



Testing Java EE 6 Applications: Tools and Techniques

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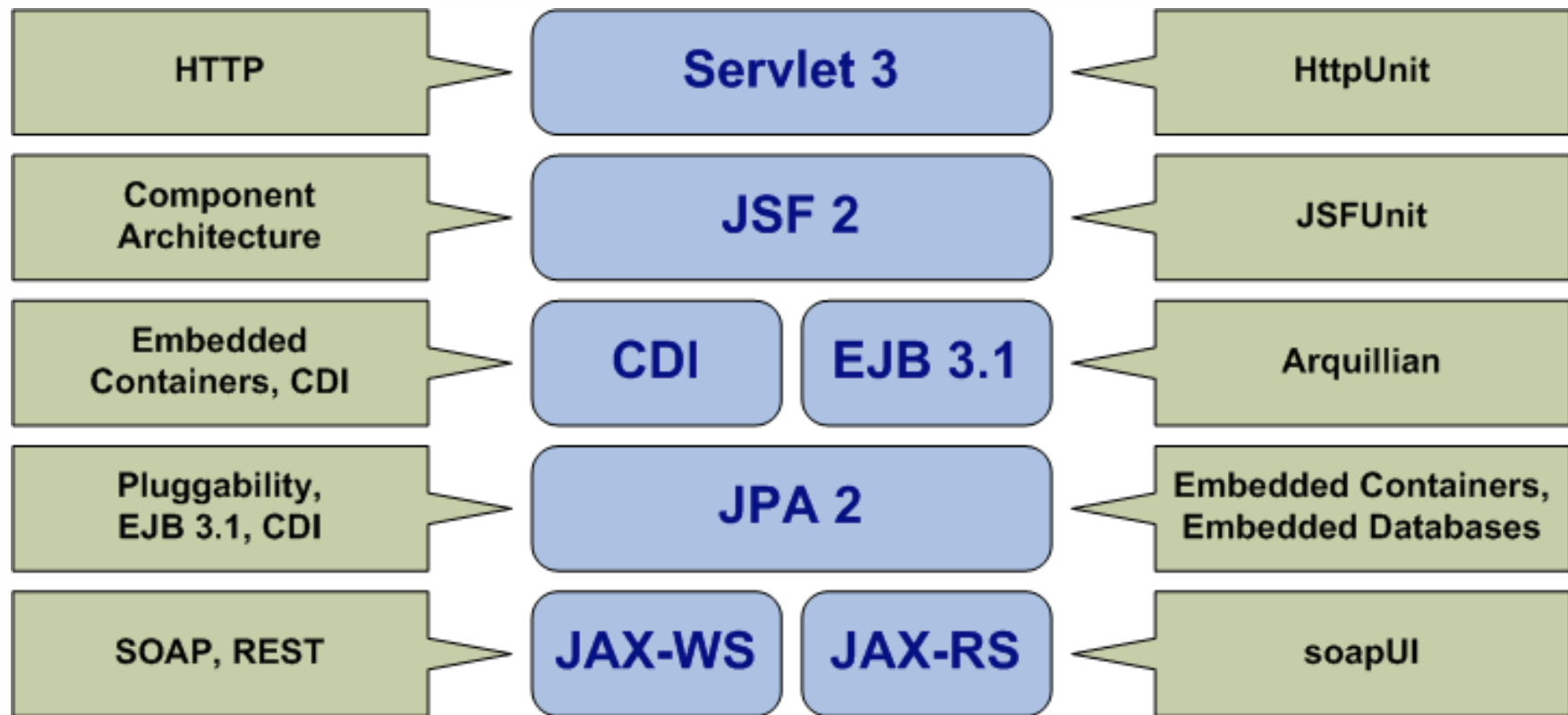


Testing and Java EE

- **Testing critical in enterprise development**
- **Pain-point that was not addressed well by J2EE**
- **Java EE 6 helps enormously by providing a number of enabling features geared towards testing**
- **Still somewhat a patchwork of evolving solutions**
- **Focus on developer (unit and integration) testing**
- **Focus on JUnit**
- **More about new tools rather than new techniques**



Testing Java EE Applications



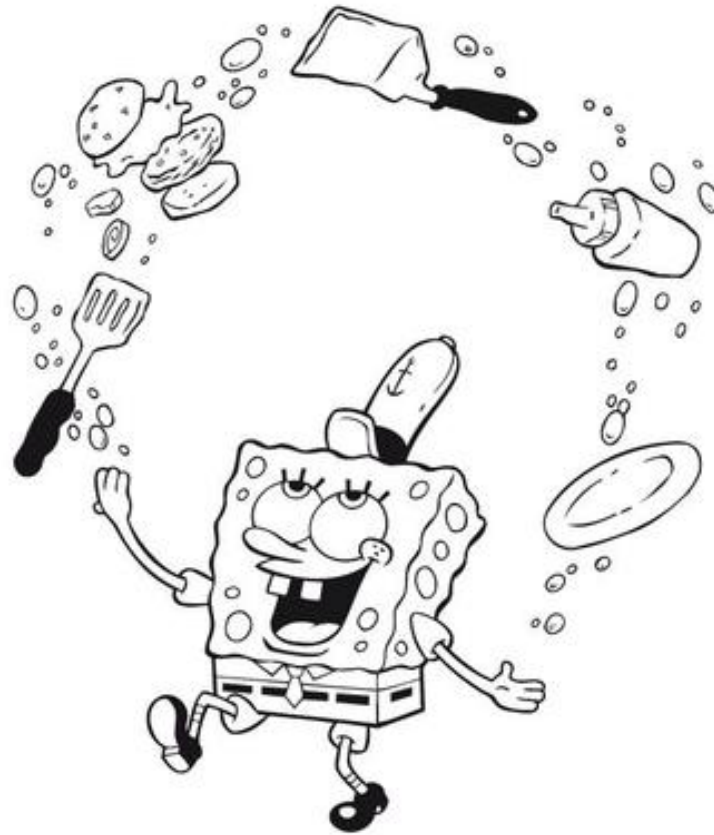


Testing Servlet 3

- **JUnit, HttpUnit, HtmlUnit great choices**
- **See if your container can be embedded into a unit test**
- **Cactus and Selenium can be good choices too**
- **Simulated Servlet containers like ServletUnit or mocking Servlet objects with EasyMock or Mockito options for very simple cases**



Servlet 3 Testing Demo!



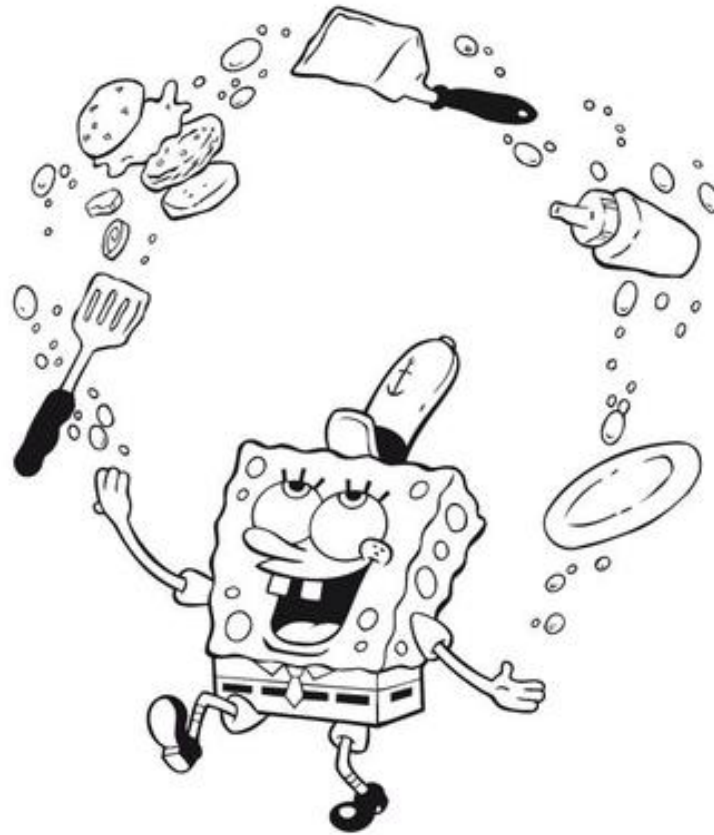


Testing JSF 2

- **JSF 2 project stages invaluable for debugging, test configuration, component development**
- **For simple cases, generic Servlet testing tools could be used, especially Selenium**
- **JSFUnit ideal for more complete JSF testing**
- **JSFUnit uses Cactus, JUnit, HttpUnit, HtmlUnit under the hood**



JSF 2 Testing Demo!





Testing EJB 3.1/CDI

- **CDI increases Java EE middle-tier testability by leaps and bounds**
- **EJB 3.1 embedded containers, generic dependency injection, @Alternative, portable extensions, XML deployment descriptors key enablers**
- **Arquillian/ShrinkWrap ideal cross-vendor CDI/EJB 3.1 testing tools**
- **Apache MyFaces CODI Testing another option**

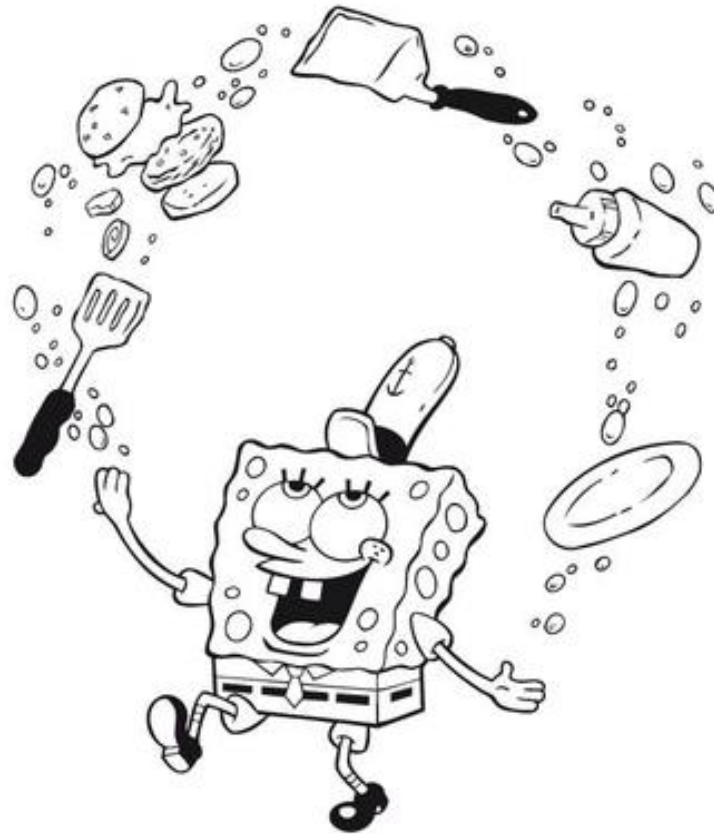


Testing EJB 3.1/CDI

- **Check to see if your application server provides specific testing or JUnit integration support (Resin provides excellent JUnit integration support, for example)**
- **Embedded containers can be used directly with JUnit for simpler cases, especially OpenEJB**
- **For the simplest cases, JUnit with EasyMock or Mockito is fine**



EJB 3.1 + CDI Testing Demo!



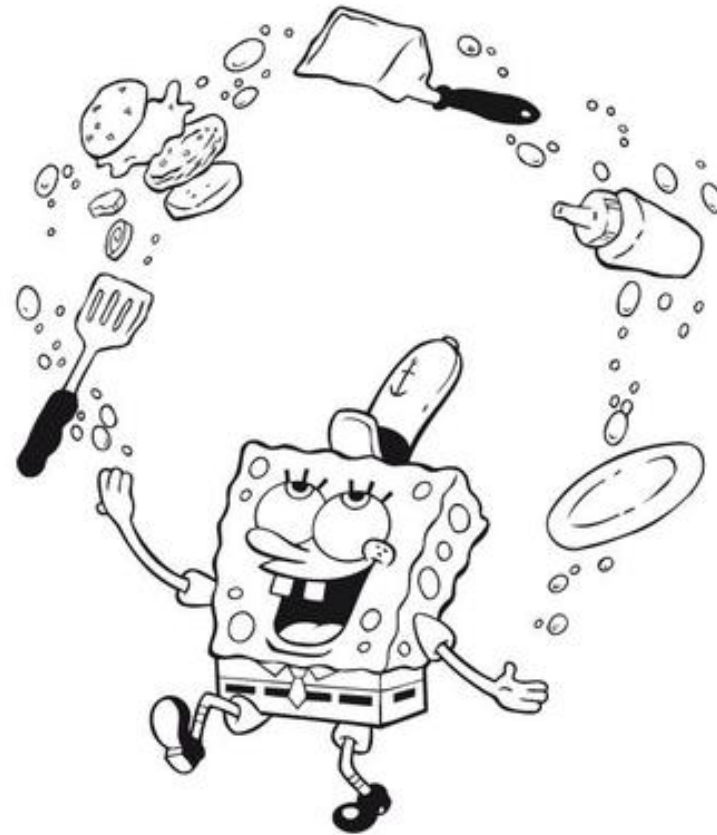


Testing JPA 2

- **Embedded containers/CDI tools with JUnit integration works well for JPA 2 as well**
- **Consider using embedded databases like Java DB, Derby, HSQL**
- **You can use DBUnit for better data consistency**
- **JPA supports Java SE environments, non-JTA transactions, JDBC database connections for simpler cases**
- **For simplest cases JUnit, EasyMock, Mockito or even EJB3Unit works**



JPA 2 Testing Demo!



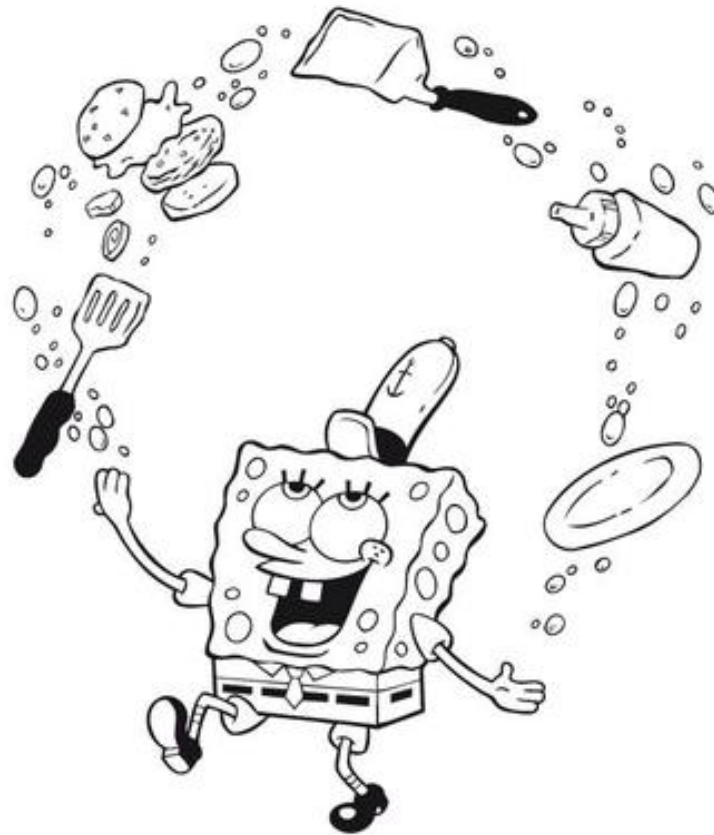


Testing JAX-RS/JAX-WS

- You can use JAX-WS/JAX-RS client APIs with JUnit, especially with embedded containers and Arquillian
- Jersey Test Framework is also very good
- For more complex cases consider soapUI (supports SOAP *and* REST)



JAX-WS/JAX-RS Testing Demo!





Summary

- **JSF 2 component model, embedded containers, JPA 2 pluggability, CDI @Alternative, portable extensions, XML deployment descriptors key enablers for Java EE testing**
- **Range of new and existing tools available to fit your testing methodology, requirements**
- **Tools diversification, gradual convergence and further standardization likely going forward**



References

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