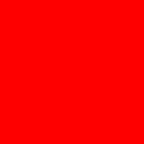# ORACLE®

JSR 342: Java EE 7 Platform

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Agenda

- Java EE 7 goals
- Main features
- Component JSRs
- Transparency
- Status and Schedule

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Java EE 7 Goals

- Support for latest Web standards
- Ease of development, simplification
- Managed bean alignment
- Infrastructure, including in preparation for cloud support

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Java EE 7 Goals

- Support for latest Web standards
  - HTML 5
  - WebSocket
  - JSON
  - JAX-RS
  - Servlet NIO, async
- Ease of development, simplification
- Managed bean alignment
- Infrastructure, including in preparation for cloud support

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Java EE 7 Goals

- Support for latest Web standards
- Ease of development, simplification
  - JMS 2.0
  - Expanded use of injection
  - Bean Validation integration
  - Default resources
  - Pruning (JAX-RPC; EJB 2.X BMP, CMP Entity Beans; JAXR; Deployment API (JSR 88)
- Managed bean alignment
- Infrastructure, including in preparation for cloud support

Java EE 7 Goals

- Support for latest Web standards
- Ease of development, simplification
- Managed bean alignment
  - CDI enabled by default
  - Generalized use of CDI injection and interceptors across Java EE managed classes
  - Transactional interceptors
  - Method validation
- Infrastructure, including in preparation for cloud support

Java EE 7 Goals

- Support for latest Web standards

- Ease of development, simplification

- Managed bean alignment

- Infrastructure, including in preparation for cloud support

  - Resource definition metadata

  - Default DataSource and JMS ConnectionFactory resources

  - Improved security configuration

  - Schema generation

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Java EE 7 JSRs
New or Updated

- JPA 2.1
- JAX-RS 2.0
- EJB 3.2
- JMS 2.0
- Servlet 3.1
- EL 3.0
- JSF 2.2

- CDI 1.1
- Bean Validation 1.1
- WebSocket 1.0
- JSON 1.0
- Batch Processing1.0
- Concurrency Utilities 1.0 (?)
- JCache 1.0 (?)

Java EE 7 Maintenance Releases

- Common Annotations 1.2
- JTA 1.2
- Interceptors 1.2
- Connector 1.7
- JSP 2.3
- JASPIC 1.2
- JACC 1.4
- JavaMail 1.5

Java EE 7 Web Profile
New or Updated

- JPA 2.1
- JAX-RS 2.0
- EJB 3.2 Lite
- JMS 2.0
- Servlet 3.1
- EL 3.0
- JSF 2.2
- CDI 1.1

- Bean Validation 1.1
- WebSocket 1.0
- JSON 1.0
- JSP 2.3 (MR)
- Common Annotations 1.2 (MR)
- JTA 1.2 (MR)
- Interceptors 1.2 (MR)

Managed Bean Alignment

- Enabling CDI by default
- Expanded Use of CDI Interceptors
- Transactional Interceptors
- TransactionScope
- On the roadmap (Java EE 8)
  - Expanded use of Stereotype-like functionality
  - Implicit Producers

CDI Enablement by Default

- CDI enabled by default in Java EE 7
  - Previously, CDI had to be enabled on per-archive basis with beans.xml
- CDI bean-defining annotations and beans.xml descriptor used to determine which classes are CDI beans
- CDI injection *and* interceptors apply to all Java EE components and related managed classes when CDI is enabled

Transactional Interceptors

Generalization of EJB ease-of-use-facility
- Annotations and semantics defined in JTA 1.2 MR

```
@Inherited
@InterceptorBinding
@Target({TYPE, METHOD}) @Retention(RUNTIME)
public @interface Transactional {
    TxType value() default TxType.REQUIRED;
    Class[] rollbackOn() default {};
    Class[] dontRollbackOn() default {};
}


@Transactional(rollbackOn={SQLException.class},
               dontRollbackOn={SQLWarning.class})
public class ShoppingCart {...}
```

Transactional Scope

Standard scope for beans whose lifecycle is same as JTA transaction

- Annotations and semantics defined in JTA 1.2 MR
- Used for JMSContext objects

```
@NormalScope(passivating=true)
@Target({TYPE, METHOD, FIELD})
@Retention(RUNTIME)
public @interface TransactionScoped {}
```

Bean Validation

Method-level validation via CDI interceptors

```
@Stateless
public class OrderService {
    ...
    public void shipOrder(
        @NotNull String productName,
        @Max(10) int quantity,
        String customerName,
        @Address String customerAddress)  {
    ...
    }
}
```

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Expanded Use of CDI Stereotype-like Functionality (Roadmap)

Proposal for creating annotations as combinations of existing ones

```
@RolesAllowed("Administrator")
@Metatype  // NOTE: annotation name subject to change
@Target({TYPE, METHOD}) @Retention(RUNTIME)
public @interface Admin {}

@Stateless
@Metatype
@Target({TYPE}) @Retention(RUNTIME)
@Admin
public @interface AdminBean {}

@AdminBean
public class AdminEJB {...}
```

Implicit Producers (Roadmap)

Producer methods/fields currently needed for CDI injection of Java EE resources

- Instead of

```
@Produces @Resource(lookup="java:comp/DefaultDataSource")
        DataSource myDS;
```

- Proposed that we consider

```
@Inject DataSource myDS;
```

Resource Definition Metadata

- Java EE 6 introduced DataSourceDefinition metadata
- Specifies resource needed by application

```
@DataSourceDefinition(
    name="java:app/jdbc/myDB",
    className="oracle.jdbc.pool.OracleDataSource",
    isolationLevel=TRANSACTION_REPEATABLE_READ,
    initialPoolSize=5
)
```

- Referenced by @Resource via lookup element

```
@Stateless
public class MySessionBean {
  @Resource(lookup = "java:app/jdbc/myDB")
  DataSource myDB;
  ...
}
```

Resource Definition Metadata

- Java EE 7 adds:
  - JMSConnectionFactoryDefinition
  - JMSDestinationDefinition
  - ConnectorResourceDefinition
  - AdministeredObjectDefinition
  - MailSessionDefinition

- Enhanced configurability in Java EE 7 apps
- Facilitates provisioning in cloud environments

"Default" Resources

- ## Default DataSource
  - ### Preconfigured resource for use by application in accessing provider-supplied database

    java:comp/DefaultDataSource

    ```
    @Resource(lookup="java:comp/DefaultDataSource")
    DataSource myDS;

    @Resource DataSource myDS;
    ```

- ## Default JMSConnectionFactory
  - ### Preconfigured resource for access to JMS Provider

    java:comp/DefaultJMSConnectionFactory

Improved Security Configuration

- Clarified requirements for support for security managers and required/expected permissions

- permissions.xml descriptors

```xml
<?xml version="1.0" encoding="UTF-8"?>
<permissions>
  <permission>
    <classname>java.io.FilePermission</classname>
    <name>/tmp/abc</name>
    <actions>read,write</actions>
  </permission>
  <permission>
    <classname>java.lang.RuntimePermission</classname>
    <name>createClassLoader</name>
  </permission>
</permissions>
```

JPA Schema Generation

- Generation of database tables, indexes, constraints, etc.
- Ease of development facility
- Needed for cloud support
- Designed for flexibility
  - Scenarios: (iterative) prototyping; production; provisioning environments
  - Generate from object/relational metadata
  - Generate from bundled SQL DDL scripts; also SQL load scripts
  - Generate directly into database
  - Generate into SQL DDL scripts

EG Membership

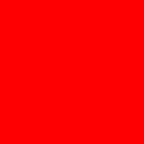| Companies	Expert Members
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Jeff Genender
Antonio Goncalves
Alex Heneveld
Jevgeni Kabanov
Werner Keil
Spike Washburn
Markus Eisele

Transparency

- High level of transparency for all Java EE JSRs
  - http://java.net/projects/javaee-spec/pages/Home
- Using java.net projects to run our JSRs in the open
  - One java.net project per specification
  - E.g., javaee-spec, jpa-spec, jax-rs-spec, ejb-spec,…
- Publicly viewable Expert Group mailing list archives
- Users observer lists get copies of all emails to the EG
- Public download areas, JIRAs
- Wikis, source repositories, etc. at the group discretion
- JCP.org private mailing lists for administrative / confidential info only
- Commitment to JCP 2.8 / 2.9 processes

Status and Schedule

- Target schedule publicly viewable at
   http://java.net/projects/javaee-spec/pages/Home#Java_EE_7_Schedule

- Nearly all JSRs now at Public Review Draft or later

- Final release target: April 2013

- Date-driven release: anything not ready will be deferred to Java EE 8

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