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What's Going on With Struts Ti

Don Brown

Jason Carreira

Patrick Lightbody

<http://struts.apache.org/>

TS-3682

WebWork + Struts

Making web development better for everyone

Discover how Struts is evolving to make development easier and more powerful for the needs of today's web applications.

Agenda

Quick Struts history lesson

Both sides of the isle: Shale and Action

Emergence of Struts Action 2

New features

- Validation

- UI Tags

- AJAX

- Advanced interceptors

Struts Action 2 in Action

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The Story So Far

Struts past and present

- Struts 0.5—May 2000—**Prototype** release
- Struts 1.0—June 2001—**Initial** release
- Struts 1.1—June 2003—**Commons** release
- Struts 1.2—Dec. 2004—**Wildcards** release
- Struts 1.3—Feb. 2006—**Subproject** release

The Story So Far

WebWork past and present

- WebWork 1.0—Mar. 2002—**Initial** release
- WebWork 1.4—Nov. 2003—**Legacy** release
- WebWork 2.0—Feb. 2004—**Next-gen** release
- WebWork 2.2—Jan. 2006—**Struts** release

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Two Frameworks, One Community

- Struts Action
 - What most people think of when they think of “Struts”
 - Directly maps URLs to actions (method)
 - Well-suited for AJAX or ReST-based web services
 - Stays close to how HTTP and HTML work
- Struts Shale
 - Builds on JavaServer™ Faces
 - Adds advanced features like dialogs, Spring support, and remoting
 - Good for complex user interfaces and tool support

Struts Action 1.3

Launch of the subprojects

- Divided Struts Action in to subprojects
 - Action, Apps, EL, Extras, Taglibs, Tiles
 - Faces (new)
 - Scripting (new)
- Major features include “extends” attribute, Commons Chain integration, and a composable Request Processor

Struts Showing Its Age...

- Struts Action 1 out of date
 - Requires too much code and XML
 - Imposes itself on your application
 - Lacks built-in features for advanced UIs
 - No portlet support
- Does the world need another framework?
 - Action-based frameworks more similar than not
 - Frameworks still too complicated and tedious
 - Struts users need a smooth migration path

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Introducing Struts Action 2

Merging with OpenSymphony WebWork

- Familiar action-centric paradigm
- Interface based
- Plain old Java™ Objects (POJO) actions and forms
- HTTP independence
- Explicit AJAX support using Dojo
- Continuations
- Extensible presentation types

Migration

What about existing Struts apps?

- Dual processors/shared resources
 - Run old and new side-by-side, migrate gradually
 - Share common resources like validations or messages
- Examples for developer knowledge migration
 - Struts Mailreader
 - iBATIS Jpetstore
- Tools for source migration
 - Reuse existing ActionForms
 - More to come

Struts Action 2 Roadmap

- Phase 1
 - WebWork 2.2.2 codebase
 - Struts Action 1 migration tools
 - Tiles, Validator, and Commons Chain support
- Phase 2
 - Zero XML configuration
 - Annotated, stateful POJO controllers
 - Dialog/workflow support

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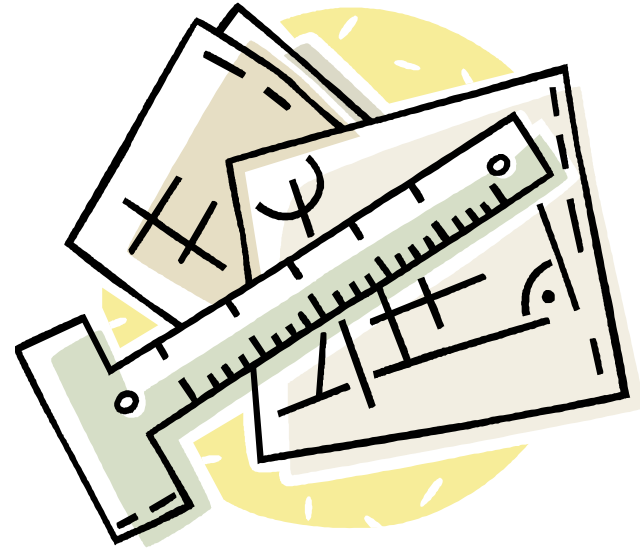
Struts Action 2 in Action

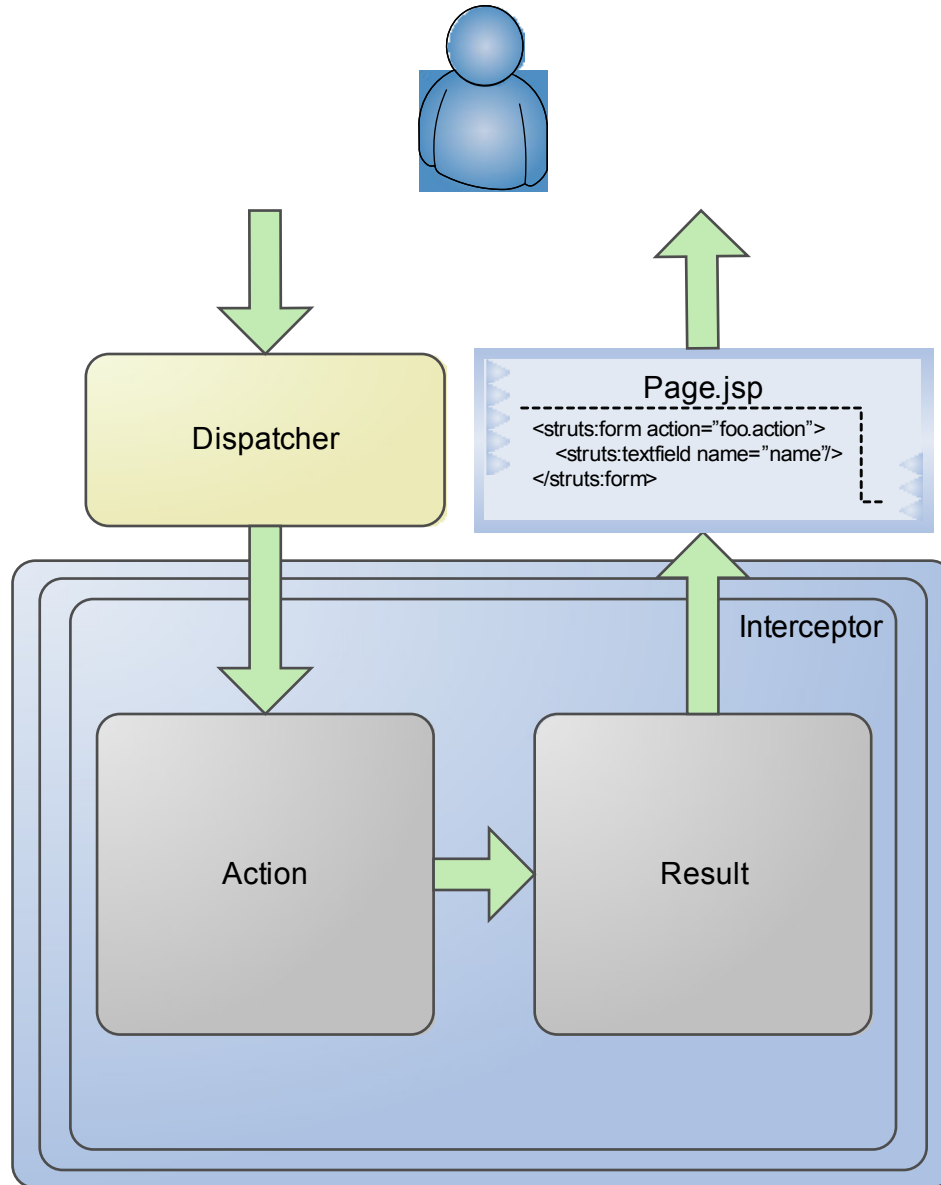
Introduction to Struts Action 2.0

- Action-based Web MVC framework
 - Similar concepts to Struts 1.x
- Simplicity
 - Easy to follow
 - No complex lifecycle

Basic Architecture

- Main Pieces
 - Dispatcher
 - Actions
 - Interceptors
 - Results
 - Tags





Features We'll Cover



- Validation
- UI Tags
- AJAX
- Advanced Interceptors

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Validation

- Many different options for validation
 - Implement validation in the execute() method
 - Implement the Validateable interface and validate()
 - Use the validation framework and XML validation meta-data



Validation Framework

- Simple XML or Java-based Annotations meta-data
- Pre-built set of validators
- Build and apply custom validators
- Declaratively define powerful validation rules using the expression validator
- Different sets of rules per context



When to Use Each Type of Validation?

- Do you need different validation contexts?
- Do you need to reuse validations on domain objects?
- Are the validations complex and need to check other system data?



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UI Tags

- Reusable UI components
- Work across JavaServer Pages™, Freemarker, and Velocity
- UI component models rendered via Freemarker templates
- Theme groups templates for UI components



First name is required!

First name:

Last name:

Email:

Gender: Male Female

Street Address:

Zip Code:

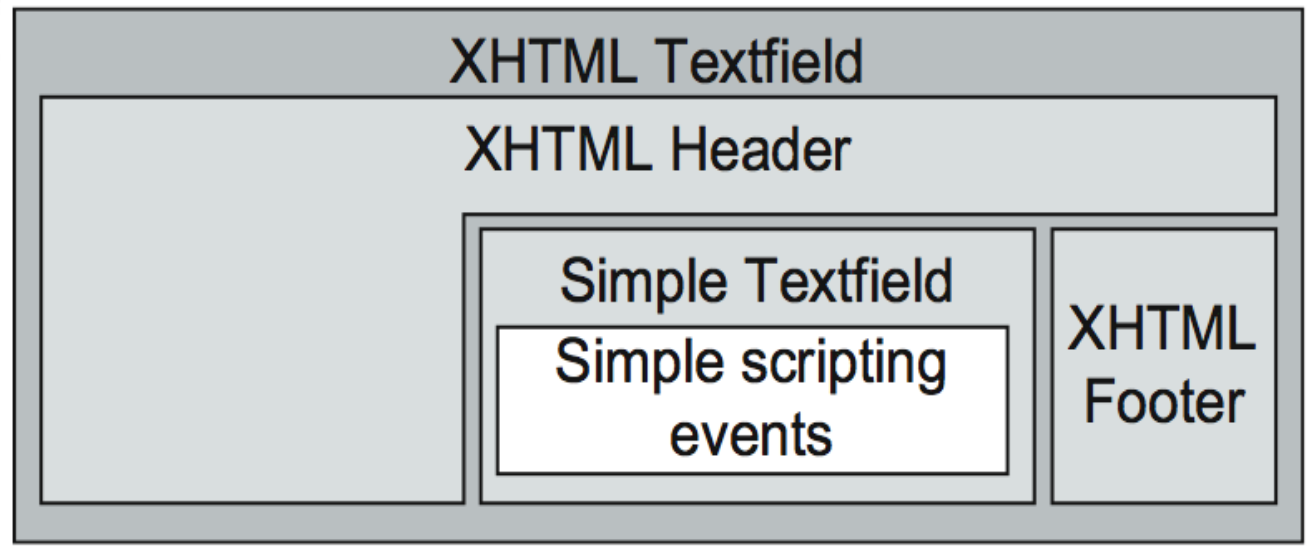
City:

State: ▼

Country: ▼

P.O. Box

The xhtml Theme Extends the Simple Theme and Provides a Standard Two-Column Layout...



Example code

```
<ww:form method="post">  
  <ww:textfield label="Name"  
                name="name" />  
  <ww:textfield label="Age"  
                name="age" />  
  <ww:select label="Favorite color"  
            name="color"  
            list="colors" />  
  <ww:submit action="quiz" />  
</ww:form>
```

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AJAX

- **AJAX** = **A**synchronous **J**avaScript™ **A**nd **X**ML
- **Basic Ideas**
 - Refresh parts of the page without redrawing the whole page
 - Make a richer UI, more like desktop apps



AJAX Support in Struts Action 2.0

- AJAX theme for UI tags
- Uses Dojo Toolkit
- Loosely coupled UI components
 - Use in-page topics with publish/subscribe messaging
 - Events trigger parts of the page to refresh themselves



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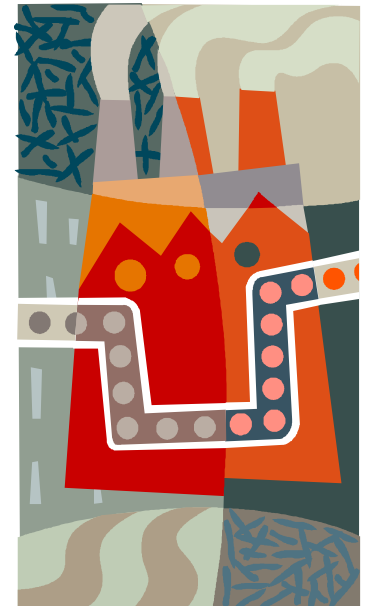
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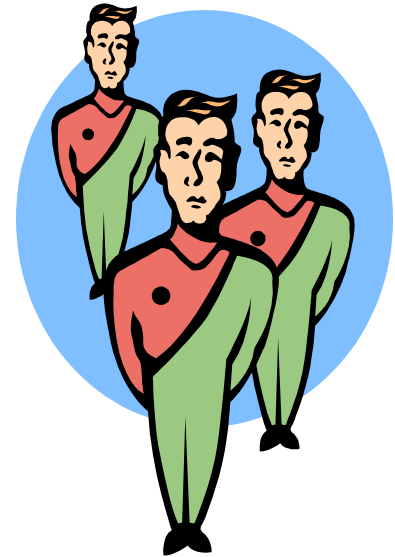
Advanced Interceptors

- Interceptors allow for reusing complex functionality
- A Couple Examples
 - Preventing duplicate form posts
 - Running time consuming processing in a new Thread



Duplicate Form Posts

- What's the problem?
 - User clicks the button more than once
 - User refreshes page after submitting form
- Don't want to process the data twice!
 - What if it's a bank transfer?



TokenSessionInterceptor

- Combination of the token tag and the interceptor
- Saves a form token in the session
- Interceptor compares the token passed with the form with the one in the session
- Two options for what to do with duplicate posts:
 - Show an error page
 - Re-render the page from the first time!



Long Running Processes

- What's the problem?
 - Users may kick off process that takes several minutes
 - Don't want them to think the webapp has died
 - Let them know we're doing something, and show them the results when we're done



Example: Booking a Flight



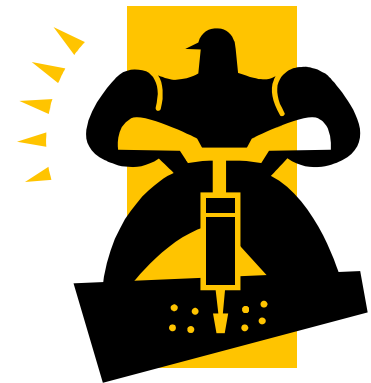
ExecuteAndWaitInterceptor

- Spawns a new thread
- Hands off executing the action to the new thread
- Returns a special code to let you show the “Working” page



The “Working” Page

- Lets the user know something is happening
- Refreshes periodically
- Refreshing checks if the thread is done
- When the thread is done, render the page from the first request



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DEMO

New Features

Summary

- Struts has a renewed energy with Shale and Action 2.0
- Action 2.0 brings together features from Struts 1.x and WebWork to provide the best of both worlds
- Action 2.0 makes upgrading easy by supporting 1.x actions along side your new actions
- Action 2.0 focuses on simplified configuration and advanced features demoed here

Q&A



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