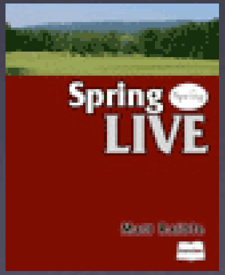
Comparing Web Frameworks:
Struts, Spring MVC, WebWork, Tapestry & JSF

Matt Raible
www.raibledesigns.com

Who is Matt Raible?

- Developing websites since 1994 (before Netscape 1.0) - Developing in J2EE webapps since 1999
- Committer on several open source projects:Roller Weblogger, XDoclet, Struts Menu, Display Tag, AppFuse
- J2EE 5.0 Expert Group Member
- Author: Spring Live (SourceBeat) and contributor to Pro JSP (Apress)



Framework Experience

- Struts: used since June 2001 - same time 1.0 was released.
- Spring MVC: used since January 2004 - before 1.0 was released.
- WebWork: used since July 2004.
- Tapestry: used since July 2004.
- JSF: used since July 2004 - both Sun's RI and MyFaces.

Meet the Candidates

Struts

- Pros:
  - The "Standard" - lots of Struts jobs
  - Lots of information and examples
  - HTML tag library is one of the best
- Cons:
  - ActionForms - they're a pain
  - Can't unit test - StrutsTestCase only does integration
  - Mailing list volume is overwhelming

Spring MVC

- Pros:
  - Lifecyle for overriding binding, validation, etc.
  - Integrates with many view options seamlessly: JSP/JSTL, Tiles, Velocity, FreeMarker, Excel, XSL, PDF
  - Inversion of Control makes it easy to test
- Cons:
  - Not many using it
  - Requires writing lots of code in JSPs
  - Almost too flexible - no common parent Controller

WebWork

- Pros:
  - Simple architecture - easy to extend
  - Tag Library is easy to customize - backed by Velocity
  - Interceptors are pretty slick
- Cons:
  - Documentation only recently written, few examples
  - Client-side validation immature

Tapestry

- Pros:
  - Very productive once you learn it
  - Templates are HTML - great for designers
  - Healthy and smart user community
- Cons:
  - Documentation very conceptual, rather than pragmatic
  - Steep learning curve - very few examples
  - Impossible to test - page classes are abstract

JSF

- Pros:
  - J2EE Standard - lots of demand and jobs
  - Fast and easy to develop with
  - Rich Navigation framework
- Cons:
  - Tag soup for JSPs
  - Immature technology - doesn't come with everything
  - No single source for implementation

Controllers and Views

- Struts: UserAction extends DispatchAction
- Spring MVC: UserFormController extends SimpleFormController
- WebWork: UserAction extends ActionSupport
- Tapestry: UserForm extends BasePage
- JSF: UserForm

List Screens

- How easy is it to integrate a sortable/ pageable list of data?
  - Struts, Spring MVC and WebWork can all use Tag Libraries like the Display Tag
  - Tapestry has a contrib:Table component
  - JSF has a dataTable with no sorting - have to write your own logic if you want it

Bookmarking and URLs

- Using container-managed authentication (or other filter-based security systems) allow users to bookmark pages. They can click the bookmark, login and go directly to the page.
    - WebWork has namespaces - makes it easy
    - Struts and Spring allow full URL control
    - Tapestry has ugly URLs - difficult to segment the app for different roles
    - JSF does a POST for everything

Validation

- Validation should be easy to configure, be robust on the client side and either provide good out of the box messages or allow you to easily customize them.
  - Struts and Spring MVC use Commons Validator - a mature solution
  - WebWork uses OGNL for powerful expressions - client-side support very new
  - Tapestry has very robust validation - good messages without need to customize
  - JSF - ugly default messages, but easiest to configure

Testability

- Struts - can use StrutsTestCase
- Spring and WebWork allow easy testing with mocks (i.e. EasyMock, jMock, Spring Mocks)
- Tapestry is impossible to test because page classes are abstract
- JSF page classes can be easily tested and actually look a lot like WebWork actions

Success Messages

- The duplicate-post problem, what is it?
- Easiest way to solve: redirect after POST
  - Struts is the only framework that allows success messages to live through a redirect
  - Spring and WebWork require custom solutions
  - Tapestry requires you to throw an Exception to redirect
  - JSF requires a custom solution, i18n messages difficult to get in page beans

Spring Integration

- All frameworks have integration with Spring
  - Struts: ContextLoaderPlugin and Base classes
  - WebWork: SpringObjectFactory
  - Tapestry: override base engine, grab from servlet context, put into global map
  - JSF: DelegateVariableResolver or JSF-Spring Library

Internationalization

- JSTL's <fmt:message> tag makes it easy
- No standard for getting i18n messages in controller classes
- Struts, Spring and JSF encourage one ResourceBundle per locale
- WebWork and Tapestry advocate separate files for each page/action

Page Decoration

- Used Tiles since it first came out in 2001
- SiteMesh is much easier to setup and use
- Tiles can be used in Struts, Spring and JSF
  - Requires configuration for each page
- SiteMesh can be used with all frameworks
  - Requires very little maintenance after setup

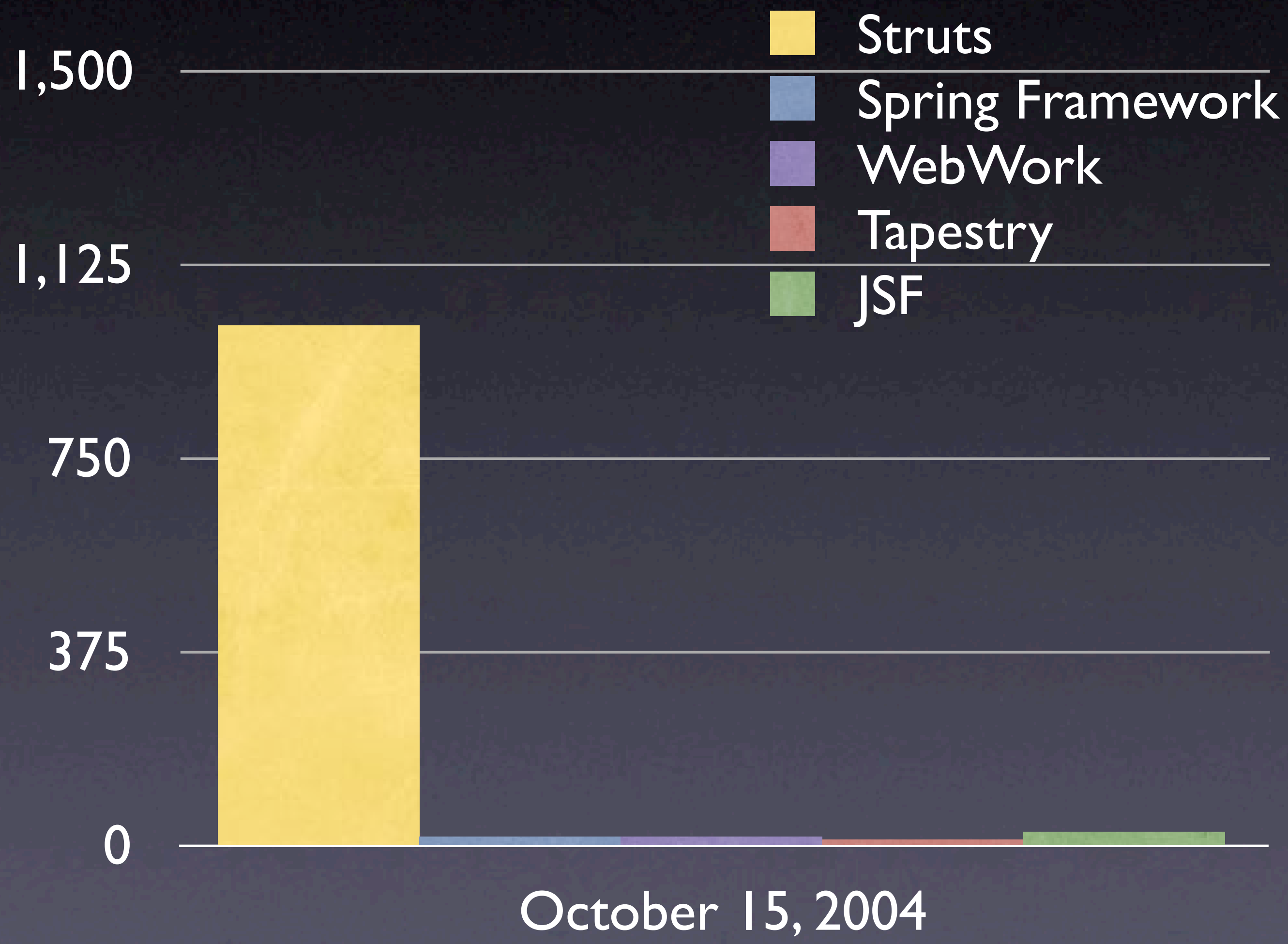
Tools

- Struts has a lot of IDE support and even has frameworks built on top of it (i.e. Beehive's PageFlow)
- Spring has Spring IDE - only does XML validation, not a UI/web tool
- WebWork has none
- Tapestry has Spindle - great for coders
- JSF has many, all cost money and hook into proprietary app servers

Business/Marketing

- Struts is still in high-demand and widely-used
- Spring is getting more press, but mostly due to the framework's other features
- WebWork is gaining ground, but pretty scarce on job boards
- Tapestry is even more scarce - needs more marketing
- JSF is quickly becoming popular

Dice Job Count



My Opinion

- Struts is fast to develop with because most problems have been solved. HTML tag library the best of the bunch.
- Spring is nice, but lack of form tags drops it down a notch or two. JSP 2.0 tag files exist in issue tracker.
- I like WebWork a lot, but lack of of good client-side validation support is a killer.
- Tapestry - I haven’t finished the learning curve.
- JSF - needs to listen to developers to see what they want instead of tools vendors.

Which would I choose?

- Quick and dirty project?
  - Struts because I know it best
- Massive enterprise project?
  - Tapestry for its reusable components
- If I got a job as an open source developer?
  - WebWork because using it requires you to dig into the frameworks

Resources

- Download sample apps for this presentation
  - http://equinox.dev.java.net/framework-comparison
- Struts - http://struts.apache.org
  - StrutsTestCase: http://strutstestcase.sf.net
- Spring MVC - http://www.springframework.org
  - Spring IDE: http://www.springframework.org/spring-ide/eclipse
- WebWork - http://opensymphony.org/webwork
  - Eclipse Plugin: http://sf.net/projects/eclipsework
  - IDEA Plugin: http://wiki.opensymphony.com/display/WW/IDEA+Plugin

Resources, cont.

- Tapestry - http://jakarta.apache.org/tapestry
  - Spindle: http://spindle.sourceforge.net
- JSF - http://java.sun.com/j2ee/javaserverfaces and http://myfaces.org
  - Java Studio Creator: http://sun.com/software/products/jscreator
  - MyEclipse: http://myeclipseide.com
- IDEA: http://www.jetbrains.com/idea
- SiteMesh: http://opensymphony.com/sitemesh

Resources, cont.

- Testing Frameworks
  - JUnit: http://junit.org
  - EasyMock: http://easymock.org
  - jMock: http://jmock.org
  - jWebUnit: http://jwebunit.sourceforge.net
  - Canoo WebTest: http://webtest.canoo.com
- XDoclet - http://xdoclet.sourceforge.net
- AppFuse - http://appfuse.dev.java.net

Books

- Struts in Action, Ted Husted and Team
- Struts Live, Rick Hightower and Jonathan Lehr
- Spring Live, Matt Raible
- Spring in Action, Craig Walls and Ryan Breidenbach
- Professional Java Development with Spring, Rod Johnson, Juergen Hoeller and Team

Books, cont.

- WebWork in Action, Patrick Lightbody and Team
- Tapestry in Action, Howard Lewis Ship
- Core JSF, David Geary and Cay Horstmann
- JSF in Action, Kito Mann

The End

...or is it just the beginning...

www.raibledesigns.com