Getting Started with the Stripes Framework
Emerging Technologies for the Enterprise 2009

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My Background (1)

- **Degree**
  - ☐ **B.S. in Computer Science**
  - ☐ **Rutgers University (go Scarlet Knights!)**
- **"Petrochemical Research Organization"**
  - ☐ **Senior Research Technician (1988-1998, 2004-present)**
  - ☐ **Systems Analyst (1998-2002)**
- **Ai-Logix, Inc. (Now AudioCodes)**
  - ☐ **Technical Support Engineer (2003-2004)**
- **Amateur Computer Group of New Jersey (ACGNJ)**
  - ☐ **Java Users Group Leader (2001-present)**
  - ☐ **President (2007-present)**
  - ☐ **Secretary (2006)**

My Background (2)

⚜ **Publications**

   ❑ **Java Boutique (http://www.javaboutique.com/)**

     ❖ **Co-authored with Barry Burd**

     ❖ **Design Patterns**

   ❑ **http://publications.redlich.net/**

⚜ **Presentations**

   ❑ **Emerging Technologies for the Enterprise 2008**

   ❑ **Trenton Computer Festival (TCF) since 1998**

   ❑ **TCF IT Professional Conference since 2006**

   ❑ **Princeton Java Users Group**

   ❑ **Capital District Java Developers Network**

   ❑ **New York Software Industry Association (NYSIA) Java Users Group**

Upcoming Event

Trenton Computer Festival (TCF) 2009

- ❏ **April 24-26, 2009**
- ❏ **IT Professional Conference (April 24, 2009)**
- ❏ **General Show (April 25-26, 2009)**
- ❏ **The College of New Jersey**
- ❏ **Ewing, New Jersey**
- ❏ **http://www.tcf-nj.org/**

Objectives

- **What is Stripes?**
  - ❑ **"What! Yet another web framework?!?"**
- **Stripes vs. Struts**
- **How to get started**
- **Overview of some basic components**
- **Stripes Lifecycle**
- **Live demo**
  - ❑ **Source code, source code, source code (*woo-hoo!*)**
  - ❑ **Build a small web application from scratch…**

What is Stripes?

- **Open source, action-based Java web framework**
- **Tim Fennell**
  - ❑ **"Father" of Stripes**
  - ❑ **Lead Developer**
  - ❑ **Anti-Struts!**
- **Designed around the principles that web development should be:**
  - ❑ **Simple**
  - ❑ **Productive**

Stripes

Yet Another Open Source Web Framework? (1)

- Struts
- Tapestry
- Cocoon
- MyFaces
- Wicket
- WebWork
- Spring
- Google Web Toolkit
- Turbine
- Makumba
- Helma
- Restlet

- Echo
- JPublish
- Trimpath Junction
- Calyxo
- RIFE
- DWR
- JOSSO (Java Open Single Sign-On
- OpenXava
- Click
- ZK
- RSF

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Yet Another Open Source Web Framework? (2)

- Strecks
- flexive
- Maverick
- Anvil
- Jaffa
- Vraptor
- Millstone
- wingS
- Aranea
- Hamlets
- ThinWire
- Pustefix

- jWic
- Mentawai
- SpringWeb
- Macaw
- Ztemplates
- Jucas
- Chrysalis
- Caramba
- jZeno
- Aurora
- SOFIA
- Verge

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Stripes

*Goals of Stripes**

- Make developing web applications in Java easy
- Provide simple yet powerful solutions to common problems
- Make the Stripes ramp up time for a new developer less than 30 minutes
- Make it really easy to extend Stripes, without making you configure every last thing

* Source: Stripes web site, `http://www.stripesframework.org/`.

Stripes

Key Features* (1)

- Zero external configuration per page/action
  - Action Beans are auto-discovered and configured using annotations
- Powerful binding engine that will build complex object webs out of the request parameters
- Easy to use (and localized) validation and type conversion system
- Localization system that works even when you use direct JSP->JSP links
- Ability to re-use Action Beans as view helpers

* Source: Stripes web site, http://www.stripesframework.org/.

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Key Features* (2)

- Ridiculously easy to use indexed property support
- Built-in support for multiple events per form
- Transparent file upload capabilities
- Support for incremental development
  - e.g., you can build and test your JSP before even thinking about your Action Bean
- And a lot of built in flexibility that you only have to be aware of when you need to use it

* Source: Stripes web site, http://www.stripesframework.org/.

*Stripes Aims to…**

- ♣ …provide an experience similar to owning:
  - ❑ Apple hardware
  - ❑ Sony TVs
  - ❑ Luxury German cars (without the price premium)
- ♣ Things just work…
- ♣ Things just feel right…
- ♣ And you sometimes get that "Oh, it does that too? Awesome!" feeling…

* Source: Stripes web site, http://www.stripesframework.org/.

Stripes

Stripes vs. Struts

- ♣ ActionBean
- ♣ JSP
- ♣ `web.xml`
- ♣ Specific Annotations
  - ❑ `@UrlBinding`
  - ❑ `@Validate`
- ♣ Form and action information in one location

Stripes

- ♣ Action
- ♣ Form
- ♣ JSP
- ♣ `web.xml`
- ♣ `struts-config.xml`
  - ❑ form-bean stanza
  - ❑ action stanza
  - ❑ Forward stanzas

Struts

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Stripes vs. Struts2 (1)

	Stripes	Struts2
Version	1.5	2.0.12
Configuration	`web.xml`	`web.xml`, `struts.xml`, optionally `struts.properties` and others
Main workhorse	Classes that implement `ActionBean`	Classes that have an `execute()` method, optionally implement `Action`, or extend `ActionSupport`
Response mechanism	Instance of `Resolution`	`String` identifier that maps to a `result` in `struts.xml` or in an annotation
View technology	JSP or FreeMarker	JSP, FreeMarker, or Velocity
Layout mechanism	Built-in, with three layout tags. For people who like Tiles or SiteMesh, they can be used as well.	Tiles or SiteMesh
Binding mechanism	Built-in	OGNL
Validation	`@Validate` and `@ValidateNestedProperties`	Configure in an XML file, or use annotations

Stripes vs. Struts2 (2)

	Stripes	Struts2
Validation short-circuiting	Built-in, configurable with `when=ValidationState.ALWAYS` and `Validation.InvokeValidateWhenErrorsExist`	Set `short-circuit="true"` on `<field-validator>`
Custom validation	Annotate your method with `@ValidationMethod`	Extend either `ValidatorSupport` or `FieldValidatorSupport`, and configure in `validators.xml`
Model-to-view data transfer	`${actionBean}` attribute	`ValueStack`
Type conversion	Implementations of `TypeConverter<T>` (generified)	Implementations of `ognl.TypeConverter`, typically extensions of `StrutsTypeConverter` (not generified)
Formatting	Implementations of `Formatter<T>` (generified)	Implementations of `ognl.TypeConverter`, typically extensions of `StrutsTypeConverter` (not generified)
Custom module configuration	Automatically loaded with `Extension.Packages` init-parameter	Configuration in `struts.xml`
Interceptors	Implementations of `Interceptor`, or methods annotated with `@Before`/`@After`	Implementations of `Interceptor`, with configuration in `struts.xml`
Localization	Resource bundle(s) for errors and field names, and JSTL	Resource bundle search mechanism

What Do I Need to Get Started?

- Stripes 1.5.1
  - http://www.stripesframework.org/
- Java classes (as needed)
- JSP pages (as needed)
- `web.xml` file
- `StripesResources.properties` file
- Servlet container

Basic Components

- **ActionBean**
- **ActionBeanContext**
- **Resolution**
- **StripesFilter**
- **DispatcherServlet**
- **@Validate**

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ActionBean

- Interface for all classes that respond to user events through an `ActionBeanContext` object
- Allows the Stripes Dispatcher to inject an `ActionBeanContext` object into the action being serviced
- All Stripes actions need to implement this interface

Stripes
ActionBeanContext

- ♠ **Encapsulates information about the current action**
  - ❏ **State information**
  - ❏ **Informational messages**
  - ❏ **Error messages**
- ♠ **Provides access to the Servlet API**
  - ❏ **`HttpServletRequest`**
  - ❏ **`HttpServletResponse`**
  - ❏ **`ServletContext`**
  - ❏ **`ValidationErrors`**

Resolution (1)

- An interface designed to be returned by handler methods in Action Beans
- Responsible for executing the next step after an Action Bean has handled the user's request
- Called by the Stripes Dispatcher to invoke a Resolution
- Should use the request and response provided to direct the user to an appropriate view

```
void execute(HttpServletRequest
request,HttpServletResponse response);
```

Resolution (2)

ForwardResolution

- Uses a server-side forward directive to forward the user to another path in the same application

RedirectResoution

- Uses a client-side redirect the user to another path in the same web application or another web application on the web

StreamingResoution

- Used to stream content back to the user

JavaScriptResolution

- Used to convert a Java object into JavaScript objects and arrays and stream them back to the client

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Stripes Filter

- Configured in `web.xml` file
  - No additional external configuration files necessary!
- All requests are filtered through `StripesFilter`
- Ensures that all requests coming to a Stripes application are handled consistently
- All actions are auto-discovered at deployment time
- Performs initialization of `<init-param>` elements
- `ActionResolver.Packages` is the only *required* `<init-param>` element
  - Specify one or more package roots
  - Subpackages automatically included

Stripes Filter Configuration

```
<filter>
    <display-name>Stripes Filter</display-name>
    <filter-name>StripesFilter</filter-name>
    <filter-class>net...StripesFilter</filter-class>
    <init-param>
        <param-name>ActionResolver.Packages</param-name>
        <param-value>org.emergingtech.hello</param-value>
    </init-param>
</filter>
```

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Stripes Dispatcher (DispatcherServlet)

- Configured in `web.xml` file
    - No additional external configuration files necessary!
- Controls how requests to the Stripes framework are processed
- Resolves a URL to a Stripes `ActionBean` class

```
org/emergingtech/calculator/Calculator.action
org.emergingtech.calculator.CalculatorActionBean
```

Stripes Dispatcher Configuration

```xml
<servlet>
  <servlet-name>StripesDispatcher</servlet-name>
  <servlet-class>net...DispatcherServlet</servlet-class>
  <load-on-startup>1</load-on-startup>
</servlet>
<servlet-mapping>
  <servlet-name>StripesDispatcher</servlet-name>
  <url-pattern>*.action</url-pattern>
</servlet-mapping>
```

Stripes
Validation

- Specifies validation for form fields
- Custom validations

```
@ValidateNestedProperties({
  @Validate(field = "firstName",required = true,on =
{"hello"}),
  @Validate(field = "age",required = true,minvalue = 13)
  })
private Person person;


@Validate(required=true)
Private double numberOne;
```
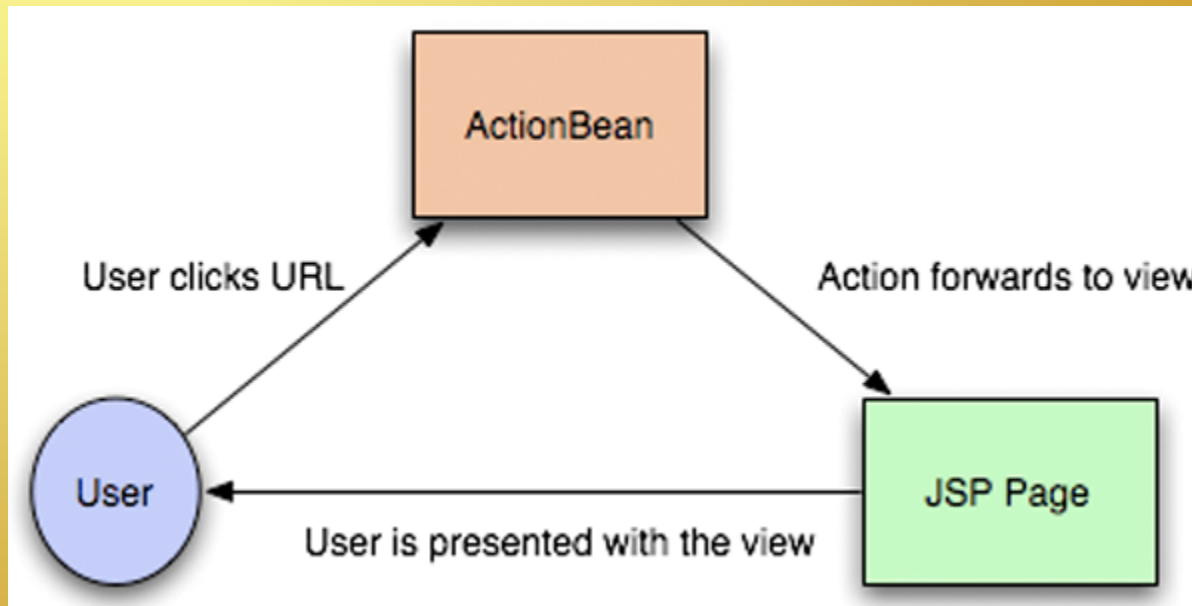
Events

- Represented by a method in a concrete `ActionBean` class
- Must have the following method signature:

```
public Resolution eventName();
```

Stripes Lifecycle

- Resolve an `ActionBean` based on the URL of the request and set the `ActionBeanContext` on it

- Resolve the handler method that will handle the event received in the request

- Bind properties from the `HttpServletRequest` into the `ActionBean`, running validation as necessary

- Invoke any custom validation methods

- Invoke the appropriate handler method on the `ActionBean`

- Execute a concrete `Resolution` returned by the `ActionBean`

Stripes Filter Preprocessing (1)

- ♣ **"Hides" the current configuration through a concrete `Configuration` object**
  - ❑ **The configuration can be retrieved by calling `StripesFilter.getConfiguration()`**
- ♣ **Resolves a `Locale` object that should be used for the current request**
- ♣ **Wraps the `HttpServletRequest` with a `StripesRequestWrapper`**
  - ❑ **Detects when the request is a multipart/form-data request**
  - ❑ **Correctly parses such requests to provide access to the request parameters and uploaded files**

Stripes

Stripes Filter Preprocessing (2)

⚜ **Flow of control to either:**

❑ **Directly to a JSP page**

❑ **Stripes Dispatcher**

❖ **If the request is for an `ActionBean` event**

Resolving the Action Bean

- **The Stripes Dispatcher:**
  - **Manufactures an `ActionBeanContext`**
    - ❖ **From the `ActionBeanContextFactory`**
  - **Resolves the appropriate ActionBean instance**
    - ❖ **From the configured `ActionResolver`**
  - **Matches the URL path of the request to the URL binding of an `ActionBean` class**
  - **Creates an instance of the `ActionBean`**
  - **Inserts the bean into the relevant scope (request or session)**
  - **Returns the ActionBean**

Handler Resolution

- **The Stripes Dispatcher:**
  - ❑ **Uses `ActionResolver` to determine the name of the event submitted**
  - ❑ **If there was no identifiable event name, `ActionResolver` uses the method annotated with `@DefaultHandler`**
- **The event name is then set on the `ActionBeanContext`**

Binding and Field Validation

- Performs required field validation on all required fields
- Perform pre-conversion validations
  - ❑ Such as minimum and maximum length attributes
- For each field supplied in the request that had a non-empty-string value
  - ❑ Convert the field using the type conversion system
  - ❑ Bind the converted values on to the `ActionBean`
- Run post conversion validations including min/max numeric value and expression checks
- Return a `ValidationErrors` containing any errors that arose during validation and binding

Executing the Action Bean

- **The Stripes Dispatcher invokes the handler method**
- **If the `ActionBean` throws an Exception:**
  - **It is propagated by Stripes Dispatcher, either:**
    - **Directly if it is a `Servlet` or `Runtime` exception, or**
    - **By wrapping it in a `StripesServletException`**
- **The `ActionBean` may execute arbitrary code, including handling the response directly**
- **Handler methods may return any Object**
  - **However, the return is ignored unless it is an instance of `Resolution`**
  - **If the `ActionBean` returns a non-null `Resolution`, the Stripes Dispatcher will call its `execute()` method to complete the request**

Stripes

We've Just Scratched the Surface...

- Custom Configurations
- Extensions
- Can use Stripes with:
  - Spring
  - AJAX

♠ …the live demo!

Are You Ready?

Summary

- Stripes was designed on the principles that web development should be easy and productive
- You can get started with Stripes in a minimal amount of time
- You can download Stripes from:
  - **http://www.stripesframework.org/**
- You can get this presentation and source code from:
  - **http://www.chariotsolutions.com/**
  - **http://presentations.redlich.net/**
- If you happen to be in the Scotch Plains, NJ area, please visit us at an ACGNJ Java User Group meeting!
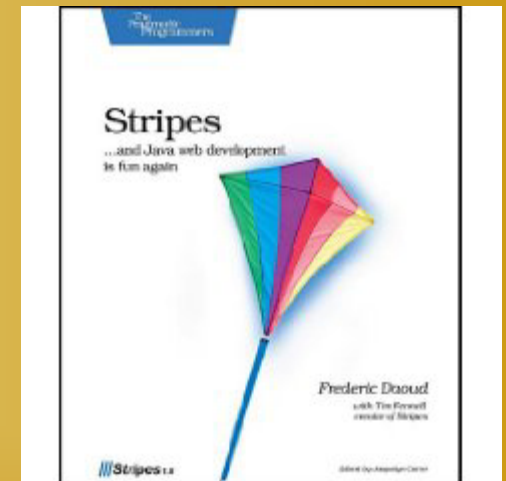
Stripes Resources (1)

- **Stripes Framework**
  - **http://www.stripesframework.org/**
- **Stripes …and Java web development is fun again**
  - **Book (Pragmatic Programmers)**
  - **Frederic Daoud (with Tim Fennell)**
  - **http://www.amazon.com/**
- **Java Web Development with Stripes**
  - **Article (ONJava)**
  - **Mark Eagle**
  - **http://www.onjava.com/lpt/a/6901/**

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Stripes Resources (2)

- **Using Stripes as a Web MVC Framework without that thing called XML**
  - **Blog Article (Gridshore)**
  - **Jettro Coenradie**
  - **http://www.gridshore.nl/2008/12/13/using-stripes-as-a-webmvc-framework-without-that-thing-called-xml/**

Local Java Users Groups

- **ACGNJ Java Users Group**
  - ❏ **facilitated by Mike Redlich**
  - ❏ **http://www.javasig.org/**
- **Princeton Java Users Group**
  - ❏ **facilitated by Yakov Fain**
  - ❏ **http://www.myflex.org/princetonjug/**
- **NYJavaSIG**
  - ❏ **facilitated by Frank Greco**
  - ❏ **http://www.javasig.com/**
- **Capital District Java Developers Network**
  - ❏ **facilitated by Anthony DeBonis**
  - ❏ **http://www.cdjdn.com/**

Many Thanks...

♠ **Chariot Solutions**

❑ **http://www.chariotsolutions.com/**