Ch’ti JUG

ProxiAD

Bienvenue chez le Ch’ti JUG !

Ch'ti JUG

ProxiAD

Programme

- Bienvenue chez le Ch'ti JUG
- Le mot du sponsor
- Les JUGs en France
- Java EE 6, qu'est-ce qui nous attend ?
- L'interro
- Le buffet

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Le sponsor de cette session

ProxiAD

ProxiAD

Les JUGs en France

BreizhJug

Paris JUG

Lyon JUG
Java User Group

JUG Toulouse

NormandyJUG

<%LorraineJUG%>

ProxiAD

Les nouveautés de Java EE 6

Antonio Goncalves

Ch'ti JUG

ProxiAD

« EJBs are dead… »

Rod Johnson

« …Long live EJBs ! »

Antonio Goncalves

Ch'ti JUG

Antonio Goncalves

ProxiAD

- Software Architect
- Former BEA Consultant
  - Experience with Application Servers
- Java EE 5 author (in French)
- Java EE 6 author (in English)
- JCP Expert Member
  - Java EE 6, EJB 3.1, JPA 2.0
- Co-creator, co-leader of the Paris JUG

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Agenda

ProxiAD

Interoperability Tier

Servlet 3.0	JSP 2.2	**JSF 2.0**	JAX-WS 2.2
Presentation Tier			**JAX-RS 1.1**
	EJB 3.1	JTA 1.1	JMS 1.1
Business Logic Tier			
		JPA 2.0	JCDI 1.0
Persistence Tier			

Java EE 6

Java EE 6

ProxiAD

Interoperability Tier

Servlet 3.0 | JSP 2.2 | JSF 2.0 | JAX-WS 2.2

Presentation Tier

JAX-RS 1.1

EJB 3.1 | JTA 1.1 | JMS 1.1

Business Logic Tier

JPA 2.0 | JCDI 1.0

Persistence Tier

Java EE 6

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A Bit of history

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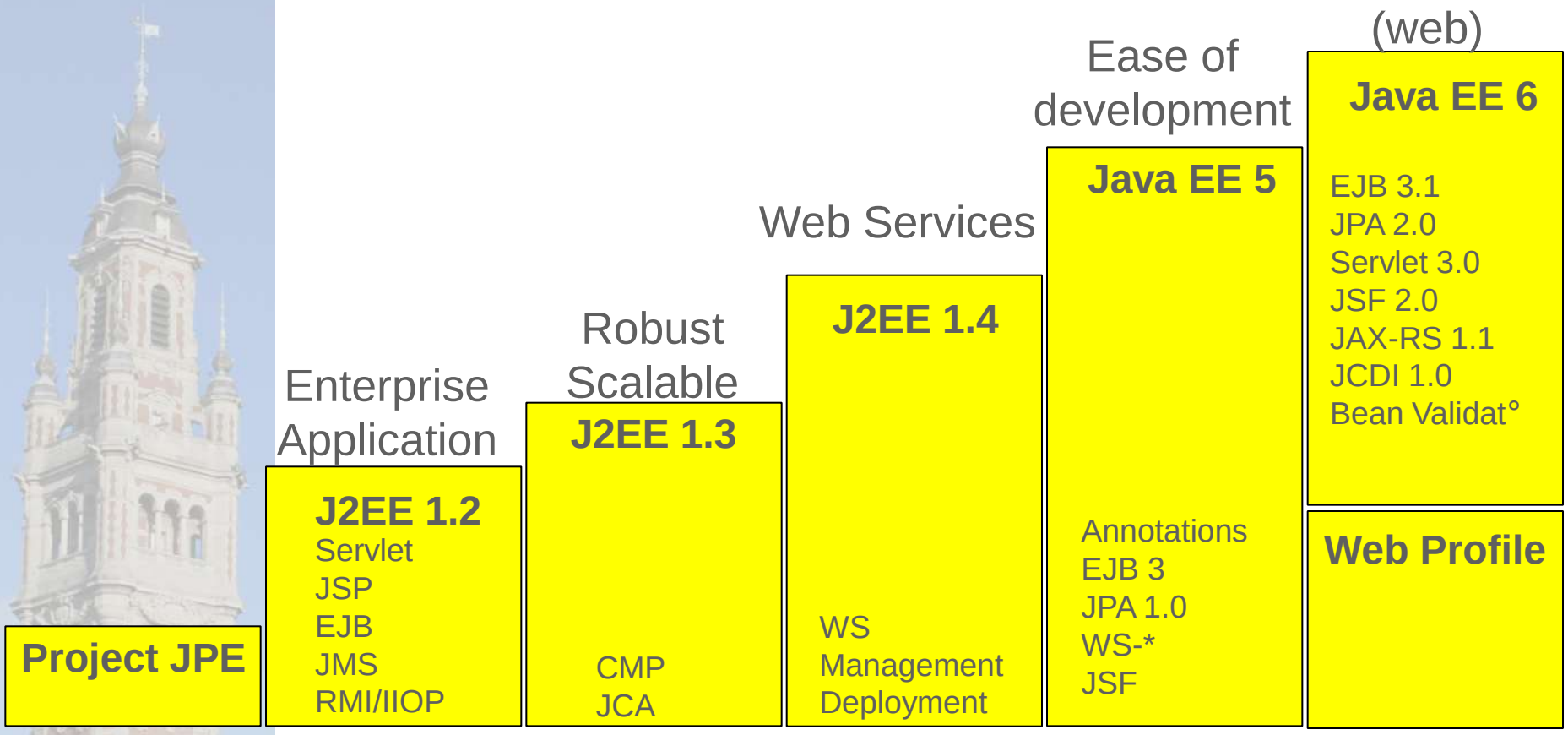

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Java EE 6 is Richer, Easier, Lighter

ProxiAD

- Richer
  - New specifications
- Easier
  - POJO model
  - Less XML…
  - … even on the web tier
- Lighter
  - EJB Lite
  - Profiles and Pruning

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Richer : ~28 specifications

ProxiAD

Web Services

JAX-RPC	1.1
JAX-WS	2.2
JAXM	1.0
JAX-RS	**1.1**
JAXR	1.1
StAX	1.0
Web Services	1.2
Web Services Metadata	1.1

Enterprise

EJB	3.1
JAF	1.1
JavaMail	1.4
JCA	1.6
JMS	1.1
JPA	2.0
JTA	1.1

Web

JSF	2.0
JSP	2.2
JSTL	1.2
Servlet	3.0
Expression Language	1.2

Management, Security and other

JCDI	**1.0**
JACC	1.1
Common Annotations	1.0
Java EE Application Deployment	1.2
Java EE Management	1.1
Java Authentication Service Provider Interface for Containers	1.0
Debugging Support for Other Languages	1.0
Bean Validation	**1.0**

+ Java SE 6

JAXB	2.2
JDBC	4.0
JNDI	1.5
RMI	
JMX	
JAAS	
JAXP...	

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Lighter : Profiles

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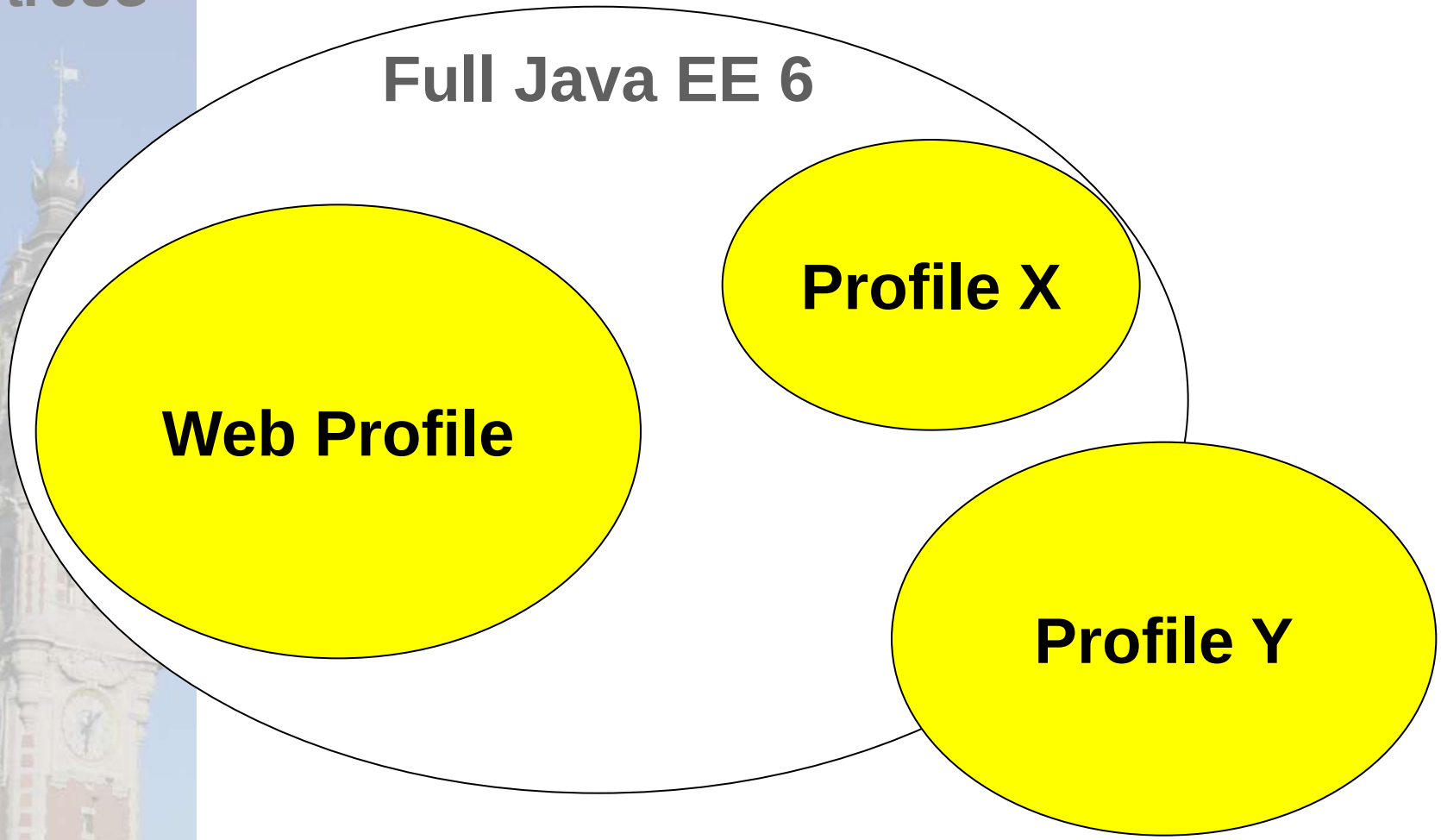

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Lighter : Web Profile

ProxiAD

- Subset of full platform
- Focuses on web development
- Separate specification
- Others will come
  - Minimal (Servlet/JSP)
  - Portal….

Servlet	3.0
JSP	2.2
EL	1.2
JSTL	1.2
EJB **Lite**	3.1
JTA	1.1
JPA	2.0
JSF	2.0

« …you'll see gradual move toward the Web profile »
- *Rod Johnson*

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Lighter : EJB Light

ProxiAD

- Subset of the EJB 3.1 API
- To be used in Web profile

Local Session Bean
Injection
CMT / BMT
Interceptors
Security

~~Message Driven Beans~~
~~EJB Web Service Endpoint~~
~~RMI/IIOP Interoperability~~
~~Remote interface~~
~~EJB 2.x~~
~~Timer service~~
~~CMP / BMP~~

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Lighter : Pruning (Soon less specs)

ProxiAD

- Makes some specifications optional in next version
- Pruned in Java EE 6
  - Entity CMP 2.x
  - JAX-RPC
  - JAX-R
  - JSR 88 (Java EE Application Deployment)
- Stronger than @Deprecated
- Might disappear from Java EE 7
  - Evolve (or not) separately from Java EE
- Easier for future containers

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ProxiAD

Easier ?

Of course!

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Servlet 3.0

ProxiAD

Interoperability Tier

Servlet 3.0	JSP 2.2	JSF 2.0	JAX-WS 2.2
Presentation Tier			JAX-RS 1.1
	EJB 3.1	JTA 1.1	JMS 1.1
Business Logic Tier			
		JPA 2.0	JCDI 1.0
Persistence Tier			

Java EE 6

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Ease of development

ProxiAD

- Annotations based programming model
  - @WebServlet
  - @ServletFilter
  - @WebServletContextListener
  - @InitParam
- Deployment descriptors optional (web.xml)
  - Modular

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Ease of development

ProxiAD

```
public class MyServlet extends HttpServlet {
    public void doGet (HttpServletRequest req,
                       HttpServletResponse res) {
                ....
    }
}
```

Deployment descriptor (web.xml)

```
<web-app>
  <servlet>
          <servlet-name>MyServlet</servlet-name>
          <servlet-class>samples.MyServlet</servlet-class>
  </servlet>

  <servlet-mapping>
          <servlet-name>MyServlet</servlet-name>
          <url-pattern>/MyApp</url-pattern>
  </servlet-mapping>
  ...
</web-app>
```

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Ease of development

ProxiAD

```
@WebServlet(urlMappings={"/MyApp"})
public class MyServlet extends HttpServlet {

    public void doGet (HttpServletRequest req,
                       HttpServletResponse res){
                ....
    }
}
```

web.xml is optional

- Same for filters and listeners

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Extensibility

ProxiAD

- Fragments or modular web.xml
  - Logical partitioning of a web application
- Annotations and web fragments are merged

```
<web-fragment>
  <servlet>
    <servlet-name>myservlet</servlet-name>
    <servlet-class>samples.MyServlet</servlet-class>
  </servlet>
  <listener>
    <listener-class>samples.MyListener</listener-class>
  </listener>
</web-fragment>
```

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Asynchronous support

ProxiAD

- Servlets have to wait for a response from :
  - Web service
  - JDBC connection
  - JMS message….
- Comet style of programming
- @WebServlet (asyncSupported = true)
- New APIs to ServletRequest / ServletResponse
  - Suspending, resuming, querying the status of the request

JSF 2.0

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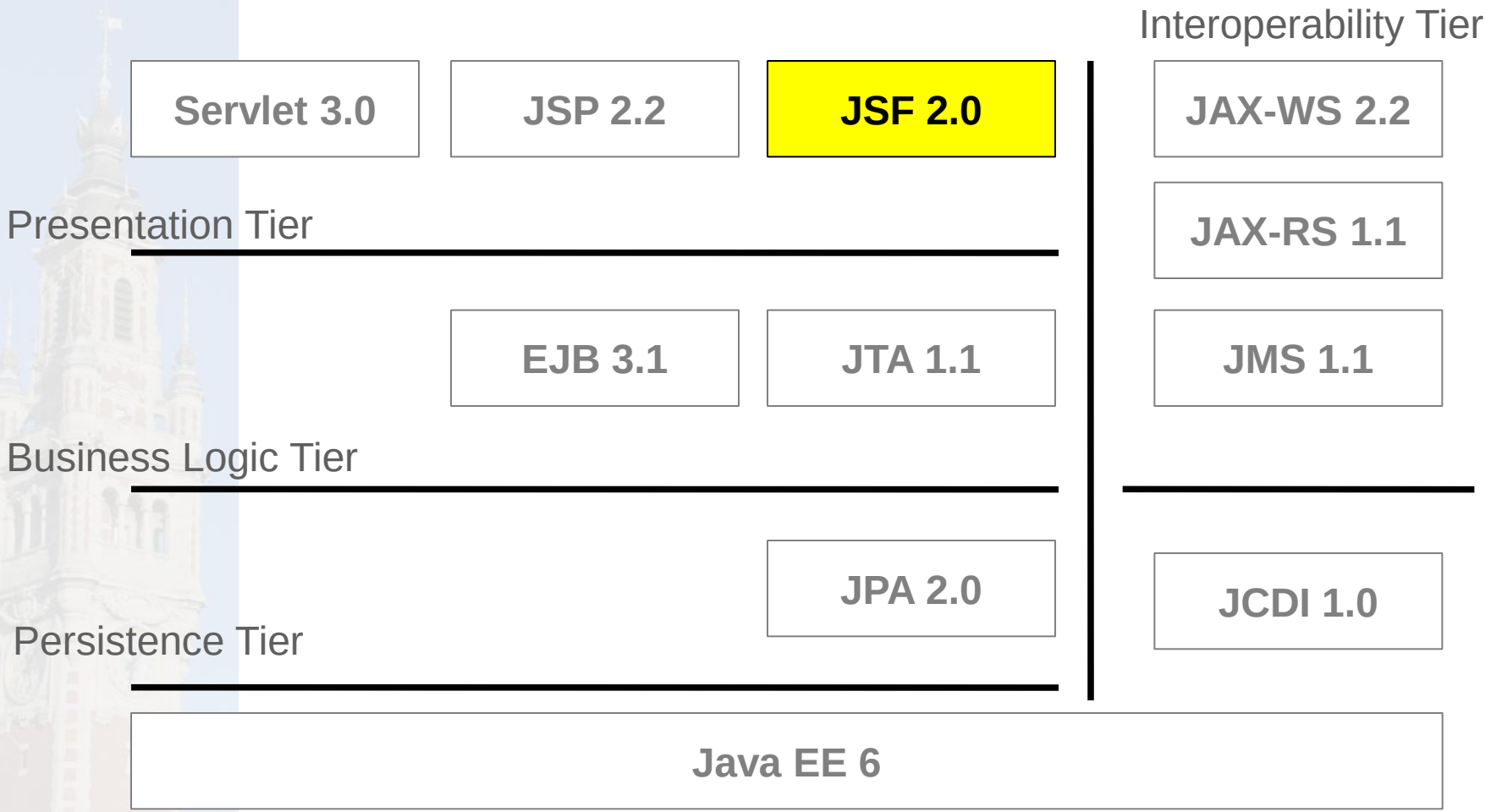

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Ease of development

ProxiAD

- Annotations
  - @ManagedBean
  - @ApplicationScoped, @SessionScoped…
  - @FacesConverter
  - @FacesValidator
- faces-config.xml optional
- Page declaration language (PDL)
  - Facelets (preferred)
  - JSP (still supported)
- Easier resources management
- Easier way of Component Development
- Ajax support

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Managed bean

```
public class DatabaseUtil {

  private Cities cities;
  ...
}
```

faces-config.xml

```
<managed-bean>
  <managed-bean-name>dbUtil</managed-bean-name>
  <managed-bean-class>server.DatabaseUtil
  </managed-bean-class>
  <managed-bean-scope>request</managed-bean-scope>
  <managed-property>
    <property-name>cities</property-name>
    <value>#{cities}</value>
  </managed-property>
</managed-bean>
```

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Managed bean

ProxiAD

```
@ManagedBean(name="dbUtil")
@ApplicationScoped
public class DatabaseUtil {

    @ManagedProperty(value="#{cities}")
    private Cities cities;
}
```

faces-config.xml is optional

- Same for converters and validators

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Composite component

ProxiAD

- No Java code needed
- Use XHTML and JSF tags to create components
- Like Java programming you need :
  - «an interface»
  - «an implementation»

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Composite component

ProxiAD

```
<html>
<composite:interface>
  <composite:attribute name="item" required="true"/>
</composite:interface>

<composite:implementation>
  <tr>
    <td>Title :</td>
    <td>
      <h:inputText
value="#{compositeComponent.attrs.item.title}"/>
    </td>
  </tr>
  <tr>
    <td>Description :</td>
    <td>
      <h:inputText
value="#{compositeComponent.attrs.item.desc}" />
    </td>
  </tr>
</composite:implementation>
</html>
```

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Ajax support

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- Previous versions had no native Ajax solution
- Ajax support has been specified
- JavaScript library (jsf.js)
  - Several specified JavaScript functions
  - request, response, execute, render…
- Easier integration in your pages

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EJB 3.1

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Interoperability Tier

Presentation Tier

Business Logic Tier

Persistence Tier

Servlet 3.0	JSP 2.2	JSF 2.0	JAX-WS 2.2
			JAX-RS 1.1
	EJB 3.1	JTA 1.1	JMS 1.1
		JPA 2.0	JCDI 1.0

Java EE 6

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Easier & Richer

ProxiAD

- Optional Local Interfaces
- Singleton
- Asynchronous calls
- Cron-based Timer Service
- Packaging in a war
- Portable JNDI name
- Embeddable Container
- EJB Lite

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Optional Local Interface

ProxiAD

- @Local, @Remote
- Interfaces are not always needed
  - Only for local interfaces
  - Remote interfaces are not optional !

```
@Stateless
public class HelloBean {

  public String sayHello() {
    return "Salut biloute !";
  }
}
```

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Singleton

ProxiAD

- New component
  - Looks like a stateless / stateful
  - No/local/remote interface
- Follows the Singleton pattern
  - One single EJB per application per JVM
- Use to share state in the entire application
  - State not preserved after container shutdown
- Added concurrency management
  - @ConcurrencyManagement

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Singleton

```
@Singleton
public class CachingBean {

  private Map cache;

  @PostConstruct void init() {
    cache = ...;
  }

  public Map getCache() {
    return cache;
  }

  public void addToCache(Object key, Object val) {
    cache.put(key, val);
  }
}
```

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Asynchronous calls

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- How to have asynchronous call in EJBs ?
- JMS is to send messages not to do asynchronous calls
- Threads are not allowed (don't integrate well)
- @Asynchronous
- Method returns `void` or `Future<T>`
  - `java.util.concurrent` package

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Asynchronous calls

ProxiAD

```
@Stateless
public class OrderBean {

  public void createOrder() {
    Order order = persistOrder();
    sendEmail(order) ;
  }

  public Order persistOrder() {...}

  @Asynchronous
  public void sendEmail(Order order) {...}
}
```

Packaging in a war

ProxiAD

foo.ear

lib/foo_common.jar

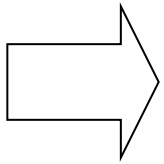
com/acme/**Foo**.class

foo_web.war

WEB-INF/**web.xml**
WEB-INF/classes
com/acme/**FooServlet**.class

foo_ejb.jar

com/acme/**FooEJB**.class



foo.war

WEB-INF/classes
com/acme/**Foo**.class
com/acme/**FooServlet**.class
com/acme/**FooEJB**.class

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Portable JNDI Name

ProxiAD

- Client inside a container (use DI)

```
@EJB Hello h;
```

- Client outside a container

```
Context ctx = new InitialContext();
Hello h = (Hello) ctx.lookup(???);
```

- Portable JNDI name is specified

```
java:global/env/foo/HelloEJB
```

```
java:global/(app)/(module)/(bean)#(intf)
```

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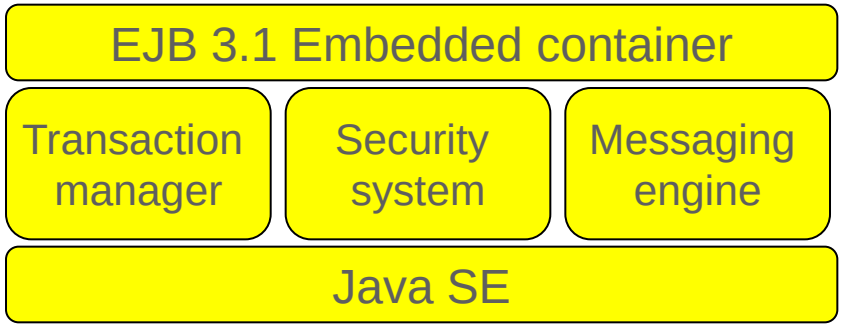
Embeddable Container

ProxiAD

- API allowing to :
  - Initialize a container
  - Get container context
  - …



- Can run in any Java SE environment
  - Batch processing
  - Simplifies testing
  - Just a jar file in your classpath

Embeddable Container

ProxiAD

```
public class PlaceBidClient {
  public static void main(String[] args) throws Exception {

    EJBContainer container =
                  EJBContainerFactory.createEJBContainer();

    Context context = container.getContext();

    Hello h = (Hello)
          context.lookup("java:global/app/foo/HelloEJB");

    h.sayHello;

    container.close();
  }
}
```

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Timer Service

ProxiAD

- Programmatic and Calendar based scheduling
  - « Last day of the month »
  - « Every five minutes on Monday and Friday »
- Cron-like syntax
  - second [0..59], minute[0..59], hour[0..23], year
  - DayOfMonth[1..31]
  - dayOfWeek[0..7] or [sun, mon, tue..]
  - Month[0..12] or [jan,feb..]

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Timer Service

ProxiAD

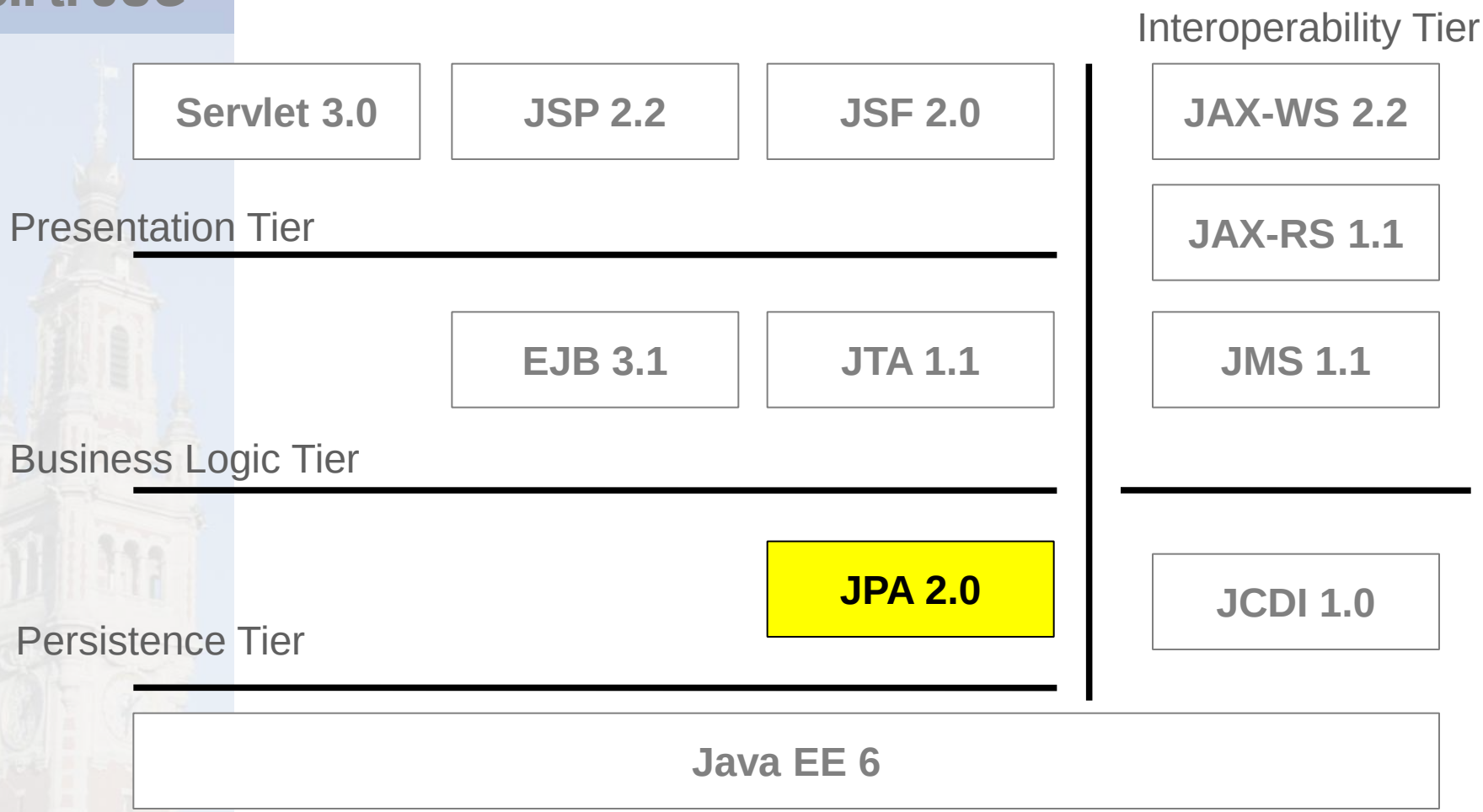
```
@Stateless
public class WakeUpBean {

   @Schedule(dayOfWeek="Mon-Fri", hour="9")
   void wakeUp() {
      ...
   }
}
```

- EJB Lite + Timer + Asynch calls + Embeddable Container = Batch processing

JPA 2.0

ProxiAD



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JPA 2.0

ProxiAD

- Java Persistent API
- Evolves separately from EJB now
  - JSR 317
- Can also be used in Java SE
- More mappings
  - JoinTable for OneToOne relationship
- Criteria API
- Standard properties in persistence.xml
- Simple Cache API

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Collection of basic types

ProxiAD

```
@Entity
Public class Item {

  @ElementCollection
  private Set<String> tags;
}
```

- Mapped in a separate table

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Better Support of Map

ProxiAD

```
@Entity
public class Department {
...
  @ElementCollection
  public Map<Integer, Employee> employees
  ...
}
```

- Basic types, Objects, Embeddables
- Mapped in a separate table

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Locking Enhancement

ProxiAD

```
public enum LockModeType {
   OPTIMISTIC,
   OPTIMISTIC_FORCE_INCREMENT,
   PESSIMISTIC,
   PESSIMISTIC_FORCE_INCREMENT,
   NONE
}
```

- JPA 1.0 only support optimist locking
- Now Pessimist locking
- Multiple places to specify lock
  - Lock, read and lock, read then lock

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Criteria API

ProxiAD

- Used to define dynamic queries
- Like JPQL, Criteria API is based on Entities
- Allow the construction of an object-based graph
- Strongly typed
- Uses a metamodel
  - Each entity X has a metamodel class X_

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Criteria API

ProxiAD

```
@Entity
public class Customer {
  @Id Integer custId;
  String name;
  Address shippingAddress;
  ...
}
```

```
CriteriaQuery q = qb.create();
Root<Customer> customer = q.from(Customer.class);
q.select(customer.get(Customer_.shippingAddress)).
where(q.equal(customer.get(Customer_.name),"Peter"));
```

JAX-RS 1.1

New

ProxiAD

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JAX-RS 1.1

ProxiAD

- RESTful Services
- POJO and Annotations Based
- Data and functionality are considered resources
- Map HTTP

HTTP	Action	HTTP	Action
GET	Get a resource	PUT	Create or update
POST	Create a resource	Delete	Deletes a resource

- JAX-RS 1.0 has been released

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Hello World

ProxiAD

```
@Path("/helloworld")
public class HelloWorldResource {

   @GET
   @Produces("text/plain")
   public String sayHello() {
      return "Hello World";
   }
}
```

- http://example.com/helloworld

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Hello World

ProxiAD

Request

```
GET /helloworld HTTP/1.1
Host: example.com
Accept: text/plain
```

Response

```
HTTP/1.1 200 OK
Date: Wed, 12 Nov 2008 16:41:58 GMT
Server: Apache/1.3.6
Content-Type: text/plain; charset=UTF-8
Hello World
```

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MIME Types

ProxiAD

```
@Path("/helloworld")
public class HelloWorldResource {

   @GET @Produces("image/jpeg")
   public byte[] paintHello() {
   ...
   @POST @Consumes("text/xml")
   public void updateHello(String xml) {
   ...
}
```

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Parameters

ProxiAD

```
@Path("/users/{userId}")
public class UserResource {

   @GET
   @Produces("text/xml")
   public String getUser(@PathParam("userId")
                         String userName) {
      ...
   }
}
```

- http://example.com/users/Smith123

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Summary

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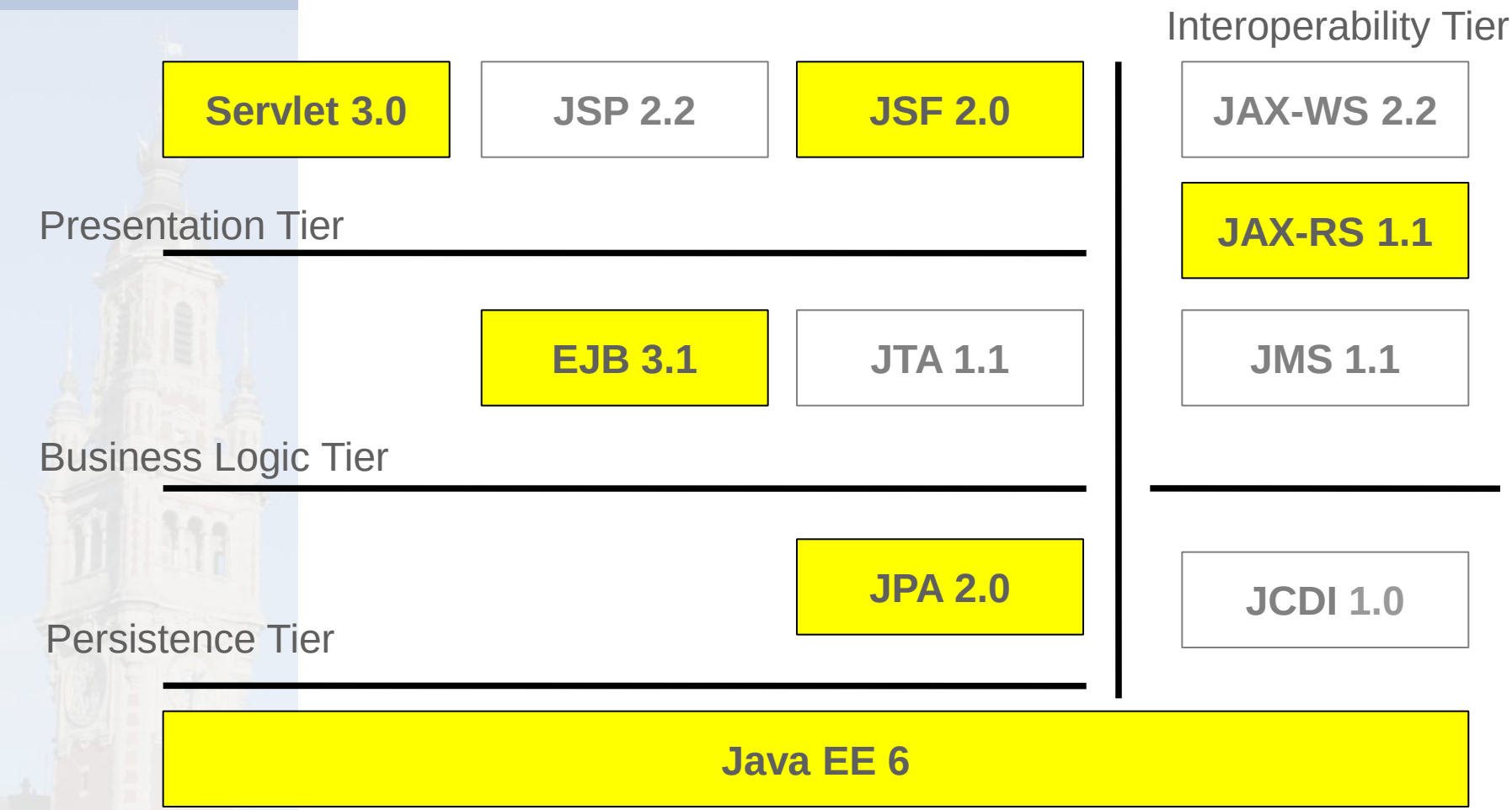

From simple web application

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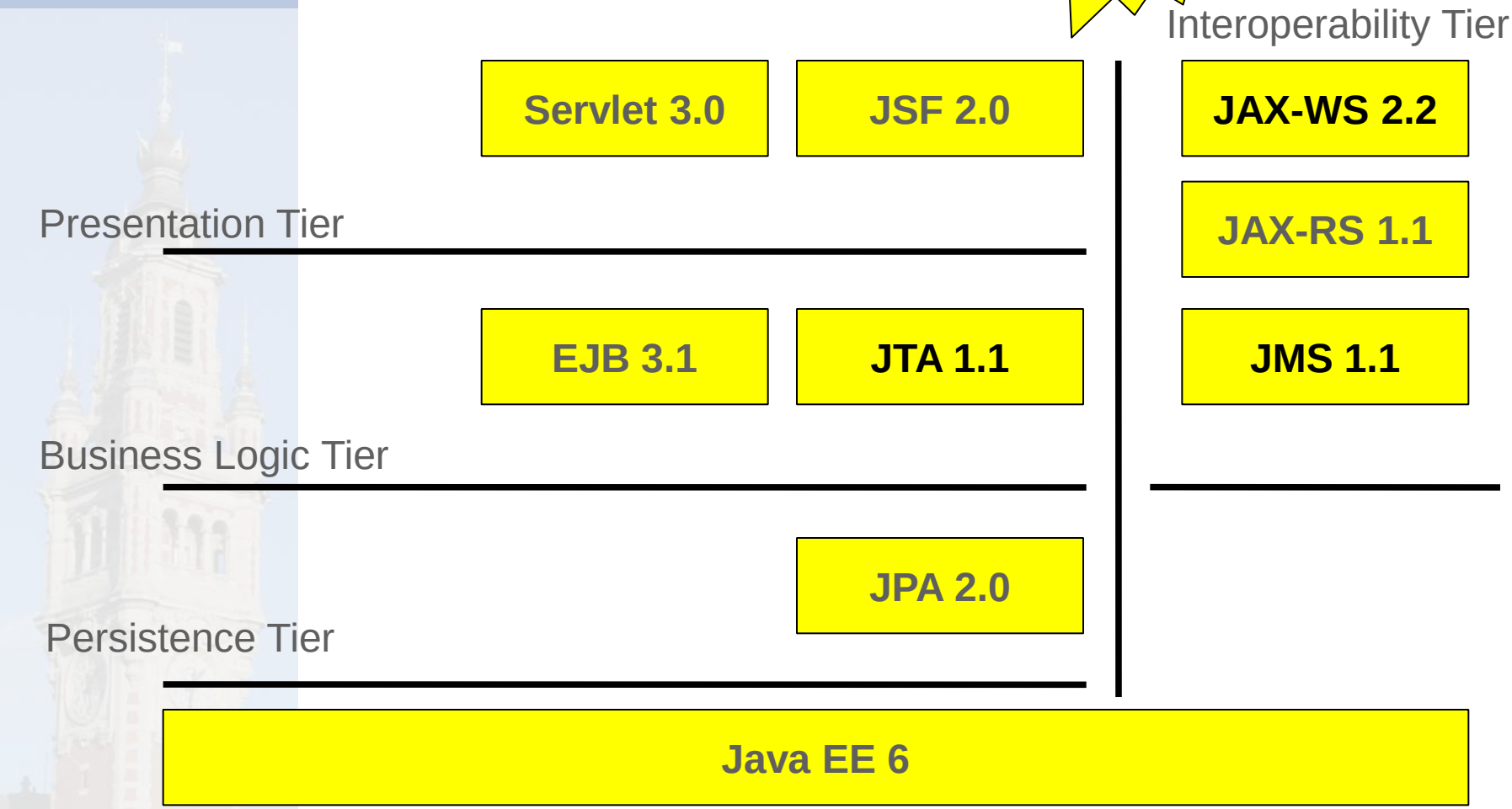
...to richer ones

ear in a cluster

ProxiAD



Reference Implementations

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- All these specs have reference implementations
  - GlassFish V3 : EJB 3.1 and Servlet 3.0
  - EclipseLink : Java Persistence API (JPA 2.0)
  - Jersey : RESTful Web Services (JAX-RS 1.0)
  - Metro : Web Services (JAX-WS 2.2)
  - JBoss Seam : Web Beans 1.0
  - Mojarra : JSF 2.0

  And they are production ready

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Summary

ProxiAD

- Java EE 6 is
  - Simpler (POJO, annotation, less XML, Pruning)
  - Richer (more specifications)
  - Lighter (profiles, pruning, EJB lite)
  - Standard (no vendor locking)
  - Robust (10th anniversary)
  - Book out in June 2009
  - **Java EE 6 out in September 2009**

« Forget the past, look to the future, Java EE 6 is the place to go… » - Antonio Goncalves

Q&A

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Prochains épisodes ?

- Rendez-vous sur chtijug.org ! Flux RSS…
- Mailing list : « chtijug-annonces » chez Google Groups
- Twitter: « chtijug »

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Le Quizz !

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Servlet 3.0

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- Parmi les éléments suivants, lequel est une nouveauté de Servlet 3.0 ?
  1. Prise en charge du JDK 1.6
  2. Un fichier web.xml optionnel
  3. Prise en compte de la locale ch_TI

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EJB 3.1

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- Parmi les assertions suivantes concernant les EJB 3.1, laquelle est vraie ?
  1. Pour être appelé en local, je n'ai pas besoin de coder d'interface
  2. Pour être appelé en remote, je n'ai pas besoin de coder d'interface
  3. Je suis obligé de déployer mon EJB dans un JAR séparé du WAR

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JPA 2.0

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- Parmi les éléments suivants, lequel est une nouveauté de JPA 2.0 ?
  1. L'utilisation d'annotations
  2. L'API de Criteria
  3. Les locks optimistes

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Les JUGs

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- Combien y a-t-il de JUGs en France ?
  1. entre 7 et 8
  2. entre 13 et 15
  3. entre 20 et 23
  4. 42