ready-made, self-contained components. These components don't require additional configuration in order to send requests or update.

Ajax support

All components in the `a4j` library feature built-in Ajax support, so it is unnecessary to add the `<a4j:support>` behavior.

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Common Ajax attributes

The Ajax components in the `a4j` library share common attributes to perform similar functionality. Most RichFaces components in the `rich` library that feature built-in Ajax support share these common attributes as well.

Most attributes have default values, so they need not be explicitly set for the component to function in its default state. These attributes can be altered to customize the behavior of the component if necessary.

2.1. Rendering

2.1.1. `render`

The `render` attribute provides a reference to one or more areas on the page that need updating after an Ajax interaction. It uses the `UIComponent.findComponent()` algorithm to find the components in the component tree using their `id` attributes as a reference. Components can be referenced by their `id` attribute alone, or by a hierarchy of components' `id` attributes to make locating components more efficient. *Example 2.1, "render example"* shows both ways of referencing components. Each command button will correctly render the referenced panel grids, but the second button locates the references more efficiently with explicit hierarchy paths.

Example 2.1. render example

```
<h:form id="form1">
    <a4j:commandButton value="Basic reference" render="infoBlock, infoBlock2" />
                                        <a4j:commandButton         value="Specific
 reference" render=":infoBlock,:sv:infoBlock2" />
</h:form>

<h:panelGrid id="infoBlock">
    ...
</h:panelGrid>

<f:subview id="sv">
    <h:panelGrid id="infoBlock2">
        ...
    </h:panelGrid>
</f:subview>
```

The value of the `render` attribute can also be an expression written using JavaServer Faces' Expression Language (EL); this can either be a Set, Collection, Array, or String.

`rendered` attributes

A common problem with using `render` occurs when the referenced component has a `rendered` attribute. JSF does not mark the place in the browser's Document Object Model (DOM) where the rendered component would be placed in case the `rendered` attribute returns `false`. As such, when RichFaces sends the render code to the client, the page does not update as the place for the update is not known.

To work around this issue, wrap the component to be rendered in an `<a4j:outputPanel>` with `layout="none"`. The `<a4j:outputPanel>` will receive the update and render the component as required.

2.1.2. `ajaxRendered`

A component with `ajaxRendered="true"` will be re-rendered with *every* Ajax request, even when not referenced by the requesting component's `render` attribute. This can be useful for updating a status display or error message without explicitly requesting it.

Rendering of components in this way can be repressed by adding `limitRender="true"` to the requesting component, as described in *Section 2.1.3, "limitRender"*.

2.1.3. `limitRender`

A component with `limitRender="true"` specified will *not* cause components with `ajaxRendered="true"` to re-render, and only those components listed in the `render` attribute will be updated. This essentially overrides the `ajaxRendered` attribute in other components.

Example 2.3, "Data reference example" describes two command buttons, a panel grid rendered by the buttons, and an output panel showing error messages. When the first button is clicked, the output panel is rendered even though it is not explicitly referenced with the `render` attribute. The second button, however, uses `limitRender="true"` to override the output panel's rendering and only render the panel grid.

Example 2.2. Rendering example

```
<h:form id="form1">
    <a4j:commandButton value="Normal rendering" render="infoBlock" />
                                    <a4j:commandButton         value="Limited
 rendering" render="infoBlock" limitRender="true" />
</h:form>

<h:panelGrid id="infoBlock">
    ...
</h:panelGrid>

<a4j:outputPanel ajaxRendered="true">
```

```
    <h:messages />
</a4j:outputPanel>
```

2.2. Queuing and traffic control

2.2.1. `queue`

The `queue` attribute defines the name of the queue that will be used to schedule upcoming Ajax requests. Typically RichFaces does not queue Ajax requests, so if events are produced simultaneously they will arrive at the server simultaneously. This can potentially lead to unpredictable results when the responses are returned. The `queue` attribute ensures that the requests are responded to in a set order.

A queue name is specified with the `queue` attribute, and each request added to the named queue is completed one at a time in the order they were sent. In addition, RichFaces intelligently removes similar requests produced by the same event from a queue to improve performance, protecting against unnecessary traffic flooding and

2.2.2. `requestDelay`

The `requestDelay` attribute specifies an amount of time in milliseconds for the request to wait in the queue before being sent to the server. If a similar request is added to the queue before the delay is over, the original request is removed from the queue and not sent.

2.2.3. `ignoreDupResponses`

When set to `true`, the `ignoreDupResponses` attribute causes responses from the server for the request to be ignored if there is another similar request in the queue. This avoids unnecessary updates on the client when another update is expected. The request is still processed on the server, but if another similar request has been queued then no updates are made on the client.

2.3. Data processing

RichFaces uses a form-based approach for sending Ajax requests. As such, each time a request is sent the data from the requesting component's parent JSF form is submitted along with the XMLHTTPRequest object. The form data contains values from the input element and auxiliary information such as state-saving data.

2.3.1. `execute`

The `execute` attribute allows JSF processing to be limited to defined components. To only process the requesting component, `execute="@this"` can be used.

2.3.2. `immediate`

If the `immediate` attribute is set to `true`, the default ActionListener is executed immediately during the Apply Request Values phase of the request processing lifecycle, rather than waitingfor

the Invoke Application phase. This allows some data model values to be updated regardless of whether the Validation phase is successful or not.

2.3.3. `bypassUpdates`

If the `bypassUpdates` attribute is set to `true`, the Update Model phase of the request processing lifecycle is bypassed. This is useful if user input needs to be validated but the model does not need to be updated.

2.4. Action and navigation

The `action` and `actionListener` attributes can be used to invoke action methods and define action events.

2.4.1. `action`

The `action` attribute is a method binding that points to the application action to be invoked. The method can be activated during the Apply Request Values phase or the Invoke Application phase of the request processing lifecycle.

The method specified in the `action` attribute must return `null` for an Ajax response with a partial page update.

2.4.2. `actionListener`

The `actionListener` attribute is a method binding for `ActionEvent` methods with a return type of `void`.

2.5. Events and JavaScript interactions

RichFaces allows for Ajax-enabled JSF applications to be developed without using any additional JavaScript code. However it is still possible to invoke custom JavaScript code through Ajax events using event listeners.

2.5.1. `submit`

The `submit` event attribute invokes the event listener *before* the Ajax request is sent. The request is canceled if the event listener defined for `submit` event returns `false`.

2.5.2. `begin`

The `begin` event attribute invokes the event listener *after* the Ajax request is sent.

2.5.3. `click`

The `click` event attribute functions similarly to the `submit` event attribute for those components that can be clicked, such as `<a4j:commandButton>` and `<a4j:commandLink>`. It invokes the

defined JavaScript before the Ajax request, and the request will be canceled if the defined code returns `false`.

2.5.4. `success`

The `success` event attribute invokes the event listener after the Ajax response has been returned but *before* the DOM tree of the browser has been updated.

2.5.5. `complete`

The `complete` event attribute invokes the event listener after the Ajax response has been returned *and* the DOM tree of the browser has been updated.

Reference consistency

The code is registered for further invocation of the XMLHTTP request object before an Ajax request is sent. As such, using JSF Expression Language (EL) value binding means the code will not be changed during processing of the request on the server. Additionally the `complete` event attribute cannot use the `this` keyword as it will not point to the component from which the Ajax request was initiated.

2.5.6. `error`

The `error` event attribute invokes the event listener when an error has occurred during Ajax communications.

2.5.7. `data`

The `data` event attribute allows the use of additional data during an Ajax call. JSF Expression Language (EL) can be used to reference the property of the managed bean, and its value will be serialized in JavaScript Object Notation (JSON) and returned to the client side. The property can then be referenced through the `data` variable in the event attribute definitions. Both primitive types and complex types such as arrays and collections can be serialized and used with `data`.

Example 2.3. Data reference example

```
<a4j:commandBut value="Upda data="#{userBean.name}" oncomplete="showTheName(data.name)"
>
```

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Common features

This chapter covers those attributes and features that are common to many of the components in the tag libraries.

3.1. Positioning and appearance of components

A number of attributes relating to positioning and appearance are common to several components.

`disabled`
: Specifies whether the component is disabled, which disallows user interaction.

`focus`
: References the `id` of an element on which to focus after a request is completed on the client side.

`height`
: The height of the component in pixels.

`dir`
: Specifies the direction in which to display text that does not inherit its writing direction. Valid values are `LTR` (left-to-right) and `RTL` (right-to-left).

`style`
: Specifies Cascading Style Sheet (CSS) styles to apply to the component.

`styleClass`
: Specifies one or more CSS class names to apply to the component.

`width`
: The width of the component in pixels.

3.2. Calling available JavaScript methods

Client-side JavaScript methods can be called using component events. These JavaScript methods are defined using the relevant event attribute for the component tag. Methods are referenced through typical Java syntax within the event attribute, while any parameters for the methods are obtained through the `data` attribute, and referenced using JSF Expression Language (EL). *Example 2.3, "Data reference example"* a simple reference to a JavaScript method with a single parameter.

Refer to *Section 2.5, "Events and JavaScript interactions"* or to event descriptions unique to each component for specific usage.

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Part I. Ajax control components

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Actions

This chapter details the basic components that respond to a user action and submit an Ajax request.

4.1. <a4j:ajax>

The <a4j:ajax> component allows Ajax capability to be added to any non-Ajax component. It is placed as a direct child to the component that requires Ajax support. The <a4j:ajax> component uses the common attributes listed in *Chapter 2, Common Ajax attributes*.

Attaching JavaScript functions

When attaching the <a4j:ajax> component to non-Ajax JavaServer Faces command components, such as <h:commandButton> and <h:commandLink>, it is important to set disabledDefault="true". If this attribute is not set, a non-Ajax request is sent after the Ajax request and the page is refreshed unexpectedly.

Example 4.1. <a4j:ajax> example

```
<h:panelGrid columns="2">
    <h:inputText id="myinput" value="#{userBean.name}">
        <a4j:ajax event="keyup" render="outtext" />
    </h:inputText>
    <h:outputText id="outtext" value="#{userBean.name}" />
</h:panelGrid>
```

4.1.1. Reference data

- *component-type*: org.ajax4jsf.Ajax
- *component-class*: org.ajax4jsf.component.html.HtmlAjaxSupport
- *component-family*: org.ajax4jsf.Ajax
- *renderer-type*: org.ajax4jsf.components.AjaxSupportRenderer

4.2. <a4j:actionParam>

The <a4j:actionParam> behavior combines the functionality of the JavaServer Faces (JSF) components <f:param> and <f:actionListener>.

4.2.1. Basic usage

Basic usage of the `<a4j:actionParam>` requires three main attributes:

- `name`, for the name of the parameter;
- `value`, for the initial value of the parameter; and
- `assignTo`, for defining the bean property. The property will be updated if the parent command component performs an action event during the *Process Request* phase.

Example 4.2, "<a4j:actionParam> example" shows a simple implementation along with the accompanying managed bean.

Example 4.2. `<a4j:actionParam>` example

```
<h:form id="form">
    <a4j:commandButton value="Set name to Alex" reRender="rep">

<a4j:actionparamname="username"value="Alex"assignTo="#{actionparamBean.name}"/
>
    </a4j:commandButton>
    <h:outputText id="rep" value="Name: #{actionparamBean.name}"/>
</h:form>
```

```
public class ActionparamBean {
    private String name = "John";

    public String getName() {
        return name;
    }

    public void setName(String name) {
        this.name = name;
    }
}
```

When the **Set name to Alex** button is pressed, the application sets the `name` parameter of the bean to `Alex`, and displays the name in the output field.

4.2.2. Interoperability

The `<a4j:actionParam>` behavior can be used with non-Ajax components in addition to Ajax components. In this way, data model values can be updated without an JavaScript code on the server side.

The `converter` attribute can be used to specify how to convert the value before it is submitted to the data model. The property is assigned the new value during the *Update Model* phase.

Validation failure

If the validation of the form fails, the *Update Model* phase will be skipped and the property will not be updated.

Variables from JavaScript functions can be used for the `value` attribute. In such an implementation, the `noEscape` attribute should be set to `true`. Using `noEscape="true"`, the `value` attribute can contain any JavaScript expression or JavaScript function invocation, and the result will be sent to the server as the `value` attribute.

4.2.3. Reference data

- *`component-type`*: `org.ajax4jsf.ActionParameter`
- *`component-class`*: `org.ajax4jsf.component.html.HTMLActionParameter`

4.3. `<a4j:commandButton>`

The `<a4j:commandButton>` is similar to the JavaServer Faces (JSF) component `<h:commandButton>`, but additionally includes Ajax support. When the command button is clicked it submits an Ajax form, and when a response is received the command button can be dynamically rendered.

Figure 4.1. `<a4j:commandButton>`

4.3.1. Basic usage

The `<a4j:commandButton>` requires only the `value` and `render` attributes to function. The `value` attribute specifies the text of the button and the `render` attribute specifies which areas are to be updated. The `<a4j:commandButton>` uses the `click` event instead of the `submit` event, but otherwise uses all common Ajax attributes as listed in *Chapter 2, Common Ajax attributes*.

Set `disabledDefault="true"`

When attaching a JavaScript function to a `<a4j:commandButton>` with the help of a `<rich:componentControl>`, do not use the `attachTo` attribute of `<rich:componentControl>`. The attribute adds event handlers using `Event.observe` but `<a4j:commandButton>` does not include this event.

4.3.2. Reference data

- *component-type*: `org.ajax4jsf.CommandButton`
- *component-class*: `org.ajax4jsf.component.html.HtmlAjaxCommandButton`
- *component-family*: `javax.faces.Command`
- *renderer-type*: `org.ajax4jsf.components.AjaxCommandButtonRenderer`

4.4. `<a4j:commandLink>`

The `<a4j:commandLink>` is similar to the JavaServer Faces (JSF) component `<h:commandLink>`, but additionally includes Ajax support. When the command link is clicked it generates an Ajax form submit, and when a response is received the command link can be dynamically rendered.

Figure 4.2. `<a4j:commandLink>`

4.4.1. Basic usage

The `<a4j:commandLink>` requires only the `value` and `render` attributes to function. The `value` attribute specifies the text of the link and the `render` attribute specifies which areas are to be updated. The `<a4j:commandLink>` uses the `click` event instead of the `submit` event, but otherwise uses all common Ajax attributes as listed in *Chapter 2, Common Ajax attributes*.

4.4.2. Reference data

- *component-type*: `org.ajax4jsf.CommandLink`
- *component-class*: `org.ajax4jsf.component.html.HtmlAjaxCommandLink`
- *component-family*: `javax.faces.Command`
- *renderer-type*: `org.ajax4jsf.components.AjaxCommandLinkRenderer`

4.5. `<rich:componentControl>`

The `<rich:componentControl>` allows JavaScript API functions to be called on components after defined events. Initialization variants and activation events can be customized, and parameters can be passed to the target component.

4.5.1. Basic usage

The `event`, `for`, and `operation` attributes are all that is required to attach JavaScript functions to the parent component. The `event` attribute specifies the event that triggers the JavaScript API

function call. The `for` attribute defines the target component, and the `operation` attribute specifies the JavaScript function to perform.

Example 4.3. `<rich:componentControl>` basic usage

```
<h:commandButton value="Show Modal Panel">
    <!--componentControl is attached to the commandButton-->
   <rich:componentControl for="ccModalPanelID" event="click" operation="show"/>
</h:commandButton>
```

The example contains a single command button, which when clicked shows the modal panel with the identifier `ccModalPanelID`.

4.5.2. Attaching to a component

The `attachTo` attribute can be used to attach the event to a component other than the parent component. If no `attachTo` attribute is supplied, the `<rich:componentControl>` component's parent is used, as in *Example 4.3, "<rich:componentControl> basic usage"*.

Example 4.4. Attaching `<rich:componentControl>` to a component

```
<rich:componentControl attachTo="doExpandCalendarID" event="click" operation="Expand" for="ccCalendarID"
>
```

In the example, the `click` event of the component with the identifier `ccCalendarID` will trigger the `Expand` operation for the component with the identifier `doExpandCalendarID`.

4.5.3. Parameters and JavaScript

The operation can receive parameters either through the `params` attribute, or by using `<f:param>` elements.

Example 4.5. Using parameters

The `params` attribute

```
<rich:componentControl name="fewer" event="rowclick" for="menu" operation="show" params="#{car.model}"/
>
```

`<f:param>` elements

```
<rich:componentControl event="rowclick" for="menu" operation="show">
```

```
    <f:param value="#{car.model}" name="model"/>
</rich:componentControl>
```

The `name` attribute can be used to define a normal JavaScript function that triggers the specified operation on the target component.

4.5.4. Timing

The `attachTiming` attribute can determine the page loading phase during which the `<rich:componentControl>` is attached to the source component:

`immediate`
: attached during execution of the script.

`available`
: attached after the target component is initialized.

`load`
: attached after the page is loaded.

4.5.5. Reference data

- *`component-type`*: `org.richfaces.ComponentControl`
- *`component-class`*: `org.richfaces.component.html.HtmlComponentControl`
- *`component-family`*: `org.richfaces.ComponentControl`
- *`renderer-type`*: `org.richfaces.ComponentControlRenderer`
- *`tag-class`*: `org.richfaces.taglib.ComponentControlTag`

4.6. `<a4j:jsFunction>`

The `<a4j:jsFunction>` component allows Ajax requests to be performed directly from JavaScript code, and server-side data to be invoked and returned in JavaScript Object Notation (JSON) format to use in client-side JavaScript calls.

4.6.1. Basic usage

The `<a4j:jsFunction>` component has all the common Ajax action attributes as listed in *Chapter 2, Common Ajax attributes*; the `action` and `actionListener` attributes can be invoked and parts of the page can be re-rendered after a successful call to the JavaScript function. *Example 4.6, "<a4j:jsFunction> example"* shows how an Ajax request can be initiated from the JavaScript and a partial page update performed. The JavaScript function can be invoked with the data returned by the Ajax response.

Example 4.6. `<a4j:jsFunction>` example

```
<h:form>
    ...
<a4j:jsFunction name="callScript" ajaxSingle="true" oncomplete="myScript(data.subProperty1,
 data.subProperty2)">
        <a4j:actionParam name="param_name" assignTo="#{bean.someProperty2}"/>
    </a4j:jsFunction>
    ...
</h:form>
```

4.6.2. Parameters and JavaScript

The `<a4j:jsFunction>` component allows the use of the `<a4j:actionParam>` component or the JavaServer Faces `<f:param>` component to pass any number of parameters for the JavaScript function.

The `<a4j:jsFunction>` component is similar to the `<a4j:commandButton>` component, but it can be activated from the JavaScript code. This allows some server-side functionality to be invoked and the returned data to subsequently be used in a JavaScript function invoked by the `complete` event attribute. In this way, the `<a4j:jsFunction>` component can be used instead of the `<a4j:commandButton>` component.

4.6.3. Reference data

- *`component-type`*: `org.ajax4jsf.Function`
- *`component-class`*: `org.ajax4jsf.component.html.HtmlajaxFunction`
- *`component-family`*: `org.ajax4jsf.components.ajaxFunction`
- *`renderer-type`*: `org.ajax4jsf.components.ajaxFunctionRenderer`

4.7. `<a4j:poll>`

The `<a4j:poll>` component allows periodical sending of Ajax requests to the server. It is used for repeatedly updating a page at specific time intervals.

4.7.1. Timing options

The `interval` attribute specifies the time in milliseconds between requests. The default for this value is 1000 ms (1 second).

The `timeout` attribute defines the response waiting time in milliseconds. If a response isn't received within the timeout period, the connection is aborted and the next request is sent. By default, the timeout is not set.

The `<a4j:poll>` component can be enabled and disabled using the `enabled` attribute. Using Expression Language (EL), the `enabled` attribute can point to a bean property to apply a particular attribute value.

4.7.2. Reference data

- *`component-type`*: `org.ajax4jsf.Poll`
- *`component-class`*: `org.ajax4jsf.component.html.AjaxPoll`
- *`component-family`*: `org.ajax4jsf.components.AjaxPoll`
- *`renderer-type`*: `org.ajax4jsf.components.AjaxPollRenderer`

4.8. `<a4j:push>`

The `<a4j:push>` component periodically performs an Ajax request to the server, simulating "push" functionality. While it is not strictly pushing updates, the request is made to minimal code only, not to the JSF tree, checking for the presence of new messages in the queue. The request registers `EventListener`, which receives messages about events, but does not poll registered beans. If a message exists, a complete request is performed. This is different from the `<a4j:poll>` component, which performs a full request at every interval.

4.8.1. Timing options

The `interval` attribute specifies the time in milliseconds between checking for messages. The default for this value is 1000 ms (1 second). It is possible to set the interval value to `0`, in which case it is constantly checking for new messages.

The `timeout` attribute defines the response waiting time in milliseconds. If a response isn't received within the timeout period, the connection is aborted and the next request is sent. By default, the timeout is not set. In combination with the `interval` attribute, checks for the queue state can short polls or long connections.

4.8.2. Reference data

- *`component-type`*: `org.ajax4jsf.Push`
- *`component-class`*: `org.ajax4jsf.component.html.AjaxPush`
- *`component-family`*: `org.ajax4jsf.components.AjaxPush`
- *`renderer-type`*: `org.ajax4jsf.components.AjaxPushRenderer`

Resources

This chapter covers those components used to handle and manage resources and beans.

5.1. `<a4j:keepAlive>`

The `<a4j:keepAlive>` component allows the state of a managed bean to be retained between Ajax requests.

Managed beans can be declared with the `request` scope in the `faces-config.xml` configuration file, using the `<managed-bean-scope>` tag. Any references to the bean instance after the request has ended will cause the server to throw an illegal argument exception (`IllegalArgumentException`). The `<a4j:keepAlive>` component avoids this by maintaining the state of the whole bean object for subsequent requests.

5.1.1. Basic usage

The `beanName` attribute defines the request-scope managed bean name to keep alive.

Example 5.1. `<a4j:keepAlive>` example

```
<a4j:keepAlive beanName="testBean" />
```

5.1.2. Non-Ajax requests

The `ajaxOnly` attribute determines whether or not the value of the bean should be available during non-Ajax requests; if `ajaxOnly="true"`, the request-scope bean keeps its value during Ajax requests, but any non-Ajax requests will re-create the bean as a regular request-scope bean.

5.1.3. Reference data

- *`component-type`*: `org.ajax4jsf.components.KeepAlive`
- *`component-class`*: `org.ajax4jsf.components.AjaxKeepAlive`
- *`component-family`*: `org.ajax4jsf.components.AjaxKeepAlive`

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Containers

This chapter details those components in the `a4j` tag library which define an area used as a container or wrapper for other components.

6.1. `<a4j:include>`

The `<a4j:include>` component allows one view to be included as part of another page. This is useful for applications where multiple views might appear on the one page, with navigation between the views. Views can use partial page navigation in Ajax mode, or standard JSF navigation for navigation between views.

6.1.1. Basic usage

The `viewId` attribute is required to reference the resource that will be included as a view on the page. It uses a full context-relative path to point to the resource, similar to the paths used for the `<from-view-id>` and `<to-view-id>` tags in the `faces-config.xml` JSF navigation rules.

Example 6.1. A wizard using `<a4j:include>`

The page uses `<a4j:include>` to include the first step of the wizard:

```
<h:panelGrid width="100%" columns="2">
    <a4j:keepAlive beanName="profile" />
    <rich:panel>
        <f:facet name="header">
        <h:outputText value="A wizard using a4j:include" />
        </f:facet>
        <h:form>
            <a4j:include viewId="/richfaces/include/examples/wstep1.xhtml" />
        </h:form>
    </rich:panel>
</h:panelGrid>
```

The first step is fully contained in a separate file, `wstep1.xhtml`. Subsequent steps are set up similarly with additional **Previous** buttons.

```
<ui:composition xmlns="http://www.w3.org/1999/xhtml"
      xmlns:ui="http://java.sun.com/jsf/facelets"
      xmlns:h="http://java.sun.com/jsf/html"
      xmlns:f="http://java.sun.com/jsf/core"
      xmlns:a4j="http://richfaces.org/a4j"
      xmlns:rich="http://richfaces.org/rich">

    <div style="position:relative;height:140px">
```

```
  <h:panelGrid rowClasses="s1row" columns="3" columnClasses="wfcol1,wfcol2,wfcol3">
            <h:outputText value="First Name:" />
                <h:inputText id="fn" value="#{profile.firstName}" label="First
 Name" required="true" />
            <rich:message  for="fn" />

            <h:outputText value="Last Name:" />
               <h:inputText   id="ln" value="#{profile.lastName}"   label="Last
 Name"  required="true" />
            <rich:message  for="ln" />
        </h:panelGrid>
        <div class="navPanel" style="width:100%;">
              <a4j:commandButton style="float:right" action="next" value="Next
 &gt;&gt;"/>
        </div>
    </div>
</ui:composition>
```

The navigation is defined in the `faces-config.xml` configuration file:

```
<navigation-rule>
   <from-view-id>/richfaces/include/examples/wstep1.xhtml</from-view-id>
   <navigation-case>
      <from-outcome>next</from-outcome>
      <to-view-id>/richfaces/include/examples/wstep2.xhtml</to-view-id>
   </navigation-case>
</navigation-rule>
<navigation-rule>
   <from-view-id>/richfaces/include/examples/wstep2.xhtml</from-view-id>
   <navigation-case>
      <from-outcome>previous</from-outcome>
      <to-view-id>/richfaces/include/examples/wstep1.xhtml</to-view-id>
   </navigation-case>
   <navigation-case>
      <from-outcome>next</from-outcome>
      <to-view-id>/richfaces/include/examples/finalStep.xhtml</to-view-id>
   </navigation-case>
</navigation-rule>
<navigation-rule>
   <from-view-id>/richfaces/include/examples/finalStep.xhtml</from-view-id>
   <navigation-case>
      <from-outcome>previous</from-outcome>
      <to-view-id>/richfaces/include/examples/wstep2.xhtml</to-view-id>
   </navigation-case>
</navigation-rule>
```

6.1.2. Reference data

- *component-type*: `org.ajax4jsf.Include`
- *component-class*: `org.ajax4jsf.component.html.Include`
- *component-family*: `javax.faces.Output`
- *renderer-type*: `org.ajax4jsf.components.AjaxIncludeRenderer`

6.2. `<a4j:outputPanel>`

The `<a4j:outputPanel>` component is used to group together components in to update them as a whole, rather than having to specify the components individually.

6.2.1. Panel appearance

The `layout` attribute can be used to determine how the component is rendered in HTML:

- `layout="inline"` is the default behavior, which will render the component as a pair of `<span>` tags containing the child components.
- `layout="block"` will render the component as a pair of `<div>` tags containing the child components, which will use any defined `<div>` element styles.
- `layout="none"` will render the component as a pair of `<span>` tags with an identifier equal to that of a child component. If the child component is rendered then the `<span>` are not included, leaving no markup representing the `<a4j:outputPanel>` in HTML.

Setting `ajaxRendered="true"` will cause the `<a4j:outputPanel>` to be updated with each Ajax response for the page, even when not listed explicitly by the requesting component. This can in turn be overridden by specific attributes on any requesting components.

6.2.2. Reference data

- *component-type*: `org.ajax4jsf.OutputPanel`
- *component-class*: `org.ajax4jsf.component.html.HtmlAjaxOutputPanel`
- *component-family*: `javax.faces.Panel`
- *renderer-type*: `org.ajax4jsf.components.AjaxOutputPanelRenderer`

6.3. `<a4j:region>`

The `<a4j:region>` component specifies a part of the document object model (DOM) tree to be processed on the server. The processing includes data handling during decoding, conversion,

validation, and model updating. When not using `<a4j:region>`, the entire view functions as a region.

The whole form is still submitted to the server, but only the specified region is processed. Regions can be nested, in which case only the immediate region of the component initiating the request will be processed.

6.3.1. Reference data

- *component-type*: `org.ajax4jsf.AjaxRegion`
- *component-class*: `org.ajax4jsf.component.html.HtmlAjaxRegion`
- *component-family*: `org.ajax4jsf.AjaxRegion`
- *renderer-type*: `org.ajax4jsf.components.AjaxRegionRenderer`

DRAFT

Validation

JavaServer Faces 2 provides built-in support for bean validation as per the Java Specification Request JSR-303 standard. As such, containers must validate model objects. Validation is performed at different application tiers according to annotation-based constraints. Refer to *http://jcp.org/en/jsr/detail?id=303* for further details on the JSR-303 specification.

Example 7.1, "JSR-303 validation annotations" shows an example JSF managed bean. The bean includes JSR-303 annotations for validation. Validation annotations defined in this way are registered on components bound to the bean properties, and validation is triggered in the *Process Validation* phase.

Example 7.1. JSR-303 validation annotations

```
import javax.validation.constraints.Max;
import javax.validation.constraints.Min;
import javax.validation.constraints.Pattern;
import javax.validation.constraints.Size;

@ManagedBean
@RequestScoped
public class UserBean {

   @Size(min=3, max=12)
   private String name = null;

       @Pattern(regexp   =   "^[\\w\\-]([\\.\\w])+[\\w]+@([\\w\\-]+\\.)+[a-zA-Z]
{2,4}$" , message="Bad email")
   private String email = null;

   @Min(value = 18)
   @Max(value = 99)
   private Integer age;

//...
//Getters and Setters
}
```

Requirements

Bean validation in both JavaServer Faces and RichFaces requires the *JSR-303* implementation. The implementation is bundled with JEE 6 Application Server.

If using Tomcat or another simple servlet container, add the `validation-api` Java Archive and a validation provider (such as Hibernate Validator) to your application libraries.

7.1. `<rich:validator>` client-side validation

The validation built in to JavaServer Faces 2 occurs on the server side. The `<rich:validator>` behavior adds client-side validation to a control based on registered server-side validators. It provides this validation without the need to reproduce the server-side annotations. The `<rich:validator>` behavior triggers all client validator annotations listed in the relevant managed bean.

7.1.1. Basic usage

The `<rich:validator>` behavior is added as a child element to any input control. The value of the input control must reference a managed bean. The `<rich:validator>` behavior validates the content of the input control on the client-side based on registered server-side validators included in the managed bean.

Example 7.2. Basic usage

```
<h:inputText value="#{userBean.name}">
   <rich:validator/>
</h:inputText>
```

The `<rich:validator>` behavior is added to an `<h:inputText>` control. The validator uses the registered server-side validators included in the managed bean referenced by the input control.

JSF validation tags

JSF validation tags, such as `<f:validateLength>` and `<f:validateDoubleRange>` tags, can be declared alongside `<rich:validator>` behaviors. However, because this duplicates the validation processes at both the view and model level, it is not recommended.

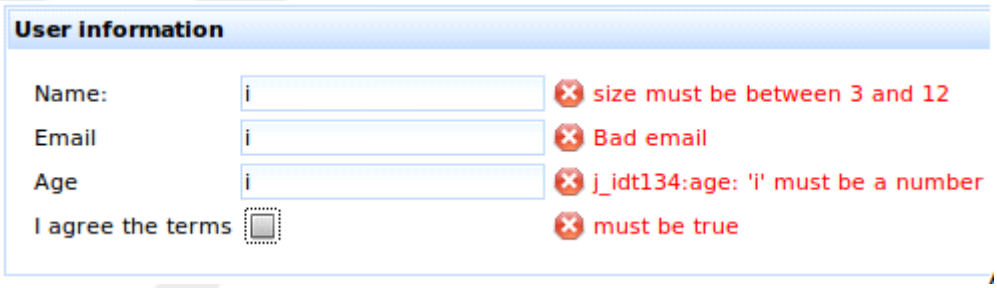
7.1.2. Messages from client-side validators

Use the `<rich:message>` and `<rich:messages>` components to display validation messages. The `for` attribute of the `<rich:message>` component references the `id` identifier of the input control being validated.

Example 7.3. Messages

```
<rich:panel header="User information">
   <h:panelGrid columns="3">

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

      <h:outputText value="Email" />
      <h:inputText value="#{validationBean.email}" id="email">
         <rich:validator />
      </h:inputText>
      <rich:message for="email" />

      <h:outputText value="Age" />
      <h:inputText value="#{validationBean.age}" id="age">
         <rich:validator />
      </h:inputText>
      <rich:message for="age" />

      <h:outputText value="I agree the terms" />
      <h:selectBooleanCheckbox value="#{validationBean.agree}" id="agree">
         <rich:validator/>
      </h:selectBooleanCheckbox>
      <rich:message for="agree" />

   </h:panelGrid>
</rich:panel>
```

Failed validation checks are reported using `<rich:message>` components. The validation annotations in the managed bean are outlined in *Example 7.1, "JSR-303 validation annotations"*.



7.1.3. Validation triggers

Use the `event` attribute to specify which event on the input control triggers the validation process. By default, the `<rich:validator>` behavior triggers validation when the input control is changed (`event="change"`).

Example 7.4. Validation triggers

```
<h:inputText value="#{userBean.name}">
   <rich:validator event="keyup"/>
</h:inputText>
```

The `event` attribute is changed to the `keyup` event, such that validation takes place after each key press.

7.1.4. Ajax fall-backs

If no client-side validation method exists for a registered server-side validator, Ajax fall-back is used. The `<rich:validator>` behavior invokes all available client-side validators. If all the client-side validators return valid, RichFaces performs an Ajax request to invoke the remaining validators on the server side.

7.1.5. Reference data

- *`component-type`*: `org.richfaces.validator`
- *`component-class`*: `org.richfaces.component.html.Htmlvalidator`
- *`component-family`*: `org.richfaces.validator`
- *`renderer-type`*: `org.richfaces.validatorRenderer`
- *`tag-class`*: `org.richfaces.taglib.validatorTag`

7.2. `<rich:graphValidator>` object validation

The `<rich:graphValidator>` component is used to wrap a set of input components related to one object. The object defined by the `<rich:graphValidator>` component can then be completely validated. The validation includes all object properties, even those which are not bound to the individual form components. Validation performed in this way allows for cross-field validation in complex forms.

Validation without model updates

The `<rich:graphValidator>` component performs a `clone()` method on the referenced bean instance during the validation phase. The cloned object is

validated and triggers any required validation messages. As such, the model object remains clean, and the lifecycle is interrupted properly after the *Process Validations* phase.

7.2.1. Basic usage

The `<rich:graphValidator>` element must wrap all the input controls that are required to validate the object. The `value` attribute names the bean for the validating object.

Example 7.5. Basic usage

The example demonstrates a simple form for changing a password. The two entered passwords must match, so a `<rich:graphValidator>` component is used for cross-field validation.

```
<h:form>
   <rich:graphValidator value="#{userBean}">
      <rich:panel header="Change password">
         <rich:messages/>
         <h:panelGrid columns="3">
            <h:outputText value="Enter new password:" />
            <h:inputSecret value="#{userBean.password}" id="pass"/>
            <rich:message for="pass"/>
            <h:outputText value="Confirm the new password:" />
            <h:inputSecret value="#{userBean.confirm}" id="conf"/>
            <rich:message for="conf"/>
         </h:panelGrid>
         <a4j:commandButton value="Store changes"
                            action="#{userBean.storeNewPassword}" />
      </rich:panel>
   </rich:graphValidator>
</h:form>
```

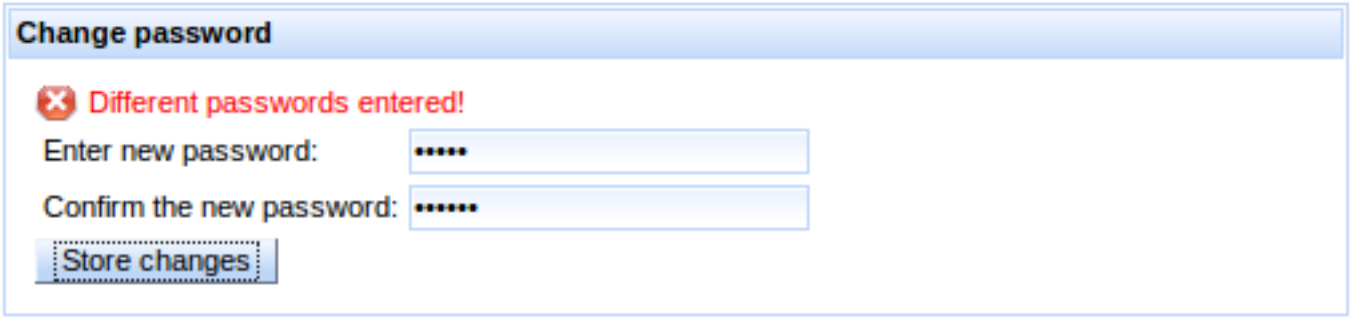
The input controls validate against the following bean:

```
@ManagedBean
@RequestScoped
public class UserBean {

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

   @AssertTrue(message = "Different passwords entered!")
   public boolean isPasswordsEquals() {
```

```
        return password.equals(confirm);
    }

    public void storeNewPassword() {
FacesContext.getCurrentInstance().addMessage(null, new FacesMessage(FacesMessage.SEVERITY_INFO, "Succesfully
 changed!", "Succesfully changed!"));
    }

    ...
}
```

When validation occurs, the whole object is validated against the annotation contstraints. The `@AssertTrue` annotation relies on the `isPasswordsEqual()` function to check whether the two entered passwords are equal.

If the entered passwords do not match, an error message is displayed:



7.2.2. Reference data

- *component-type*: `org.richfaces.graphValidator`
- *component-class*: `org.richfaces.component.html.HtmlgraphValidator`
- *component-family*: `org.richfaces.graphValidator`
- *renderer-type*: `org.richfaces.graphValidatorRenderer`
- *tag-class*: `org.richfaces.taglib.graphValidatorTag`

Processing management

This chapter covers those components that manage the processing of information, requests, and updates.

8.1. `<a4j:queue>`

The `<a4j:queue>` component manages a queue of Ajax requests to control message processing.

8.1.1. Queue size

The `size` attribute specifies the number of requests that can be stored in the queue at a time; smaller queue sizes help prevent server overloads. When the queue's size is exceeded, the `sizeExceededBehavior` determines the way in which the queue handles the requests:

- `dropNext` drops the next request currently in the queue.
- `dropNew` drops the incoming request.
- `fireNext` immediately sends the next request currently in the queue.
- `fireNew` immediately sends the incoming request.

8.1.2. `<a4j:queue>` client-side events

The `<a4j:queue>` component features several events relating to queuing actions:

- The `complete` event attribute is fired after a request is completed. The request object is passed as a parameter to the event handler, so the queue is accessible using `request.queue` and the element which was the source of the request is accessible using `this`.
- The `requestqueue` event attribute is fired after a new request has been added to the queue.
- The `requestdequeue` event attribute is fired after a request has been removed from the queue.
- The `sizeexceeded` event attribute is fired when the queue has been exceeded.
- The `submit` event attribute is fired before the request is sent.
- The `success` event attribute is fired after a successful request but before the DOM is updated on the client side.

8.1.3. Reference data

- *`renderer-type`*: `org.ajax4jsf.QueueRenderer`

- *component-class*: org.ajax4jsf.component.html.HtmlQueue
- *component-family*: org.ajax4jsf.Queue
- *tag-class*: org.ajax4jsf.taglib.html.jsp.QueueTag

8.2. <a4j:log>

The <a4j:log> component generates JavaScript that opens a debug window, logging application information such as requests, responses, and DOM changes.

8.2.1. Log monitoring

The popup attribute causes the logging data to appear in a new pop-up window if set to true, or in place on the current page if set to false. The window is set to be opened by pressing the key combination **Ctrl**+**Shift**+**L**; this can be partially reconfigured with the hotkey attribute, which specifies the letter key to use in combination with **Ctrl**+**Shift** instead of **L**.

The amount of data logged can be determined with the level attribute:

- ERROR
- FATAL
- INFO
- WARN
- ALL, the default setting, logs all data.

Example 8.1. <a4j:log> example

```
<a4j:log level="ALL" popup="false" width="400" height="200" />
```

Log renewal

The log is automatically renewed after each Ajax request. It does not need to be explicitly re-rendered.

8.2.2. Reference data

- *component-type*: org.ajax4jsf.Log
- *component-class*: org.ajax4jsf.component.html.AjaxLog

- *component-family*: org.ajax4jsf.Log
- *renderer-type*: org.ajax4jsf.LogRenderer

8.3. <a4j:status>

The <a4j:status> component displays the status of current Ajax requests; the status can be either in progress or complete.

8.3.1. Customizing the text

The startText attribute defines the text shown after the request has been started and is currently in progress. This text can be styled with the startStyle and startStyleClass attributes. Similarly, the stopText attribute defines the text shown once the request is complete, and text is styled with the stopStyle and stopStyleClass attributes. Alternatively, the text styles can be customized using facets, with the facet name set to either start or stop as required. If the stopText attribute is not defined, and no facet exists for the stopped state, the status is simply not shown; in this way only the progress of the request is displayed to the user.

Example 8.2. Basic <a4j:status> usage

```
<a4j:status startText="In progress..." stopText="Complete" />
```

8.3.2. Specifying a region

The <a4j:status> component works for each Ajax component inside the local region. If no region is defined, every request made on the page will activate the <a4j:status> component. Alternatively, the <a4j:status> component can be linked to specific components in one of two ways:

- The for attribute can be used to specify the component for which the status is to be monitored.
- With an id identifier attribute specified for the <a4j:status>, individual components can have their statuses monitored by referencing the identifier with their own status attributes.

Example 8.3. Updating a common <a4j:status> component

```
<a4j:region id="extr">
    <h:form>
        <h:outputText value="Status:" />
       <a4j:status id="commonstatus" startText="In Progress...." stopText="" />

        <a4j:region id="intr">
            <h:panelGrid columns="2">
                <h:outputText value="Name" />
```

```
                <h:inputText id="name" value="#{userBean.name}">
              <a4j:support event="keyup" reRender="out" status="commonstatus" />
                </h:inputText>

                <h:outputText value="Job" />
                <h:inputText id="job" value="#{userBean.job}">
              <a4j:support event="keyup" reRender="out" status="commonstatus" />
                </h:inputText>

                <h:panelGroup />

            </h:panelGrid>
        </a4j:region>
        <a4j:region>
            <br />
            <rich:spacer height="5" />
            <b><h:outputText id="out"
                value="Name: #{userBean.name}, Job: #{userBean.job}" /></b>
            <br />
            <rich:spacer height="5" />
            <br />
            <a4j:commandButton ajaxSingle="true" value="Clean Up Form"
                reRender="name, job, out" status="commonstatus">
              <a4j:actionparam name="n" value="" assignTo="#{userBean.name}" />
               <a4j:actionparam name="j" value="" assignTo="#{userBean.job}" />
            </a4j:commandButton>
        </a4j:region>

    </h:form>
</a4j:region>
```

8.3.3. JavaScript API

The `<a4j:status>` component can be controlled through the JavaScript API. The JavaScript API provides the following functions:

`start()`
: Start monitoring the status.

`stop()`
: Stop monitoring the status.

8.3.4. Reference data

- *`component-type`*: `org.ajax4jsf.Status`
- *`component-class`*: `org.ajax4jsf.component.html.HtmlAjaxStatus`

- *component-family*: javax.faces.Panel
- *renderer-type*: org.ajax4jsf.components.AjaxStatusRenderer

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Part II. User interface components

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Rich inputs

This chapter details rich components for user input and interaction.

9.1. `<rich:autocomplete>`

The `<rich:autocomplete>` component is an auto-completing input-box with built-in Ajax capabilities. It supports client-side suggestions, browser-like selection, and customization of the look and feel.

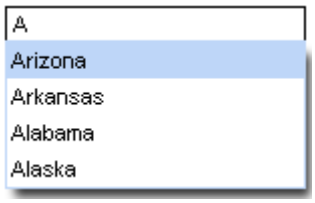


Figure 9.1. `<rich:autocomplete>`

9.1.1. Basic usage

The `value` attribute stores the text entered by the user for the auto-complete box. Suggestions shown in the auto-complete list can be specified using the `autocompleteMethod` attribute, which points to a collection of suggestions.

Example 9.1. Defining suggestion values

```
<rich:autocomplete value="#{bean.state}" autocompleteMethod="#{bean.suggestions}" />
```

9.1.2. Interactivity options

Users can type into the text field to enter a value, which also searches through the suggestion items in the drop-down box. By default, the first suggestion item is selected as the user types. This behavior can be deactivated by setting `selectFirst="false"`.

Setting `autoFill="true"` causes the combo-box to fill the text field box with a matching suggestion as the user types.

9.1.3. Customizing the filter

The `<rich:autocomplete>` component uses the JavaScript `startsWith()` method to create the list of suggestions. The filtering is performed on the client side. Alternatively, use the `clientFilter` attribute to specify a custom filtering function. The custom function must accept two parameters: the `subString` parameter is the filtering value as typed into the text box by the user,

and the `value` parameter is an item in the list of suggestions against which the `subString` must be checked. Each item is iterated through and passed to the function as the `value` parameter. The custom function must return a boolean value indicating whether the passed item meets the conditions of the filter, and the suggestion list is constructed from successful items.

Example 9.2. Customizing the filter

This example demonstrates how to use a custom filter with the `clientFilter` attribute. The custom filter determines if the sub-string is contained anywhere in the suggestion item, instead of just at the start.

```
<script>
   function customFilter(subString, value){
      if(subString.length>=1) {
         if(value.indexOf(subString)!=-1)
            return true;
      }else return false;
   };
</script>
<h:form>
   <rich:autocomplete mode="client" minChars="0" autofill="false"
                      clientFilter="customFilter"
                      autocompleteMethod="#{autocompleteBean.autocomplete}" />
</h:form>
```

9.1.4. JavaScript API

The `<rich:autocomplete>` component can be controlled through the JavaScript API. The JavaScript API provides the following functions:

`getValue()`
: Get the current value of the text field.

`setValue(newValue)`
: Set the value of the text field to the *`newValue`* string passed as a parameter.

`showPopup()`
: Show the pop-up list of completion values.

`hidePopup()`
: Hide the pop-up list.

9.1.5. Reference data

- *`component-type`*: `org.richfaces.autocomplete`
- *`component-class`*: `org.richfaces.component.html.HtmlAutocomplete`

- *component-family*: org.richfaces.autocomplete
- *renderer-type*: org.richfaces.renderkit.autocompleteRenderer
- *tag-class*: org.richfaces.taglib.autocompleteTag

9.2. <rich:calendar>

The <rich:calendar> component allows the user to enter a date and time through an in-line or pop-up calendar. The pop-up calendar can navigate through months and years, and its look and feel can be highly customized.

Figure 9.2. <rich:calendar>

9.2.1. Basic usage

Basic usage of the <rich:calendar> component requires only the value attribute, which holds the currently selected date. *Example 9.3, "Basic usage"* shows a basic declaration, with the value pointing to a bean property. The bean property holds the selected date.

Example 9.3. Basic usage

```
<rich:calendar value="#{bean.dateTest}" />
```

9.2.2. Behavior and appearance

The <rich:calendar> component is presented as a pop-up by default, appearing as a text field with a button to expand the full pop-up calendar. To render the calendar in-line on the page instead, set popup="false". This displays the full calendar without the text field or display button.

To add keyboard support for manual input, set enableManualInput="true". To disable the calendar from any user input, set disabled="true".

To change the appearance of the display button from the standard calendar icon, use the `buttonIcon` and `buttonDisabledIcon` attributes to replace the icon with a specified file. Alternatively, use the `buttonLabel` attribute to display text on the button without an icon. If `buttonLabel` is specified then both the `buttonIcon` and `buttonDisabledIcon` attributes are ignored. To hide the text field box, set `showInput="false"`.

The calendar features a **Today** button for locating today's date on the calendar. This can be set to three different values using the `todayControlMode` attribute:

- `hidden`, which does not display the button;
- `select`, the default setting, which scrolls the calendar to the current month and selects today's date; and
- `scroll`, which scrolls the calendar to the current month but does not select today's date.

To make the entire calendar read-only, set `readonly="true"`. This allows months and years to be browsed through with the arrow controls, but dates and times cannot be selected.

9.2.3. Time of day

The `<rich:calendar>` component can additionally allow a time of day to be specified with the date. After selecting a date the option to set a time becomes available. The default time can be set with the `defaultTime` attribute. If the time is altered and a new date is selected, it will not reset unless `resetTimeOnDateSelect="true"` is specified.

Support for seconds

In RichFaces 4, the `<rich:calendar>` component supports times that include seconds. Previous versions of RichFaces only supported hours and minutes.

9.2.4. Localization and formatting

Date and time strings can be formatted in a set pattern. Use standard locale formatting strings specified by *ISO 8601* (for example, `d/M/yy HH:mm a`) with the `datePattern` attribute to format date and time strings.

To set the locale of the calendar, use the `locale` attribute. The calendar will render month and day names in the relevant language. For example, to set the calendar to the US locale, specify `locale="en/US"`.

Use an application resource bundle to localize the calendar control labels. Define the following strings in the resource bundle:

- The RICH_CALENDAR_APPLY_LABEL string is the label for the **Apply** button.
- The RICH_CALENDAR_TODAY_LABEL string is the label for the **Today** button.

- The RICH_CALENDAR_CLOSE_LABEL string is the label for the **Close** button.
- The RICH_CALENDAR_OK_LABEL string is the label for the **OK** button.
- The RICH_CALENDAR_CLEAN_LABEL string is the label for the **Clean** button.
- The RICH_CALENDAR_CANCEL_LABEL string is the label for the **Cancel** button.

Alternatively, use the `org.richfaces.renderkit.calendar` resource bundle with Java Archive files (JARs) defining the same properties.

9.2.5. Using a data model

The look and feel of the `<rich:calendar>` component can be customized through the use of a data model on the server side. The component supports two different ways of loading data from the server side through defining the `mode` attribute.

When the `mode` attribute is not specified, the component uses the `client` mode. The `client` mode loads an initial portion of data within a set date range. The range can be defined by using the `preloadDateRangeBegin` and `preloadDateRangeEnd` attributes. Additional data requests are not sent.

Alternatively, with `mode="ajax"` the `<rich:calendar>` requests portions of data for rendering from a special data model. The data model can be defined through the `dataModel` attribute, which points to an object that implements the `CalendarDataModel` interface. If the `dataModel` attribute is not defined or has a value of `null`, the `ajax` mode functions the same as the `client` mode.

9.2.6. Client-side customization

Instead of using a data model, the `<rich:calendar>` component can be customized on the client-side using JavaScript. Use the `dayClassFunction` attribute to reference the function that determines the CSS style class for each day cell. Use the `dayDisableFunction` to reference the function that enables or disables a day cell. *Example 9.4, "Client-side customization"* demonstrates how client-side customization can be used to style different days in a calendar.

Example 9.4. Client-side customization

```
<style>
   .everyThirdDay {
      background-color: gray;
   }
   .weekendBold {
      font-weight: bold;
      font-style: italic;
   }
</style>
<script type="text/javascript">
```

```
   var curDt = new Date();
   function disablementFunction(day){
      if (day.isWeekend) return false;
      if (curDt==undefined){
         curDt = day.date.getDate();
      }
      if (curDt.getTime() - day.date.getTime() &lt; 0) return true;
      else return false;
   }
   function disabledClassesProv(day){
      if (curDt.getTime() - day.date.getTime() &gt;= 0) return 'rf-ca-boundary-
dates';
      var res = '';
      if (day.isWeekend) res+='weekendBold ';
      if (day.day%3==0) res+='everyThirdDay';
      return res;
   }
</script>
<rich:calendar dayDisableFunction="disablementFunction"
               dayClassFunction="disabledClassesProv"
               boundaryDatesMode="scroll" />
```

9.2.7. JavaScript API

The `<rich:calendar>` component can be controlled through the JavaScript API. The JavaScript API provides the following functions:

`showPopup()`
: Expand the pop-up calendar element.

`hidePopup()`
: Collapse the pop-up calendar element.

`switchPopup()`
: Invert the state of the pop-up calendar element.

`getValue()`
: Return the selected date value of the calendar.

`getValueAsString()`
: Return the selected date value of the calendar as a formatted string.

`setValue(newValue)`
: Set the selected date value to the *`newValue`* date passed as a parameter. If the new date is not in the currently displayed month, a request is performed to display the correct month.

`resetValue()`
: Clear the selected date value.

`today()`
: Select today's date.

`getCurrentMonth()`
: Return the number of the month currently being displayed.

`getCurrentYear()`
: Return the number of the year currently being displayed.

`showSelectedDate()`
: Show the calendar month that contains the currently selected date.

`showDateEditor()`
: Show the date editor pop-up.

`hideDateEditor()`
: Hide the date editor pop-up.

`showTimeEditor()`
: Show the time editor pop-up.

`hideTimeEditor()`
: Hide the time editor pop-up.

9.2.8. Reference data

- *`component-type`*: `org.richfaces.calendar`
- *`component-class`*: `org.richfaces.component.html.HtmlCalendar`
- *`component-family`*: `org.richfaces.calendar`
- *`renderer-type`*: `org.richfaces.renderkit.calendarRenderer`
- *`tag-class`*: `org.richfaces.taglib.calendarTag`

9.3. `<rich:fileUpload>`

The `<rich:fileUpload>` component allows the user to upload files to a server. It features multiple uploads, progress bars, restrictions on file types, and restrictions on sizes to be uploaded.

9.3.1. Basic usage

Basic usage requires the `fileUploadListener` attribute. Use the attribute to call a function on the server side after each file is uploaded.

Example 9.5. Basic usage

```
<rich:fileUpload fileUploadListener="#{bean.listener}" />
```

9.3.2. Upload settings

Files are uploaded to either the temporary folder (different for each operating system) or to RAM (random-access memory), depending on the value of the *org.richfaces.fileUpload.createTempFile* parameter of the web.xml settings file for the project. If the parameter is set to true, the files are uploaded to the temporary folder.

To limit the maximum size of the uploaded files, define the byte size with the *org.richfaces.fileUpload.maxRequestSize* parameter of the web.xml settings file for the project.

9.3.3. Interactivity options

The text labels used in the component can be completely customized. Labels for the various controls of the component can be set using the following parameters:

addLabel
: The addLabel parameter sets the label for the **Add** button.

clearAllLabel
: The clearAllLabel parameter sets the label for the **Clear All** button.

clearLabel
: The clearLabel parameter sets the label for the **Clear** button.

uploadLabel
: The uploadLabel parameter sets the label for the **Upload** button.

The progress of a file upload operation can be represented using either a referencing <rich:progressBar> component, or the progress facet. Refer to *Section 14.3, "<rich:progressBar>"* for details on the <rich:progressBar> component.

To disable the <rich:fileUpload> component, use the disabled attribute.

9.3.4. <rich:fileUpload> client-side events

There are a number of event handlers specific to the <rich:fileUpload> component:

- filesubmit is triggered before a file is uploaded.
- uploadcomplete is triggered after all files in the list have finished uploading.

9.3.5. Reference data

- *component-type*: org.richfaces.FileUpload
- *component-class*: org.richfaces.component.UIFileUpload
- *component-family*: org.richfaces.FileUpload

- *renderer-type*: `org.richfaces.FileUploadRenderer`

9.4. `<rich:inplaceInput>`

The `<rich:inplaceInput>` component allows information to be entered in-line in blocks of text, improving readability of the text. Multiple input regions can be navigated with keyboard navigation. The component has three functional states: the *view* state, where the component displays its initial setting, such as "click to edit"; the *edit* state, where the user can input text; and the "changed" state, where the new value for the component has been confirmed but can be edited again if required.

9.4.1. Basic usage

Basic usage requires the `value` attribute to point to the expression for the current value of the component.

9.4.2. Interactivity options

When in the initial *view* state, the starting label can be set using the `defaultLabel` attribute. Once the user has entered text, the label is stored in the model specified by the `value` attribute. The use of the default label and value is shown in *Example 9.6, "Default label and value"*.

Example 9.6. Default label and value

```
<rich:inplaceInput value="#{bean.value}" defaultLabel="click to edit"/>
```

By default, the event to switch the component to the *edit* state is a single mouse click. This can be changed using the `editEvent` attribute to specify a different event.

The user can confirm and save their input by pressing the **Enter** key or cancel by pressing the **Esc** key. Alternatively, buttons for confirming or canceling can be added to the component by setting `showControls="true"`.

9.4.3. JavaScript API

The `<rich:inplaceInput>` component can be controlled through the JavaScript API. The JavaScript API provides the following functions:

`getValue()`
: Get the current value of the input control.

`setValue(newValue)`
: Set the value of the input control to the *`newValue`* string passed as a parameter.

`isEditState()`
: Returns `true` if the control is currently in the *edit* state, or `false` if the control is currently in the *view* state.

`isValueChanged()`
: Returns `true` if the control's value has been changed from the default.

`save()`
: Saves the current item as the control's value.

`cancel()`
: Cancel editing the value.

`getInput()`
: Return the input entered into the control by the user.

9.4.4. Reference data

- *`component-type`*: `org.richfaces.inplaceInput`
- *`component-class`*: `org.richfaces.component.html.HtmlInplaceInput`
- *`component-family`*: `org.richfaces.inplaceInput`
- *`renderer-type`*: `org.richfaces.renderkit.inplaceInputRenderer`
- *`tag-class`*: `org.richfaces.taglib.inplaceInputTag`

9.5. `<rich:inplaceSelect>`

The `<rich:inplaceSelect>` component is similar to the `<rich:inplaceInput>` component, except that the `<rich:inplaceSelect>` component uses a drop-down selection box to enter text instead of a regular text field. Changes can be rendered either in-line or for the whole block, and inputs can be focused with keyboard navigation. The component has three functional states: the *view* state, where the component displays its initial setting, such as "click to edit"; the *edit* state, where the user can select a value from a drop-down list; and the "changed" state, where the new value for the component has been confirmed but can be edited again if required.

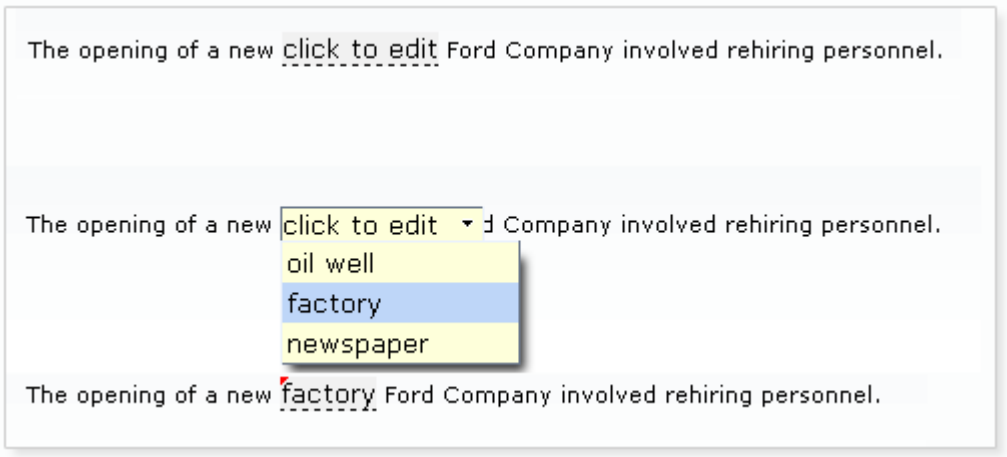


Figure 9.3. `<rich:inplaceSelect>`

9.5.1. Basic usage

Basic usage requires the `value` attribute to point to the expression for the current value of the component and a list of items. The list of items can be defined using the JSF components `<f:selectItem/>` and `<f:selectItems/>`.

Example 9.7. Defining list items for `<rich:inplaceSelect>`

```
<rich:inplaceSelect value="#{bean.inputValue}" defaultLabel="click to edit" >
    <f:selectItems value="#{bean.selectItems}" />
    <f.selectItem itemValue="1" itemLabel="Item 1" />
    <f.selectItem itemValue="2" itemLabel="Item 2" />
    <f.selectItem itemValue="3" itemLabel="Item 3" />
    <f.selectItem itemValue="4" itemLabel="Item 4" />
</rich:comboBox>
```

9.5.2. Interactivity options

When in the initial *view* state, the starting label can be set using the `defaultLabel` attribute, such as `defaultLabel="click to edit"`.

By default, the event to switch the component to the *edit* state is a single mouse click. This can be changed using the `editEvent` attribute to specify a different event. When switching to *edit* mode, the drop-down list of possible values will automatically be displayed; this can be deactivated by setting `openOnEdit="false"`.

Once a new value for the control is saved, the state switches to the "changed" state. Saving a new value for the control can be performed in three different ways:

- Once the user selects an item from the drop-down list, the item is saved as the new control value. This is the default setting.
- If `saveOnBlur="true"` is set, the selected item is saved as the new control value when the control loses focus.
- If `showControls="true"` is set, buttons are added to the control to confirm or cancel the selection. The new control value is only saved once the user confirms the selection using the button.

9.5.3. JavaScript API

The `<rich:inplaceSelect>` component can be controlled through the JavaScript API. The JavaScript API provides the following functions:

`getValue()`
: Get the current value of the select control.

`setValue(newValue)`
: Set the value of the select control to the *`newValue`* string passed as a parameter.

`isEditState()`
: Returns `true` if the control is currently in the *edit* state, or `false` if the control is currently in the *view* state.

`isValueChanged()`
: Returns `true` if the control's value has been changed from the default.

`save()`
: Saves the current item as the control's value.

`cancel()`
: Cancel editing the value.

`getInput()`
: Return the input entered into the control by the user.

`getLabel()`
: Return the default label of the control.

`setLabel(newLabel)`
: Set the default label of the control to the *`newLabel`* string passed as a parameter.

`showPopup()`
: Show the pop-up list of possible values.

`hidePopup()`
: Hide the pop-up list.

9.5.4. Reference data

- *`component-type`*: `org.richfaces.inplaceSelect`
- *`component-class`*: `org.richfaces.component.html.HtmlInplaceSelect`
- *`component-family`*: `org.richfaces.inplaceSelect`
- *`renderer-type`*: `org.richfaces.renderkit.inplaceSelectRenderer`
- *`tag-class`*: `org.richfaces.taglib.inplaceSelectTag`

9.6. `<rich:inputNumberSlider>`

The `<rich:inputNumberSlider>` component provides a slider for changing numerical values. Optional features include control arrows to step through the values, a tool-tip to display the value while sliding, and a text field for typing the numerical value which can then be validated against the slider's range.

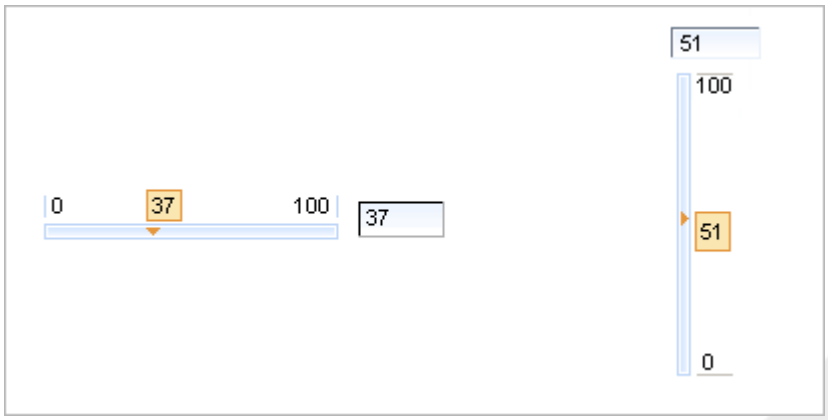


Figure 9.4. `<rich:inputNumberSlider>`

9.6.1. Basic usage

Basic use of the component with no attributes specified will render a slider with a minimum value of 0, a maximum of 100, and a gradient step of 1, together with a text field for typing the desired numerical value. The slider is labeled with the minimum and maximum boundary values, and a tool-tip showing the current value is shown while sliding the slider. The `value` attribute is used for storing the currently selected value of the slider.

9.6.2. Interactivity options

The text field can be removed by setting `showInput="false"`.

The properties of the slider can be set with the attributes `minValue`, `maxValue`, and `step`.

The minimum and maximum labels on the slider can be hidden by setting `showBoundaryValues="false"`. The tool-tip showing the current value can be hidden by setting `showToolTip="false"`.

Arrow controls can be added to either side of the slider to adjust the value incrementally by setting `showArrows="true"`. Clicking the arrows move the slider indicator in that direction by the gradient step, and clicking and holding the arrows moves the indicator continuously. The time delay for each step when updating continuously can be defined using the `delay` attribute.

9.6.3. JavaScript API

The `<rich:inputNumberSlider>` component can be controlled through the JavaScript API. The JavaScript API provides the following functions:

`getValue()`
: Get the current value of the slider control.

`setValue(newValue)`
: Set the value of the slider control to the *`newValue`* integer passed as a parameter.

`increase()`
: Increase the value of the slider control by the gradient step amount.

`decrease()`
: Decrease the value of the slider control by the gradient step amount.

9.6.4. Reference data

- *`component-type`*: `org.richfaces.inputNumberSlider`
- *`component-class`*: `org.richfaces.component.html.HtmlInputNumberSlider`
- *`component-family`*: `org.richfaces.inputNumberSlider`
- *`renderer-type`*: `org.richfaces.renderkit.inputNumberSliderRenderer`
- *`tag-class`*: `org.richfaces.taglib.inputNumberSliderTag`

9.7. `<rich:inputNumberSpinner>`

The `<rich:inputNumberSpinner>` component is a single-line input field with buttons to increase and decrease a numerical value. The value can be changed using the corresponding directional keys on a keyboard, or by typing into the field.

Figure 9.5. `<rich:inputNumberSpinner>`

9.7.1. Basic usage

Basic use of the component with no attributes specified will render a number spinner with a minimum value of 1, a maximum value of 100, and a gradient step of 1.

These default properties can be re-defined with the attributes `minValue`, `maxValue`, and `step` respectively. The starting value of the spinner is the minimum value unless otherwise specified with the `value` attribute.

9.7.2. Interactivity options

When changing the value using the buttons, raising the value above the maximum or cause the spinner to restart at the minimum value. Likewise, when lowering below the minimum value the spinner will reset to the maximum value. This behavior can be deactivated by setting `cycled="false"`, which will cause the buttons to stop responding when the reach the maximum or minimum value.

The ability to change the value by typing into the text field can be disabled by setting `enableManualInput="false"`.

9.7.3. JavaScript API

The `<rich:inputNumberSpinner>` component can be controlled through the JavaScript API. The JavaScript API provides the following functions:

`getValue()`
: Get the current value of the spinner control.

`setValue(newValue)`
: Set the value of the spinner control to the *`newValue`* integer passed as a parameter.

`increase()`
: Increase the value of the spinner control by the gradient step amount.

`decrease()`
: Decrease the value of the spinner control by the gradient step amount.

9.7.4. Reference data

- *`component-type`*: `org.richfaces.inputNumberSpinner`
- *`component-class`*: `org.richfaces.component.html.HtmlInputNumberSpinner`
- *`component-family`*: `org.richfaces.inputNumberSpinner`
- *`renderer-type`*: `org.richfaces.renderkit.inputNumberSpinnerRenderer`
- *`tag-class`*: `org.richfaces.taglib.inputNumberSpinnerTag`

9.8. `<rich:select>`

The `<rich:select>` component provides a drop-down list box for selecting a single value from multiple options. The component supports keyboard navigation and can optionally accept typed input. The `<rich:select>` component functions similarly to the JavaServer Faces `<h:selectOneMenu>` component.

Figure 9.6. `<rich:select>`

9.8.1. Basic usage

Simple usage of the `<rich:select>` component does not need any attributes declared, but child tags to manage the list of selections are required. The child tags can either be a number of

`<f:selectItem>` tags or a `<f:selectItems>` tag which points to a data model containing a list of selection items. The `value` attribute is used to store the current selection.

Example 9.8. Selection items

Using multiple `<f:selectItem>` tags

```
<rich:select>
   <f:selectItem itemValue="0" itemLabel="Option 1" />
   <f:selectItem itemValue="1" itemLabel="Option 2" />
   <f:selectItem itemValue="2" itemLabel="Option 3" />
   <f:selectItem itemValue="3" itemLabel="Option 4" />
   <f:selectItem itemValue="4" itemLabel="Option 5" />
</rich:select>
```

Using a single `<f:selectItems>` tag

```
<rich:select>
   <f:selectItems value="#{bean.options}" />
</rich:select>
```

The arrow keys on a keyboard can be used to highlight different items in the list. If the control loses focus or the **Enter** key is pressed, the highlighted option is chosen as the value and the list is closed. Pressing the **Esc** key will close the list but not change the value.

9.8.2. Advanced options

Use the `defaultLabel` attribute to set a place-holder label, such as `defaultLabel="select an option"`.

Server-side processing occurs in the same manner as for an `<h:selectOneMenu>` component. As such, custom objects used for selection items should use the same converters as for an `<h:selectOneMenu>` component.

9.8.3. Using manual input

Selection lists can allow the user to type into a text field to scroll through or filter the list. By default, the `<rich:select>` component functions as a drop-down list with no manual input. To add keyboard support for manual input, set `enableManualInput="true"`.

Once the user begins typing, the first available matching option is highlighted. If the typed text does not match any values in the list, no value is chosen and the drop-down list displays as empty. Other keyboard interaction remains the same as the basic drop-down list.

9.8.4. JavaScript API

The `<rich:select>` component can be controlled through the JavaScript API. The JavaScript API provides the following functions:

`getValue()`
: Get the current value of the text field.

`setValue(newValue)`
: Set the value of the text field to the *`newValue`* string passed as a parameter.

`getLabel()`
: Return the default label of the control.

`showPopup()`
: Show the pop-up list of completion values.

`hidePopup()`
: Hide the pop-up list.

9.8.5. Reference data

- *`component-type`*: `org.richfaces.select`
- *`component-class`*: `org.richfaces.component.html.HtmlSelect`
- *`component-family`*: `org.richfaces.select`
- *`renderer-type`*: `org.richfaces.renderkit.selectRenderer`
- *`tag-class`*: `org.richfaces.taglib.selectTag`

DRAFT

Panels and containers

This chapter details those components which act as panels and containers to hold groups of other components.

10.1. `<rich:panel>`

The `<rich:panel>` component is a bordered panel with an optional header.

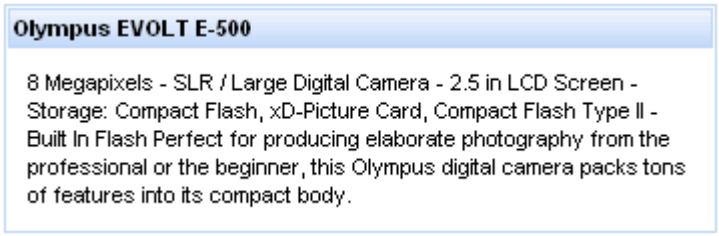


Figure 10.1. `<rich:panel>`

10.1.1. Basic usage

No attributes need to be listed for basic usage. a `<rich:panel>` without any attributes defined renders a bordered region with no header.

10.1.2. Adding a header

To add a header to the panel, use the `header` attribute to specify the text to appear in the header. Alternatively the header can be constructed using a header facet. *Example 10.1, "Adding a header"* demonstrates the two different approaches.

Example 10.1. Adding a header

```
<rich:panel header="This is the panel header">
    <h:outputText value="This is the panel content" />
</rich:panel>
```

```
<rich:panel>
    <f:facet name="header">
        <h:outputText value="This is the panel header">
    </f:facet>
    <h:outputText value="This is the panel content" />
</rich:panel>
```

Both the examples render an identical panel.

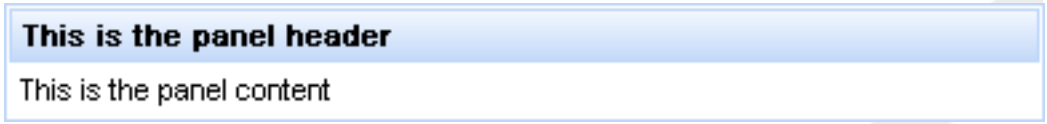


Figure 10.2. Adding a header

10.1.3. Reference data

- *component-type*: `org.richfaces.panel`
- *component-class*: `org.richfaces.component.html.HtmlPanel`
- *component-family*: `org.richfaces.panel`
- *renderer-type*: `org.richfaces.panelRenderer`
- *tag-class*: `org.richfaces.taglib.panelTag`

10.2. `<rich:accordion>`

The `<rich:accordion>` is a series of panels stacked on top of each other, each collapsed such that only the header of the panel is showing. When the header of a panel is clicked, it is expanded to show the content of the panel. Clicking on a different header will collapse the previous panel and epand the selected one. Each panel contained in a `<rich:accordion>` component is a `<rich:accordionItem>` component.

Figure 10.3. A `<rich:accordion>` component containing three `<rich:accordionItem>` components

10.2.1. Basic usage

The `<rich:accordion>` component requires no attributes for basic usage. The component can contain any number of `<rich:accordionItem>` components as children. The headers of the `<rich:accordionItem>` components control the expanding and collapsing when clicked. Only a single `<rich:accordionItem>` can be displayed at a time. Refer to *Section 10.2.7, "<rich:accordionItem>"* for details on the `<rich:accordionItem>` component.

10.2.2. Switching panels

The switching mode for performing submissions is determined by the `switchType` attribute, which can have one of the following three values:

`server`
: The default setting. Activation of a `<rich:accordionItem>` component causes the parent `<rich:accordion>` component to perform a common submission, completely re-rendering the page. Only one panel at a time is uploaded to the client side.

`ajax`
: Activation of a `<rich:accordionItem>` component causes the parent `<rich:accordion>` component to perform an Ajax form submission, and the content of the panel is rendered. Only one panel at a time is uploaded to the client side.

`client`
: Activation of a `<rich:accordionItem>` component causes the parent `<rich:accordion>` component to update on the client side. JavaScript changes the styles such that one panel component becomes hidden while the other is shown.

10.2.3. `<rich:accordion>` client-side events

In addition to the standard Ajax events and HTML events, the `<rich:accordion>` component uses the client-side events common to all switchable panels:

- The `itemchange` event points to the function to perform when the switchable item is changed.
- The `beforeitemchange` event points to the function to perform when before the switchable item is changed.

10.2.4. `<rich:accordion>` server-side events

The `<rich:accordion>` component uses the server-side events common to all switchable panels:

- The `ItemChangeEvent` event occurs on the server side when an item is changed through Ajax using the `server` mode. It can be processed using the `ItemChangeListener` attribute.

10.2.5. JavaScript API

The `<rich:accordion>` component can be controlled through the JavaScript API. The JavaScript API provides the following functions, which are common to all switchable panels:

`getItems()`
: Return an array of the items contained in the accordion control.

`getItemsNames()`
: Return an array of the names of the items contained in the accordion control.

`switchToItem(itemName)`
: Switch to and display the item identified by the *`itemName`* string passed as a parameter.

10.2.6. Reference data

- *`component-type`*: `org.richfaces.accordion`
- *`component-class`*: `org.richfaces.component.html.HtmlAccordion`
- *`component-family`*: `org.richfaces.accordion`
- *`renderer-type`*: `org.richfaces.accordionRenderer`
- *`tag-class`*: `org.richfaces.taglib.accordionTag`

10.2.7. `<rich:accordionItem>`

The `<rich:accordionItem>` component is a panel for use with the `<rich:accordion>` component.

10.2.7.1. Basic usage

Basic usage of the `<rich:accordionItem>` component requires the `label` attribute, which provides the text on the panel header. The panel header is all that is visible when the accordion item is collapsed.

Alternatively the `header` facet could be used in place of the `label` attribute. This would allow for additional styles and custom content to be applied to the tab.

10.2.7.2. `<rich:accordionItem>` client-side events

In addition to the standard HTML events, the `<rich:accordionItem>` component uses the client-side events common to all switchable panel items:

- The `enter` event points to the function to perform when the mouse enters the panel.

- The `leave` event points to the function to perform when the mouse leaves the panel.

10.2.7.3. Reference data

- *`component-type`*: `org.richfaces.accordionItem`
- *`component-class`*: `org.richfaces.component.html.HtmlAccordionItem`
- *`component-family`*: `org.richfaces.accordionItem`
- *`renderer-type`*: `org.richfaces.accordionItemRenderer`
- *`tag-class`*: `org.richfaces.taglib.accordionItemTag`

10.3. `<rich:collapsiblePanel>`

The `<rich:collapsiblePanel>` component is a collapsible panel that shows or hides content when the header bar is activated. It is a simplified version of `<rich:togglePanel>` component.

Figure 10.4. `<rich:collapsiblePanel>`

10.3.1. Basic usage

Basic usage requires the `header` attribute to be specified, which provides the title for the header element. Additionally the panel requires content to display when it is expanded. Content is added as child elements like a standard panel.

10.3.2. Expanding and collapsing the panel

The switching mode for performing submissions is determined by the `switchType` attribute, which can have one of the following three values:

`server`
: This is the default setting. The `<rich:collapsiblePanel>` component performs a common submission, completely re-rendering the page. Only one panel at a time is uploaded to the client side.

`ajax`
: The `<rich:collapsiblePanel>` component performs an Ajax form submission, and only the content of the panel is rendered. Only one panel at a time is uploaded to the client side.

`client`
: The `<rich:collapsiblePanel>` component updates on the client side, re-rendering itself and any additional components listed with the `render` attribute.

10.3.3. Appearance

The appearance of the `<rich:collapsiblePanel>` component can be customized using facets. The `headerExpandedClass` and `headerCollapsedClass` facets are used to style the appearance of the panel when it is expanded and collapsed respectively. The `expandControl` facet styles the control in the panel header used for expanding, and the `collapseControl` facet styles the control for collapsing.

10.3.4. `<rich:collapsiblePanel>` server-side events

The `<rich:collapsiblePanel>` component uses the following unique server-side events:

- The `ChangeExpandEvent` event occurs on the server side when the `<rich:collapsiblePanel>` component is expanded or collapsed through Ajax using the `server` mode. It can be processed using the `ChangeExpandListener` attribute.

10.3.5. JavaScript API

The `<rich:collapsiblePanel>` component can be controlled through the JavaScript API. The JavaScript API provides the following functions:

`switchPanel()`
: Switch the state of the collapsible panel (expanded or collapsed).

10.3.6. Reference data

- *`component-type`*: `org.richfaces.collapsiblePanel`
- *`component-class`*: `org.richfaces.component.html.HtmlcollapsiblePanel`
- *`component-family`*: `org.richfaces.collapsiblePanel`
- *`renderer-type`*: `org.richfaces.collapsiblePanelRenderer`
- *`tag-class`*: `org.richfaces.taglib.collapsiblePanelTag`

10.4. <rich:popupPanel>

The <rich:popupPanel> component provides a pop-up panel or window that appears in front of the rest of the application. The <rich:popupPanel> component functions either as a modal window which blocks interaction with the rest of the application while active, or as a non-modal window. It can be positioned on the screen, dragged to a new position by the user, and re-sized.

10.4.1. Basic usage

The <rich:popupPanel> does not require any compulsory attributes, though certain use cases require different attributes.

10.4.2. Showing and hiding the pop-up

If show="true" then the pop-up panel will display when the page is first loaded.

The <rich:popupPanel> component can be shown and hidden manually using the show() and hide() methods from the JavaScript API. These can be implemented using two different approaches:

- Using the <rich:componentControl> component. For details on the component, refer to *Section 4.5, "<rich:componentControl>"*.
- Using the rich:component function. For details on the function, refer to *Section 17.2, "rich:component"*.

For explicit referencing when using the functions, the component can be given an id identifier. The component can, however, be referenced using other means, such as through a selector.

Example 10.2, "<rich:popupPanel> example" demonstrates basic use of both the <rich:componentControl> component and the rich:component function to show and hide the <rich:popupPanel> component.

Example 10.2. <rich:popupPanel> example

```
<h:commandButton value="Show the panel">
    <rich:componentControl target="popup" operation="show" />
</h:commandButton>
...
<a4j:form>
    <rich:popupPanel id="popup">

   <p><a href="#" onclick="#{rich:component('popup')}.hide()">Hide the panel</
a></p>
    </rich:popupPanel>
```

```
</a4j:form>
```

Placement

The `<rich:popupPanel>` component should usually be placed outside the original form, and include its own form if performing submissions. An exception to this is when using the `domElementAttachment` attribute, as described in *Section 10.4.4, "Size and positioning"*.

10.4.3. Modal and non-modal panels

By default, the `<rich:popupPanel>` appears as a modal window that blocks interaction with the other objects on the page. To implement a non-modal window instead, set `modal="false"`. This will allow interaction with other objects outside the pop-up panel.

10.4.4. Size and positioning

The pop-up panel can be both re-sized and re-positioned by the user. The minimum possible size for the panel can be set with the `minWith` and `minHeight` attributes. These abilities can be deactivated by setting `resizable` or `movable` to `false` as necessary.

The pop-up panel can be automatically sized when it is shown if the `autosized` attribute is set to `true`.

The `<rich:popupPanel>` component is usually rendered in front of any other objects on the page. This is achieved by attaching the component to the `<body>` element of the page, and setting a very high *"z-index"* (the stack order of the object). This approach is taken because relatively-positioned elements could still overlap the pop-up panel if they exist at higher levels of the DOM hierarchy, even if their z-index is less than the `<rich:popupPanel>` component. However, to avoid form limitation of the pop-up panel on pages where no such elements exist, the `<rich:popupPanel>` component can be reattached to its original DOM element by setting `domElementAttachment` to either `parent` or `form`.

Embedded objects inserted into the HTML with the `<embed>` tag will typically be rendered in front of a `<rich:popupPanel>` component. The `<rich:popupPanel>` component can be forcibly rendered in front of these objects by setting `overlapEmbedObjects="true"`.

Using `overlapEmbedObjects`

Due to the additional script processing required when using the `overlapEmbedObjects` attribute, applications can suffer from decreased performance. As such, `overlapEmbedObjects` should only be set to `true` when `<embed>` tags are being used. Do not set it to `true` for applications that do not require it.

10.4.5. Contents of the pop-up

The `<rich:popupPanel>` component can contain any other rich component just like a normal panel.

Contents of the `<rich:popupPanel>` component which are positioned relatively may be trimmed if they extend beyond the borders of the pop-up panel. For certain in-line controls this behavior may be preferable, but for other dynamic controls it could be undesirable. If the `trimOverlayedElements` attribute is set to `false` then child components will not be trimmed if they extend beyond the borders of the pop-up panel.

10.4.6. Header and controls

A panel header and associated controls can be added to the `<rich:popupPanel>` component through the use of facets. The `header` facet displays a title for the panel, and the `controls` facet can be customized to allow window controls such as a button for closing the pop-up. *Example 10.3, "Header and controls"* demonstrates the use of the facets.

Example 10.3. Header and controls

```
<h:commandLink value="Show pop-up">
    <rich:componentControl target="popup" operation="show" />
</h:commandLink>
...
<a4j:form>

 <rich:popupPanel id="popup" modal="false" autosized="true" resizeable="false">
        <f:facet name="header">
            <h:outputText value="The title of the panel" />
        </f:facet>
        <f:facet name="controls">
                                              <h:graphicImage    value="/pages/
close.png" style="cursor:pointer" onclick="#{rich:component('popup')}.hide()" /
>
        </f:facet>
        <p>
            This is the content of the panel.
        </p>
    </rich:popupPanel>
</a4j:form>
```

Figure 10.5. Header and controls

10.4.7. JavaScript API

The `<rich:popupPanel>` component can be controlled through the JavaScript API. The JavaScript API provides the following functions:

`getTop()`
: Return the top co-ordinate for the position of the pop-up panel.

`getLeft()`
: Return the left co-ordinate for the position of the pop-up panel.

`moveTo(top,left)`
: Move the pop-up panel to the co-ordinates specified with the *`top`* and *`left`* parameters.

`resize(width,height)`
: Resize the pop-up panel to the size specified with the *`width`* and *`height`* parameters.

`show()`
: Show the pop-up panel.

`hide()`
: Hide the pop-up panel.

10.4.8. Reference data

- *component-type*: `org.richfaces.popupPanel`
- *component-class*: `org.richfaces.component.html.HtmlpopupPanel`
- *component-family*: `org.richfaces.popupPanel`
- *renderer-type*: `org.richfaces.popupPanelRenderer`
- *tag-class*: `org.richfaces.taglib.popupPanelTag`

10.5. `<rich:tabPanel>`

The `<rich:tabPanel>` component provides a set of tabbed panels for displaying one panel of content at a time. The tabs can be highly customized and themed. Each tab within a `<rich:tabPanel>` container is a `<rich:tab>` component. Refer to *Section 10.5.6, "<rich:tab>"* for further details on the `<rich:tab>` component.

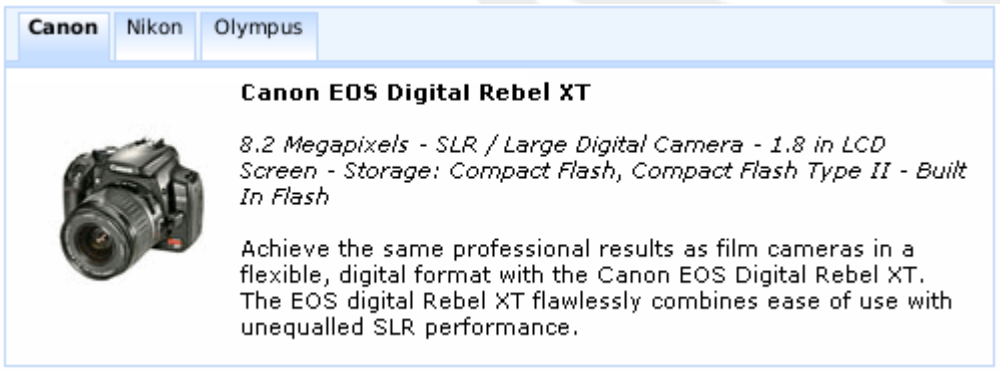


Figure 10.6. A `<rich:tabPanel>` component containing three `<rich:tab>` components

Form elements required

All `<rich:tabPanel>` components should be wrapped in a form element so that the contents of the tab are processed correctly during a tab change in either `ajax` or `server` mode.

Alternatively, the contents of a `<rich:tab>` component within the `<rich:tabPanel>` component could be wrapped in a form element, such that they will be processed using the inner submitting component only. In this case, the `<rich:tabPanel>` component will automatically add form tags around the tab's contents, and the contents will not be processed during switching.

10.5.1. Switching panels

The `activeItem` attribute holds the active tab name. This name is a reference to the `name` identifier of the active child `<rich:tab>` component.

The switching mode for performing submissions is determined by the `switchType` attribute, which can have one of the following three values:

`server`
: The default setting. Activation of a `<rich:tab>` component causes the parent `<rich:tabPanel>` component to perform a common submission, completely re-rendering the page. Only one tab at a time is uploaded to the client side.

`ajax`
: Activation of a `<rich:tab>` component causes the parent `<rich:tabPanel>` component to perform an Ajax form submission, and the content of the tab is rendered. Only one tab at a time is uploaded to the client side.

`client`
: Activation of a `<rich:tab>` component causes the parent `<rich:tabPanel>` component to update on the client side. JavaScript changes the styles such that one tab becomes hidden while the other is shown.

10.5.2. `<rich:tabPanel>` client-side events

In addition to the standard Ajax events and HTML events, the `<rich:tabPanel>` component uses the client-side events common to all switchable panels:

- The `itemchange` event points to the function to perform when the switchable item is changed.
- The `beforeitemchange` event points to the function to perform when before the switchable item is changed.

10.5.3. `<rich:tabPanel>` server-side events

The `<rich:tabPanel>` component uses the server-side events common to all switchable panels:

- The `ItemChangeEvent` event occurs on the server side when an item is changed through Ajax using the `server` mode. It can be processed using the `ItemChangeListener` attribute.

10.5.4. JavaScript API

The `<rich:tabPanel>` component can be controlled through the JavaScript API. The JavaScript API provides the following functions, which are common to all switchable panels:

`getItems()`
: Return an array of the tabs contained in the tab panel.

`getItemsNames()`
: Return an array of the names of the tabs contained in the tab panel.

`switchToItem(itemName)`
: Switch to and display the item identified by the *`itemName`* string passed as a parameter.

10.5.5. Reference data

- *`component-type`*: `org.richfaces.tabPanel`
- *`component-class`*: `org.richfaces.component.html.HtmlTabPanel`
- *`component-family`*: `org.richfaces.tabPanel`
- *`renderer-type`*: `org.richfaces.tabPanelRenderer`
- *`tag-class`*: `org.richfaces.taglib.tabPanelTag`

10.5.6. `<rich:tab>`

The `<rich:tab>` component represents an individual tab inside a `<rich:tabPanel>` component, including the tab's content. Clicking on the tab header will bring its corresponding content to the front of other tabs.

10.5.6.1. Basic usage

Basic usage of the `<rich:tab>` component requires the `name` attribute to uniquely identify the tab within the parent `<rich:tabPanel>` component. As the tabs are switched, the `name` identifier of the currently selected tab is stored in the `activeItem` attribute of the parent `<rich:tabPanel>` component.

10.5.6.2. Header labeling

In addition to the `name` identifier, the `header` attribute must be defined. The `header` attribute provides the text on the tab header. The content of the tab is then detailed inside the `<rich:tab>` tags.

Alternatively, the `header` facet could be used in place of the `header` attribute. This would allow for additional styles and custom content to be applied to the tab. The component also supports three facets to customize the appearance depending on the current state of the tab:

`headerActiveClass` facet
: This facet is used when the tab is the currently active tab.

`headerInactiveClass` facet
: This facet is used when the tab is not currently active.

`headerDisabledClass` facet

This facet is used when the tab is disabled.

The `header` facet is used in place of any state-based facet that has not been defined.

10.5.6.3. Switching tabs

The switching mode for performing submissions can be inherited from the `switchType` attribute of the parent `<rich:tabPanel>` component, or set individually for each `<rich:tab>` component. Refer to *Section 10.5, "<rich:tabPanel>"* for details on the `switchType` attribute.

An individual tab can be disabled by setting `disabled="true"`. Disabled tabs cannot be activated or switched to.

10.5.6.4. `<rich:tab>` client-side events

In addition to the standard HTML events, the `<rich:tab>` component uses the client-side events common to all switchable panel items:

- The `enter` event points to the function to perform when the mouse enters the tab.
- The `leave` attribute points to the function to perform when the mouse leaves the tab.

10.5.6.5. Reference data

- *component-type*: `org.richfaces.tab`
- *component-class*: `org.richfaces.component.html.HtmlTab`
- *component-family*: `org.richfaces.tab`
- *renderer-type*: `org.richfaces.tabRenderer`
- *tag-class*: `org.richfaces.taglib.tabTag`

10.6. `<rich:togglePanel>`

The `<rich:togglePanel>` component is a wrapper for multiple `<rich:togglePanelItem>` components. Each child component is displayed after being activated with the `<rich:toggleControl>` behavior.

Refer to *Section 10.6.5, "<rich:toggleControl>"* and *Section 10.6, "<rich:togglePanel>"* for details on how to use the components together.

The `<rich:togglePanel>` component is used as a base for the other switchable components, the `<rich:accordion>` component and the `<rich:tabPanel>` component. It provides an abstract switchable component without any associated markup. As such, the `<rich:togglePanel>` component could be customized to provide a switchable component when neither an accordion component or a tab panel component is appropriate.

10.6.1. Basic usage

The initial state of the component can be configured using the `activeItem` attribute, which points to a child component to display. Alternatively, if no `activeItem` attribute is defined, the initial state will be blank until the user activates a child component using the `<rich:toggleControl>` component.

The child components are shown in the order in which they are defined in the view.

10.6.2. Toggling between components

The switching mode for performing submissions is determined by the `switchType` attribute, which can have one of the following three values:

`server`
: The default setting. Activation of a child component causes the parent `<rich:togglePanel>` component to perform a common submission, completely re-rendering the page. Only one child at a time is uploaded to the client side.

`ajax`
: Activation of a child component causes the parent `<rich:togglePanel>` component to perform an Ajax form submission, and the content of the child is rendered. Only one child at a time is uploaded to the client side.

`client`
: Activation of a child component causes the parent `<rich:togglePanel>` component to update on the client side. JavaScript changes the styles such that one child component becomes hidden while the other is shown.

10.6.3. JavaScript API

The `<rich:togglePanel>` component can be controlled through the JavaScript API. The JavaScript API provides the following functions, which are common to all switchable panels:

`getItems()`
: Return an array of the items contained in the toggle panel.

`getItemsNames()`
: Return an array of the names of the items contained in the toggle panel.

`switchToItem(itemName)`
: Switch to and display the item identified by the *`itemName`* string passed as a parameter.

10.6.4. Reference data

- *`component-type`*: `org.richfaces.TogglePanel`

- *component-class*: org.richfaces.component.html.HtmlTogglePanel
- *component-family*: org.richfaces.TogglePanel
- *renderer-type*: org.richfaces.TogglePanelRenderer
- *tag-class*: org.richfaces.taglib.TogglePanelTag

10.6.5. <rich:toggleControl>

The <rich:toggleControl> behavior can be attached to any interface component. It works with a <rich:togglePanel> component to switch between different <rich:togglePanelItem> components.

Refer to *Section 10.6, "<rich:togglePanel>"* and *Section 10.6.6, "<rich:togglePanelItem>"* for details on how to use the components together.

10.6.5.1. Basic usage

The <rich:toggleControl> can be used to switch through <rich:togglePanelItem> components in a <rich:togglePanel> container. If the <rich:toggleControl> component is positioned inside a <rich:togglePanel> component, no attributes need to be defined, as the control is assumed to switch through the <rich:togglePanelItem> components of its parent.

A <rich:toggleControl> component can be located outside the <rich:togglePanel> component it needs to switch. Where this is the case, the <rich:togglePanel> is identified using the activePanel attribute. the Cycling through components requires the for attribute, which points to the id identifier of the <rich:togglePanel> that it controls.

10.6.5.2. Specifying the next state

The <rich:toggleControl> component will cycle through <rich:togglePanelItem> components in the order they are defined within the view. However, the next item to switch to can be explicitly defined by including a <rich:toggleControl> component within a <rich:togglePanelItem> and using the targetItem attribute. The targetItem attribute points to the <rich:togglePanelItem> to switch to when the state is next changed. *Example 10.4, "<rich:toggleControl> example"* demonstrates how to specify the next switchable state in this way.

Example 10.4. <rich:toggleControl> example

```
<rich:togglePanel id="layout" activeItem="short">
     <rich:togglePanelItem id="short">
          //content
          <h:commandButton>
           <rich:toggleControl targetItem="details"> // switches to details state
          </h:commandButton>
     </rich:togglePanelItem>
     <rich:togglePanelItem id="details">
```

```
            //content
            <h:commandButton>
                <rich:toggleControl targetItem="short"> //switches to short state
            </h:commandButton>
        <rich:togglePanelItem>
</rich:togglePanel>
<h:commandButton>
        <rich:toggleControl activePanel="layout"/> // cycles through the states
</h:commandButton>
```

10.6.5.3. Reference data

- *component-type*: `org.richfaces.ToggleControl`
- *component-class*: `org.richfaces.component.html.HtmlToggleControl`
- *component-family*: `org.richfaces.ToggleControl`
- *renderer-type*: `org.richfaces.ToggleControlRenderer`
- *tag-class*: `org.richfaces.taglib.ToggleControlTag`

10.6.6. `<rich:togglePanelItem>`

The `<rich:togglePanelItem>` component is a switchable panel for use with the `<rich:togglePanel>` component. Switching between `<rich:togglePanelItem>` components is handled by the `<rich:toggleControl>` behavior.

10.6.6.1. Reference data

- *component-type*: `org.richfaces.TogglePanelItem`
- *component-class*: `org.richfaces.component.html.HtmlTogglePanelItem`
- *component-family*: `org.richfaces.TogglePanelItem`
- *renderer-type*: `org.richfaces.TogglePanelItemRenderer`
- *tag-class*: `org.richfaces.taglib.TogglePanelItemTag`

DRAFT

Tables and grids

This chapter covers all components related to the display of tables and grids.

11.1. `<a4j:repeat>`

The `<a4j:repeat>` component is used to iterate changes through a repeated collection of components. It allows specific rows of items to be updated without sending Ajax requests for the entire collection. The `<a4j:repeat>` component forms the basis for many of the tabular components detailed in *Chapter 11, Tables and grids*.

11.1.1. Basic usage

The contents of the collection are determined using Expression Language (EL). The data model for the contents is specified with the `value` attribute. The `var` attribute names the object to use when iterating through the collection. This object is then referenced in the relevant child components. *Example 11.1, "<a4j:repeat> example"* shows how to use `<a4j:repeat>` to maintain a simple table.

Example 11.1. `<a4j:repeat>` example

```
<table>
    <tbody>
        <a4j:repeat value="#{repeatBean.items}" var="item">
            <tr>
                <td><h:outputText value="#{item.code}" id="item1" /></td>
                <td><h:outputText value="#{item.price}" id="item2" /></td>
            </tr>
        </a4j:repeat>
    </tbody>
</table>
```

Each row of a table contains two cells: one showing the item code, and the other showing the item price. The table is generated by iterating through items in the `repeatBeans.items` data model.

11.1.2. Limited views and partial updates

The `<a4j:repeat>` component uses other attributes common to iteration components, such as the `first` attribute for specifying the first item for iteration, and the `rows` attribute for specifying the number of rows of items to display.

Specific cells, rows, and columns can be updated without sending Ajax requests for the entire collection. Components that cause the change can specify which part of the table to update through the `render` attribute. The `render` attribute specifies which part of a table to update:

`render=cellId`
: Update the cell with an identifier of `cellId` within the row that contains the current component.

  Instead of a specific identifier, the `cellId` reference could be a variable: `render=#{bean.cellToUpdate}`.

`render=tableId:rowId`
: Update the row with an identifier of `rowId` within the table with an identifier of `tableId`. Alternatively, if the current component is contained within the table, use `render=rowId`.

  Instead of a specific identifier, the `tableId` of `rowId` references could be variables: `render=tableId:#{bean.rowToUpdate}`.

`render=tableId:rowId:cellId`
: Update the cell with an identifier of `cellId`, within the row with and identifier of `rowId`, within the table with an identifier of `tableId`.

  Instead of a specific identifier, any of the references could be variables: `render=tableId:#{bean.rowToUpdate}:cellId`.

Alternatively, keywords can be used with the `render` attribute:

`render=@column`
: Update the column that contains the current component.

`render=@row`
: Update the row that contains the current component.

`render=tableId:@body`
: Update the body of the table with the identifier of `tableId`. Alternatively, if the current component is contained within the table, use `render=@body` instead.

`render=tableId:@header`
: Update the header of the table with the identifier of `tableId`. Alternatively, if the current component is contained within the table, use `render=@header` instead.

`render=tableId:@footer`
: Update the footer of the table with the identifier of `tableId`. Alternatively, if the current component is contained within the table, use `render=@footer` instead.

11.1.3. Reference data

- *component-type*: `org.ajax4jsf.Repeat`
- *component-class*: `org.ajax4jsf.component.html.HtmlAjaxRepeat`
- *component-family*: `javax.faces.Data`
- *renderer-type*: `org.ajax4jsf.components.RepeatRenderer`

11.2. <rich:dataTable>

The <rich:dataTable> component is used to render a table, including the table's header and footer. It works in conjunction with the <rich:column> and <rich:columnGroup> components to list the contents of a data model.

<rich:extendedDataTable>

The <rich:dataTable> component does not include extended table features, such as data scrolling, row selection, and column reordering. These features are available as part of the <rich:extendedDataTable> component; refer to *Section 11.6, "<rich:extendedDataTable>"* for further details.

11.2.1. Basic usage

The value attribute points to the data model, and the var attribute specifies a variable to use when iterating through the data model.

11.2.2. Customizing the table

The first attribute specifies which item in the data model to start from, and the rows attribute specifies the number of items to list. The header, footer, and caption facets can be used to display text, and to customize the appearance of the table through skinning. demonstrates a simple table implementation.

Example 11.2. <rich:dataTable> example

```
<rich:dataTable value="#{capitalsBean.capitals}" var="cap" rows="5">
    <f:facet name="caption">
        <h:outputText value="United States Capitals" />
    </f:facet>
    <f:facet name="header">
        <h:outputText value="Capitals and States Table" />
    </f:facet>
    <rich:column>
        <f:facet name="header">State Flag</f:facet>
            <h:graphicImage value="#{cap.stateFlag}"/>
        <f:facet name="footer">State Flag</f:facet>
    </rich:column>
    <rich:column>
        <f:facet name="header">State Name</f:facet>
            <h:outputText value="#{cap.state}"/>
        <f:facet name="footer">State Name</f:facet>
    </rich:column>
    <rich:column >
```

```
        <f:facet name="header">State Capital</f:facet>
            <h:outputText value="#{cap.name}"/>
        <f:facet name="footer">State Capital</f:facet>
    </rich:column>
    <rich:column>
        <f:facet name="header">Time Zone</f:facet>
            <h:outputText value="#{cap.timeZone}"/>
        <f:facet name="footer">Time Zone</f:facet>
    </rich:column>
    <f:facet name="footer">
        <h:outputText value="Capitals and States Table" />
    </f:facet>
</rich:dataTable>
```

United States Capitals

Capitals and States Table			
State Flag	Capital Name	State Name	TimeZone
	Montgomery	Alabama	GMT-6
	Juneau	Alaska	GMT-9
	Phoenix	Arizona	GMT-7
	Little Rock	Arkansas	GMT-6
	Sacramento	California	GMT-8
State Flag	Capital Name	State Name	TimeZone
Capitals and States Table			

Figure 11.1. `<rich:dataTable>` example

For details on filtering and sorting data tables, refer to *Section 11.10, "Table filtering"* and *Section 11.11, "Table sorting"*.

11.2.3. Partial updates

As `<rich:dataTable>` the component is based on the `<a4j:repeat>` component, it can be partially updated with Ajax. Refer to *Section 11.1.2, "Limited views and partial updates"* for details on partially updating the `<rich:dataTable>` component.

11.2.4. JavaScript API

The `<rich:dataTable>` component can be controlled through the JavaScript API. The JavaScript API provides the following functions:

`expandAllSubTables()`
: Expand any sub-tables contained in the data table.

`collapseAllSubTables()`
: Collapse any sub-tables contained in the data table.

`switchSubTables()`
: Switch the expanded or collapsed state of any sub-tables contained in the data table.

`filter(columnId, newFilterValue, [isClearPreviousFilters])`
: Filter the table based on the column specified with the *`columnId`* parameter. Use the *`newFilterValue`* parameter as the filter value. The optional *`isClearPreviousFilters`* parameter is a boolean value which, if set to `true`, will clear any previous filters applied to the table.

`sort(columnId, [direction], [isClearPreviousSorting])`
: Sort the table based on the column specified with the *`columnId`* parameter. The option *`direction`* parameter specifies whether to sort in ascending or descending order. The optional *`isClearPreviousSorting`* parameter is a boolean value which, if set to `true`, will clear any previous sorting applied to the table.

11.2.5. Reference data

- *`component-type`*: `org.richfaces.DataTable`
- *`component-class`*: `org.richfaces.component.html.HtmlDataTable`
- *`component-family`*: `org.richfaces.DataTable`
- *`renderer-type`*: `org.richfaces.DataTableRenderer`
- *`tag-class`*: `org.richfaces.taglib.DataTableTag`

11.3. `<rich:column>`

The `<rich:column>` component facilitates columns in a table. It supports merging columns and rows, sorting, filtering, and customized skinning.

11.3.1. Basic usage

In general usage, the `<rich:column>` component is used in the same was as the JavaServer Faces (JSF) `<h:column>` component. It requires no extra attributes for basic usage, as shown in *Example 11.3, “Basic column example”*.

Example 11.3. Basic column example

```
<rich:dataTable value="#{capitalsBean.capitals}" var="cap" rows="5">
```

```
    <rich:column>
        <f:facet name="header">State Flag</f:facet>
        <h:graphicImage value="#{cap.stateFlag}"/>
    </rich:column>
    <rich:column>
        <f:facet name="header">State Name</f:facet>
        <h:outputText value="#{cap.state}"/>
    </rich:column>
    <rich:column >
        <f:facet name="header">State Capital</f:facet>
        <h:outputText value="#{cap.name}"/>
    </rich:column>
    <rich:column>
        <f:facet name="header">Time Zone</f:facet>
        <h:outputText value="#{cap.timeZone}"/>
    </rich:column>
</rich:dataTable>
```

State Flag	State Name	State Capital	Time Zone
	Alabama	Montgomery	GMT-6
	Alaska	Juneau	GMT-9
	Arizona	Phoenix	GMT-7
	Arkansas	Little Rock	GMT-6
	California	Sacramento	GMT-8

Figure 11.2. Basic column example

11.3.2. Spanning columns

Columns can be merged by using the `colspan` attribute to specify how many normal columns to span. The `colspan` attribute is used in conjunction with the `breakBefore` attribute on the next column to determine how the merged columns are laid out. *Example 11.4, "Column spanning example"*.

Example 11.4. Column spanning example

```
<rich:dataTable value="#{capitalsBean.capitals}" var="cap" rows="5">
    <rich:column colspan="3">
        <h:graphicImage value="#{cap.stateFlag}"/>
    </rich:column>
    <rich:column breakBefore="true">
```

```
        <h:outputText value="#{cap.state}"/>
    </rich:column>
    <rich:column >
        <h:outputText value="#{cap.name}"/>
    </rich:column>
    <rich:column>
        <h:outputText value="#{cap.timeZone}"/>
    </rich:column>
</rich:dataTable>
```

Figure 11.3. Column spanning example

11.3.3. Spanning rows

Similarly, the `rowspan` attribute can be used to merge and span rows. Again the `breakBefore` attribute needs to be used on related `<rich:column>` components to define the layout. *Example 11.5, "Row spanning example"* and the resulting *Figure 11.5, "Complex headers using column groups"* show the first column of the table spanning three rows.

Example 11.5. Row spanning example

```
<rich:dataTable value="#{capitalsBean.capitals}" var="cap" rows="5">
    <rich:column rowspan="3">
        <f:facet name="header">State Flag</f:facet>
        <h:graphicImage value="#{cap.stateFlag}"/>
    </rich:column>
    <rich:column>
        <f:facet name="header">State Info</f:facet>
        <h:outputText value="#{cap.state}"/>
```

```
    </rich:column>
    <rich:column breakBefore="true">
        <h:outputText value="#{cap.name}"/>
    </rich:column>
    <rich:column breakBefore="true">
        <h:outputText value="#{cap.timeZone}"/>
    </rich:column>
</rich:dataTable>
```

State Flag	State Info
	Alabama
	Montgomery
	GMT-6
	Alaska
	Juneau
	GMT-9
	Arizona
	Phoenix
	GMT-7
	Arkansas
	Little Rock
	GMT-6
	California
	Sacramento
	GMT-8

Figure 11.4. Row spanning example

For details on filtering and sorting columns, refer to *Section 11.10, "Table filtering"* and *Section 11.11, "Table sorting"*.

11.3.4. Reference data

- *component-type*: `org.richfaces.Column`
- *component-class*: `org.richfaces.component.html.HtmlColumn`
- *component-family*: `org.richfaces.Column`
- *renderer-type*: `org.richfaces.renderkit.CellRenderer`
- *tag-class*: `org.richfaces.taglib.ColumnTag`

11.4. `<rich:columnGroup>`

The `<rich:columnGroup>` component combines multiple columns in a single row to organize complex parts of a table. The resulting effect is similar to using the `breakBefore` attribute of the `<rich:column>` component, but is clearer and easier to follow in the source code.

11.4.1. Complex headers

The `<rich:columnGroup>` can also be used to create complex headers in a table. *Example 11.6, "Complex headers using column groups"* and the resulting *Figure 11.5, "Complex headers using column groups"* demonstrate how complex headers can be achieved.

Example 11.6. Complex headers using column groups

```
<rich:dataTable value="#{capitalsBean.capitals}" var="cap" rows="5" id="sublist">
    <f:facet name="header">
        <rich:columnGroup>
            <rich:column rowspan="2">
                <h:outputText value="State Flag"/>
            </rich:column>
            <rich:column colspan="3">
                <h:outputText value="State Info"/>
            </rich:column>
            <rich:column breakBefore="true">
                <h:outputText value="State Name"/>
            </rich:column>
            <rich:column>
                <h:outputText value="State Capital"/>
            </rich:column>
            <rich:column>
                <h:outputText value="Time Zone"/>
            </rich:column>
        </rich:columnGroup>
    </f:facet>
    <rich:column>
        <h:graphicImage value="#{cap.stateFlag}"/>
    </rich:column>
    <rich:column>
        <h:outputText value="#{cap.state}"/>
    </rich:column>
    <rich:column>
        <h:outputText value="#{cap.name}"/>
    </rich:column>
    <rich:column>
        <h:outputText value="#{cap.timeZone}"/>
    </rich:column>
</rich:dataTable>
```

State Flag	State Info		
	State Name	State Capital	Time Zone
	Alabama	Montgomery	GMT-6
	Alaska	Juneau	GMT-9
	Arizona	Phoenix	GMT-7
	Arkansas	Little Rock	GMT-6
	California	Sacramento	GMT-8

Figure 11.5. Complex headers using column groups

11.4.2. Reference data

- *component-type*: `org.richfaces.ColumnGroup`
- *component-class*: `org.richfaces.component.html.HtmlColumnGroup`
- *component-family*: `org.richfaces.ColumnGroup`
- *renderer-type*: `org.richfaces.ColumnGroupRenderer`
- *tag-class*: `org.richfaces.taglib.ColumnGroupTag`

11.5. `<rich:collapsibleSubTable>`

The `<rich:collapsibleSubTable>` component acts as a child element to a `<rich:dataTable>` component. It allows sections of a table to be grouped into collapsible sections. The `<rich:collapsibleSubTable>` component works with the `<rich:collapsibleSubTableToggler>` component, which allows the user to expand and collapse the sub tables.

11.5.1. Basic usage

The `<rich:collapsibleSubTable>` component requires the same basic attributes as the `<rich:dataTable>` component. The `value` attribute points to the collection, and the `var` attribute specifies a variable to use when iterating through the collection.

In addition, the `<rich:collapsibleSubTable>` component typically needs a corresponding `<rich:collapsibleSubTableToggler>` component to allow expanding and collapsing. Declare the `id` identifier on the `<rich:collapsibleSubTable>` element so that the `<rich:collapsibleSubTableToggler>` component can reference it. Refer to *Section 11.5.4,*

“<rich:collapsibleSubTableToggler>” for details on the `<rich:collapsibleSubTableToggler>` component.

Example 11.7. Basic usage

```
<rich:dataTable value="#{carsBean.inventoryVendorLists}" var="list">
   <f:facet name="header">
      <rich:columnGroup>
         <rich:column colspan="6">
            <h:outputText value="Cars marketplace" />
         </rich:column>
         <rich:column breakRowBefore="true">
            <h:outputText value="Model" />
         </rich:column>
         <rich:column>
            <h:outputText value="Price" />
         </rich:column>
         <rich:column>
            <h:outputText value="Mileage" />
         </rich:column>
         <rich:column>
            <h:outputText value="VIN Code" />
         </rich:column>
         <rich:column>
            <h:outputText value="Items stock" />
         </rich:column>
         <rich:column>
            <h:outputText value="Days Live" />
         </rich:column>
      </rich:columnGroup>
   </f:facet>
   <rich:column colspan="6">
      <rich:collapsibleSubTableToggler for="sbtbl" />
      <h:outputText value="#{list.vendor}" />
   </rich:column>
   <rich:collapsibleSubTable value="#{list.vendorItems}" var="item" id="sbtbl"
      expandMode="client">
      <rich:column>
         <h:outputText value="#{item.model}" />
      </rich:column>
      <rich:column>
         <h:outputText value="#{item.price}" />
      </rich:column>
      <rich:column>
         <h:outputText value="#{item.mileage}" />
      </rich:column>
      <rich:column>
         <h:outputText value="#{item.vin}" />
```

```
      </rich:column>
      <rich:column>
         <h:outputText value="#{item.stock}" />
      </rich:column>
      <rich:column>
         <h:outputText value="#{item.daysLive}" />
      </rich:column>
      <f:facet name="footer">
         <h:outputText value="Total of #{list.vendor} Cars: #{list.count}" />
      </f:facet>
   </rich:collapsibleSubTable>
</rich:dataTable>
```

The resulting tables contains multiple sub-tables, grouping the list of cars by vendor. Each sub-table can be expanded or collapsed using the toggle with the vendor's name. The screenshot shows all sub-tables collapsed except for the sub-table for Ford cars.

Cars marketplace					
Model	**Price**	**Mileage**	**VIN Code**	**Items stock**	**Days Live**
Chevrolet					
Ford					
Taurus	23810	36710.0	CCEJYNFDFIZKQZWEJ	ORCOZLP	90
Taurus	26685	63661.0	KIPQZFJLGXBOMITWZ	YNKCJZ	87
Taurus	47151	41638.0	MQJGCFPZTTMVMVORT	GNQWTW	82
Taurus	47017	25851.0	KCCJMHUVSDSOVIXOB	ZZEGUSN	66
Taurus	40805	47046.0	DZECUNNGCJYVHSVQZ	FNASXG	34
Explorer	24774	10659.0	REGUTBPGVCMTJWKNG	ZNJBQOJ	23
Explorer	34632	62375.0	ZYFFCGQHAOZXGQDEL	VHOEGYE	19
Explorer	15348	27136.0	ADAYRYSTSQJWJOKED	YZYJWF	65
Explorer	47482	47222.0	ZJORWUJUIBFYBWYPY	AOGBDT	63
Explorer	30610	14070.0	BSZWVUQFJWVCARGIW	QRXBYAI	26
Total of Ford Cars: 23					
GMC					
Infiniti					
Nissan					
Toyota					

11.5.2. Expanding and collapsing the sub-table

Use the boolean `expanded` attribute to control the current state of the sub-table.

The switching mode for performing submissions is determined by the `expandMode` attribute, which can have one of the following three values:

`server`
: The default setting. Expansion of the `<rich:collapsibleSubTable>` component performs a common submission, completely re-rendering the page.

`ajax`
: Expansion of the `<rich:collapsibleSubTable>` component performs an Ajax form submission, and the content of the data table is rendered.

`client`
: Expansion of the `<rich:collapsibleSubTable>` component updates the data table on the client side.

11.5.3. Reference data

- *`component-type`*: `org.richfaces.CollapsibleSubTable`
- *`component-class`*: `org.richfaces.component.html.HtmlCollapsibleSubTable`
- *`component-family`*: `org.richfaces.CollapsibleSubTable`
- *`renderer-type`*: `org.richfaces.CollapsibleSubTable`
- *`tag-class`*: `org.richfaces.taglib.CollapsibleSubTableTag`

11.5.4. `<rich:collapsibleSubTableToggler>`

The `<rich:collapsibleSubTableToggler>` component provides a toggle control for the user to expand and collapse sub-tables.

11.5.4.1. Basic usage

The `<rich:collapsibleSubTableToggler>` component requires the `for` attribute. The `for` attribute references the `id` identifier of the `<rich:collapsibleSubTable>` component to control.

Refer to *Example 11.7, "Basic usage"* for an example using the `<rich:collapsibleSubTable>` component. In the example, the toggle control is placed in a column that spans the width of the table. Output text next to the toggle control displays the car vendor's name for that sub-table.

11.5.4.2. Reference data

- *`component-type`*: `org.richfaces.CollapsibleSubTableToggler`
- *`component-class`*: `org.richfaces.component.html.HtmlCollapsibleSubTableToggler`
- *`component-family`*: `org.richfaces.CollapsibleSubTableToggler`
- *`renderer-type`*: `org.richfaces.CollapsibleSubTableToggler`
- *`tag-class`*: `org.richfaces.taglib.CollapsibleSubTableTogglerTag`

11.6. <rich:extendedDataTable>

The <rich:extendedDataTable> component builds on the functionality of the <rich:dataTable> component, adding features such as data scrolling, row and column selection, and rearranging of columns.

The <rich:extendedDataTable> component includes the following main attributes not included in the <rich:dataTable> component:

- clientRows
- frozenColumns
- height
- onselectionchange
- selectedClass
- selection
- selectionMode

The <rich:extendedDataTable> component does *not* include the following attributes available with the <rich:dataTable> component:

- breakBefore
- columnGroup
- colSpan
- rowSpan

Complex sub-tables

Due to the complex mark-up involved in the <rich:extendedDataTable> component, it does not support the use of the <rich:collapsibleSubTable> component. The <rich:collapsibleSubTable> component is only available with the <rich:dataTable> component.

Similarly, complex row and column spanning using the breakBefore, columnGroup, colSpan, and rowSpan attributes is also not available with the <rich:extendedDataTable> component.

11.6.1. Basic usage

Basic use of the <rich:extendedDataTable> component requires the value and var attributes, the same as with the <rich:dataTable> component. Refer to *Section 11.2, "<rich:dataTable>"* for details.

11.6.2. Table appearance

The `height` attribute defines the height of the table on the page. This is set to `100%` by default. The width of the table can be set by using the `width` attribute. As with the `<rich:dataTable>` component, the look of the `<rich:extendedDataTable>` component can be customized and skinned using the `header` and `footer` facets.

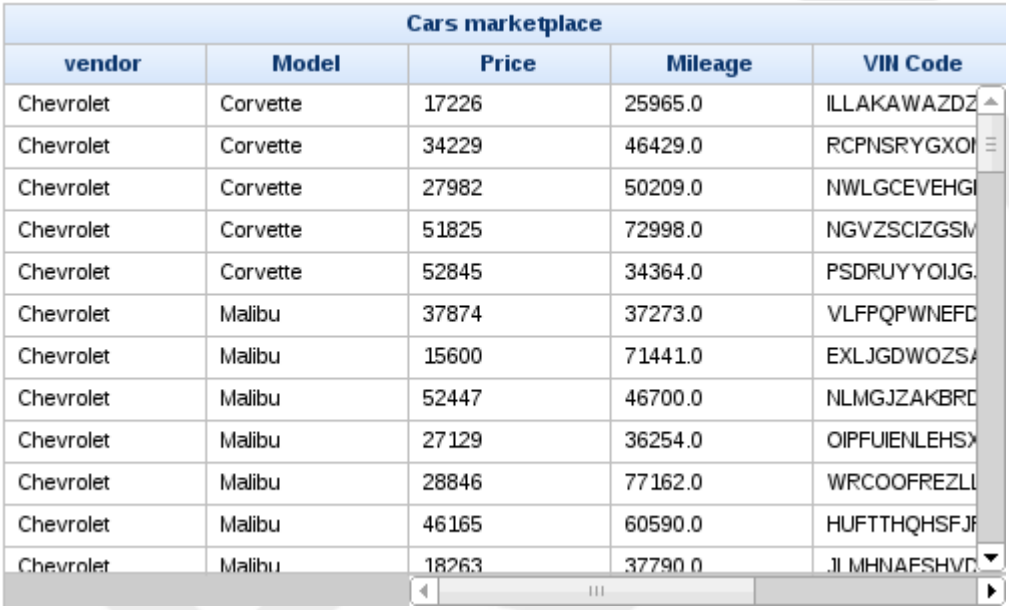
11.6.3. Extended features

Example 11.8. `<rich:extendedDataTable>` example

This example `<rich:extendedDataTable>` component demonstrates horizontal and vertical scrolling and frozen columns. Each feature is detailed in this section.

```
<rich:extendedDataTable value="#{carsBean.allInventoryItems}"
                        var="car" id="table" frozenColumns="2"
                       style="height:300px; width:500px;" selectionMode="none">
   <f:facet name="header">
      <h:outputText value="Cars marketplace" />
   </f:facet>
   <rich:column>
      <f:facet name="header">
         <h:outputText value="vendor" />
      </f:facet>
      <h:outputText value="#{car.vendor}" />
   </rich:column>
   <rich:column>
      <f:facet name="header">
         <h:outputText value="Model" />
      </f:facet>
      <h:outputText value="#{car.model}" />
   </rich:column>
   <rich:column>
      <f:facet name="header">
         <h:outputText value="Price" />
      </f:facet>
      <h:outputText value="#{car.price}" />
   </rich:column>
   <rich:column>
      <f:facet name="header">
         <h:outputText value="Mileage" />
      </f:facet>
      <h:outputText value="#{car.mileage}" />
   </rich:column>
   <rich:column>
      <f:facet name="header">
         <h:outputText value="VIN Code" />
      </f:facet>
```

```
      <h:outputText value="#{car.vin}" />
   </rich:column>
   <rich:column>
      <f:facet name="header">
         <h:outputText value="Items stock" />
      </f:facet>
      <h:outputText value="#{car.stock}" />
   </rich:column>
   <rich:column>
      <f:facet name="header">
         <h:outputText value="Days Live" />
      </f:facet>
      <h:outputText value="#{car.daysLive}" />
   </rich:column>
</rich:extendedDataTable>
```



Cars marketplace

vendor	Model	Price	Mileage	VIN Code
Chevrolet	Corvette	17226	25965.0	ILLAKAWAZDZ
Chevrolet	Corvette	34229	46429.0	RCPNSRYGXO
Chevrolet	Corvette	27982	50209.0	NWLGCEVEHG
Chevrolet	Corvette	51825	72998.0	NGVZSCIZGSM
Chevrolet	Corvette	52845	34364.0	PSDRUYYOIJG
Chevrolet	Malibu	37874	37273.0	VLFPQPWNEFD
Chevrolet	Malibu	15600	71441.0	EXLJGDWOZSA
Chevrolet	Malibu	52447	46700.0	NLMGJZAKBRD
Chevrolet	Malibu	27129	36254.0	OIPFUIENLEHSX
Chevrolet	Malibu	28846	77162.0	WRCOOFREZLL
Chevrolet	Malibu	46165	60590.0	HUFTTHQHSFJ
Chevrolet	Malibu	18263	37790.0	JLMHNAFSHVD

11.6.3.1. Scrolling

The example table shown in *Example 11.8, "<rich:extendedDataTable> example"* features both horizontal and vertical scrolling. Scrolling occurs automatically when the contents of the table exceed the dimensions specified with the `height` and `width` attributes. Headers and footers remain in place and visible when the table is scrolled.

Large tables can use Ajax "lazy" loading to cache data on the client during scrolling. Use the `clientRows` attribute to specify the number of rows to load. The specified number of rows are loaded on the initial rendering and with every vertical scroll. If the `clientRows` attribute is not specified, all the rows are loaded on the client without the use of Ajax.

In addition to Ajax scrolling, the `<rich:extendedDataTable>` component can also be used with the `<rich:dataScroller>` component in the same way as a regular `<rich:dataTable>`

component. Refer to *Section 11.9, "<rich:dataScroller>"* for full details on using the `<rich:dataScroller>` component.

11.6.3.2. Frozen columns

The example table shown in *Example 11.8, "<rich:extendedDataTable> example"* has the first two columns frozen so that they remain visible if the user scrolls horizontally through the table. Note that the horizontal scrollbar does not encompass these frozen columns. To freeze columns, use the `frozenColumns` attribute to specify the number of columns on the left-hand side of the table to freeze.

11.6.3.3. Row selection

Row selection is determined by the `selectionMode` attribute. Setting the attribute to `none` allows for no row selection capability. The example table shown in *Example 11.8, "<rich:extendedDataTable> example"* does not allow row selection.

Setting the `selectionMode` attribute to `single` allows the user to select a single row at a time using the mouse. With the `selectionMode` attribute set to `multi`, the user can select multiple rows. Holding down the **Ctrl** key while clicking selects additional rows with each click. Holding down the **Shift** key while clicking selects all the rows in a range.

The `selection` attribute points to a collection of objects. It holds the `rowKey` identifiers to track which rows are selected. *Example 11.9, "Selecting multiple rows"* shows how to implement multiple row selection in the same table from *Example 11.8, "<rich:extendedDataTable> example"*.

Example 11.9. Selecting multiple rows

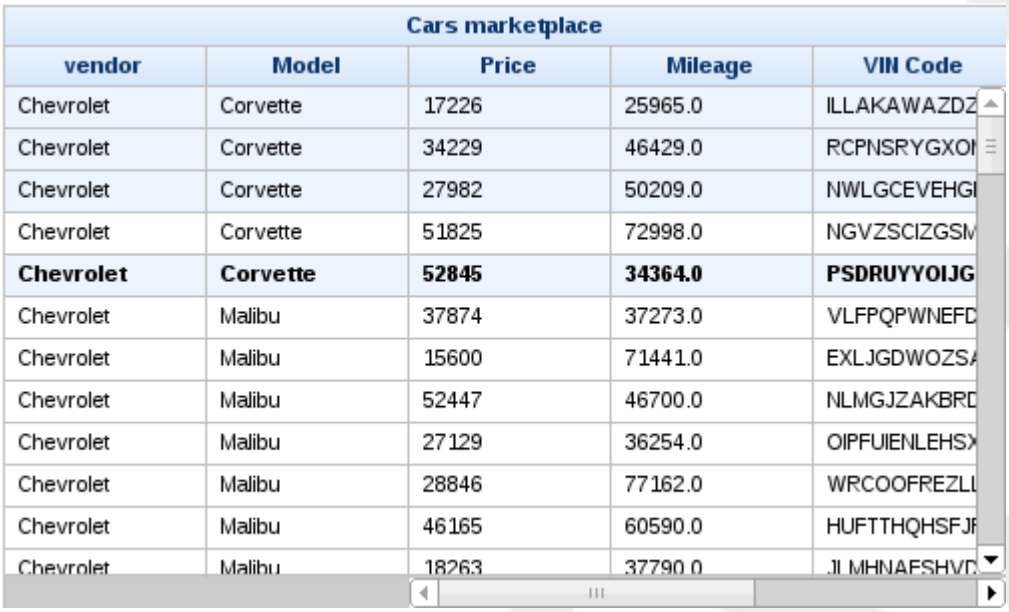
```
<rich:extendedDataTable value="#{extTableSelectionBean.inventoryItems}"
                        var="car" selection="#{extTableSelectionBean.selection}"
                         id="table" frozenColumns="2"
                       style="height:300px; width:500px;" selectionMode="multi">
   ...
```

The accompanying `ExtSelectionBean` bean handles which rows are selected. The rows are identified by their `rowKey` identifiers.

```
package org.richfaces.demo.tables;

import java.io.Serializable;
import java.util.ArrayList;
import java.util.Collection;
import java.util.List;

import javax.faces.bean.ManagedBean;
import javax.faces.bean.ManagedProperty;
```

```
import javax.faces.bean.SessionScoped;
import javax.faces.event.AjaxBehaviorEvent;

import org.richfaces.component.UIExtendedDataTable;
import org.richfaces.demo.tables.model.cars.InventoryItem;

@ManagedBean
@SessionScoped

public class ExtTableSelectionBean implements Serializable{

   private Collection<Object> selection;
   @ManagedProperty(value = "#{carsBean.allInventoryItems}")
   private List<InventoryItem> inventoryItems;
   private List<InventoryItem> selectionItems = new ArrayList<InventoryItem>();

   public void selectionListener(AjaxBehaviorEvent event){
     UIExtendedDataTable dataTable = (UIExtendedDataTable)event.getComponent();
      Object originalKey = dataTable.getRowKey();
      selectionItems.clear();
      for (Object selectionKey: selection) {
         dataTable.setRowKey(selectionKey);
         if (dataTable.isRowAvailable()){
            selectionItems.add((InventoryItem)dataTable.getRowData());
         }
      }
      dataTable.setRowKey(originalKey);
   }

   public Collection<Object> getSelection() {
      return selection;
   }

   public void setSelection(Collection<Object> selection) {
      this.selection = selection;
   }

   public List<InventoryItem> getInventoryItems() {
      return inventoryItems;
   }

   public void setInventoryItems(List<InventoryItem> inventoryItems) {
      this.inventoryItems = inventoryItems;
   }

   public List<InventoryItem> getSelectionItems() {
      return selectionItems;
   }
```

```
    public void setSelectionItems(List<InventoryItem> selectionItems) {
        this.selectionItems = selectionItems;
    }
}
```

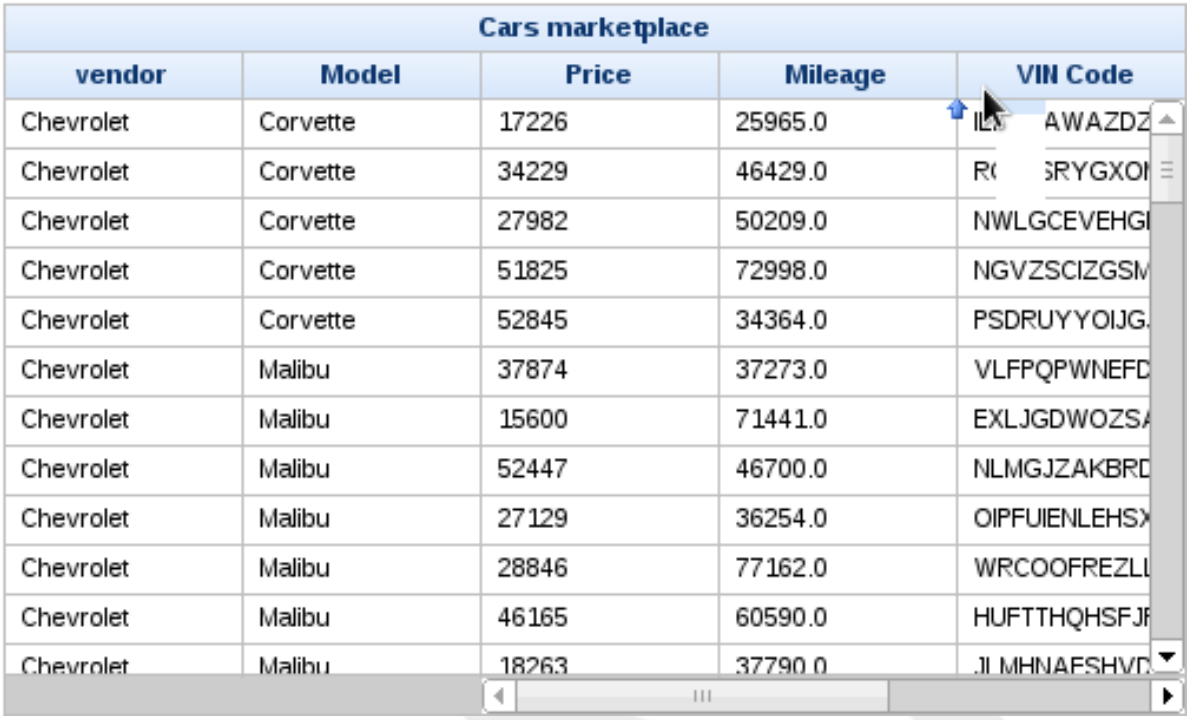


Cars marketplace

vendor	Model	Price	Mileage	VIN Code
Chevrolet	Corvette	17226	25965.0	ILLAKAWAZDZ
Chevrolet	Corvette	34229	46429.0	RCPNSRYGXOI
Chevrolet	Corvette	27982	50209.0	NWLGCEVEHGI
Chevrolet	Corvette	51825	72998.0	NGVZSCIZGSM
Chevrolet	**Corvette**	**52845**	**34364.0**	**PSDRUYYOIJG**
Chevrolet	Malibu	37874	37273.0	VLFPQPWNEFD
Chevrolet	Malibu	15600	71441.0	EXLJGDWOZSA
Chevrolet	Malibu	52447	46700.0	NLMGJZAKBRD
Chevrolet	Malibu	27129	36254.0	OIPFUIENLEHSX
Chevrolet	Malibu	28846	77162.0	WRCOOFREZLL
Chevrolet	Malibu	46165	60590.0	HUFTTHQHSFJF
Chevrolet	Malibu	18263	37790.0	JLMHNAESHVD

11.6.3.4. Rearranging columns

Columns in a `<rich:extendedDataTable>` component can be rearranged by the user by dragging each column to a different position. A graphical representation of the column is displayed during dragging. *Figure 11.6, "Dragging columns"* illustrates the **Price** column being dragged to a new location. The small blue arrow indicates where the column will be moved to if it is dropped in the current position. *Figure 11.7, "Rearranged columns"* shows the result of dragging the **Price** column.



Cars marketplace				
vendor	Model	Price	Mileage	VIN Code
Chevrolet	Corvette	17226	25965.0	IL AWAZDZ
Chevrolet	Corvette	34229	46429.0	R(RYGXOI
Chevrolet	Corvette	27982	50209.0	NWLGCEVEHG
Chevrolet	Corvette	51825	72998.0	NGVZSCIZGSM
Chevrolet	Corvette	52845	34364.0	PSDRUYYOIJG.
Chevrolet	Malibu	37874	37273.0	VLFPQPWNEFD
Chevrolet	Malibu	15600	71441.0	EXLJGDWOZSA
Chevrolet	Malibu	52447	46700.0	NLMGJZAKBRD
Chevrolet	Malibu	27129	36254.0	OIPFUIENLEHSX
Chevrolet	Malibu	28846	77162.0	WRCOOFREZLL
Chevrolet	Malibu	46165	60590.0	HUFTTHQHSFJF
Chevrolet	Malibu	18263	37790.0	JLMHNAFSHVD

Figure 11.6. Dragging columns

Cars marketplace				
vendor	Model	Mileage	Price	VIN Code
Chevrolet	Corvette	25965.0	17226	ILLAKAWAZDZ
Chevrolet	Corvette	46429.0	34229	RCPNSRYGXOI
Chevrolet	Corvette	50209.0	27982	NWLGCEVEHG
Chevrolet	Corvette	72998.0	51825	NGVZSCIZGSM
Chevrolet	Corvette	34364.0	52845	PSDRUYYOIJG.
Chevrolet	Malibu	37273.0	37874	VLFPQPWNEFD
Chevrolet	Malibu	71441.0	15600	EXLJGDWOZSA
Chevrolet	Malibu	46700.0	52447	NLMGJZAKBRD
Chevrolet	Malibu	36254.0	27129	OIPFUIENLEHSX
Chevrolet	Malibu	77162.0	28846	WRCOOFREZLL
Chevrolet	Malibu	60590.0	46165	HUFTTHQHSFJF
Chevrolet	Malibu	37790.0	18263	JLMHNAFSHVD

Figure 11.7. Rearranged columns

11.6.3.5. Filtering and sorting

The `<rich:extendedDataTable>` component can include filtering and sorting in the same way as a regular `<rich:dataTable>` component. For full details on filtering tables, refer to *Section 11.10, "Table filtering"*. For full details on sorting tables, refer to *Section 11.11, "Table sorting"*.

11.6.4. JavaScript API

The `<rich:extendedDataTable>` component can be controlled through the JavaScript API. The JavaScript API provides the following functions:

`sort()`
: Sort the data table.

`filter()`
: Filter the data table.

`clearSorting()`
: Clear any sorting that is currently applied to the table.

`clearFiltering()`
: Clear any filtering that is currently applied to the table.

`selectRow(index)`
: Select the row specified by the *`index`* parameter.

`selectRows([startIndex, stopIndex])`
: Select all the rows in the table. Optionally, select only those rows between the indexes specified with the *`startIndex`* and *`stopIndex`* parameters.

`deselectRow`
: Deselect the row that is currently selected.

`setActiveRow(index)`
: Set the active row to that specified by the *`index`* parameter.

11.6.5. Reference data

- *`component-type`*: `org.richfaces.ExtendedDataTable`
- *`component-class`*: `org.richfaces.component.html.HtmlExtendedDataTable`
- *`component-family`*: `org.richfaces.ExtendedDataTable`
- *`renderer-type`*: `org.richfaces.ExtendedDataTableRenderer`

- *tag-class*: `org.richfaces.taglib.ExtendedDataTableTag`

11.7. `<rich:dataGrid>`

The `<rich:dataGrid>` component is used to arrange data objects in a grid. Values in the grid can be updated dynamically from the data model, and Ajax updates can be limited to specific rows. The component supports `header`, `footer`, and `caption` facets.

The `<rich:dataGrid>` component is similar in function to the JavaServer Faces `<h:panelGrid>` component. However, the `<rich:dataGrid>` component additionally allows iteration through the data model rather than just aligning child components in a grid layout.

Figure 11.8. The `<rich:dataGrid>` component

11.7.1. Basic usage

The `<rich:dataGrid>` component requires the `value` attribute, which points to the data model, and the `var` attribute, which holds the current variable for the collection of data.

11.7.2. Customizing the grid

The number of columns for the grid is specifed with the `columns` attribute, and the number of elements to layout among the columns is determined with the `elements` attribute. The `first` attribute references the zero-based element in the data model from which the grid starts.

Example 11.10. `<rich:dataGrid>` example

```
<rich:panel style="width:150px;height:200px;">
  <h:form>

  <rich:dataGrid value="#{dataTableScrollerBean.allCars}" var="car" columns="2" elements="4" fi
```

```
        <f:facet name="header">
          <h:outputText value="Car Store"></h:outputText>
        </f:facet>
        <rich:panel>
            <f:facet name="header">
              <h:outputText value="#{car.make} #{car.model}"></h:outputText>
            </f:facet>
            <h:panelGrid columns="2">
              <h:outputText value="Price:" styleClass="label"></h:outputText>
              <h:outputText value="#{car.price}"/>
              <h:outputText value="Mileage:" styleClass="label"></h:outputText>
              <h:outputText value="#{car.mileage}"/>
            </h:panelGrid>
        </rich:panel>
        <f:facet name="footer">
            <rich:datascroller></rich:datascroller>
        </f:facet>
    </rich:dataGrid>
  </h:form>
</rich:panel>
```

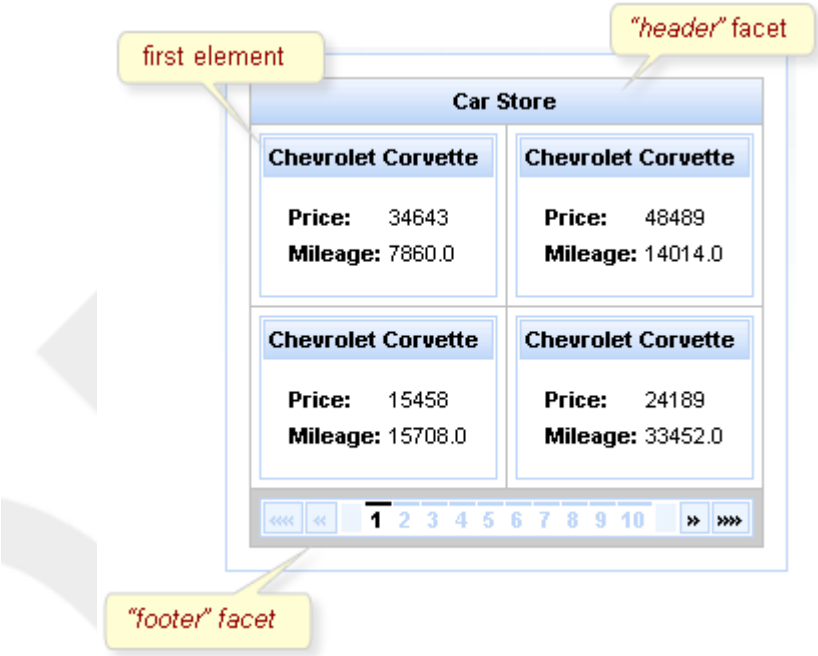


Figure 11.9. `<rich:dataGrid>` example

11.7.3. Patial updates

As `<rich:dataGrid>` the component is based on the `<a4j:repeat>` component, it can be partially updated with Ajax. Refer to *Section 11.1.2, "Limited views and partial updates"* for details on partially updating the `<rich:dataGrid>` component.

11.7.4. Reference data

- *component-type*: org.richfaces.DataGrid
- *component-class*: org.richfaces.component.html.HtmlDataGrid
- *component-family*: org.richfaces.DataGrid
- *renderer-type*: org.richfaces.DataGridRenderer
- *tag-class*: org.richfaces.taglib.DataGridTag

11.8. <rich:list>

The <rich:list> component renders a list of items. The list can be an numerically ordered list, an un-ordered bullet-point list, or a data definition list. The component uses a data model for managing the list items, which can be updated dynamically.

11.8.1. Basic usage

The var attribute names a variable for iterating through the items in the data model. The items to iterate through are determined with the value attribute by using EL (Expression Language).

11.8.2. Type of list

By default, the list is displayed as an un-ordered bullet-point list. The type attribute is used to specify different list types:

unordered
: The default presentation. The list is presented as a series of bullet-points, similar to the <ul> HTML element.

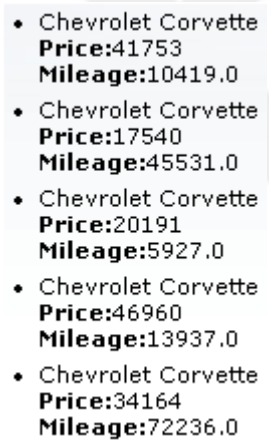


Figure 11.10. Unordered list

`ordered`

The list is presented as a numbered series of items, similar to the `<ol>` HTML element.

1. Chevrolet Corvette
   Price:16080
   Mileage:55773.0
2. Chevrolet Corvette
   Price:49936
   Mileage:72356.0
3. Chevrolet Corvette
   Price:52167
   Mileage:30749.0
4. Chevrolet Corvette
   Price:21148
   Mileage:55447.0
5. Chevrolet Corvette
   Price:18098
   Mileage:16296.0

Figure 11.11. Ordered list

`definitions`

The list is presented as a series of data definitions. Part of the data model, specified as the term, is listed prominently. The other associated data is listed after each term.

Chevrolet Corvette
Price:18098
Mileage:16296.0
Chevrolet Malibu
Price:36523
Mileage:46112.0
Chevrolet Malibu
Price:33307
Mileage:57709.0
Chevrolet Malibu
Price:34248
Mileage:62821.0
Chevrolet Malibu
Price:51555
Mileage:51549.0

Figure 11.12. Data definition list

The term is marked using the `term` facet. The facet is required for all definition lists. Use of the facet is shown in *Example 11.11, "Data definition list"*.

Example 11.11. Data definition list

```
<h:form>

  <rich:list var="car" value="#{dataTableScrollerBean.allCars}" type="definitions" rows="5"
        <f:facet name="term">
            <h:outputText value="#{car.make} #{car.model}"></h:outputText>
        </f:facet>
        <h:outputText value="Price:" styleClass="label"></h:outputText>
```

```
            <h:outputText value="#{car.price}" /><br/>
            <h:outputText value="Mileage:" styleClass="label"></h:outputText>
            <h:outputText value="#{car.mileage}" /><br/>
        </rich:list>
    </h:form>
```

11.8.3. Bullet and numeration appearance

The appearance of bullet points for unordered lists or numeration for ordered lists can be customized through CSS, using the list-style-type property.

11.8.4. Customizing the list

The `first` attribute specifies which item in the data model to start from, and the `rows` attribute specifies the number of items to list. The `title` attribute is used for a floating tool-tip. *Example 11.12, "<rich:list> example"* shows a simple example using the `<rich:list>` component.

Example 11.12. `<rich:list>` example

```
<h:form>

<rich:list var="car" value="#{dataTableScrollerBean.allCars}" rows="5" type="unordered" title="Car
    Store">
        <h:outputText value="#{car.make} #{car.model}"/><br/>
        <h:outputText value="Price:" styleClass="label"></h:outputText>
        <h:outputText value="#{car.price} "/><br/>
        <h:outputText value="Mileage:" styleClass="label"></h:outputText>
        <h:outputText value="#{car.mileage} "/><br/>
    </rich:list>
</h:form>
```

- Chevrolet Corvette
  Price:41753
  Mileage:10419.0
- Chevrolet Corvette
  Price:17540
  Mileage:45531.0
- Chevrolet Corvette
  Price:20191
  Mileage:5927.0
- Chevrolet Corvette
  Price:46960
  Mileage:13937.0
- Chevrolet Corvette
  Price:34164
  Mileage:72236.0

Figure 11.13. `<rich:list>` example

11.8.5. Reference data

- *component-type*: `org.richfaces.List`
- *component-class*: `org.richfaces.component.html.HtmlList`
- *component-family*: `org.richfaces.List`
- *renderer-type*: `org.richfaces.ListRenderer`
- *tag-class*: `org.richfaces.taglib.ListTag`

11.9. `<rich:dataScroller>`

The `<rich:dataScroller>` component is used for navigating through multiple pages of tables or grids.

Figure 11.14. The `<rich:dataScroller>` component

11.9.1. Basic usage

The `<rich:dataScroller>` must be placed in the `footer` facet of the table or grid it needs to control. Alternatively, use the `for` attribute to bind the parent table or grid to the scroller.

The bound table or grid should also have the `rows` attribute defined to limit the number of rows per page.

The `<rich:dataScroller>` component must be re-rendered whenever a filter changes on the bound table, so that the scroller matches the current model for the table.

Example 11.13. Basic usage

```
<rich:dataTable id="table" value="#{capitalsBean.capitals}" var="cap" rows="5">
   <!-- table content -->
   ...
</rich:dataTable>
<rich:datascroller for="table" maxPages="5">
   <f:facet name="first">
      <h:outputText value="First" />
   </f:facet>
   <f:facet name="last">
      <h:outputText value="Last" />
   </f:facet>
</rich:datascroller>
```

11.9.2. Appearance and interactivity

The `page` attribute is a value-binding attribute used to define and save the current page number.

The `<rich:dataScroller>` component provides a range of controllers for scrolling through tables and grids:

Controls for scrolling by a specific amount
: The component includes controls for switching to the first page, the last page, the next page, and the previous page, as well as controls for fast-forwarding or rewinding by a set amount. Use the `fastStep` attribute to set the number of pages to skip when fast-forwarding or rewinding.

  The appearance of these controls can be customized using the following facets: `first`, `last`, `next`, `previous`, `fastforward`, and `rewind`. Additionally, there are facets for the controls' disabled states: `first_disabled`, `last_disabled`, `next_disabled`, `previous_disabled`, `fastforward_disabled`, and `rewind_disabled`.

Page controls
: The component also features a series of numbered controls to jump to a specific page. Use the `maxPages` attribute to limit the number of page controls that appear. The current page control is highlighted.

The `pageIndexVar` and `pagesVar` attributes are request-scope variables for the current page and the total number of pages. Use these attributes with the `pages` facet to provide information about the pages of the table, as shown in *Example 11.14, "pages facet"*.

Example 11.14. `pages` facet

```
<rich:dataTable value="#{capitalsBean.capitals}" var="cap" rows="5">
```

```
   <!-- table content -->
   ...
   <f:facet name="footer">
      <rich:datascroller pageIndexVar="pageIndex" pagesVar="pages">
         <f:facet name="pages">
            <h:outputText value="#{pageIndex} / #{pages}" />
         </f:facet>
      </rich:datascroller>
   </f:facet>
</rich:dataTable>
```

To add optional separators between controls, define the separators with the `controlsSeparator` facet.

11.9.3. JavaScript API

The `<rich:dataScroller>` component can be controlled through the JavaScript API. The JavaScript API provides the following functions:

`switchToPage(pageIndex)`
: Switch to the page specified with the *`pageIndex`* parameter.

`next()`
: Switch to the next page.

`previous()`
: Switch to the previous page.

`first()`
: Switch to the first page.

`last()`
: Switch to the last page.

`fastForward()`
: Step forward through the pages by the `fastStep` amount.

`fastRewind()`
: Step backward through the pages by the `fastStep` amount.

11.9.4. Reference data

- *`component-type`*: `org.richfaces.DataScroller`
- *`component-class`*: `org.richfaces.component.html.HtmlDataScroller`
- *`component-family`*: `org.richfaces.DataScroller`
- *`renderer-type`*: `org.richfaces.DataScrollerRenderer`

- *tag-class*: `org.richfaces.taglib.DataScrollerTag`

11.10. Table filtering

Documentation in development

This section is currently under development. Any features it describes may not be available in the current release of RichFaces.

Tables entries can be filtered by the user through either the basic method built in to the `<rich:column>` component, or by defining external filters. Refer to *Section 11.3, "<rich:column>"* for details on using the `<rich:column>` component in tables.

11.10.1. Basic filtering

The built-in filtering abilities of the `<rich:column>` component allow the user to enter text as a filtering value. The table displays only those entries that begin with the filter value.

Set the `filterValue` attribute to point to the value used to filter the column. This can be either an initial filtering value on the page, or a value binding on the server. The `filterValue` value is then used with the JavaScript `startsWith()` method to filter the column entries based on the data specified with the `filterBy` attribute. Expressions in the `filterBy` attribute must refer to the variable declared in the table's `var` attribute, which is used to fill the contents of the table.

The filter is processed and the table is rendered when the `onblur` event occurs for the column. This can be changed by defining a different event with the `filterEvent` attribute. For example, to implement live updating such that the filter refreshes after every keystroke, set `filterEvent="keyup"`.

Example 11.15. Basic filtering

```
<rich:dataTable value="#{capitalsBean.capitals}" var="cap">
   <f:facet name="header">
      <rich:column>
         <h:outputText value="State Name">
      </rich:column>
      <rich:column>
         <h:outputText value="State Capital">
      </rich:column>
   </f:facet>
   <rich:column filterValue="#{capitalsBean.currentStateFilterValue}"
                filterBy="#{cap.state}" filterEvent="keyup">
      <h:outputText value="#{cap.state}"/>
   </rich:column>
   <rich:column filterValue="#{capitalsBean.currentNameFilterValue}"
                filterBy="#{cap.name}" filterEvent="keyup">
```

```
      <h:outputText value="#{cap.name}"/>
   </rich:column>
</rich:dataTable>
```

The example uses the basic filtering method on both columns in the table.

State Name	State Capital
n	
Nebraska	Lincoln
Nevada	Carson City
New Hampshire	Concord
New Jersey	Trenton
New Mexico	Santa Fe
New York	Albany
North Carolina	Raleigh
North Dakota	Bismarck

11.10.2. External filtering

If you require more advanced filtering using custom functions or expressions, use the external filtering properties of the `<rich:column>` component.

Use the `filterExpression` attribute to define an expression that can be evaluated as a boolean value. The expression checks if each table entry satisfies the filtering condition when the table is rendered.

Use the `filterMethod` attribute to define a method binding. The method needs to accept an object as a parameter and return a boolean value. Similar to the `filterExpression` attribute, the table is rendered only with those entries that satisfy the filtering condition. By defining a custom filtering method, you can implement complex business logic to filter a table.

Example 11.16. External filtering

```
<rich:dataTable value="#{capitalsBean.capitals}" var="cap" id="table">
   <f:facet name="header">
      <rich:column>
         <h:outputText value="State Name">
      </rich:column>
      <rich:column>
         <h:outputText value="State Time Zone">
      </rich:column>
   </f:facet>
   <rich:column filterMethod="#{filteringBean.filterStates}">
        <f:facet name="header">
            <h:inputText value="#{filteringBean.filterValue}" id="input">
```

```
                <a4j:ajax event="keyup" render="table"
                                ignoreDupResponses="true" requestDelay="700"/>
            </h:inputText>
        </f:facet>
      <h:outputText value="#{cap.state}"/>
   </rich:column>
   <rich:column filterExpression=
      "#{fn:containsIgnoreCase(cap.timeZone, filteringBean.filterZone)}">
        <f:facet name="header">
            <h:selectOneMenu value="#{filteringBean.filterZone}">
                <f:selectItems value="#{filteringBean.filterZones}" />
                <a4j:ajax event="change" render="table" />
            </h:selectOneMenu>
        </f:facet>
      <h:outputText value="#{cap.timeZone}"/>
   </rich:column>
</rich:dataTable>
```

The example uses a filter expression on the first column and a filter method on the second column.

State Name	State Time Zone
n	-5
New Hampshire	GMT-5
New Jersey	GMT-5
New York	GMT-5
North Carolina	GMT-5

11.11. Table sorting

Documentation in development

This section is currently under development. Any features it describes may not be available in the current release of RichFaces.

Tables entries can be sorted by defining external sorting algorithms. Refer to *Section 11.3, "<rich:column>"* for details on using the `<rich:column>` component in tables.

Sorting non-English tables

To sort a table whose contents are not in English, add the `org.richfaces.datatableUsesViewLocale` context parameter to the project's `web.xml` settings file. Set the value of the context parameter to `true`.

11.11.1. External sorting

Bind the `sortOrder` attribute to bean properties to manage the sorting order externally. The bean must handle all the sorting algorithms. *Example 11.17, "External sorting"* demonstrates table sorting using an external control.

Example 11.17. External sorting

```
<rich:dataTable value="#{dataTableScrollerBean.allCars}"
                var="category" rows="20" id="table" reRender="ds2"
                sortPriority="#{sortingBean.prioritList}">
   <rich:column id="make" sortBy="#{category.make}"
                sortOrder="#{sortingBean.makeDirection}">
      <f:facet name="header">
         <h:outputText styleClass="headerText" value="Make" />
      </f:facet>
      <h:outputText value="#{category.make}" />
   </rich:column>
   <rich:column id="model" sortBy="#{category.model}"
                sortOrder="#{sortingBean.modelDirection}">
      <f:facet name="header">
         <h:outputText styleClass="headerText" value="Model" />
      </f:facet>
      <h:outputText value="#{category.model}" />
   </rich:column>
   <rich:column id="price" sortBy="#{category.price}"
                sortOrder="#{sortingBean.priceDirection}">
      <f:facet name="header">
         <h:outputText styleClass="headerText" value="Price" />
      </f:facet>
      <h:outputText value="#{category.price}" />
   </rich:column>
   <rich:column id="mileage" sortBy="#{category.mileage}"
                sortOrder="#{sortingBean.mileageDirection}">
      <f:facet name="header">
         <h:outputText styleClass="headerText" value="Mileage" />
      </f:facet>
      <h:outputText value="#{category.mileage}" />
   </rich:column>
</rich:dataTable>
```

The example uses an external control to manage the table's sorting.

Make	Model	Price	Mileage
Chevrolet	Corvette	21227	32792.0
Chevrolet	Corvette	26659	14208.0
Chevrolet	Corvette	45779	24349.0
Chevrolet	Malibu	15708	74154.0
Chevrolet	Malibu	54037	71257.0
Chevrolet	Malibu	39646	31674.0
Chevrolet	S-10	21599	39670.0
Chevrolet	S-10	18042	65112.0
Chevrolet	S-10	42683	22633.0

When using the `sortMode="multiple"` configuration, set the priority by which columns are sorted with the `sortPriorities` attribute.

Use the `sortExpression` attribute to define a bean property to use for sorting the column. The expression checks each table entry against the sorting expression during rendering.

Trees

Read this chapter for details on components that use tree structures.

12.1. <rich:tree>

The <rich:tree> component provides a hierarchical tree control. Each <rich:tree> component typically consists of <rich:treeNode> child components. The appearance and behavior of the tree and its nodes can be fully customized.

12.1.1. Basic usage

The <rich:tree> component requires the value attribute to point to the data model for populating the tree. The data model must be either an org.richfaces.model.TreeNode interface, an org.richfaces.model.TreeDataModel interface, or a javax.swing.tree.TreeNode interface. The var attribute declares the variable used for iterating through the data model, so that child <rich:treeNode> components can reference each iteration.

Ideally, the <rich:tree> component needs one or more <rich:treeNode> components to work with the data model. However if no <rich:treeNode> components are provided the tree creates default nodes instead.

Example 12.1. Basic usage

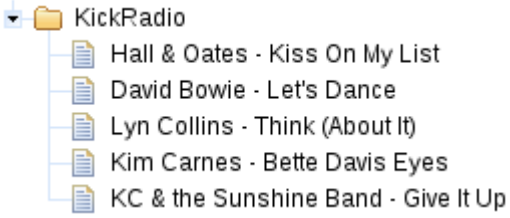
This example demonstrates basic usage of the <rich:tree> component using an org.richfaces.model.TreeNode data model.

The data model is constructed as follows:

```
private TreeNodeImpl<String> stationRoot = new TreeNodeImpl<String>();
private TreeNodeImpl<String> stationNodes = new TreeNodeImpl<String>();
private String[] kickRadioFeed = { "Hall & Oates - Kiss On My List",
                                   "David Bowie - Let's Dance",
                                   "Lyn Collins - Think (About It)",
                                   "Kim Carnes - Bette Davis Eyes",
                                   "KC & the Sunshine Band - Give It Up" };

stationRoot.setData("KickRadio");
stationNodes.addChild(0, stationRoot);
for (int i = 0; i < kickRadioFeed.length; i++){
   TreeNodeImpl<String> child = new TreeNodeImpl<String>();
   child.setData(kickRadioFeed[i]);
   stationRoot.addChild(i, child);
}
```

The tree then accesses the nodes of the model using the `station` variable:

```
<rich:tree value="#{stations.stationNodes}" var="station">
   <rich:treeNode>
      <h:outputText value="#{station}" />
   </rich:treeNode>
</rich:tree>
```



12.1.2. Appearance

Different nodes in the tree can have different appearances, such as node icons, depending on the type of data the node contains. Use the `nodeType` attribute to differentiate the types of nodes; the node is then rendered according to the `<rich:treeNode>` component with the corresponding `type` attribute. *Example 12.2, "nodeType attribute"* shows a `<rich:tree>` component with three different child `<rich:treeNode>` components defined to represent three different node appearances. Refer to *Section 12.1.8.2, "Appearance"* for details on customizing the appearance of `<rich:treeNode>` components.

Example 12.2. `nodeType` attribute

```
<rich:tree style="width:300px" value="#{library.data}" var="item" nodeType="#{item.type}">
               <rich:treeNode     type="artist"     iconExpanded="/images/tree/
singer.png" iconCollapsed="/images/tree/singer.png">
      <h:outputText value="#{item.name}" />
   </rich:treeNode>
               <rich:treeNode     type="album"     iconExpanded="/images/tree/
disc.png" iconCollapsed="/images/tree/disc.png">
      <h:outputText value="#{item.album}" />
   </rich:treeNode>
   <rich:treeNode type="song" iconLeaf="/images/tree/song.png">
      <h:outputText value="#{item.title}" />
   </rich:treeNode>
</rich:tree>
```

If the `nodeType` attribute returns null, the node is rendered as a "*typeless*" (or default) node. The *typeless* node is the first child `<rich:treeNode>` component with a valid `rendered` attribute, but without a defined `type` attribute.

If the `nodeType` attribute is not included and there are no child `<rich:treeNode>` components, the tree constructs a default node itself.

Icons for different nodes and node states can be defined for the whole tree using the following attributes:

`iconLeaf`
: The `iconLeaf` attribute points to the icon to use for any node that does not contain any child nodes.

`iconExpanded` and `iconCollapsed`
: The `iconExpanded` and `iconCollapsed` attributes point to the icons to use for expanded and collapsed nodes respectively. If these attributes are defined, the `icon` attribute is not used.

12.1.3. Expanding and collapsing tree nodes

The mode for performing submissions when nodes are expanded or collapsed is determined by the `toggleType` attribute, which can have one of the following three values:

`ajax`
: This is the default setting. The `<rich:tree>` component performs an Ajax form submission, and only the content of the tree is rendered.

`server`
: The `<rich:tree>` component performs a common submission, completely re-rendering the page.

`client`
: The `<rich:tree>` component updates on the client side, re-rendering itself and any additional components listed with the `render` attribute.

By default, the event to expand or collapse a tree node is a mouse click. To specify a different event, use the `toggleNodeEvent` attribute.

12.1.4. Selecting tree nodes

The mode for performing submissions when nodes are selected is determined by the `selectionType` attribute, which can have one of the following three values:

`ajax`
: This is the default setting. The `<rich:tree>` component performs an Ajax form submission, and only the content of the tree is rendered.

`server`
: The `<rich:tree>` component performs a common submission, completely re-rendering the page.

`client`
: The `<rich:tree>` component updates on the client side, re-rendering itself and any additional components listed with the `render` attribute.

12.1.5. Identifying nodes with the `rowKeyConverter` attribute

If the `<rich:tree>` component uses a custom data model, the data model provides unique keys for tree nodes so they can be identified during a client request. The `<rich:tree>` component can use strings as key values. These strings may contain special characters that are not allowed by browsers, such as the left angle bracket (<) and ampersand (&). To allow these characters in the keys, a row key converter must be provided.

To apply a converter to the `<rich:tree>` component, define it with the `rowKeyConverter` attribute.

12.1.6. Event handling

In addition to the standard Ajax events and HMTL events, the `<rich:tree>` component uses the following client-side events:

- The `nodetoggle` event is triggered when a node is expanded or collapsed.
- The `beforenodetoggle` event is triggered before a node is expanded or collapsed.
- The `selectionchange` event is triggered when a node is selected.
- The `beforeselectionchange` event is triggered before a node is selected.

The `<rich:tree>` component uses the following server-side listeners:

- The `toggleListener` listener processes expand and collapse events.

- The `selectionChangeListener` listener processes the request when a node is selected.

12.1.7. Reference data

- *`component-type`*: `org.richfaces.tree`
- *`component-class`*: `org.richfaces.component.html.Htmltree`
- *`component-family`*: `org.richfaces.tree`
- *`renderer-type`*: `org.richfaces.treeRenderer`
- *`tag-class`*: `org.richfaces.taglib.treeTag`

12.1.8. `<rich:treeNode>`

The `<rich:treeNode>` component is a child component of the `<rich:tree>` component. It represents nodes in the parent tree. The appearance and functionality of each tree node can be customized.

12.1.8.1. Basic usage

The `<rich:treeNode>` component must be a child of a `<rich:tree>` component. It does not need any attributes declared for basic usage, but can provide markup templates for tree nodes of particular types. Refer to *Example 12.1, "Basic usage"* for an example of basic `<rich:treeNode>` component usage.

12.1.8.2. Appearance

Refer to *Section 12.1.2, "Appearance"* for the `<rich:tree>` component for details and examples on styling nodes and icons. Icon styling for individual `<rich:treeNode>` components uses the same attributes as the parent `<rich:tree>` component: `iconLeaf`, `iconExpanded`, and `iconCollapsed`. Icon-related attributes specified for child `<rich:treeNode>` components overwrite any global icon attributes of the parent `<rich:tree>` component.

Use the `rendered` attribute to determine whether the node should actually be rendered in the tree or not. Using the `rendered` attribute in combination with the `<rich:treeNode>` `type` attribute can allow further style differentiation between node content, as shown in *Example 12.3, "rendered attribute"*.

Example 12.3. `rendered` attribute

The `rendered` attribute is used to differentiate between music albums that are in stock and those that are not. The item `type` attributes return values that are otherwise identical; only the item.exist property differs, so it is used for the `rendered` attribute.

```
<rich:tree style="width:300px" value="#{library.data}"
           var="item" nodeFace="#{item.type}">
   ...
   <rich:treeNode type="album" iconLeaf="/images/tree/album.gif"
                  rendered="#{item.exist}">
      <h:outputText value="#{item.name}" />
   </rich:treeNode>
   <rich:treeNode type="album" iconLeaf="/images/tree/album_absent.gif"
                  rendered="#{not item.exist}">
      <h:outputText value="#{item.name}" />
   </rich:treeNode>
   ...
</rich:tree>
```

12.1.8.3. Interactivity

Interactivity with individual nodes, such as expanding, collapsing, and other event handling, can be managed by the parent `<rich:tree>` component. Refer to *Section 12.1.3, "Expanding and collapsing tree nodes"* and *Section 12.1.6, "Event handling"* for further details.

Use the `expanded` attribute to determine whether the node is expanded or collapsed.

12.1.8.4. Reference data

- *component-type*: `org.richfaces.treeNode`
- *component-class*: `org.richfaces.component.html.HtmltreeNode`
- *component-family*: `org.richfaces.treeNode`
- *renderer-type*: `org.richfaces.treeNodeRenderer`
- *tag-class*: `org.richfaces.taglib.treeNodeTag`

12.2. Tree adaptors

Use a tree adaptor to populate a tree model declaratively from a non-hierarchical model, such as a list or a map.

12.2.1. `<rich:treeModelAdaptor>`

The `<rich:treeModelAdaptor>` component takes an object which implements the `Map` or `Iterable` interfaces. It adds all the object entries to the parent node as child nodes.

12.2.1.1. Basic usage

The `<rich:treeModelAdaptor>` component is added as a nested child component to a `<rich:tree>` component, or to another tree adaptor component.

The `<rich:treeModelAdaptor>` component requires the `nodes` attribute for basic usage. The `nodes` attribute defines a collection of elements to iterate through for populating the nodes.

Define the appearance of each node added by the adaptor with a child `<rich:treeNode>` component. Refer to *Section 12.1.8, "<rich:treeNode>"* for details on the `<rich:treeNode>` component.

12.2.1.2. Multiple levels

`<rich:treeModelAdaptor>` components can further be nested in other `<rich:treeModelAdaptor>` components to subsequently populate lower levels of the tree.

To access the current element at each iteration, use the `var` attribute of either the parent `<rich:tree>` component or the `<rich:treeModelAdaptor>` component itself. *Example 12.4, "Nested <rich:treeModelAdaptor> components"* demonstrates a series of nested `<rich:treeModelAdaptor>` components, each using the parent's `var` attribute to reference the current element.

Example 12.4. `Nested <rich:treeModelAdaptor> components`

```
<rich:tree>

  <rich:treeNodesAdaptor id="project" nodes="#{loaderBean.projects}" var="project">
      <rich:treeNode>
                    <h:commandLink   action="#{project.click}"   value="Project:
 #{project.name}" />
      </rich:treeNode>
     <rich:treeNodesAdaptor id="srcDir" var="srcDir" nodes="#{project.srcDirs}">
         <rich:treeNode>
              <h:commandLink action="#{srcDir.click}" value="Source directory:
 #{srcDir.name}" />
         </rich:treeNode>
```

```
        <rich:treeNodesAdaptor id="pkg" var="pkg" nodes="#{srcDir.packages}">
           <rich:treeNode>
           <h:commandLink action="#{pkg.click}" value="Package: #{pkg.name}" />
           </rich:treeNode>
         <rich:treeNodesAdaptor id="class" var="class" nodes="#{pkg.classes}">
              <rich:treeNode>
                        <h:commandLink action="#{class.click}" value="Class:
 #{class.name}" />
              </rich:treeNode>
           </rich:treeNodesAdaptor>
        </rich:treeNodesAdaptor>
     </rich:treeNodesAdaptor>
  </rich:treeNodesAdaptor>
</rich:tree>
```

Each `<rich:treeModelAdaptor>` component is mapped to a list of objects. During the iteration, the corresponding object properties are used to define the node labels and actions, and are in turn used for iterating through nested lists.

12.2.1.3. Identifying nodes

Adaptors that use `Map` interfaces or models with non-string keys require a row key converter in order to correctly identify nodes. Refer to *Section 12.1.5, "Identifying nodes with the rowKeyConverter attribute"* for details on the use of the `rowKeyConverter` attribute.

Adaptors that use `Iterable` interfaces have simple integer row keys. A default converter is provided and does not need to be referenced explicitly.

12.2.1.4. Reference data

- *component-type*: `org.richfaces.treeModelAdaptor`
- *component-class*: `org.richfaces.component.html.HtmltreeModelAdaptor`
- *component-family*: `org.richfaces.treeModelAdaptor`
- *tag-class*: `org.richfaces.taglib.treeModelAdaptorTag`

12.2.2. `<rich:treeModelRecursiveAdaptor>`

The `<rich:treeModelRecursiveAdaptor>` component iterates through recursive collections in order to populate a tree with hierarchical nodes, such as for a file system with multiple levels of directories and files.

12.2.2.1. Basic usage

The `<rich:treeModelRecursiveAdaptor>` component is an extension of the `<rich:treeModelAdaptor>` component. As such, the `<rich:treeModelRecursiveAdaptor>`

component uses all of the same attributes. Refer to *Section 12.2.1, "<rich:treeModelAdaptor>"* for details on the `<rich:treeModelAdaptor>` component.

In addition, the `<rich:treeModelRecursiveAdaptor>` component requires the `root` attribute. The `root` attribute defines the collection to use at the top of the recursion. For subsequent levels, the `node` attribute is used for the collection.

Example 12.5, "Basic usage" demonstrates how the `<rich:treeModelRecursiveAdaptor>` component can be used in conjunction with the `<rich:treeModelAdaptor>` component to recursively iterate through a file system and create a tree of directories and files.

Example 12.5. Basic usage

```
<rich:tree var="item">

  <rich:treeModelRecursiveAdaptor roots="#{fileSystemBean.sourceRoots}" nodes="#{item.directori
      <rich:treeNode>
         #{item.shortPath}
      </rich:treeNode>
      <rich:treeModelAdaptor nodes="#{item.files}">
         <rich:treeNode>#{item}</rich:treeNode>
      </rich:treeModelAdaptor>
   </rich:treeModelRecursiveAdaptor>
</rich:tree>
```

The `<rich:treeModelRecursiveAdaptor>` component references the `FileSystemBean` class as the source for the data.

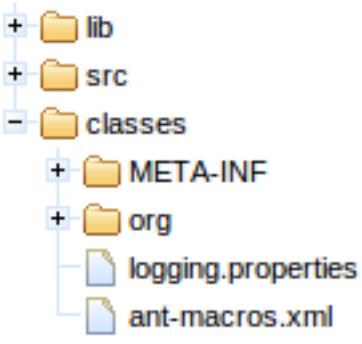
```
@ManagedBean
@RequestScoped
public class FileSystemBean {
   private static final String SRC_PATH = "/WEB-INF";

   private List<FileSystemNode> srcRoots;

   public synchronized List<FileSystemNode> getSourceRoots() {
      if (srcRoots == null) {
         srcRoots = new FileSystemNode(SRC_PATH).getDirectories();
      }
      return srcRoots;
   }
}
```

The `FileSystemBean` class in turn uses the `FileSystemNode` class to recursively iterate through the collection.

```
public class FileSystemNode {
   ...
   public synchronized List<FileSystemNode> getDirectories() {
      if (directories == null) {
         directories = Lists.newArrayList();
Iterables.addAll(directories,transform(filter(getResourcePaths(),containsPattern("/
$")), FACTORY));
      }
      return directories;
   }

   public synchronized List<String> getFiles() {
      if (files == null) {
         files = new ArrayList<String>();
 Iterables.addAll(files,transform(filter(getResourcePaths(),not(containsPattern("/
$"))), TO_SHORT_PATH));
      }
      return files;
   }

   private Iterable<String> getResourcePaths() {
        FacesContext facesContext = FacesContext.getCurrentInstance();
        ExternalContext externalContext = facesContext.getExternalContext();
       Set<String> resourcePaths = externalContext.getResourcePaths(this.path);

      if (resourcePaths == null) {
         resourcePaths = Collections.emptySet();
      }
      return resourcePaths;
   }
   ...
}
```

The `getDirectories()` function is used recursively until the object has the collection of children. The model adaptor calls the `getFiles()` function at each level in order to add the file nodes.

The resulting tree hierarchically lists the directories and files in the collection.



12.2.2.2. Identifying nodes

Adaptors that use `Map` interfaces or models with non-string keys require a row key converter in order to correctly identify nodes. Refer to *Section 12.1.5, "Identifying nodes with the rowKeyConverter attribute"* for details on the use of the `rowKeyConverter` attribute.

Adaptors that use `Iterable` interfaces have simple integer row keys. A default converter is provided and does not need to be referenced explicitly.

12.2.2.3. Reference data

- *`component-type`*: `org.richfaces.treeModelRecursiveAdaptor`
- *`component-class`*: `org.richfaces.component.html.HtmltreeModelRecursiveAdaptor`
- *`component-family`*: `org.richfaces.treeModelRecursiveAdaptor`
- *`tag-class`*: `org.richfaces.taglib.treeModelRecursiveAdaptorTag`

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Menus and toolbars

Read this chapter for details on menu and toolbar components.

13.1. `<rich:dropDownMenu>`

The `<rich:dropDownMenu>` component is used for creating a drop-down, hierarchical menu. It can be used with the `<rich:toolbar>` component to create menus in an application's toolbar.

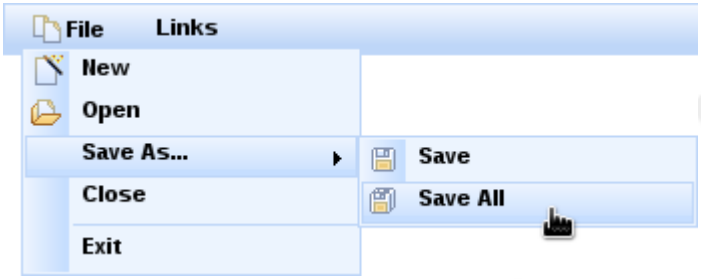


Figure 13.1. `<rich:dropDownMenu>`

13.1.1. Basic usage

The `<rich:dropDownMenu>` component only requires the `label` attribute for basic usage. Use the `label` attribute to define the text label that appears as the title of the menu. Clicking on the title drops the menu down.

Alternatively, use the `label` facet to define the menu title. If the `label` facet is used, the `label` attribute is not necessary.

13.1.2. Menu content

To set the content of the drop-down menu and any sub-menus, use the `<rich:menuItem>`, `<rich:menuGroup>`, and `<rich:menuSeparator>` components. These components are detailed in *Section 13.2, "Menu sub-components"*.

13.1.3. Appearance

Use the `jointPoint` and `direction` attributes to determine the direction and location of the menu when it appears. The `jointPoint` and `direction` attributes both use the following settings:

`topLeft`, `topRight`, `bottomLeft`, `bottomRight`

When used with the `jointPoint` attribute, the menu is attached to the top-left, top-right, bottom-left, or bottom-right of the control as appropriate.

When used with the `direction` attribute, the menu appears to the top-left, top-right, bottom-left, or bottom-right of the joint location as appropriate.

`auto`
: The direction or joint location is determined automatically.

`autoLeft`, `autoRight`, `autoTop`, `autoBottom`
: When used with the `jointPoint` attribute, the joint location is determined automatically, but defaults to either the left, right, top, or bottom of the control as appropriate.

  When used with the `direction` attribute, the menu direction is determined automatically, but defaults to either the left, right, top, or bottom of the joint location as appropriate.

13.1.4. Expanding and collapsing the menu

By default, the menu drops down when the title is clicked. To drop down with a different event, use the `eventShow` attribute to define the event instead.

Menus can be navigated using the keyboard. Additionally, menus can be navigated programmatically using the JavaScript API. The JavaScript API allows the following methods:

`show()`
: The `show()` method shows the menu.

`hide()`
: The `hide()` method hides the menu.

`activateItem(menuItemId)`
: The `activateItem(menuItemId)` activates the menu item with the *`menuItemId`* identifier.

Use the `mode` attribute to determine how the menu requests are submitted:

- `server`, the default setting, submits the form normally and completely refreshes the page.
- `ajax` performs an Ajax form submission, and re-renders elements specified with the `render` attribute.
- `client` causes the `action` and `actionListener` items to be ignored, and the behavior is fully defined by the nested components or custom JavaScript instead of responses from submissions.

13.1.5. Reference data

- *`component-type`*: `org.richfaces.DropDownMenu`
- *`component-class`*: `org.richfaces.component.html.HtmlDropDownMenu`
- *`component-family`*: `org.richfaces.DropDownMenu`
- *`renderer-type`*: `org.richfaces.DropDownMenuRenderer`
- *`tag-class`*: `org.richfaces.taglib.DropDownMenuTag`

13.2. Menu sub-components

The `<rich:menuItem>`, `<rich:menuGroup>`, and `<rich:menuSeparator>` components are used to construct menus for the `<rich:dropDownMenu>` component. Refer to *Section 13.1, "<rich:dropDownMenu>"* for more details on the `<rich:dropDownMenu>` component.

13.2.1. `<rich:menuItem>`

The `<rich:menuItem>` component represents a single item in a menu control. The `<rich:menuItem>` component can be also be used as a seperate component without a parent menu component, such as on a toolbar.

13.2.1.1. Basic usage

The `<rich:menuItem>` component requires the `label` attribute for basic usage. The `label` attribute is the text label for the menu item.

13.2.1.2. Appearance

Icons can be added to menu items through the use of two icon attributes. The `icon` attribute specifies the normal icon, while the `iconDisabled` attribute specifies the icon for a disabled item.

Alternatively, define facets with the names `icon` and `iconDisabled` to set the icons. If facets are defined, the `icon` and `iconDisabled` attributes are ignored. Using facets for icons allows more complex usage; example shows a checkbox being used in place of an icon.

Example 13.1. Icon facets

```
<rich:menuItem value="Show comments">
   <f:facet name="icon">
      <h:selectBooleanCheckbox value="#{bean.property}"/>
   </f:facet>
</rich:menuItem>
```

13.2.1.3. Submission modes

Use the `submitMode` attribute to determine how the menu item requests are submitted:

- `server`, the default setting, submits the form normally and completely refreshes the page.
- `ajax` performs an Ajax form submission, and re-renders elements specified with the `render` attribute.
- `client` causes the `action` and `actionListener` items to be ignored, and the behavior is fully defined by the nested components instead of responses from submissions.

13.2.1.4. JavaScript API

The `<rich:menuItem>` component can be controlled through the JavaScript API. The JavaScript API provides the following functions:

`activate()`
: Activate the menu item as though it were selected.

13.2.1.5. Reference data

- *`component-type`*: `org.richfaces.MenuItem`
- *`component-class`*: `org.richfaces.component.html.HtmlMenuItem`
- *`component-family`*: `org.richfaces.DropDownMenu`
- *`renderer-type`*: `org.richfaces.MenuItemRenderer`
- *`tag-class`*: `org.richfaces.taglib.MenuItemTag`

13.2.2. `<rich:menuGroup>`

The `<rich:menuGroup>` component represents an expandable sub-menu in a menu control. The `<rich:menuGroup>` component can contain a number of `<rich:menuItem>` components, or further nested `<rich:menuGroup>` components.

13.2.2.1. Basic usage

The `<rich:menuGroup>` component requires the `value` attribute for basic usage. The `value` attribute is the text label for the menu item.

Additionally, the `<rich:menuGroup>` component must contain child `<rich:menuItem>` components or `<rich:menuGroup>` components.

13.2.2.2. Appearance

Icons can be added to menu groups through the use of two icon attributes. The `icon` attribute specifies the normal icon, while the `iconDisabled` attribute specifies the icon for a disabled group.

The `<rich:menuGroup>` component can be positioned using the `jointPoint` and `direction` attributes, the same as the parent menu control. For details on the `jointPoint` and `direction` attributes, refer to *Section 13.1.3, “Appearance”*.

13.2.2.3. JavaScript API

The `<rich:menuGroup>` component can be controlled through the JavaScript API. The JavaScript API provides the following functions:

`show()`
: Show the menu group.

`hide()`
Hide the menu group.

13.2.2.4. Reference data

- *component-type*: `org.richfaces.MenuGroup`
- *component-class*: `org.richfaces.component.html.HtmlMenuGroup`
- *component-family*: `org.richfaces.DropDownMenu`
- *renderer-type*: `org.richfaces.MenuGroupRenderer`
- *tag-class*: `org.richfaces.taglib.MenuGroupTag`

13.2.3. `<rich:menuSeparator>`

The `<rich:menuSeparator>` component represents a separating divider in a menu control.

13.2.3.1. Basic usage

The `<rich:menuSeparator>` component does not require any attributes for basic usage. Add it as a child to a menu component to separator menu items and menu groups.

13.2.3.2. Reference data

- *component-type*: `org.richfaces.MenuSeparator`
- *component-class*: `org.richfaces.component.html.HtmlMenuSeparator`
- *component-family*: `org.richfaces.DropDownMenu`
- *renderer-type*: `org.richfaces.MenuSeparatorRenderer`
- *tag-class*: `org.richfaces.taglib.MenuSeparatorTag`

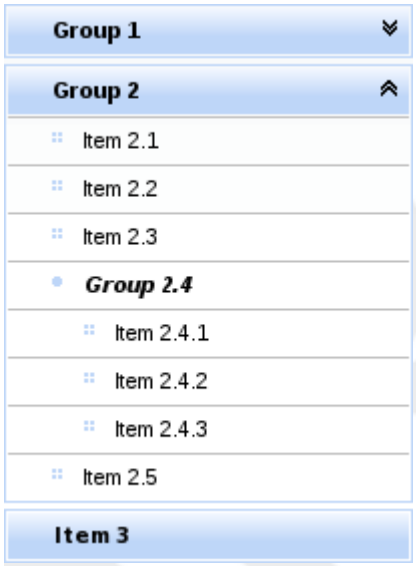
13.3. `<rich:panelMenu>`

The `<rich:panelMenu>` component is used in conjunction with `<rich:panelMenuItem>` and `<rich:panelMenuGroup>` to create an expanding, hierarchical menu. The `<rich:panelMenu>` component's appearance can be highly customized, and the hierarchy can stretch to any number of sub-levels.

Example 13.2. richpanelMenu

```
<rich:panelMenu mode="ajax"
                topGroupExpandedRightIcon="chevronUp"
                topGroupCollapsedRightIcon="chevronDown"
```

```
                groupExpandedLeftIcon="disc"
                groupCollapsedLeftIcon="disc">
   <rich:panelMenuGroup label="Group 1">
      <rich:panelMenuItem label="Item 1.1"/>
      <rich:panelMenuItem label="Item 1.2"/>
      <rich:panelMenuItem label="Item 1.3"/>
   </rich:panelMenuGroup>
   <rich:panelMenuGroup label="Group 2">
      <rich:panelMenuItem label="Item 2.1"/>
      <rich:panelMenuItem   label="Item 2.2"/>
      <rich:panelMenuItem label="Item 2.3"/>
      <rich:panelMenuGroup label="Group 2.4">
         <rich:panelMenuItem label="Item 2.4.1"/>
         <rich:panelMenuItem label="Item 2.4.2"/>
         <rich:panelMenuItem label="Item 2.4.3"/>
      </rich:panelMenuGroup>
      <rich:panelMenuItem label="Item 2.5"/>
   </rich:panelMenuGroup>
   <rich:panelMenuItem label="Item 3"/>
</rich:panelMenu>
```



13.3.1. Basic usage

The `<rich:panelMenu>` component does not need any extra attributes declared for basic usage. However, it does require child `<rich:panelMenuGroup>` and `<rich:panelMenuItem>` components. Refer to *Section 13.3.8, "<rich:panelMenuGroup>"* and *Section 13.3.9, "<rich:panelMenuItem>"* for details on these child components.

13.3.2. Interactivity options

The `activeItem` attribute is used to point to the name of the currently selected menu item.

By default, the event to expand the menu is a mouse click. Set the `expandEvent` attribute to specify a different event to expand menus. Multiple levels of sub-menus can be expanded in one action. Set `expandSingle="true"` to only expand one sub-menu at a time.

Similarly, the default event to collapse the menu is a mouse click. Set the `collapseEvent` attribute to specify a different event to collapse menus.

As with other control components, set `disabled="true"` to disable the `<rich:panelMenu>` comonent. Child menu components can be disabled in the same way.

13.3.3. Appearance

Icons for the panel menu can be chosen from a set of standard icons. Icons can be set for the top panel menu, child panel menus, and child item. There are three different menu states that the icon represents, as well as icons for both the left and right side of the item title.

`topGroupExpandedLeftIcon`, `topGroupExpandedRightIcon`
: These attributes determine the icons for the top level menu when it is expanded.

`topGroupCollapsedLeftIcon`, `topGroupCollapsedRightIcon`
: These attributes determine the icons for the top level menu when it is collapsed.

`topGroupDisabledLeftIcon`, `topGroupDisabledRightIcon`
: These attributes determine the icons for the top level menu when it is disabled.

`topItemLeftIcon`, `topItemRightIcon`
: These attributes determine the icons for a top level menu item.

`topItemDisabledLeftIcon`, `topItemDisabledRightIcon`
: These attributes determine the icons for a top level menu item when it is disabled.

`groupExpandedLeftIcon`, `groupExpandedRightIcon`
: These attributes determine the icons for sub-menus that are not the top-level menu when they are expanded.

`groupCollapsedLeftIcon`, `groupCollapsedRightIcon`
: These attributes determine the icons for sub-menus that are not the top-level menu when they are collapsed.

`groupDisabledLeftIcon`, `groupDisabledRightIcon`
: These attributes determine the icons for sub-menus that are not the top-level menu when they are disabled.

`itemLeftIcon`, `itemRightIcon`
: These attributes determine the icons for items in the menus.

`itemDisabledLeftIcon`, `itemDisabledRightIcon`
: These attributes determine the icons for items in the menus when they are disabled.

Example 13.2, "richpanelMenu" demonstrates the use of icon declaration at the panel menu level. The standard icons are shown in *Figure 13.2, "<Standard icons>"*.

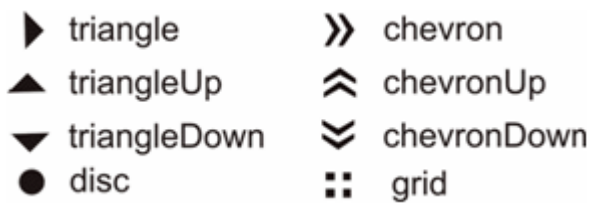


Figure 13.2. `<Standard icons>`

Alternatively, point the icon attributes to the paths of image files. The image files are then used as icons.

Any icons specified by child `<rich:panelMenuGroup>` and `<rich:panelMenuItem>` components overwrite the relevant icons declared with the parent `<rich:panelMenu>` component.

13.3.4. Submission modes

The `itemMode` attribute defines the submission mode for normal menu items that link to content, and the `groupMode` attribute defines the submission mode for menu items that expand and collapse. The settings for these attributes apply to the entire menu unless a menu item defines its own individual `itemMode` or `groupMode`. The possible values for `itemMode` and `groupMode` are as follows:

- `server`, the default setting, which submits the form normally and completely refreshes the page.
- `ajax`, which performs an Ajax form submission, and re-renders elements specified with the `render` attribute.
- `client`, which causes the `action` and `actionListener` items to be ignored, and the behavior is fully defined by the nested components instead of responses from submissions.

13.3.5. `<rich:panelMenu>` server-side events

The `<rich:panelMenu>` component fires the `ItemChangeEvent` event on the server side when the menu is changed. The event only fires in the `server` and `ajax` submission modes. The event provides the `itemChangeListener` attribute to reference the event listener.

13.3.6. JavaScript API

The `<rich:panelMenu>` component can be controlled through the JavaScript API. The JavaScript API provides the following functions:

`expandAll()`
: Expand all the panel menu groups in the component.

`collapseAll()`
Collapse all the panel menu groups in the component.

`selectItem(id)`
Select the menu item with the *`id`* identifier.

13.3.7. Reference data

- *`component-type`*: `org.richfaces.PanelMenu`
- *`component-class`*: `org.richfaces.component.html.HtmlPanelMenu`
- *`component-family`*: `org.richfaces.PanelMenu`
- *`renderer-type`*: `org.richfaces.PanelMenuRenderer`
- *`tag-class`*: `org.richfaces.taglib.PanelMenuTag`

13.3.8. `<rich:panelMenuGroup>`

The `<rich:panelMenuGroup>` component defines a group of `<rich:panelMenuItem>` components inside a `<rich:panelMenu>`.

13.3.8.1. Basic usage

The `<rich:panelMenuGroup>` component needs the `label` attribute declared, which specifies the text to show for the menu entry. Alternatively, the `label` facet can be used to specify the menu text.

In addition, the `<rich:panelMenuGroup>` component at least one `<rich:panelMenuGroup>` or `<rich:panelMenuItem>` components as child elements.

13.3.8.2. Appearance

Icons for the menu group are inherited from the parent `<rich:panelMenu>` component. Refer to *Section 13.3.3, "Appearance"* for details on icon attributes and facets. Alternatively, the menu group's icons can be re-defined at the `<rich:panelMenuGroup>` component level, and these settings will be used instead of the parent component's settings.

13.3.8.3. Submission modes

If the `mode` attribute is unspecified, the submission behavior for the group is inherited from the parent `<rich:panelMenu>`. Otherwise, the `mode` setting is used instead of the parent's behavior. Refer to *Section 13.3.4, "Submission modes"* for submission mode settings.

13.3.8.4. `<rich:panelMenuGroup>` server-side events

The `<rich:panelMenuGroup>` component fires the `ActionEvent` event on the server side when the menu group receives a user action. The event only fires in the `server` and `ajax` submission

modes. The event provides the `action` attribute to specify the user action performed, and the `actionListener` attribute to reference the event listener.

13.3.8.5. JavaScript API

The `<rich:panelMenuGroup>` component can be controlled through the JavaScript API. The JavaScript API provides the following functions:

`expand()`
: Expand this panel menu group.

`collapse()`
: Collapse this panel menu group.

`select(id)`
: Select the menu item with the *`id`* identifier.

13.3.8.6. Reference data

- *`component-type`*: `org.richfaces.PanelMenuGroup`
- *`component-class`*: `org.richfaces.component.html.HtmlPanelMenuGroup`
- *`component-family`*: `org.richfaces.PanelMenuGroup`
- *`renderer-type`*: `org.richfaces.PanelMenuGroupRenderer`
- *`tag-class`*: `org.richfaces.taglib.PanelMenuGroupTag`

13.3.9. `<rich:panelMenuItem>`

The `<rich:panelMenuItem>` component represents a single item inside a `<rich:panelMenuGroup>` component, which is in turn part of a `<rich:panelMenu>` component.

13.3.9.1. Basic usage

The `<rich:panelMenuItem>` component needs the `label` attribute declared, which specifies the text to show for the menu entry. Alternatively, the `label` facet can be used to specify the menu text.

13.3.9.2. Appearance

Icons for the menu item are inherited from the parent `<rich:panelMenu>` or `<rich:panelMenuGroup>` component. Refer to *Section 13.3.3, "Appearance"* for details on icon attributes and facets. Alternatively, the menu item's icons can be re-defined at the `<rich:panelMenuItem>` component level, and these settings will be used instead of the parent component's settings.

13.3.9.3. Submission modes

If the `mode` is unspecified, the submission behavior for the item is inherited from the parent `<rich:panelMenu>`. Otherwise, the `mode` setting is used instead of the parent's behavior.

13.3.9.4. `<rich:panelMenuItem>` server-side events

The `<rich:panelMenuItem>` component fires the `ActionEvent` event on the server side when the menu item receives a user action. The event only fires in the `server` and `ajax` submission modes. The event provides the `action` attribute to specify the user action performed, and the `actionListener` attribute to reference the event listener.

13.3.9.5. JavaScript API

The `<rich:panelMenuItem>` component can be controlled through the JavaScript API. The JavaScript API provides the following functions:

`select()`
: Select this menu item.

13.3.9.6. Reference data

- *`component-type`*: `org.richfaces.PanelMenuItem`
- *`component-class`*: `org.richfaces.component.html.HtmlPanelMenuItem`
- *`component-family`*: `org.richfaces.PanelMenuItem`
- *`renderer-type`*: `org.richfaces.PanelMenuItemRenderer`
- *`tag-class`*: `org.richfaces.taglib.PanelMenuItemTag`

13.4. `<rich:toolbar>`

The `<rich:toolbar>` component is a horizontal toolbar. Any JavaServer Faces (JSF) component can be added to the toolbar.

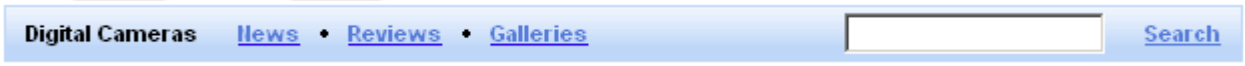


Figure 13.3. `<rich:toolbar>`

13.4.1. Basic usage

The `<rich:toolbar>` component does not require any attributes to be defined for basic usage. Add child components to the `<rich:toolbar>` component to have them appear on the toolbar when rendered.

Example 13.3. Basic usage

```
<rich:toolbar>
   <h:commandLink value="News" />
   <h:commandLink value="Reviews" />
   <h:commandLink value="Galleries" />
</rich:toolbar>
```

13.4.2. Appearance

Set the width and height of the toolbar using the common `width` and `height` attributes.

Items on the toolbar can be separated by a graphical item separator. Use the `itemSeparator` attribute to specify one of the standard separator styles:

- `none`, the default appearance, does not show any item separators.
- `disc` shows a small circular disc to separate items:

- `grid` shows a grid pattern to separate items:

- `line` shows a vertical line to separate items:

- `square` shows a small square to separate items:

Alternatively, use the `itemSeparator` attribute to specify a URL to an image. The image is then used as an item separator. The appearance of the item separator can be additionally customized by using the `itemSeparator` facet.

13.4.3. Grouping items

Group together multiple items on the toolbar by using the `<rich:toolbarGroup>` child component. Refer to *Section 13.4.5, "<rich:toolbarGroup>"* for full details on the `<rich:toolbarGroup>` component.

13.4.4. Reference data

- *component-type*: `org.richfaces.Toolbar`

- *component-class*: org.richfaces.component.html.HtmlToolbar
- *component-family*: org.richfaces.Toolbar
- *renderer-type*: org.richfaces.ToolbarRenderer
- *tag-class*: org.richfaces.taglib.ToolbarTag

13.4.5. <rich:toolbarGroup>

The <rich:toolbarGroup> component is a child component of the <rich:toolbar> component. The <rich:toolbarGroup> component is used to group a number of items together on a toolbar.

13.4.5.1. Basic usage

Like the <rich:toolbar> parent component, the <rich:toolbarGroup> component does not require any extra attributes for basic functionality. Add child components to the <rich:toolbarGroup> component to have them appear grouped on the parent toolbar when rendered.

13.4.5.2. Appearance

Similar to the <rich:toolbar> component, items within a <rich:toolbarGroup> can be separated by specifying the itemSeparator attribute. Refer to *Section 13.4.2, "Appearance"* for details on using the itemSeparator attribute.

Groups of toolbar items can be located on either the left-hand side or the right-hand side of the parent toolbar. By default, they appear to the left. To locate the toolbar group to the right of the parent toolbar, set location="right".

Example 13.4. <rich:toolbarGroup>

```
<rich:toolBar height="26" itemSeparator="grid">
   <rich:toolBarGroup>
      <h:graphicImage value="/images/icons/create_doc.gif"/>
      <h:graphicImage value="/images/icons/create_folder.gif"/>
      <h:graphicImage value="/images/icons/copy.gif"/>
   </rich:toolBarGroup>
   <rich:toolBarGroup>
      <h:graphicImage value="/images/icons/save.gif"/>
      <h:graphicImage value="/images/icons/save_as.gif"/>
      <h:graphicImage value="/images/icons/save_all.gif"/>
   </rich:toolBarGroup>
   <rich:toolBarGroup location="right">
      <h:graphicImage value="/images/icons/find.gif"/>
      <h:graphicImage value="/images/icons/filter.gif"/>
   </rich:toolBarGroup>
</rich:toolBar>
```

The example shows how to locate a toolbar group to the right-hand side of the parent toolbar. It also demonstrates how item separators on the parent toolbar work with toolbar groups.

13.4.5.3. Reference data

- *component-type*: `org.richfaces.ToolbarGroup`
- *component-class*: `org.richfaces.component.html.HtmlToolbarGroup`
- *component-family*: `org.richfaces.ToolbarGroup`
- *renderer-type*: `org.richfaces.ToolbarGroupRenderer`
- *tag-class*: `org.richfaces.taglib.ToolbarGroupTag`

DRAFT

Output and messages

Read this chapter for details on components that display messages and other feedback to the user.

14.1. `<rich:message>`

The `<rich:message>` component renders a single message relating to another specific component. The message consists of two parts, both of which are optional: the marker icon and the textual label. The appearance of the message can be customized, and tool-tips can be used for further information about the message.

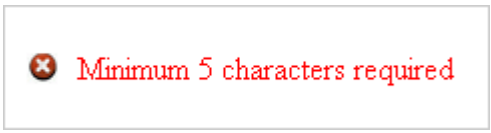


Figure 14.1. rich:message component

14.1.1. Basic usage

The `<rich:message>` component needs the `for` attribute to point to the `id` identifier of the related component. The message is displayed depending on the state of the linked component's requests.

The `<rich:message>` component is automatically rendered after an Ajax request, even without the use of an `<a4j:outputPanel>` component.

14.1.2. Appearance

The `passedLabel` attribute contains a message to display when there are no errors; that is, when validation passes successfully. The `showSummary` attribute specifies whether to display only a summary of the full message. The full message can be displayed in a tool-tip when hovering the mouse over the summary.

Facets are used to define the marker icons for different message states:

`errorMarker`
: Defines the icon for messages with the `error` severity class.

`fatalMarker`
: Defines the icon for messages with the `fatal` severity class.

`infoMarker`
: Defines the icon for messages with the `info` severity class.

`passedMarker`
: Defines the icon for messages that are not of the `error`, `fatal`, `info`, or `warn` severity classes.

`warnMarker`
: Defines the icon for messages with the `warn` severity class.

Example 14.1. rich:message example

```
<rich:message for="id" passedLabel="No errors" showSummary="true">
    <f:facet name="errorMarker">
        <h:graphicImage url="/image/error.png"/>
    </f:facet>
    <f:facet name="passedMarker">
        <h:graphicImage url="/image/passed.png"/>
    </f:facet>
</rich:message>
```

14.1.3. Reference data

- *component-type*: `org.richfaces.component.RichMessage`
- *component-class*: `org.richfaces.component.html.HtmlRichMessage`
- *component-family*: `org.richfaces.component.RichMessage`
- *renderer-type*: `org.richfaces.RichMessageRenderer`
- *tag-class*: `org.richfaces.taglib.RichMessageTag`

14.2. `<rich:messages>`

The `<rich:messages>` components works similarly to the `<rich:message>` component, but can display validation messages for a group of components instead of just a single component. Refer to *Section 14.1, "<rich:message>"* for details on the `<rich:message>` component.

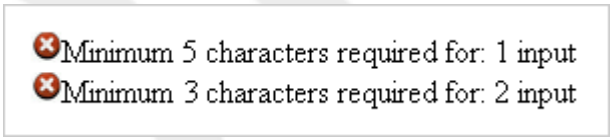


Figure 14.2. rich:messages component

14.2.1. Basic usage

The `<rich:messages>` component doesn't require any extra attributes for basic usage. It displays all messages relating to requests from components in the same container element.

The `<rich:message>` component is automatically rendered after an Ajax request, even without the use of an `<a4j:outputPanel>` component.

14.2.2. Appearance

The `<rich:messages>` component displays error messages for each validating component in the same container. The `passedLabel` attribute contains a message to display when there are no errors; that is, when validation for all components passes successfully. The `layout` attribute defines how the messages are presented: either using `list` for a list layout, or `table` for a tabular layout.

All messages use the same state icons, specified by using facets in the same way as for the `<rich:message>` component:

`errorMarker`
: Defines the icon for messages with the `error` severity class.

`fatalMarker`
: Defines the icon for messages with the `fatal` severity class.

`infoMarker`
: Defines the icon for messages with the `info` severity class.

`passedMarker`
: Defines the icon for messages that are not of the `error`, `fatal`, `info`, or `warn` severity classes.

`warnMarker`
: Defines the icon for messages with the `warn` severity class.

Example 14.2. rich:messages example

```
<h:form>
    <rich:messages passedLabel="Data validated." layout="list">
        <f:facet name="header">
            <h:outputText value="Entered Data Status:"></h:outputText>
        </f:facet>
        <f:facet name="passedMarker">
            <h:graphicImage  value="/images/ajax/passed.gif" />
        </f:facet>
        <f:facet name="errorMarker">
            <h:graphicImage value="/images/ajax/error.gif" />
        </f:facet>
    </rich:messages>

    <h:panelGrid columns="2">
        <h:outputText value="Name:" />
```

```
  <h:inputText label="Name" id="name" required="true" value="#{userBean.name}">
            <f:validateLength minimum="3"  />
        </h:inputText>
        <h:outputText value="Job:" />
      <h:inputText label="Job" id="job" required="true" value="#{userBean.job}">
            <f:validateLength minimum="3" maximum="50"  />
        </h:inputText>
        <h:outputText value="Address:" />

  <h:inputText label="Address" id="address" required="true" value="#{userBean.address}">
            <f:validateLength minimum="10" />
        </h:inputText>
        <h:outputText value="Zip:" />
      <h:inputText label="Zip" id="zip" required="true" value="#{userBean.zip}">
            <f:validateLength minimum="4" maximum="9"  />
        </h:inputText>
        <f:facet name="footer">
            <a4j:commandButton value="Validate" />
        </f:facet>
    </h:panelGrid>
</h:form>
```

14.2.3. Reference data

- *component-type*: `org.richfaces.component.RichMessages`
- *component-class*: `org.richfaces.component.html.HtmlRichMessages`
- *component-family*: `org.richfaces.component.RichMessages`
- *renderer-type*: `org.richfaces.RichMessagesRenderer`
- *tag-class*: `org.richfaces.taglib.RichMessagesTag`

14.3. `<rich:progressBar>`

The `<rich:progressBar>` component displays a progress bar to indicate the status of a process to the user. It can update either through Ajax or on the client side, and the look and feel can be fully customized.

Figure 14.3. `<rich:progressBar>`

14.3.1. Basic usage

Basic usage of the `<rich:progressBar>` component requires only the `value` attribute, which points to the method that provides the current progress.

Example 14.3. Basic usage

```
<rich:progressBar value="#{bean.incValue}" />
```

14.3.2. Customizing the appearance

By default, the minimum value of the progress bar is `0` and the maximum value of the progress bar is `100`. These values can be customized using the `minValue` and `maxValue` attributes respectively.

The progress bar can be labeled in one of two ways:

Using the `label` attribute
: The content of the `label` attribute is displayed over the progress bar.

Example 14.4. Using the `label` attribute

```
<rich:progressBarvalue="#{bean.incValue}"id="progrs"label="#{bean.incValue}"/
>
```

Using nested child components
: Child components, such as the JSF `<h:outputText>` component, can be nested in the `<rich:progressBar>` component to display over the progress bar.

Example 14.5. Using nested child components

```
<rich:progressBar value="#{bean.incValue}">
    <h:outputText value="#{bean.incValue} %"/>
</rich:progressBar>
```

Macro-substitution

The following section details the use of macro-substitution paramaters in labeling. Macro-substitution may be revised and altered in future versions of RichFaces. Be aware of this when using macro-substitution in your applications.

For labeling, the `<rich:progressBar>` component recognizes three macro-substitution parameters:

`{value}`
: The current progress value.

`{minValue}`
: The minimum value for the progress bar.

`{maxValue}`
: The maximum value for the progress bar.

Example 14.6. Using macro-substitution for labeling

```
<rich:progressBar value="#{bean.incValue1}" minValue="400" maxValue="900">
    <h:outputText value="Minimum value is {minValue}, current value is {value},
 maximum value is {maxValue}"/>
</rich:progressBar>
```

Additionally, you can use the `{param}` parameter to specify any custom parameters you require. Define the parameters in the bean for the progress method, then reference it with the `<rich:progressBar>` component's `parameters` attribute, as shown in *Example 14.7, "Using the param parameter"*.

Example 14.7. Using the `param` parameter

```
<rich:progressBar value="#{bean.incValue}" parameters="param:'#{bean.dwnlSpeed}'">
    <h:outputText value="download speed {param} KB/s"/>
</rich:progressBar>
```

To define customized initial and complete states for the progress bar, use the `initial` and `complete` facets. The `initial` facet displays when the progress value is less than or equal to the minimum value, and the `complete` facet displays when the progress value is greater than or equal to the maximum value.

Example 14.8. Initial and complete states

```
<rich:progressBar value="#{bean.incValue1}">
    <f:facet name="initial">
        <h:outputText value="Process not started"/>
    </f:facet>
    <f:facet name="complete">
        <h:outputText value="Process completed"/>
```

```
    </f:facet>
</rich:progressBar>
```

14.3.3. Using set intervals

The `<rich:progressBar>` component can be set to constantly poll for updates at a constant interval. Use the `interval` component to set the interval in milliseconds. The progress bar is updated whenever the polled value changes. Polling is only active when the `enabled` attribute is set to `true`.

Example 14.9. Using set intervals

```
<rich:progressBar value="#{bean.incValue1}" id="progress" interval="200" enabled="#{bean.enabled1}"/
>
```

14.3.4. Update mode

The mode for updating the progress bar is determined by the `mode` attribute, which can have one of the following values:

`ajax`
: The progress bar updates in the same way as the `<a4j:poll>` component. The `<rich:progressBar>` component repeatedly polls the server for the current progress value.

`client`
: The progress bar updates on the client side, set using the JavaScript API.

14.3.5. JavaScript API

The `<rich:progressBar>` component can be controlled through the JavaScript API. The JavaScript API provides the following functions:

`getValue()`
: Return the current value displayed on the progress bar.

`setValue()`
: Set the current value to display on the progress bar.

`getMinValue()`
: Return the minimum value for the progress bar.

`getMaxValue()`
: Return the maximum value for the progress bar.

`disable()`
: Disables the progress bar.

`enable()`
: Enables the progress bar.

`isEnabled()`
: Returns a boolean value indicating whether the progress bar is enabled.

14.3.6. Reference data

- *`component-type`*: `org.richfaces.ProgressBar`
- *`component-class`*: `org.richfaces.component.html.HtmlProgressBar`
- *`component-family`*: `org.richfaces.component.ProgressBar`
- *`renderer-type`*: `org.richfaces.renderkit.ProgressBarRenderer`
- *`tag-class`*: `org.richfaces.taglib.ProgressBarTag`

14.4. `<rich:toolTip>`

The `<rich:toolTip>` component provides an informational tool-tip. The tool-tip can be attached to any control and is displayed when hovering the mouse cursor over the control.

Figure 14.4. `<rich:toolTip>`

14.4.1. Basic usage

For basic usage, define the tool-tip text using the `value` attribute. The `<rich:toolTip>` component is then automatically attached to the parent element, and is usually shown when the mouse cursor hovers.

Alternatively, the content of the tool-tip can be defined inside the `<rich:toolTip>` tags, and the `value` attribute is not used. This allows HTML tags to be used to define the content, and provides for rich content such as images, links, buttons, and other RichFaces components.

Example 14.10. Defining tool-tip content

Basic content

```
<rich:panel>
```

```
    <rich:toolTip value="This is a tool-tip."/>
</rich:panel>
```

Rich content

```
<rich:panel>
    <rich:toolTip>
        This is a <b>tool-tip</b>.
    </rich:toolTip>
</rich:panel>
```

14.4.2. Attaching the tool-tip to another component

If not otherwise specified, the tool-tip is attached to the parent element in which it is defined. The `for` attribute is used to attach the tool-tip to another component, pointing to the target component's `id` identifier. This allows the `<rich:toolTip>` component to be specified outside the target element. This approach is demonstrated in *Example 14.11, "Attaching the tool-tip"*.

Example 14.11. Attaching the tool-tip

```
<rich:panel id="panelId">
...
</rich:panel>

<rich:toolTip value="This is a tool-tip." for="panelId"/>
```

The `<rich:toolTip>` component can alternatively be left unattached, and is instead invoked through an event handler on the target component. To leave the `<rich:toolTip>` component unattached, set `attached="false"`, and define the event handler to trigger the tool-tip on the target component. This approach is demonstrated in *Example 14.12, "Unattached tool-tips"*. When leaving the `<rich:toolTip>` component unattached, ensure it has an `id` identifier defined. If the `<rich:toolTip>` component is nested inside the target element, it must be the last child. If it is defined outside the target element, it must be nested in an `<a4j:form>` component.

Example 14.12. Unattached tool-tips

```
<rich:panel id="panelId" onclick="#{rich:component("tooltipId")}.show(event);" /
>

<a4j:form>
    <rich:toolTip id="toolTipId" attached="false" value="This is a tool-tip."/>
</a4j:form>
```

14.4.3. Appearance

By default, the `<rich:toolTip>` component is positioned intelligently based on the position of the mouse cursor. Use the `direction` attribute to specify a corner of the target component at which to display the tool-tip instead. Possible values include `top-left`, `top-right`, `bottom-left`, and `bottom-right`. Use the `horizontalOffset` and `verticalOffset` attributes to specify the horizontal offset and vertical offset at which to display the tool-tip.

Use the `hideEvent` attribute to specify when the tool-tip is hidden. The default value is `none`, so the tool-tip remains shown. However, it can be linked to an event on the target component, such as the `mouseout` event.

Set `followMouse="true"` to cause the tool-tip to follow the user's mouse movements.

Advanced appearance features are demonstrated in *Example 14.13, "Advanced tool-tip usage"*.

14.4.4. Update mode

The mode for updating the tool-tip is determined by the `mode` attribute, which can have one of the following values:

`ajax`
: The tool-tip content is requested from the server with every activation.

`client`
: The tool-tip content is rendered once on the server. An external submit causes the content to re-render.

When using `mode="ajax"`, define the `defaultContent` facet. The tool-tip displays the content of the `defaultContent` facet while loading the actual content from the server.

Example 14.13. Advanced tool-tip usage

```
<h:commandLink value="Simple Link" id="link">
                    <rich:toolTip     followMouse="true"     direction="top-
right" mode="ajax" value="#{bean.toolTipContent}"
                  horizontalOffset="5" verticalOffset="5" layout="block">
        <f:facet name="defaultContent">
            <f:verbatim>Loading...</f:verbatim>
        </f:facet>
    </rich:toolTip>
</h:commandLink>
```

14.4.5. `<rich:toolTip>` client-side events

The `<rich:toolTip>` component supports the following client-side events:

`click`
: This event is activated when the tool-tip is clicked with the mouse.

`dblclick`
: This event is activated when the tool-tip is double-clicked with the mouse.

`mouseout`
: This event is activated when the mouse cursor leaves the tool-tip.

`mousemove`
: This event is activated when the mouse cursor moves over the tool-tip.

`mouseover`
: This event is activated when the mouse cursor hovers over the tool-tip.

`show`
: This event is activated when the tool-tip is shown.

`complete`
: This event is activated when the tool-tip is completed.

`hide`
: This event is activated when the tool-tip is hidden.

14.4.6. JavaScript API

The `<rich:toolTip>` component can be controlled through the JavaScript API. The JavaScript API provides the following functions:

`show(event)`
: Show the tool-tip.

`hide(event)`
: Hide the tool-tip.

14.4.7. Reference data

- *`component-type`*: `org.richfaces.component.toolTip`
- *`component-class`*: `org.richfaces.component.html.HtmlToolTip`
- *`component-family`*: `org.richfaces.component.toolTip`
- *`renderer-type`*: `org.richfaces.renderkit.html.toolTipRenderer`
- *`tag-class`*: `org.richfaces.taglib.HtmlToolTipTag`

DRAFT

Drag and drop

Read this chapter for details on adding drag and drop support to controls.

15.1. `<rich:dragSource>`

The `<rich:dragSource>` component can be added to a component to indicate it is capable of being dragged by the user. The dragged item can then be dropped into a compatible drop area, designated using the `<rich:dropTarget>` component.

15.1.1. Basic usage

To add drag support to a component, attach the `<rich:dragSource>` component as a child element.

The `type` attribute must be specified, and can be any identifying string. Dragged items can only be dropped in drop zones where the `type` attribute of the `<rich:dragSource>` component is listed in the `acceptedTypes` attribute of the `<rich:dropTarget>` component.

15.1.2. Dragging an object

Use the `dragIndicator` parameter to customize the appearance of a dragged object while it is being dragged. The `dragIndicator` parameter must point to the `id` identifier of a `<rich:dragIndicator>` component. If the `dragIndicator` attribute is not defined, the drag indicator appears as a clone of the `<rich:dragSource>` component's parent control.

To bind data to the dragged object, use the `dragValue` attribute. The `dragValue` attribute specifies an item in a data model, which is then bound to the parent component when it is dragged. This facilitates handling event data during a drop event.

15.1.3. Reference data

- *`component-type`*: `org.richfaces.DragSource`
- *`component-class`*: `org.richfaces.component.html.HtmlDragSource`
- *`component-family`*: `org.richfaces.DragSource`
- *`renderer-type`*: `org.richfaces.DragSourceRenderer`
- *`tag-class`*: `org.richfaces.taglib.DragSourceTag`

15.2. `<rich:dropTarget>`

The `<rich:dropTarget>` component can be added to a component so that the component can accept dragged items. The dragged items must support the `<rich:dragSource>` component, and be of a compatible drop type.

15.2.1. Basic usage

To allow dragged items to be dropped on a component, attach the `<rich:dropTarget>` component as a child element to the component.

The `acceptedTypes` attribute must be specified. The `acceptedTypes` attribute is a comma-separated list of strings that match the types of dragged items. Dragged items can only be dropped in drop zones where the `type` attribute of the `<rich:dragSource>` component is listed in the `acceptedTypes` attribute of the `<rich:dropTarget>` component.

The `acceptedTypes` attribute can optionally be set to either `@none` or `@all`. If set to `@none`, the component will not accept any type of dropped object. If set to `@all`, the component accepts all dropped objects. If the `acceptedTypes` attribute is not specified, the default value is `null`, which is the same as a `@none` setting.

15.2.2. Handling dropped data

To provide additional parameters for a drop event, use the `dropValue` attribute.

The `<rich:dropTarget>` component raises the `DropEvent` server-side event when an object is dropped. The event uses the following parameters:

- The *`dragSource`* identifies the component being dragged (the parent of the `<rich:dragSource>` component).
- The *`dragValue`* parameter is the content of the `<rich:dragSource>` component's `dragValue` attribute.
- The *`dropValue`* parameter is the content of the `<rich:dropTarget>` component's `dropValue` attribute.

15.2.3. Reference data

- *`component-type`*: `org.richfaces.DropTarget`
- *`component-class`*: `org.richfaces.component.html.HtmlDropTarget`
- *`component-family`*: `org.richfaces.DropTarget`
- *`renderer-type`*: `org.richfaces.DropTargetRenderer`
- *`tag-class`*: `org.richfaces.taglib.DropTargetTag`

15.3. `<rich:dragIndicator>`

The `<rich:dragIndicator>` component defines a graphical element to display under the mouse cursor during a drag-and-drop operation.

15.3.1. Basic usage

If included without any attributes specified, the drag indicator will appear as an empty dotted outline, as shown in

Figure 15.1. An empty drag indicator

15.3.2. Styling the indicator

The drag indicator can be styled depending on the current state of the dragged element. There are three attributes for different states. The attributes reference the CSS class to use for styling the drag indicator when the dragged element is in the relevant state.

`acceptClass`
: The `acceptClass` attribute specifies the style when the dragged element is over an acceptable drop target. It indicates that the `type` attribute of the element's `<rich:dragSource>` component matches `acceptedTypes` attribute of the drop target's `<rich:dropTarget>` component.

`rejectClass`
: The `rejectClass` attribute specifies the style when the dragged element is over a drop target that is not acceptable. It indicates that the `type` attribute of the element's `<rich:dragSource>` component is not found in the `acceptedTypes` attribute of the drop target's `<rich:dropTarget>` component.

`draggingClass`
: The `draggingClass` attribute specifies the style when the dragged element is being dragged. It indicates that the dragged element is not over a drop target.

15.3.3. Reference data

- *`component-type`*: `org.richfaces.DragIndicator`
- *`component-class`*: `org.richfaces.component.html.HtmlDragIndicator`
- *`component-family`*: `org.richfaces.DragIndicator`
- *`renderer-type`*: `org.richfaces.DragIndicatorRenderer`
- *`tag-class`*: `org.richfaces.taglib.DragIndicatorTag`

DRAFT

Layout and appearance

Read this chapter to alter the layout and appearance of web applications using special components.

16.1. `<rich:jQuery>`

The `<rich:jQuery>` component applies styles and custom behavior to both JSF (JavaServer Faces) objects and regular DOM (Document Object Model) objects. It uses the jQuery JavaScript framework to add functionality to web applications.

16.1.1. Basic usage

The query triggered by the `<rich:jQuery>` component is specified using the `query` attribute.

With the query defined, the component is used to trigger the query as either a *timed query* or a *named query*. The query can be bound to an event to act as an *event handler*. These different approaches are covered in the following sections.

16.1.2. Defining a selector

Any objects or lists of objects used in the query are specified using the `selector` attribute. The `selector` attribute references objects using the following method:

- The `selector` attribute can refer to the `id` identifier of any JSF component or client.
- If the `selector` attribute does not match the `id` identifier attribute of any JSF components or clients on the page, it instead uses syntax defined by the World Wide Web Consortium (W3C) for the CSS rule selector. Refer to the syntax specification at *http://api.jquery.com/category/selectors/* for full details.

Because the `selector` attribute can be either an `id` identifier attribute or CSS selector syntax, conflicting values could arise. *Example 16.1, "Avoiding syntax confusion"* demonstrates how to use double backslashes to escape colon characters in `id` identifier values.

Example 16.1. Avoiding syntax confusion

```
<h:form id="form">
    <h:panelGrid id="menu">
        <h:graphicImage value="pic1.jpg" />
        <h:graphicImage value="pic2.jpg" />
    </h:panelGrid>
</h:form>
```

The `id` identifier for the `<h:panelGrid>` element is `form:menu`, which can conflict with CSS selector syntax. Double backslashes can be used to escape the colon character such that the identifier is read correctly instead of being interpreted as CSS selector syntax.

```
<rich:jQuery selector="#form\\:menu img" query="..." />
```

16.1.3. Event handlers

Queries set as event handlers are triggered when the component specified in the `selector` attribute raises an event. The query is bound to the event defined using the `event` attribute.

Use the `attachType` attribute to specify how the event-handling queries are attached to the events:

`bind`
: This is the default for attaching queries to events. The event handler is bound to all elements currently defined by the `selector` attribute.

`live`
: The event handler is bound to all current and future elements defined by the `selector` attribute.

`one`
: The event handler is bound to all elements currently defined by the `selector` attribute. After the first invocation of the event, the event handler is unbound such that it no longer fires when the event is raised.

16.1.4. Timed queries

Timed queries are triggered at specified times. This can be useful for calling simple methods when a page is rendered, or for adding specific functionality to an element. Use the `timing` attribute to specify the point at which the timed query is triggered:

`domready`
: This is the default behavior. The query is triggered when the document is loaded and the DOM is ready. The query is called as a `jQuery()` function.

`immediate`
: The query is triggered immediately. The query is called as an in-line script.

Example 16.2. `<rich:jQuery>` example

```
<rich:dataTable id="customList" ... >
   ...
</rich:dataTable>
```

```
<rich:jQuery                                                    selector="#customList
 tr:odd" timing="domready" query="addClass(odd)" />
```

In the example, the selector picks out the odd `<tr>` elements that are children of the element with an `id="customlist"` attribute. The query `addClass(odd)` is then performed on the selection during page loading (`load`) such that the `odd` CSS class is added to the selected elements.

Make	Model	Price	Mileage
Chevrolet	Corvette	39858	64699.0
Chevrolet	Corvette	38091	38014.0
Chevrolet	Corvette	18427	64568.0
Chevrolet	Corvette	35277	79994.0
Chevrolet	Corvette	47206	19290.0
Chevrolet	Malibu	52155	5242.0
Chevrolet	Malibu	41576	73266.0
Chevrolet	Malibu	41762	16542.0

16.1.5. Named queries

Named queries are given a name such that they can be triggered by other functions or handlers. Use the `name` attribute to name the query. The query can then be accessed as though it were a JavaScript function using the specified `name` attribute as the function name.

Calls to the function must pass a direct reference (`this`) to the calling object as a parameter. This is treated the same as an item defined through the `selector` attribute.

If the function requires extra parameters itself, these are provided in JavaScript Object Notation (JSON) syntax as a second parameter in the JavaScript call. The `options` namespace is then used in the `<rich:jQuery>` query to access the passed function parameters. *Example 16.3, "Calling a <rich:jQuery> component as a function"* demonstrates the use of the `name` attribute and how to pass function parameters through the JavaScript calls.

Example 16.3. Calling a `<rich:jQuery>` component as a function

```
<h:graphicImage                    width="50"                    value="/images/
price.pngonmouseover="enlargePic(this,{pwidth:'60px'})onmouseout="releasePic(this)"
>
<h:graphicImage                    width="50"                    value="/images/
discount.pngonmouseover="enlargePic(this,{pwidth:'100px'})onmouseout="releasePic(this)"
>
...
<rich:jQuery name="enlargePic" query="animate({width:options.pwidth})" />
<rich:jQuery name="releasePic" query="animate({width:'50px'})"/>
```

The example enlarges the images when the mouse moves over them. The `enlargePic` and `releasePic` components are called like ordinary JavaScript functions from the image elements.

16.1.6. Dynamic rendering

The `<rich:jQuery>` component applies style and behavioral changes to DOM objects dynamically. As such, changes applied during an Ajax response are overwritten, and will need to be re-applied once the Ajax response is complete.

Any timed queries with the `timing` attribute set to `domready` may not update during an Ajax response, as the DOM document is not completely reloaded. To ensure the query is re-applied after an Ajax response, include the `name` attribute in the `<rich:jQuery>` component and invoke it using JavaScript from the `complete` event attribute of the component that triggered the Ajax interaction.

16.1.7. Reference data

- *`component-type`*: `org.richfaces.JQuery`
- *`component-class`*: `org.richfaces.component.html.HtmlJQuery`
- *`component-family`*: `org.richfaces.JQuery`
- *`renderer-type`*: `org.richfaces.JQueryRenderer`
- *`tag-class`*: `org.richfaces.taglib.JQueryTag`

Functions

Read this chapter for details on special functions for use with particular components. Using JavaServer Faces Expression Language (JSF EL), these functions can be accessed through the `data` attribute of components. Refer to *Section 2.5.7, "data"* for details on the `data` attribute.

17.1. `rich:clientId`

The `rich:clientId('id')` function returns the client identifier related to the passed component identifier (`'id'`). If the specified component identifier is not found, `null` is returned instead.

17.2. `rich:component`

The `rich:component('id')` function is a shortcut for the equivalent `#{rich:clientId('id')}.component` code. It returns the UIComponent instance from the client, based on the passed server-side component identifier (`'id'`). If the specified component identifier is not found, `null` is returned instead.

17.3. `rich:element`

The `rich:element('id')` function is a shortcut for the equivalent `document.getElementById(#{rich:clientId('id')})` code. It returns the element from the client, based on the passed server-side component identifier. If the specified component identifier is not found, `null` is returned instead.

17.4. `rich:findComponent`

The `rich:findComponent('id')` function returns the a UIComponent instance of the passed component identifier. If the specified component identifier is not found, `null` is returned instead.

Example 17.1. `rich:findComponent` example

```
<h:inputText id="myInput">
   <a4j:support event="keyup" render="outtext"/>
</h:inputText>
<h:outputText id="outtext" value="#{rich:findComponent('myInput').value}" />
```

17.5. `rich:isUserInRole`

The `rich:isUserInRole(Object)` function checks whether the logged-in user belongs to a certain user role, such as being an administrator. User roles are defined in the `web.xml` settings file.

Example 17.2. `rich:isUserInRole` example

The `rich:isUserInRole(Object)` function can be used in conjunction with the `rendered` attribute of a component to only display certain controls to authorized users.

```
<rich:editor value="#{bean.text}" rendered="#{rich:isUserInRole('admin')}"/>
```

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