Kickstart JPA
The Tools

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Speaker’s qualifications

- Max was online when Stephan was looking for someone to replace a JPA talk
- Max developed Hibernate Tools
- Max is a contributor to Eclipse Dali
- Max is part of Hibernate and Seam team
- Max leads the development of JBoss Tools and Developer Studio at JBoss
Do you need JPA Tools?

- JPA runtime combines:
  - Java Classes
  - Mapping Metadata
  - Database schema
  - JPA Queries

![Diagram showing JPA runtime components: Java Classes, Mapping Metadata, Database Schema, and JPA Persistence Provider.]
Do you need JPA Tools?

• How can you tell if they all match?
  • Deploy and run tests?
    ✖ slow
    ✖ find one problem at a time (fix, run, fix, …)
    ✔ definitive
  – Design time validation?
    ✔ quick
    ✔ finds all issues
    ✔ validates against spec
    ✖ runtime may not match spec

– JPA Queries
  • Completion
  • Validation
  • Execution

– Visualization

Design Time

Runtime
About Dali

• Support for the definition, editing, and deployment of JPA Entities
• Simplify mapping definition and editing through:
  • intelligent mapping assistance
  • problem identification
  • mapping generation
• Extensible frameworks and tools so vendors and open source projects can provide specific support for their JPA runtimes
• A subproject of the Web Tools Platform (WTP)
Hibernate Tools

• Hibernate Centric
• Own unique feature-set
• Wizards
• .hbm.xml editor
• HQL/JPA Query prototyping
• Query inline validation/completion
• Flexible code generation
• Mapping Diagram
• Uses Hibernate as Core model

• Adds Hibernate support to Dali
The tools Goals

• Simplicity
  • Intelligent mapping assistance and automated generation

• Intuitiveness
  • Use existing and consistent modeling and tooling practices in Eclipse
  • Light-weight views offer assistance but don’t get in the way of power users

• Compliance
  • Dali: Support any and all JPA 1.0 compliant runtime implementations, Test using JPA Reference Implementation (Dali)
  • Hibernate: Support Hibernate core, annotations, entity manager

• Extensibility
  • Provide the ability for vendors and open source projects to seamlessly add their own value-add features
JPA supports “The Persistence of Memory” — which is the title of a well known Salvador Dali painting.
Dali in Eclipse

• JPA Mapping Validation
• JPA Structure View
• JPA Details View
• Persistence.xml Editor
• Java Source Editor enhancements
• Text Markers
• Code Completion of table/columns
• JPA Project Explorer Content
Mapping Validation

- Annotations and/or XML used to define JPA Entities.

- JDT validates syntax, but doesn’t understand what the annotations mean.
Mapping Validation

- Java Source Editor enhancements
- Mapping Problem Markers

```
@Entity
public class Address {
    @Id
    @Column(name="ADDRESS_ID")
    private int addressId;
    private String city;
    private String country;
    private String postalCode;
    private String province;
    private String street;
}
```

```
ADDRESS
ADDRES S_ID     CITY     ...     P_CODE
```

Default mapping won’t work!
Mapping Assistance

• JPA Details View

```java
@Entity
public class Address {
    @Id
    @Column(name="ADDRESS_ID")
    private int addressId;
    private String city;
    private String country;
    private String postalCode;
    private String province;
    private String street;
}
```
...for Basic Mapping

```java
@Entity
public class Address {
    @Id
    @Column(name="ADDRESS_ID")
    private int addressId;
    private String city;
    private String country;
    @Column(name="P_CODE")
    private String postalCode;
    private String province;
    private String street;
}
```
JPA Structure View

• Provides a JPA specific view of Java Class or ORM XML Mapping File
• A thumbnail sketch of how an Entity is mapped
• Supports navigation between mappings
• Automatically adjusts to either property or field mapping in Java
• Represents structure in Java and XML artifacts
JPA Project Explorer

• Provides a JPA specific view of persistence from the persistence.xml down
• Easily navigate and view the contents of a persistence unit.
• Represents structure in Java and XML artifacts
JPA Perspective/All Views
Persistence XML Editor

General
Name: PetClinic
Persistence Provider: 
Description: 

Managed Classes
Specify the list of classes to be managed in this persistence unit.
- model.Vets
- model.Types
- model.Specialties
- model.Person

Exclude Unlisted Classes (False)

XML Mapping Files
Specify the XML mapping files for this persistence unit.
- META-INF/orm.xml
Sync. Persistence.xml

- In Java SE environment, persistence.xml should list the Entities—Dali offers synchronization
Sync. Persistence.xml

```xml
<?xml version="1.0" encoding="UTF-8"?>
<persistence xmlns="http://java.sun.com/xr"

    <persistence-unit name="jdj">
        <class>model.Customer</class>
        <class>model.CustomerInfo</class>
        <class>model.Invoice</class>
        <class>model.Phone</class>
    </persistence-unit>
</persistence>
```
Dali & Hibernate Tools
Hibernate Tools in Eclipse
Hibernate Tools in Eclipse

- Persistence.xml Editor (Hibernate specific)
- Java Source Editor enhancements
  - Generate JPA Annotations for existing Java
  - JPA/HQL code completion
  - Validation of JPA/HQL

- HQL and Criteria Editor
  - Query execution
  - Dynamic SQL Preview
- .hbm.xml editor
- Flexible reverse engineering and code generation
Hibernate persistence.xml

• With Hibernate platform the persistence.xml editor has Hibernate specific features
JPA Queries in Java Editor

Code completion & Validation
Query prototyping

Dynamically edit and execute HQL and Criteria
.hbm.xml editor

• Structured hbm.xml editor
.hbm.xml editor

Code completion in .hbm.xml (class, properties, types, etc)
Mapping diagram

Mapping overview and easy navigation
Independent Hibernate

- Hibernate Tools Setup is not coupled to WTP nor JDT
rev.eng & generation

• You can generate JPA, .hbm.xml, DDL, custom, etc. (also from Ant)
Generate Annotations

Add JPA Annotations to existing Java model
DEMO

Hibernate Tools
How to get it?

• Eclipse Dali: Download WTP at [http://download.eclipse.org](http://download.eclipse.org)

• Hibernate Tools: Download at [http://jboss.org/tools](http://jboss.org/tools)

• JBoss Developer Studio got everything included and configured: [http://www.jboss.com/products/devstudio](http://www.jboss.com/products/devstudio)
Summary

Dali—the WTP project bringing developer productivity to JPA

Mapping validation to avoid the map, deploy, debug cycle

Intelligent mapping assistance to avoid problems and speed up the process of mapping

Integrated with WTP to support development for Java SE and EE

Focused on JPA spec

Hibernate Tools – the JBoss Tools project for Hibernate

Support “normal” Java Projects as well as Dali JPA projects

Add’s Hibernate platform to Dali

Provides additional unique features

Focused around Hibernate including Hibernate Core, Annotations and JPA
Q&A

• More at

• 17:25, Room 5: “Making full use of Hibernate Tools”

• 19:00, Room 2: “Scaling Hibernate: tips, recipes and new perspectives” BOF

• JBoss booth