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EJB with Meta-Annotations

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OpenJPA
OpenWB
MyFaces
Tomcat

David Blevins
@dblevins
#OpenEJB



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What is a Meta Annotation?

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Rediscovering what you knew

- **Inheritance is important**
- **Abstractions are important**
- **Encapsulation is important**
- **Reducing redundancy is**
- **Separating application and config is important**



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And yet...

```
@Singleton
@Lock(LockType.WRITE)
@PermitAll
@TransactionManagement(TransactionManagementType.CONTAINER)
@ConcurrencyManagement(ConcurrencyManagementType.CONTAINER)
public class Movies {

    @PersistenceContext(unitName = "movie-unit", type = PersistenceContextType.TRANSACTION)
    private EntityManager entityManager;

    @RolesAllowed({"Employee", "Manager"})
    @TransactionAttribute(TransactionAttributeType.REQUIRED)
    @Interceptors(AddInterceptor.class)
    public void addMovie(Movie movie) throws Exception {
        entityManager.persist(movie);
    }

    @RolesAllowed({"Manager"})
    @TransactionAttribute(TransactionAttributeType.MANDATORY)
    @Interceptors(DeleteInterceptor.class)
    public void deleteMovie(Movie movie) throws Exception {
        entityManager.remove(movie);
    }

    @Schedule(month = "5", dayOfMonth = "20-Last", minute = "0", hour = "8")
    @Lock(LockType.READ)
    @RolesAllowed({"Manager"})
    @TransactionAttribute(TransactionAttributeType.SUPPORTS)
    @Interceptors(ReadInterceptor.class)
```

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How did we get here?



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Evolution of Metadata

- **XML on “classes”**
 - **external configuration**
 - **hard to maintain the relationship between classes and config**
- **redundant config**
 - classes with the same need, duplicate the xml
 - configuration explosion

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Everybody back on the boat!

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Evolution of Metadata

- **Annotations on classes**
 - **internal configuration (hardcoded)**
 - **easy to maintain the relationship between classes and config**
 - **annotations usually too generic**
 - specific to concept of applications
 - not specific to your application
 - **more redundancy (not the good kind)**
 - duplicate annotation data
 - duplicate xml data
 - **overriding still only done on application classes**
 - even harder with metadata spread everywhere in code



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The trouble with tribbles



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Oh, they're so cute!

```
@Tribble
@Tribble(LockType.WRITE)
@Tribble
@Tribble(TransactionManagementType.CONTAINER)
@Tribble(ConcurrencyManagementType.CONTAINER)
public class Movies {

    @Tribble(unitName = "movie-unit", type = PersistenceContextType.TRANSACTION)
    private EntityManager entityManager;

    @Tribble({"Employee", "Manager"})
    @Tribble(TransactionAttributeType.REQUIRED)
    @Tribble(AddInterceptor.class)
    public void addMovie(Movie movie) throws Exception {
        entityManager.persist(movie);
    }

    @Tribble({"Manager"})
    @Tribble(TransactionAttributeType.MANDATORY)
    @Tribble(DeleteInterceptor.class)
    public void deleteMovie(Movie movie) throws Exception {
        entityManager.remove(movie);
    }

    @Tribble(month = "5", dayOfMonth = "20-Last", minute = "0", hour = "8")
    @Tribble(LockType.READ)
    @Tribble({"Manager"})
    @Tribble(TransactionAttributeType.SUPPORTS)
    @Tribble(ReadInterceptor.class)
```

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Evolution of Metadata

- **Annotation on Annotations**
 - **internal configuration (hardcoded .ish)**
 - **easy to maintain the relationship between classes and config**
 - **no redundancy**
 - actual annotation data in one place
 - annotation “instance” reuse and inheritance
 - **overriding still not possible**
 - or only possible via old mechanisms

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Evolution of Metadata

- **XML on Annotations**
 - **external configuration**
 - **easy to maintain the relationship between classes and config**
 - **no redundancy**
 - actual annotation data in one place
 - annotation “instance” reuse and inheritance
 - **overriding easy**
 - override the definition of the meta annotation
 - classes using the meta annotation don't need to be updated

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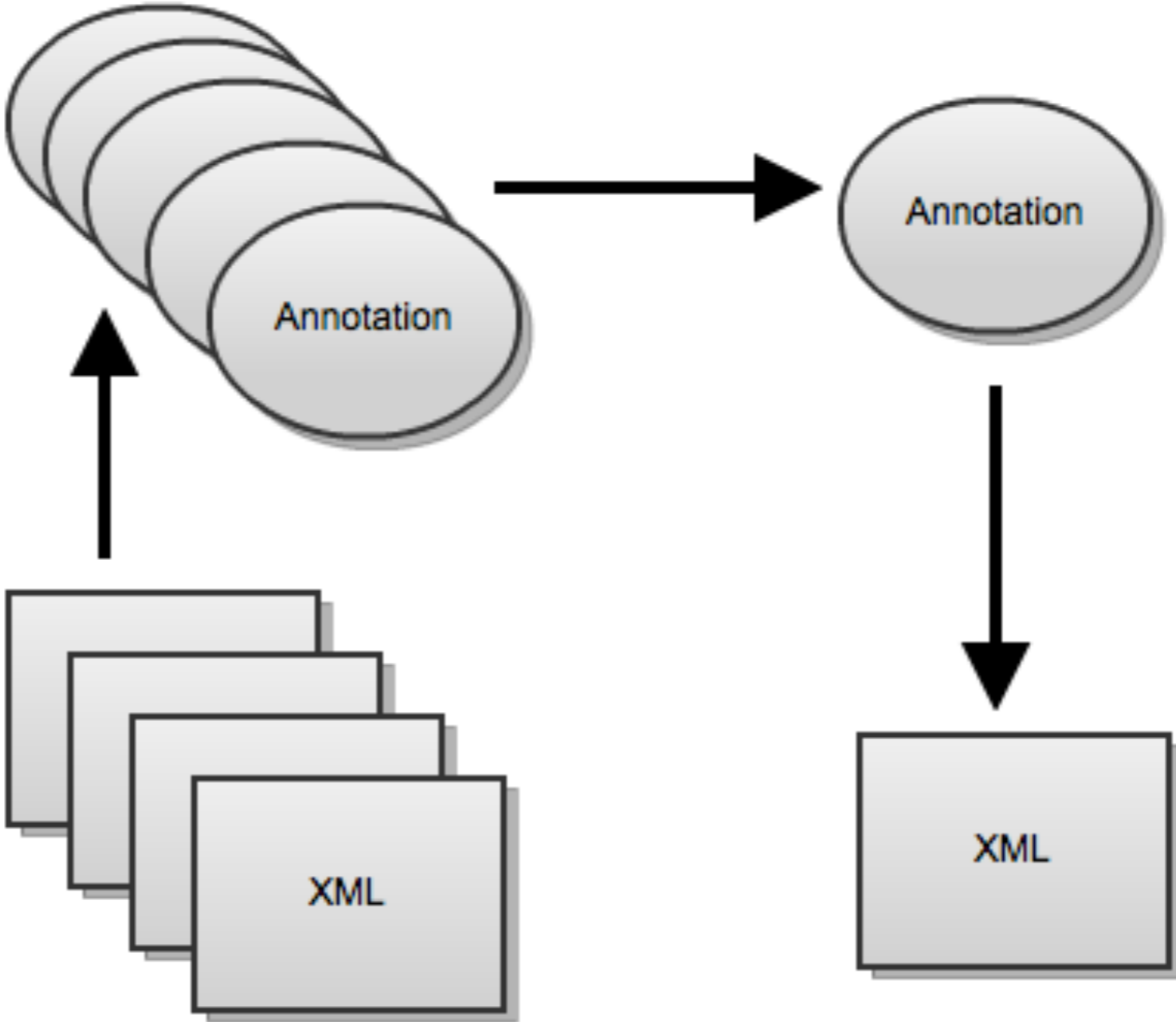


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Evolution of Metadata



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A new breakthrough



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Administrator-friendly config

- **config files are now “logical”**
 - **only meta annotation definitions in xml**
 - we don't care how they're are used
 - **xml now expresses the application's needs**
 - not the application structure itself
 - **no more refactoring related breakage**
 - `<class name="org.superbiz.MyBusinessLogic">...</code>`
 - “why did rename MyBusinessLogic!!!!!!”
- **Keep the meta-annotations consistent**
 - change the application classes all you want



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Demo

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Questions?

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thank you!
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