



Introduction to Jboss EJB 3.0
in and out of JBoss AS
JBoss, a division of Red Hat

Emmanuel Bernard
Core developer
emmanuel.bernard@jboss.com




EJB A History of pain and sorrow

- **EJB: component model architecture for business applications**
 - Distributed
 - Transactional
 - Scalable
- **Up to EJB 2.1**
 - Intrusive (subclassing, interface implementation)
 - Noisy: lots of technical artifacts (home, ...)
 - Hard to test
 - Drag a XML boilerplate
 - Entity Beans were 'heavy' and not flexible enough for day to day relational models
 - API too complex and verbose
 - Mandate tools




EJB 3.0

- **Use of annotations and sensible defaults**
 - Eliminate the XML Hell
 - No need for a dedicated tool: a Java SE 5 compliant IDE is enough
- **Embrace the dependency injection**
 - No more explicit JNDI lookup
 - Use of annotations as dependency descriptor
- **Embrace the POJO model**
 - Unit testable (more later)
- **No required technical class**
 - No Home
 - No technical / lifecycle interface / no technical Exception
- **New Persistence model**
 - Lightweight POJO
 - Full inheritance and polymorphism
 - Enhance query language
 - Defines the O/R mapping configuration



Demo



Session Bean


- One interface and one implementation
- A POJO with one annotation (or through XML)
- No home, no RemoteException, no verbose interface

```

@Stateless
public class OrderProcessBean implements OrderProcess {
    ...
    public void order(Order order) {
        if ( validateOrder(order) )
            throw new InvalidOrderException();
        em.persist(order);
    }
}

@Remote
public interface OrderProcess {
    void order(Order order);
}

```




Transaction

- Decorate the transactional methods
- Obvious when reading the code

```

@Stateful
@TransactionalAttribute(NOT_SUPPORTED)
public class OrderProcessBean ... {
    ...
    @TransactionalAttribute(REQUIRED)
    public void order(Order order) {
        if ( validateOrder(order) )
            throw new InvalidOrderException();
        em.persist(order);
    }
}

```



Dependency injection

- No more JNDI lookup
- Annotations as a Dependency Injection marker

```
@Stateful
@TransactionAttribute(NOT_SUPPORTED)
public class OrderProcessBean ... {
    @Resource DataSource ds;
    @EJB BasketProcess basketProcess;
    @EJB OrderDAO orderDao;

    @TransactionAttribute(REQUIRED)
    public void order(Order order) {
        if ( validateOrder(order) )
            throw new InvalidOrderException();
        orderDao.save(order);
    }
}
```



Persistence context injection

- Conversation scoped object cache
- Managed by the container for you
 - No technical boilerplate code

```
@Stateful @TransactionAttribute(NOT_SUPPORTED)
public class BasketProcessBean ... {
    @PersistenceContext(EXTENDED) EntityManager em;
    Order o;

    public void createOrder(User user) {
        o = new Order(user);
        em.persist(o);
    }

    public void addToBasket(Item item) { ... }

    @TransactionAttribute(REQUIRED)
    public void order() {
        if ( validateOrder(order) ) throw new InvOrdExcp...
    }
}
```



Callback / interceptors

- No more mandatory interface to implement
- Annotation on the callback method
- Set of common interceptors
 - Ability to extends JavaEE in a standard way

```
@Stateful @TransactionAttribute(NOT_SUPPORTED)
public class OrderProcessBean ... {
    ...
    @PostConstruct
    public void init() { ... };

    @Remove @TransactionAttribute(REQUIRED)
    public void order(Order order) {
        if ( validateOrder(order) )
            throw new InvalidOrderException();
        em.persist(order);
    }
}
```



JBoss and EJB 3.0

- Strong advocate
- 3 members in the Expert Group
 - Bill Burke
 - Gavin King
 - Emmanuel Bernard
- Preview releases since the inception of the specification
 - Mature technology based on the JBoss AS EJB container and Hibernate
- JBoss EJB3 available for
 - JBoss AS 4.x as an add-on
 - Final for JBoss 5 (targeting JavaEE 5)
 - Standalone via JBoss Embeddable EJB3 (based on the Jboss MicroContainer technology)
- Hibernate 3.2.0.GA implements Java Persistence API

