

Connecticut Java User Group

Spring and EJB 3 Integration

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EJB 3: EJB Reinvented

- **Standards-based, vendor-agnostic server-side component development model**
- **Time-tested set of services for enterprise applications (e.g. transactions, security, persistence, messaging)**
- **Radical transformation of the EJB 2.x programming model**
- **100% annotations, no XML deployment descriptor**
- **Intelligent defaulting, zero-configuration**
- **Powerful, easy-to-use, popular JPA**
- **EJB 3 adoption increasing steadily - against all odds**
- **EJB 3.1 adds even more ease-of-use, powerful features**

Spring: Popular Java EE framework

- **Rise as a response to EJB 2.x complexity, along with Hibernate**
- **Popular open-source middleware framework (slight gravitation to commercial open-source)**
- **Dependency injection and AOP as core developer services**
- **Integration with standard (JPA, JMS, JDBC, JAX-WS) and non-standard tools (iBATIS, Quartz, Acegi)**
- **Extensible platform, easy to integrate third-party tools**
- **Integration with EJB**
- **Spring Application Platform will be Java EE 6 certified**

EJB 3 and Spring Integration Scenarios

- **Innovative, best-of-breed applications taking advantage of the strong-points of both technologies as needed.**
- **EJB Features**
 - Standards-based, zero-configuration, secure, transactional components - great for the service tier
 - First-class, completely seamless JPA integration
 - Statefulness, passivation, extended persistence context
 - Message Driven Beans
 - Robust web services and remoting
 - Clustering, load-balancing, instance pooling and server thread optimization
 - IDE and application server tooling support
- **Spring Features**
 - Advanced dependency injection via Spring beans
 - Advanced AOP, including @AspectJ support
 - Spring JDBC integration
 - Spring JMS integration
 - iBATIS, Hibernate, JDO, TopLink DAOs
 - Quartz integration
- **The sky is the limit!**

Integration Mechanics

- Spring can be used inside Java EE application server
- EJB 3 embeddable containers (OpenEJB, EasyBeans, Embedded JBoss, Embedded Glassfish) can be embedded onto Tomcat with Spring
- Anything in JNDI can be injected into Spring
- Spring supports Java EE `@Resource` and `@EJB` injection annotations for resources in JNDI
- XML based injection can be done via jee schema: `<jee:jndi-lookup/>` (no need to use `<jee:local-slsb/>` and `<jee:remote-slsb/>` for EJB 3)
- Enabling Spring `@Autowired` annotation in EJB 3 beans via Interceptors
- Lookup from Spring application context using Spring-supplied EJB 2 base class
- Use EJB 3 natively inside Spring using Spring Pitchfork...or another solution 😊

The Tools in the Demo

- **Apache OpenEJB**

- Most mature EJB 3 embedded container
- EJB 3 implementation for Apache Geronimo and IBM WebSphere Community Edition
- Supports EJB 3 deployments in WAR
- Could also have used EasyBeans, Embedded JBoss or Embedded GlassFish

- **Spring 2.5**

- Much better annotation support
- XML schema based configuration
- Improved JPA, JMS, JDBC, JSF and EJB integration
- @AspectJ support

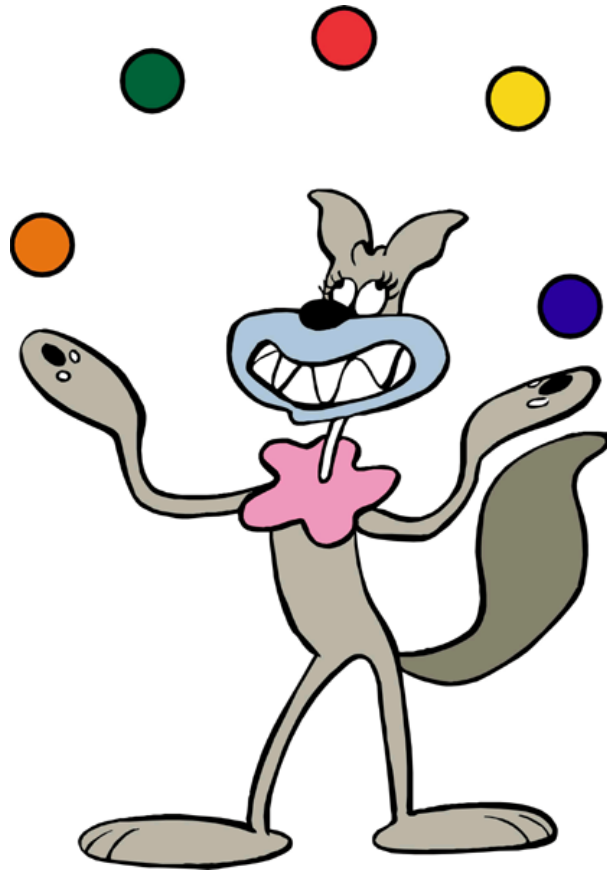
- **Tomcat**

- Predominant lightweight web container
- Could also have used WebSphere, WebLogic, JBoss, GlassFish, Oracle


- **Eclipse**

- Predominant Java IDE
- Excellent Java EE 5 support including JSF, JPA and EJB 3
- Could also have used NetBeans

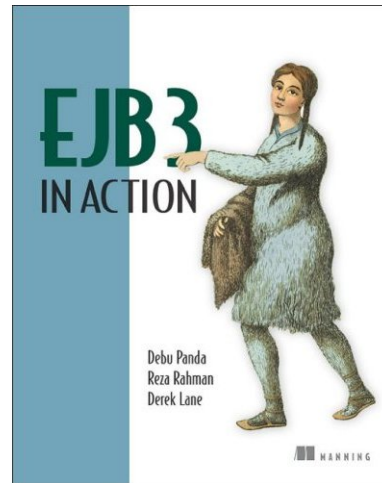
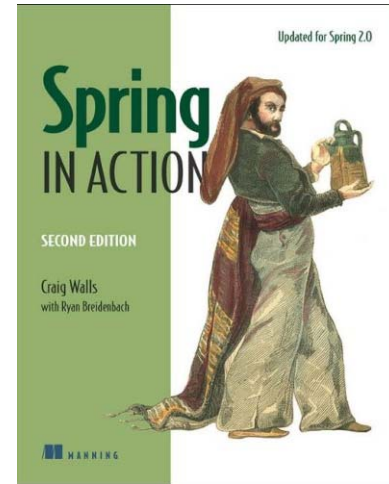
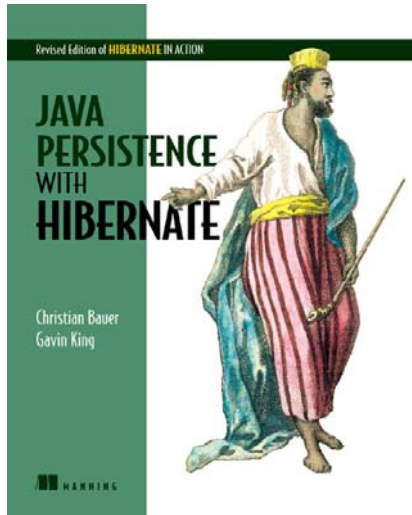
The Demo!



Summary

- **Create best-of-breed solutions leveraging the strong points of both EJB 3 and Spring**
- **Benefit from ease-of-use and vendor neutrality**
- **Take advantage of advanced AOP and DI as well as broad range of integration APIs**
- **Mix and match from broad range of features and integration points**
- **Can be done on Tomcat**
- **Can be done on Java EE servers like WebSphere, WebLogic, GlassFish, JBoss and Oracle**
- **How about much better native EJB 3 support on the Spring framework and application platform?**
- **Have fun!** 

References



Shameless plug alert!