In this session we explore:

- How to use the Java Web Parts taglib with Struts 1;
- How to use the Ajax YUI plugin with Struts 2;
- How to integrate Ajax features with Struts 1 or 2;
- Basics of the Java Web Parts taglib;
- Basics of the Struts 2 YUI plugin.
Struts on Ajax: Retrofitting Struts with Ajax Taglibs
Struts on Ajax

For the latest version of this presentation, visit http://slideshare.com/ted.husted

For the latest version of source code, visit http://code.google.com/p/sq1-struts2
Abstract

- Struts is Java's most popular web framework. Ajax is the web's hottest user interface. What happens when we put Struts on Ajax?

- During the session, we will cover
  - Integrating Ajax with Struts 1 or Struts 2
  - Using the AjaxParts taglib with Struts 1 or 2
  - Using the Ajax YUI plugin with Struts 2
Retrofitting Struts

Can we use Struts with Ajax?
Why choose AjaxParts taglib?
How about a simple Hello World example?
How does AjaxParts actually work?
Are there new alternatives for Struts 2?
Retrofitting Struts

- Can we use Struts with Ajax?
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What is Ajax?

- Originally, acronym for "Asynchronous JavaScript And XML."
- Technique, rather than a framework (such as Struts).
- Allows web pages to work like GUI apps
- Already used by Microsoft and Google, among many, many others.
What was life like before Ajax?

- "web page as a flat document"
- To mimic GUI desktop apps
  - 1 send all data with (a lot of) JavaScript
  - 2 constant form submits back to the server
- Ajax gives you the best of both worlds:
  - dynamic web pages on the client
  - server-side Java application
How does Ajax work?

Ajax adds a "background" call to the server

1. XMLHttpRequest requests content asynchronously.
2. Content can be anything; JavaScript updates page.
3. Triggered by JavaScript events: onclick, onchange, onblur, ...
Can we use Ajax in a Struts app?

- XHR is just another request/response
- Struts can stream data as a response
- Use pure Ajax libraries (with scriptlets)
- Use Ajax widget libraries
- Use Ajax JSP tag libraries
public class IndexResult extends Action {
    public ActionForward execute(
        ActionMapping mapping, ActionForm form,
        HttpServletRequest request,
        HttpServletResponse response)
    throws Exception {
        response.setContentType("text/html");
        PrintWriter out = response.getWriter();
        out.println("Hello World! 
        \"This is an AJAX response \" +
        \"from a Struts Action.\")
        out.flush();
        return null;
    }
}
public class IndexResult2 extends ActionSupport {
    private InputStream inputStream;
    public InputStream getInputStream() {
        return inputStream;
    }
    public String execute() throws Exception {
        inputStream = new StringBufferInputStream("Hello World! This is an AJAX response " + "from a Struts 2 Action.");
        return SUCCESS;
    }
}
What are some pure Ajax Libraries?

- Prototype  (http://www.prototypejs.org/),
- JQuery  (http://jquery.com/)
Prototype is a JavaScript Framework that aims to ease development of dynamic web applications.

```
cells: function(row) {
    if(row == undefined) return this.tab
    return $(row).getElementsByTagName()
},
```

Prototype is a JavaScript Framework that aims to ease development of dynamic web applications.

Featuring a unique, easy-to-use toolkit for class-driven development and the nicest Ajax library around, Prototype is quickly becoming the codebase of choice for web application developers everywhere.

**Download**
Get the latest version—1.5.1.1

**Learn**
Online documentation and resources.

**Discuss**
Mailing list and IRC

**Contribute**
Submit patches and report bugs.

http://www.prototypejs.org/
jQuery is a new type of JavaScript library.

jQuery is a fast, concise, JavaScript Library that simplifies how you traverse HTML documents, handle events, perform animations, and add Ajax interactions to your web pages. jQuery is designed to change the way that you write JavaScript.

"You start with 10 lines of jQuery that would have been 20 lines of tedious DOM JavaScript. By the time you are done it's down to two or three lines and it couldn't get any shorter unless it read your mind." - Dave Methvin

What does jQuery code look like? The quick and dirty:

```javascript
$('p.surprise').addClass('ohmy').show('slow');
```

The above code snippet looks for all paragraphs that have a class of 'surprise', adds the class 'ohmy' to them, then slowly reveals them. Click the 'Run' button to see it in action!

Download jQuery

Learn about the jQuery JavaScript library

Designers, Developers, Hobbyists, Businesses...

jQuery is for everyone.

The jQuery library is suited for many different applications.

How can jQuery help you?

Lightweight footprint
- About 14KB in size (Compressed)

CSS3 Compliant
- Supports CSS 1-3 and basic XPath

Cross-browser
- IE 6.0+, FF 1.5+, Safari 2.0+, Opera 9.0+

Getting Started With jQuery

How jQuery Works
Tutorials
Using jQuery with other libraries

Developer Resources
jQuery Documentation
Mailing List

Brand New:
Learning jQuery Book

http://jquery.com/
What are some Ajax UI Libraries?

- **Dojo** (http://dojotoolkit.org/)
- **Google Web ToolKit** (http://code.google.com/webtoolkit/)
- **YUI** (http://developer.yahoo.com/yui/)
Plaxo Online Upgrades To 0.9
Sat, 10/06/2007 - 05:32 — alex

As a user of Plaxo, I’ve been delighted with their Pulse service for a while now. Bloglines is a really great start at letting me keep up with things, but Pulse fills an important gap where Bloglines leaves off. Why do I trust my personal data to a service like this?

http://dojotoolkit.org/
Google Web Toolkit - Build AJAX apps in the Java language

Download Google Web Toolkit (GWT)

New! GWT goes out of Beta with version 1.4

Google Web Toolkit (GWT) is an open source Java software development framework that makes writing AJAX applications like Google Maps and Gmail easy for developers who don’t speak browser quirks as a second language. Writing dynamic web applications today is a tedious and error-prone process; you spend 90% of your time working around subtle incompatibilities between web browsers and platforms, and JavaScript’s lack of modularity makes sharing, testing, and reusing AJAX components difficult and fragile.

GWT lets you avoid many of these headaches while offering your users the same dynamic, standards-compliant experience. You write your front end in the Java programming language, and the GWT compiler converts your Java classes to browser-compliant JavaScript and HTML.

Learn more »
The Yahoo! User Interface Library (YUI)

The Yahoo! User Interface (YUI) Library is a set of utilities and controls, written in JavaScript, for building richly interactive web applications using techniques such as DOM scripting, DHTML, and AJAX. The YUI Library also includes several core CSS resources. All components in the YUI Library have been released as open source under a BSD license and are free for all uses.

Download YUI Download YUI version 2.3.1, including full API documentation and more than 180 functional examples from Sourceforge.

The library's developers blog at the YUI Blog and the YUI Library community exchanges ideas at YDN-JavaScript on Yahoo Groups.

Using YUI:
- FAQ
- Getting Started
- Licensing
- Articles
- Cheat Sheets
- Support & Community
- Flickr Beta

YUI Core:
- The YAHOO Global Object
  (base requirement for all YUI components)
- DOM Collection
  (convenience)

YUI Library Controls/Widgets:
- AutoComplete
- Button Control
- Calendar
- Color Picker
- Container

Steve Souders is Yahoo's chief performance guru and the author of the popular YSlow plugin for Firebug; in this talk, he outlines the 14 things you can do to make your web site snappy and responsive. [Available on Yahoo! Video and as an MP4 download]

http://developer.yahoo.com/yui/
Are there Ajax JSP tag libraries?

- **Prize Tags** ([http://www.jenkov.com/prizetags/introduction.tmpl](http://www.jenkov.com/prizetags/introduction.tmpl))
Ajax JSP Tag Library 1.3

Overview

The AJAX Tag Library is a set of JSP tags that simplify the use of Asynchronous JavaScript and XML (AJAX) technology in JavaServer Pages.

AJAX is primarily rooted in JavaScript. However, many server-side developers do not have an extensive knowledge of client-side programming in the browser. It's much easier in some cases for J2EE developers, especially, to simply add a JSP tag to the page to gain the function desired.

This tag library fills that need by not forcing J2EE developers to write the necessary JavaScript to implement an AJAX-capable web form. The tag library provides support for live form updates for the following use cases: autocomplete based on character input to an input field, select box population based on selections made from another field, callout or balloon popups for highlighting content, refreshing form fields, and toggling images and form field states on/off.

http://ajaxtags.sourceforge.net/
Coldtags suite: Ajax edition

Coldtags suite ver. 2.70 is ready. At the first hand check out extended set of Ajax tags:
http://www.servletsuite.com/jsp.htm#ajax

Monday, June 05, 2006

Posted by Abava at 12:12 AM

0 Comments:

Post a comment

<< Home

Prize Tags - Introduction

The Prize Tags JSP Tag Library is a collection of tag libraries for internet/intranet applications. The table below lists the tags in the Prize Tags collection.

Getting Started
Watch the demo, download the demo web app and look at the code, and download the user guides. You should be up and running in 15 minutes. Many projects won't need more than a few changes from the code in the demo pages.

The Tags
The JSP Tree Tag is now included in the Prize Tags collection. JSP Tree Tag v. 1.5 has had about 3,000 downloads. JSP Prize Tags has had about 6,000 downloads since then, before we reset the statistics recently.

The Prize Tags tag collection contains the following tags:

- AJAX Tags
- Tree Tag
- Tabbed Pane Tag
- Alternate Tag
- Calendar Tag
- Icon Tag
- Template Tag
- ... and several other, smaller tag libs.
JSON Tag Library

JSON-taglib is a JSP 2.0 tag library used to render JSON (JavaScript Object Notation) data from within JSP code. It can be used as part of the server-side of an AJAX application, allowing you to use the full power of JSP to format your JSON data.

The tag library is built on the Java JSON library written by Douglas Crockford.

What is JSON?

JSON is a lightweight data interchange format. It is a text-based, human-readable format for representing data structures. JSON is a subset of the object literal notation of JavaScript and is used extensively in AJAX web applications. For more information about JSON, check out JSON.org

Quick-Start

http://json-taglib.sourceforge.net/
WELCOME TO JAVA WEB PARTS >>>

Java Web Parts is a project that provides small, reusable and largely independant Java components of interest to all web application developers. You can think of this project as being similar to the Jakarta Commons projects.

Java Web Parts is comprised of a number of packages, each supplied in their own individual JAR, with little (ideally no) cross-dependency. The packages currently include:

- **AjaxParts**
  A collection of components for doing AJAX including the very popular AjaxParts Taglib (APT), formerly known as AjaxTags.

- **Context**
  A collection of components for dealing with a servlet context

- **Filter**
  A collection of useful servlet filters

- **Listener**
  Context and Session listeners for various occasions

http://javawebparts.sourceforge.net/
Retrofitting Struts

- Can we use Struts with Ajax?
- Why choose AjaxParts taglib?
- How about a simple Hello World example?
- How does AjaxParts actually work?
- Are there new alternatives for Struts 2?
Why choose AjaxParts Taglib?

- Designed for Java developers
- Requires no JavaScript knowledge
- Declarative, event-driven approach
- Uses only four tags (in combination)
Why choose AjaxParts Taglib?

- Works with any Java web application
- Handles sticky cross-browser issues
- Part of JavaWebParts component library
- Pure Ajax focus
  - Like Prototype or JQuery
Retrofitting Struts

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How about a Simple Hello World Example?

1 Press a button
2 Obtain a text message via Ajax
3 Write text message to screen
   • without refresh

[Say Hello World via Ajax]
   • Hello World!
<%@ taglib prefix="ajax" uri="javawebparts/ajaxparts/taglib" %>
<html>
<head>
<title>Simple Hello World Example</title>
</head>
<body>
<input type="button" value="Say Hello World via AJAX" />
<br />
<br />
<div id="hello-div"></div>
</body>
</html>
<%@ taglib prefix="ajax" uri="javawebparts/ajaxparts/taglib" %>
<html>
    <head>
        <title>Simple Hello World Example</title>
    </head>
    <body>
        <input type="button" value="Say Hello World via AJAX" />
        <ajax:event ajaxRef="index/hello-button"/>
        <br/>
        <div id="hello-div"></div>
        <ajax:enable />
    </body>
</html>
<ajaxConfig>
  <group ajaxRef="index">
    <element ajaxRef="hello-button">
      <event type="onclick">
        <requestHandler type="std:SimpleRequest">
          <parameter />
        </requestHandler>
        <responseHandler type="std:InnerHTML">
          <parameter>hello-div</parameter>
        </responseHandler>
      </event>
    </element>
  </group>
</ajaxConfig>
Hello World! I am an AJAX result from the (mock) server.
What JARS do we need?

- javawebparts-ajaxparts.jar
- javawebparts-core.jar
- commons-logging.jar
<web-app>
  <context-param>
    <param-name>
      AjaxPartsTaglibConfig
    </param-name>
    <param-value>
      /WEB-INF/ajax-config.xml
    </param-value>
  </context-param>
</web-app>
Say Hello World via AJAX
http://192.168.42.103:8080/retrofitting/

Say Hello World via AJAX

Hello World! I am an AJAX result from the (mock) server.
Can we use a Struts action instead?

- Replace text file with action that returns text.
public class IndexResult extends Action {
    public ActionForward execute(
        ActionMapping mapping, ActionForm form,
        HttpServletRequest request,
        HttpServletResponse response)
    throws Exception {
        response.setContentType("text/html");
        PrintWriter out = response.getWriter();
        out.println("Hello World! " +
            "This is an AJAX response " +
            "from a Struts Action.");
        out.flush();
        return null;
    }
}
<action
   path="/index-result"
   type="actions.IndexResult"
   validate="false" />

struts-config.xml
<requestHandler type="std:SimpleRequest"
target="index-result.txt">

<requestHandler type="std:SimpleRequest"
target="/index-result.do">

ajax-config.xml
Hello World! This is an AJAX response from a Struts Action.
How about Struts 2?

- Copy and modify Action
- Add action mapping
- Change URI reference
public class IndexResult2 extends ActionSupport {
    private InputStream inputStream;
    public InputStream getInputStream() {
        return inputStream;
    }
    public String execute() throws Exception {
        inputStream = new StringBufferInputStream("Hello World! This is an AJAX response "+ "from a Struts 2 Action.");
        return SUCCESS;
    }
}

actions.IndexResult2.java
<package name="ajaxwebparts"
  extends="struts-default">

  <action name="index-result"
    class="actions.IndexResult2">

    <result type="stream">
      <param name="contentType">text/html</param>
      <param name="inputName">inputStream</param>
    </result>

  </action>

</package>
<requestHandler type="std:SimpleRequest" target="/index-result.do">

<requestHandler type="std:SimpleRequest" target="/index-result.action">

ajax-config.xml
Hello World! This is an AJAX response from a Struts 2 Action.
Is it really that easy?

- No Client Side coding required
- Setting text to <div> tag
- JavaWebParts Cookbook
  - dynamically adding lines to a form
  - creating "suggest" textboxes
  - dynamic double select controls
  - and more ...
Retrofitting Struts

- Can we use Struts with Ajax?
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How does AjaxParts work?

- Bind to a JavaScript event
  - RequestHandler
  - One or more ResponseHandlers
How does AjaxParts work?

```
<ajaxConfig>
    <group ajaxRef="index">
        <element ajaxRef="hello-button">
            <event type="onclick">
                <requestHandler type="std:SimpleRequest">
                    <target>index-result.action</target>
                </requestHandler>
            </event>
        </element>
    </group>
<body>
    <input type="button" value="Say Hello World via AJAX" />
    <ajax:event ajaxRef="index/hello-button" />
```
How does AjaxParts work?

```html
<responseHandler type="std:InnerHTML">
  <parameter>hello-div</parameter>
</responseHandler>

<br />
<br />
<div id="hello-div"></div>
</body>
<ajax:enable />
```
What does `<ajax:event>` do?

- Attaches an JavaScript event to a HTML element
- Tag must **immediately** follow the HTML element
  - Repeat: *immediately!*
What does <ajax:event> do?

wrong:
<input type="button"
    value="Say Hello World via AJAX" />

<ajax:event ajaxRef="index/hello-button"/>

right:
<input type="button"
    value="Say Hello World via AJAX"
/> <ajax:event ajaxRef="index/hello-button"/>
What does `<ajax:enable>` do?

- Renders JavaScript for other tags on page
- Must appear after all other APT tags
- Usually after closing `</body>` tag
What requestHandlers are there?

- **SimpleRequest**
  - Sends request to target URI
- **SimpleXML**
  - Submits a form as a XML document
- **QueryString**
  - Submits a form as a GET request
- **Poster**
  - Submits a form as a POST request
What requestHandlers are there?

- **SendByID**
  - submits a GET or POST for a list of elements, optionally in XML
- *(Your RequestHandler here)*
  - *If you know a little JavaScript, you can write your own!*
What responseHandlers are there?

- **InnerHTML**
  - Sets response content to element's innerHTML

- **Alterer**
  - Raises a JavaScript alert() with the response content

- **CodeExecuter**
  - Evaluates the response content as a script
What responseHandlers are there?

- **Redirector**
  - Uses response content as a URI for a redirect; alternatively, URI may be specified in configuration

- **WindowOpener**
  - Opens a new window and populates it with response content
What responseHandlers are there?

- **TextBoxArea**
  - Populates text control from response

- **SelectBox**
  - Populates `<select>` control from response
  - `<list>
    <option value="DD">EE</option>
  </list>`
What responseHandlers are there?

- FormManipulator - Populates fields in a form from response content
  
  ```html
  <form name="AA">
    <formproperty name="BB" value="CC"/>
    <element name="DD" value="EE">
      <property name="FF" value="GG"/>
    </element>
  </form>
  ```
Is that all there is to AjaxParts?

- Powerful but easy to use
- Built on a declarative foundation
- Utilizes event-driven paradigm
- Works with Struts and other web application frameworks
- Doesn't require in-depth JavaScript knowledge
Is that all there is to AjaxParts?

- The AjaxParts Taglib from Java Web Parts: Ajax for Java Developers the Easy (yet powerful) Way
  - (Frank W Zammetti, http://www.omnytex.com/articles/apt/)

- JavaWebParts web site
  - JWP Sample Application and JWP Cookbook
  - (http://javawebparts.sourceforge.net/)
Is that all there is to AjaxParts?

- Practical Ajax Projects With Java Technologies
  - (Frank W. Zammetti, ISBN 1-59059-695-1)
- Struts-Ajax-Crud or "Select alters other select list"
  - (Rick Reumann, http://www.learntechnology.net/content/ajax/ajax_select_alter.jsp)
Other Struts 1 Ajax Resources

- Sprinkle Some Ajax Magic in Your Struts Web Application
  - (Paul Browne, http://today.java.net/lpt/a/236)
- Ajax using XMLHttpRequest and Struts
  - (Frank W. Zammetti, http://www.omnytex.com/articles/xhrstruts/)
Retrofitting Struts

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Are there new alternatives for Struts 2?

- Struts 2.0 Ajax Tag Themes
- Struts 2.1 Ajax Tag Plugins
  - Dojo and (some) YUI
- GWT Plugin
  - Uses Action as backend data source
- JSON Plugin
  - Renders Action properties as JSON object
How do the S2 Ajax Tags work?

The Dojo plugin provides several tags:

- **a / link** - make a remote call to the server using Ajax
- **form** - Ajax-based validation via DWR
- **submit** - Used with form tag
- **div** - Obtain content for a div via remote call
- **tabbedpanel** - content for each panel is object via remote call
How do the S2 Ajax Tags work?

The YUI plugin provides three tags

- autocompleter
- datepicker
- languages
How do the S2 Ajax Tags work?

The YUI plugin provides three tags

- autocompleter
- datepicker
- languages
The selected date is
The selected date is 

October 2007
http://192.168.42.103:8080/retrofitting/datetimepicker.action

The selected date is

10/26/2007

Submit
<html>
  <head>
    <script type="text/javascript">
      // YUI Datepicker initialization code goes here
    </script>
  </head>
  <body>
    <p>The selected date is</p>
    <form action="datepicker">
      <input type="date" id="datepicker" name="datepicker" />
      <input type="submit" />
    </form>
  </body>
</html>

datepicker.jsp
<action name="datepicker"
class="actions.Datepicker">
  <result>datepicker.jsp</result>
</action>

struts.xml
public class Datepicker extends ActionSupport {
    private Date datepicker;
    public Date getDatepicker() {
        return datepicker;
    }
    public void setDatepicker(Date value) {
        datepicker = value;
    }
}
The selected date is

10/26/2007
Are there other Struts 2 Ajax resources?

- Turbocharge Your Pages with Ajax, Dojo, and Struts
  - (Doug Tillman, http://www.devx.com/webdev/Article/31806)

- For help with the Dojo tags, see the new Ajax Recipes page
  - http://struts.apache.org/2.x/docs/ajax-and-javascript-recipes.html

- Ian Roughley's new S2 book (November 2007) includes an Ajax chapter
  - (Practical Apache Struts 2 Web 2.0 Projects, ISBN 1590599039)
Is that all there is?

In this session, we covered

- Integrating Ajax with Struts 1 or Struts 2
- Using the AjaxParts taglib with Struts 1 or 2
- Using the Ajax YUI plugin with Struts 2