Welcome!

Introduction to

Java Enterprise Edition

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What is Java EE / Jakarta EE?

What is Java EE / Jakarta EE Enterprise Edition?

"The Java EE platform, Enterprise Edition reduces the cost and complexity of developing ... multi-tier services, resulting in services that can be rapidly deployed and easily enhanced“

- *Simplified Guide to the Java 2 Platform, Enterprise Edition, Sun Microsystems, Inc.*

The Goal of an IT Enterprise

Enterprises today need to

a) extend their reach,

b) reduce their costs,

c) lower their response times”

Expectations

IT must provide:

- High quality services
  - Highly Available
  - Secure
  - Scalable
- Powerful services
  - Useful
  - Flexible
  - Extensible
- Affordable

Difficult Tasks!

Complex software is expensive to:

- produce
- purchase
- support
- maintain
- replace

What is JavaEE?

To Achieve these goals Java EE Provides:

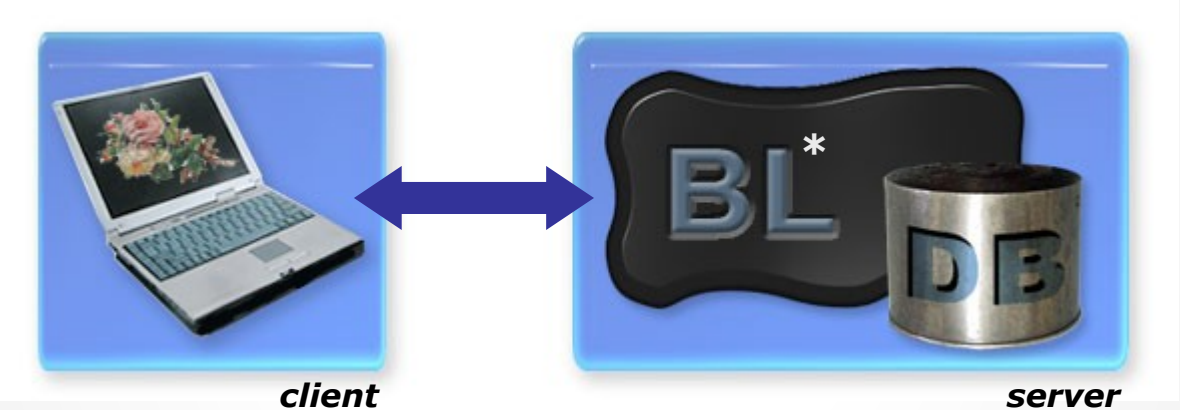
- Multi-Tier technological frameworks and APIs
- Standards based application model
- A common architecture that provides key common functionality:
  - Security
  - Management
  - Scalability

Java EE supports Multi-Tier

What does "Multi-Tier" mean?

Some History

Two tier application ("thin client")

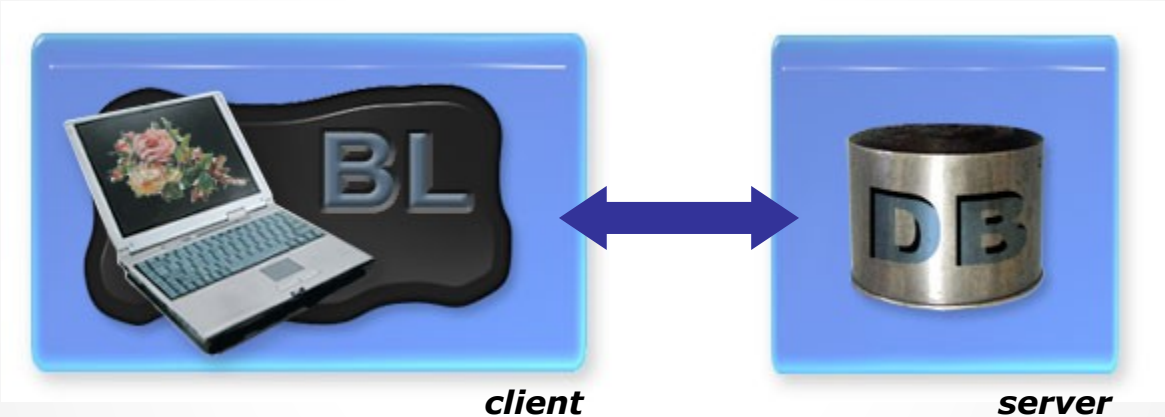


- Easy to upgrade client
- Expensive to scale and to add functionality

*Business Logic

Some History

Two tier application ("client/server")



- Strong scalability
- Poor upgradeability and difficult management

Today

Three tier application

- Thin clients make easy upgrades
- Centralized application server management is easier to manage
- Model allows for horizontal scalability

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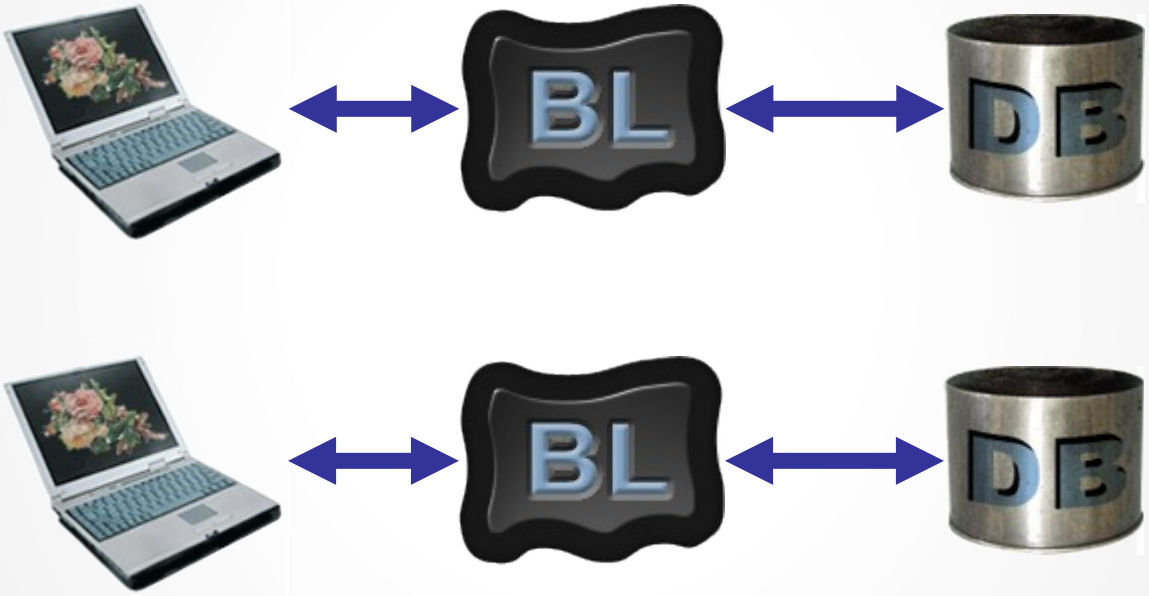
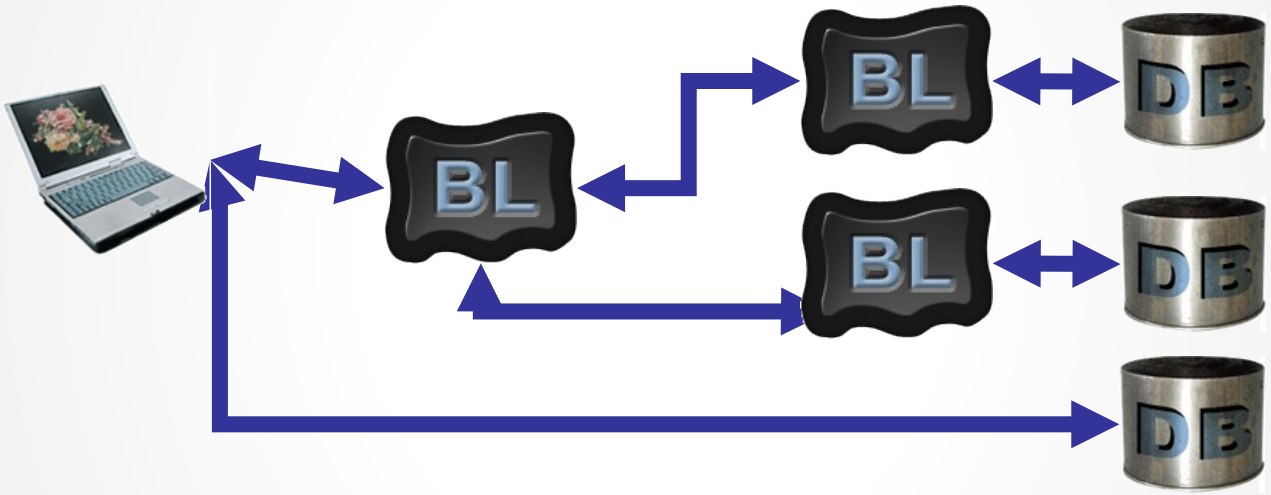


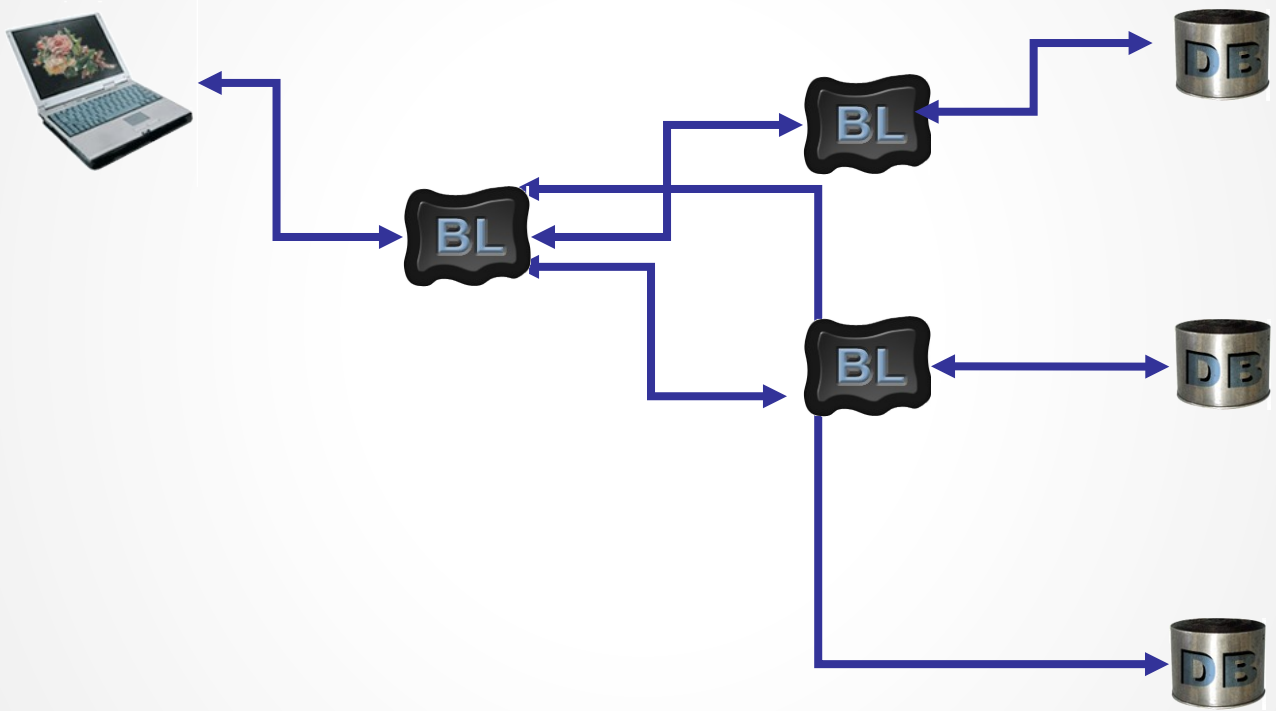
Today

N-tier application

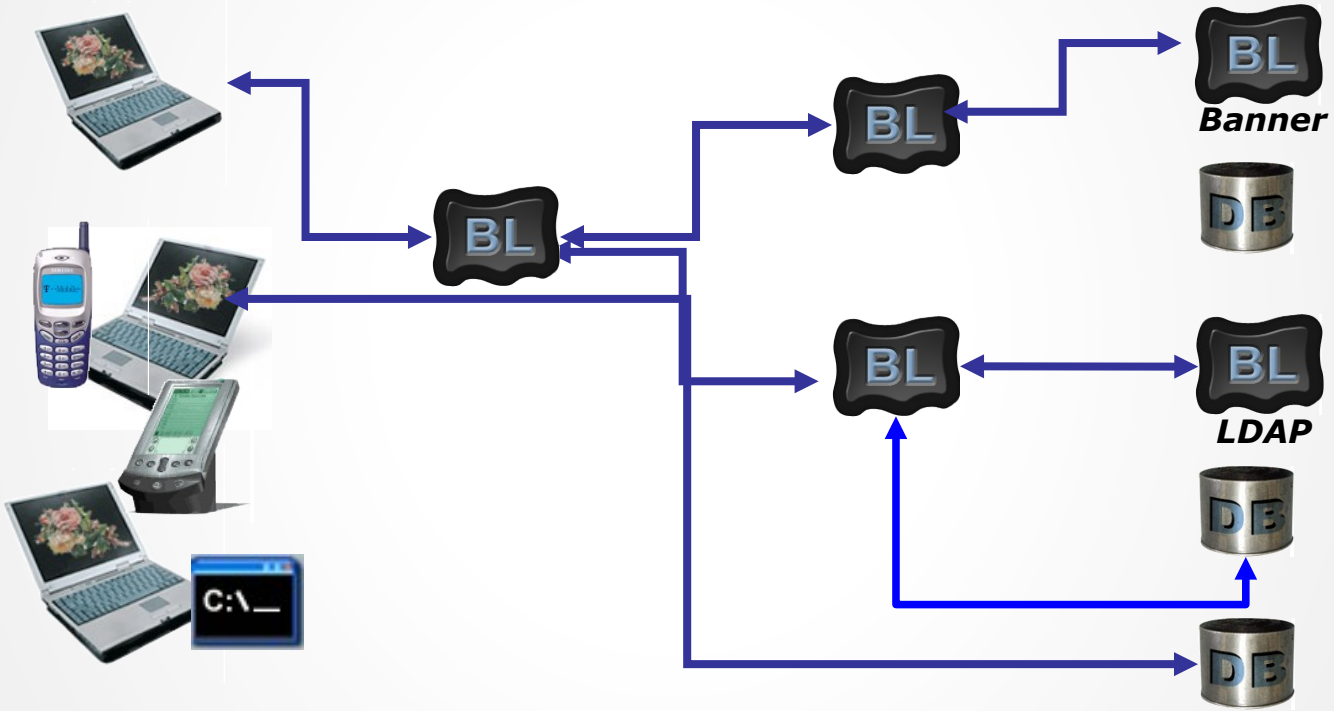


- View application server as a data store
- Leverage data abstraction

N-Tier Application



N-Tier Application



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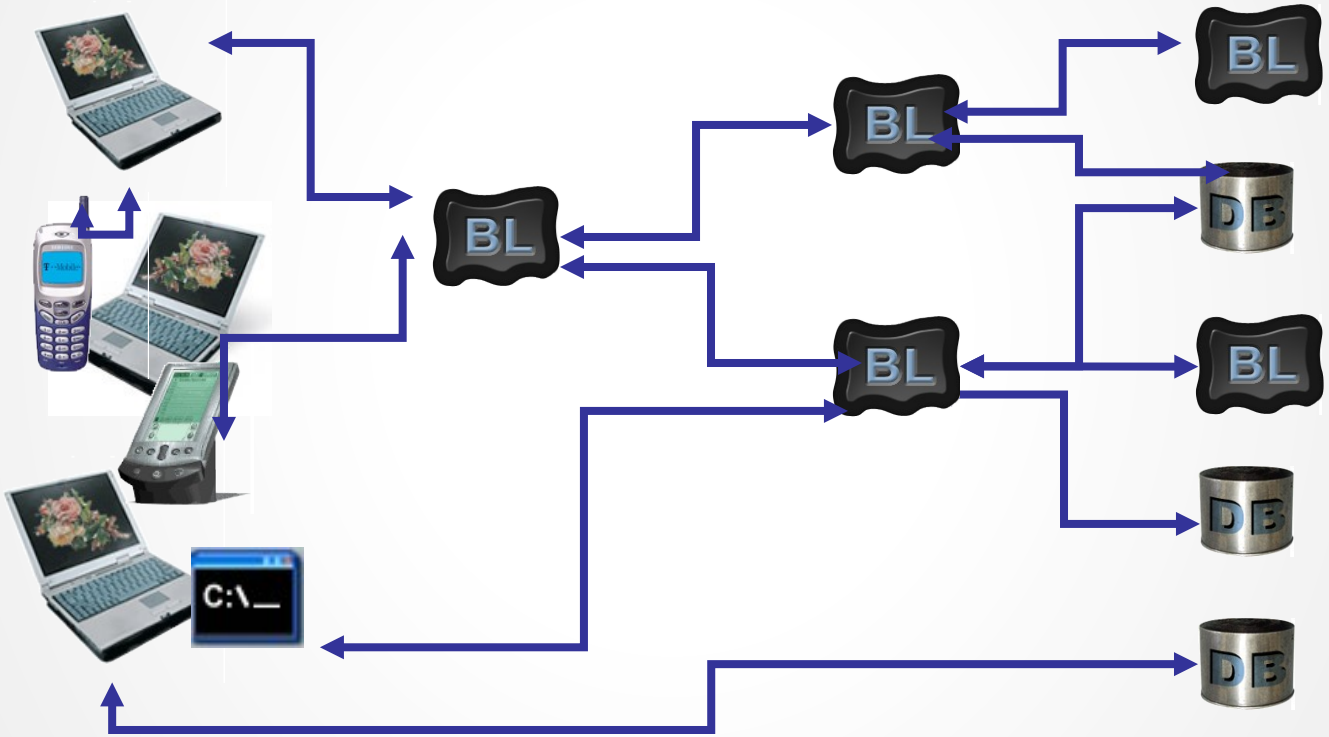

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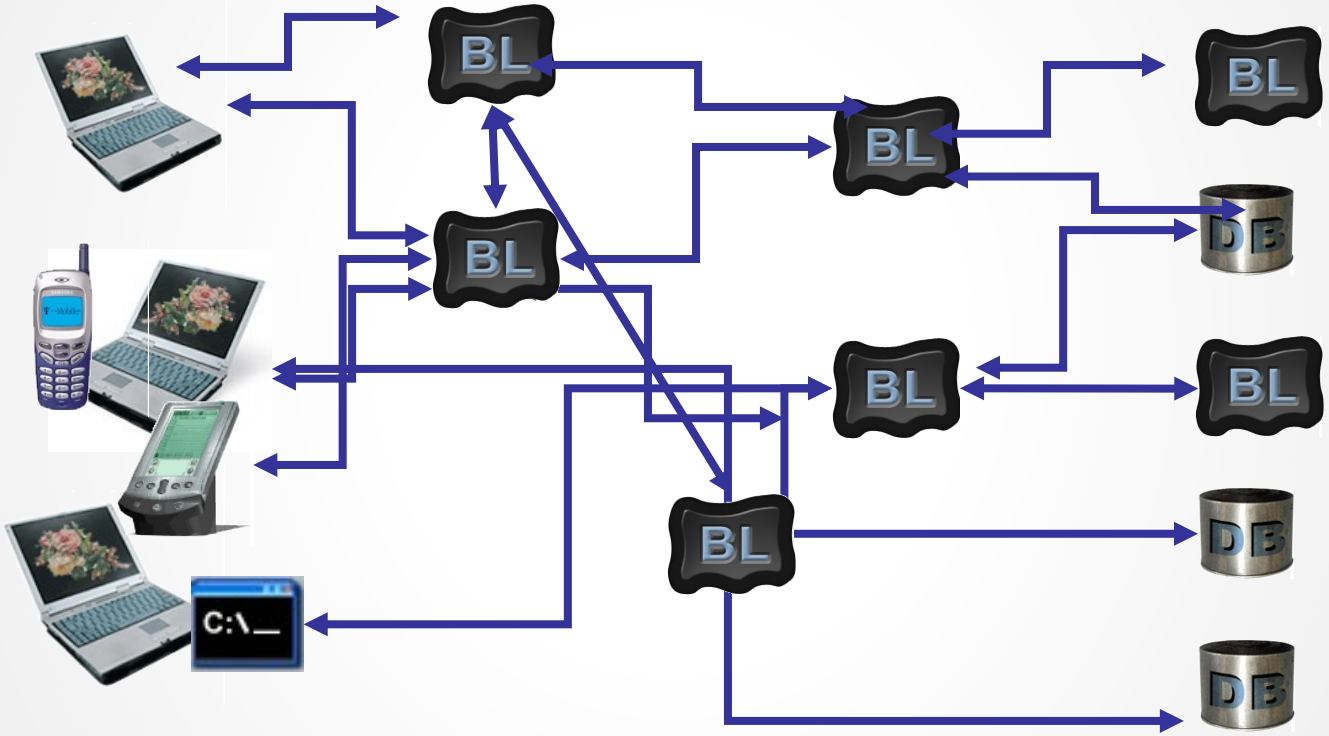
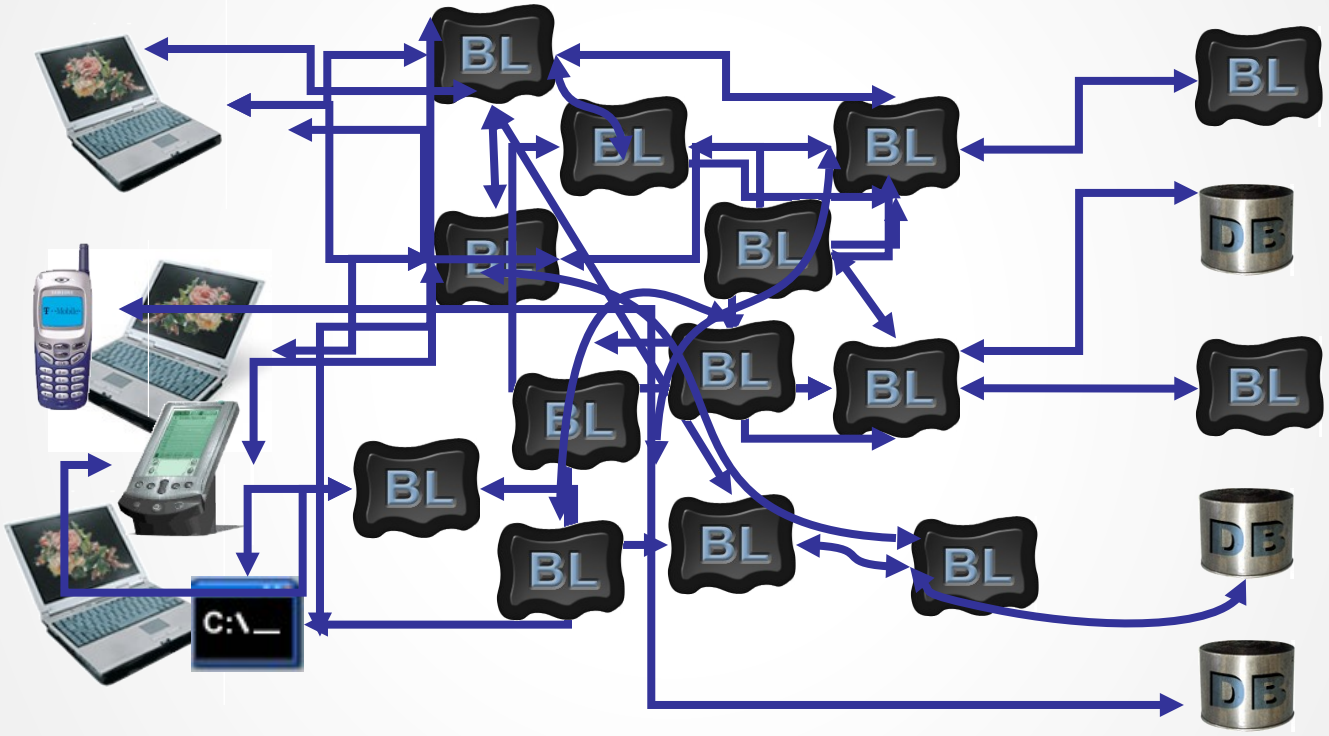
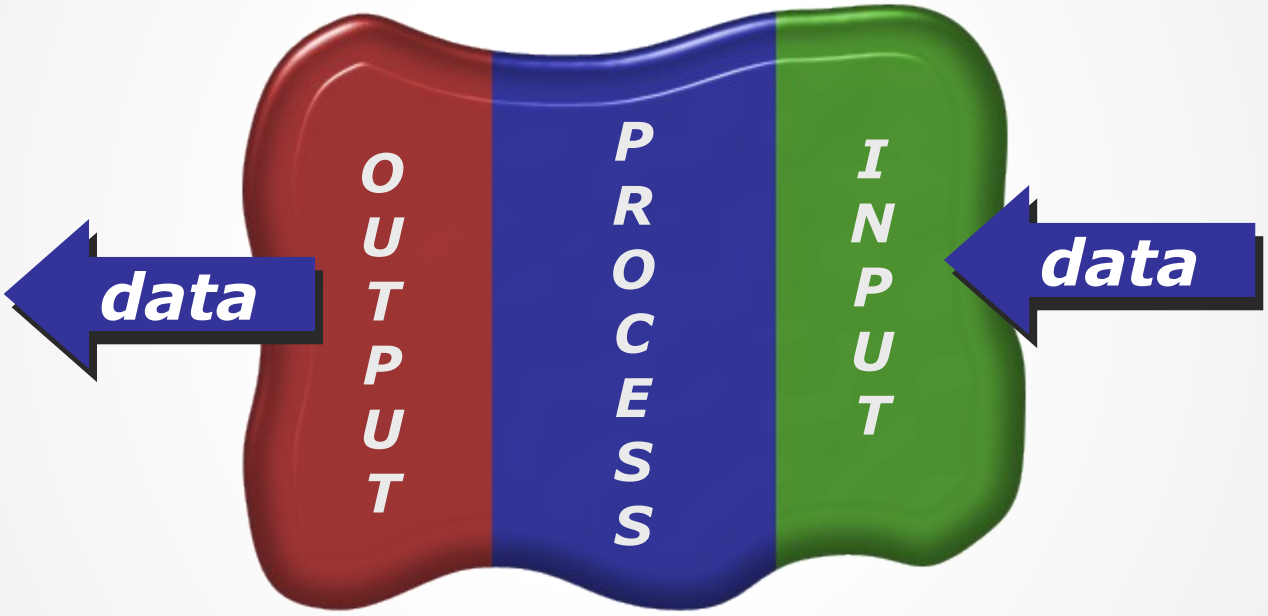


N-Tier Complexity



Business Logic

Business Logic



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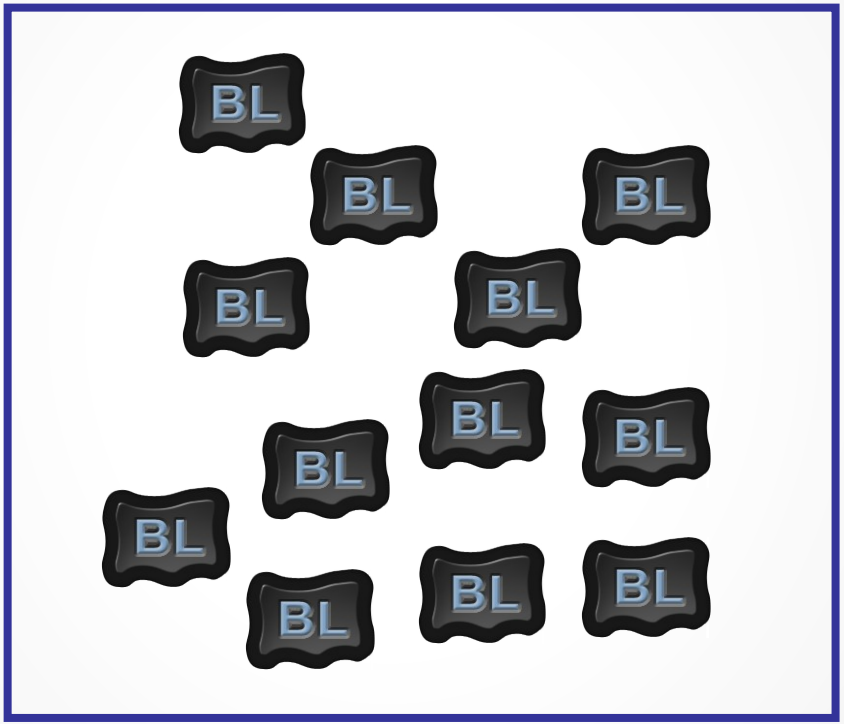

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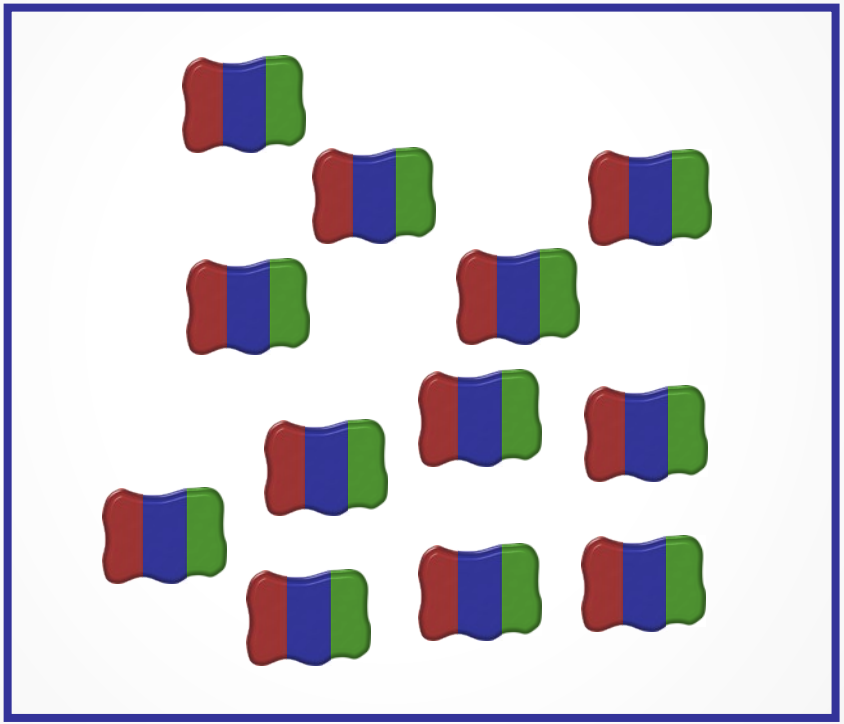

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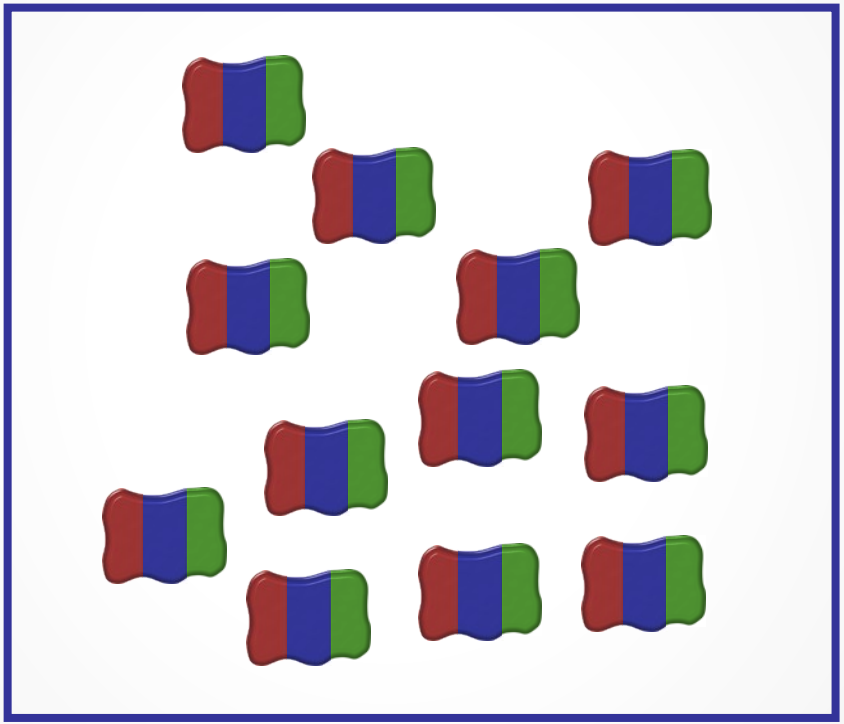

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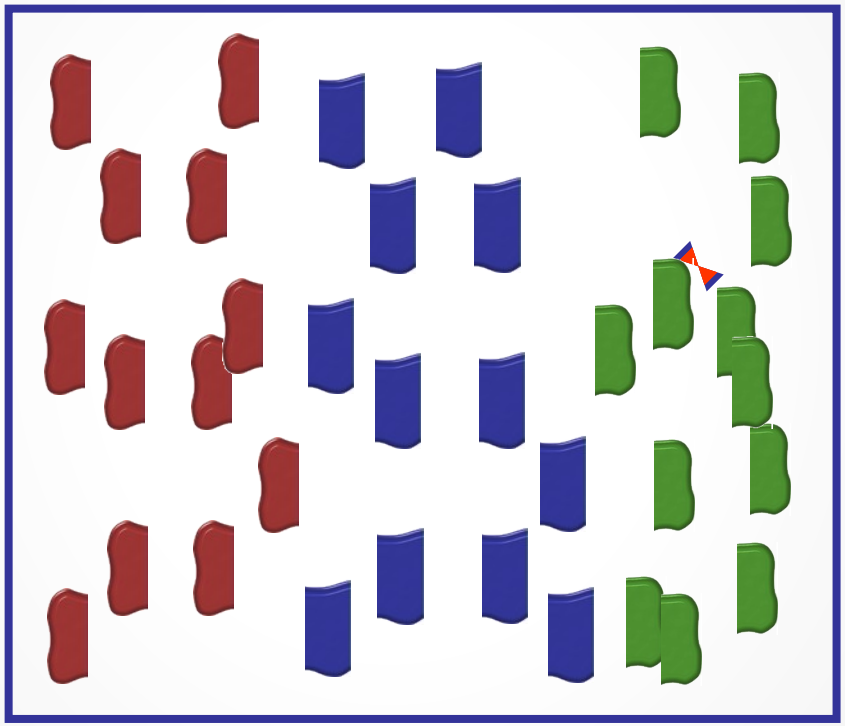

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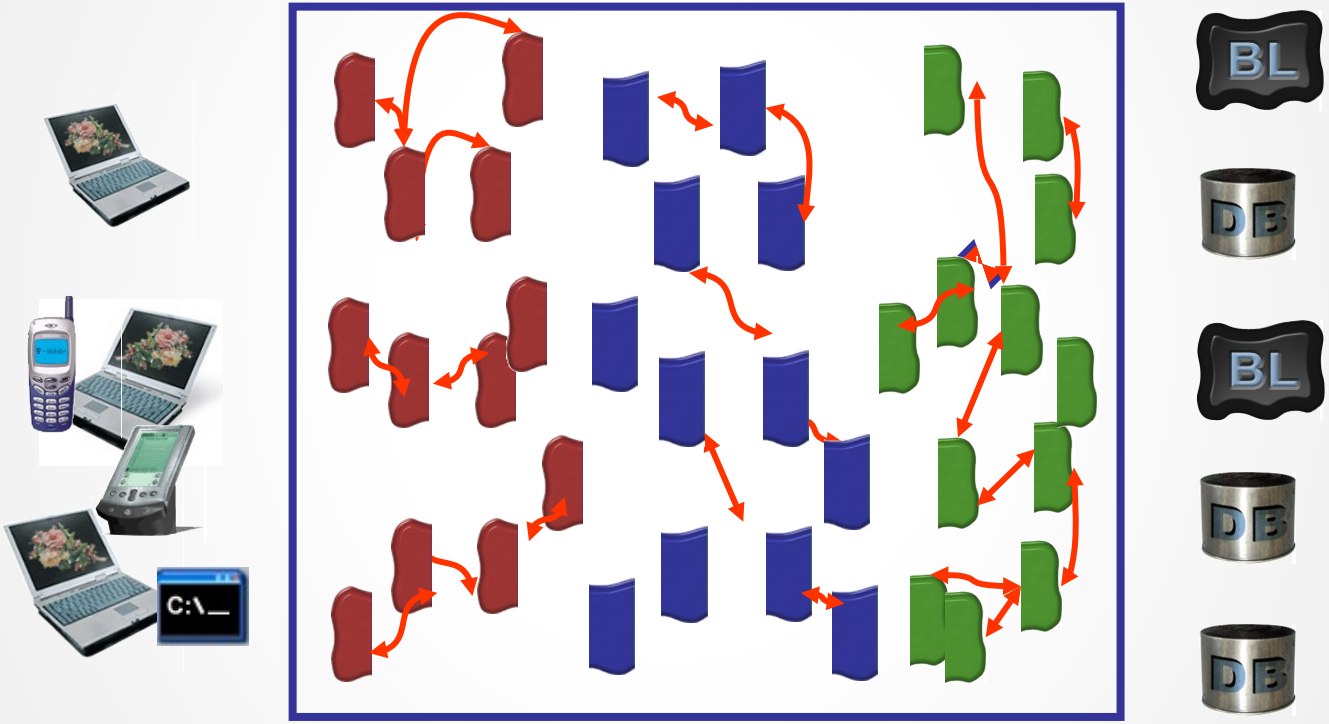
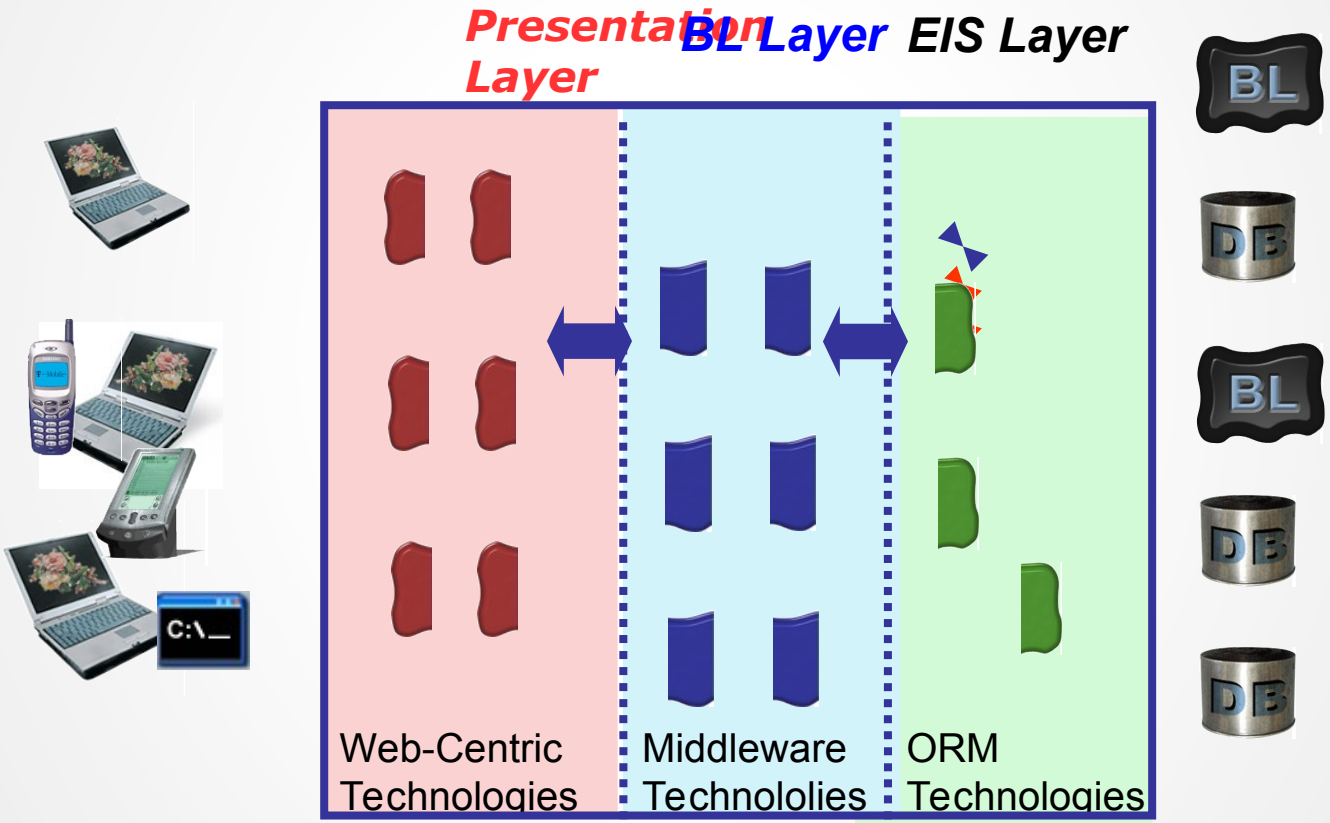


Java EE Layered Architecture



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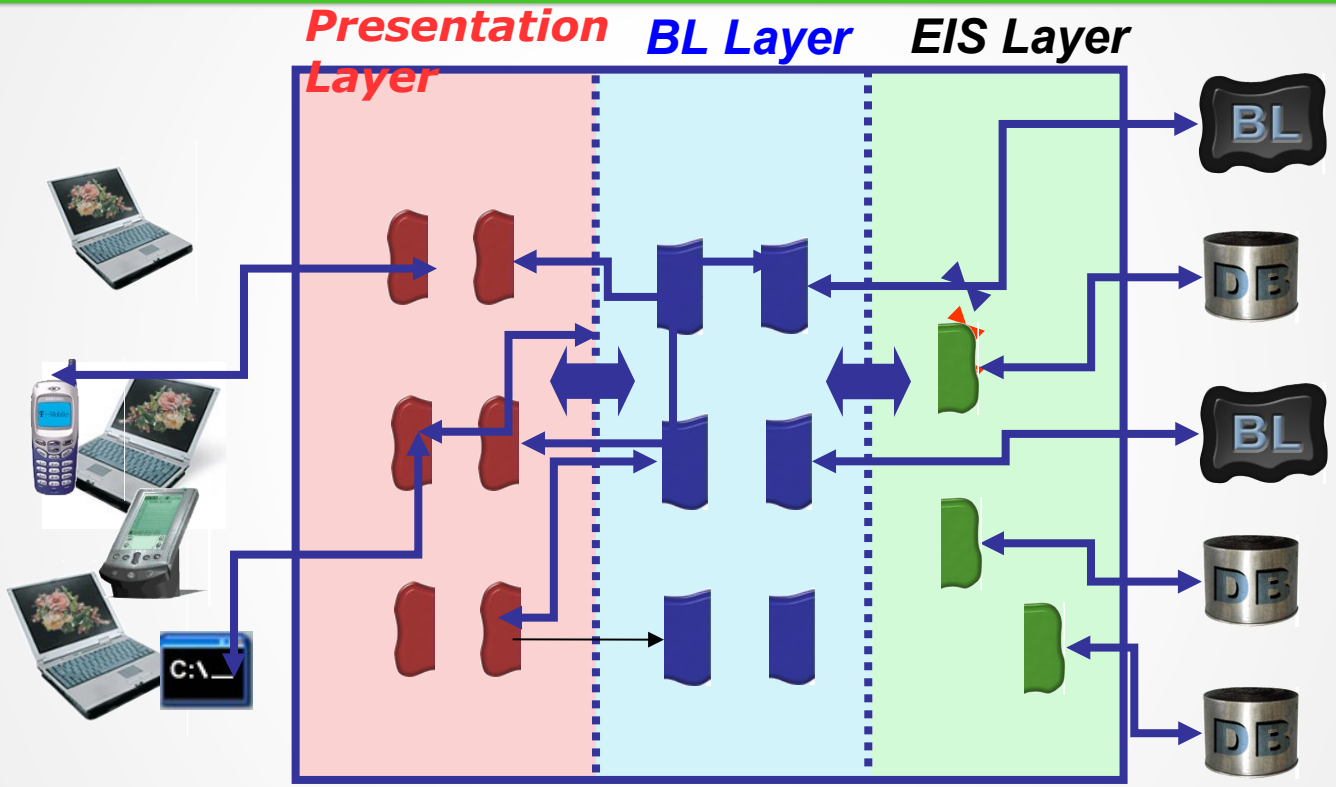

Example: The Kiosk

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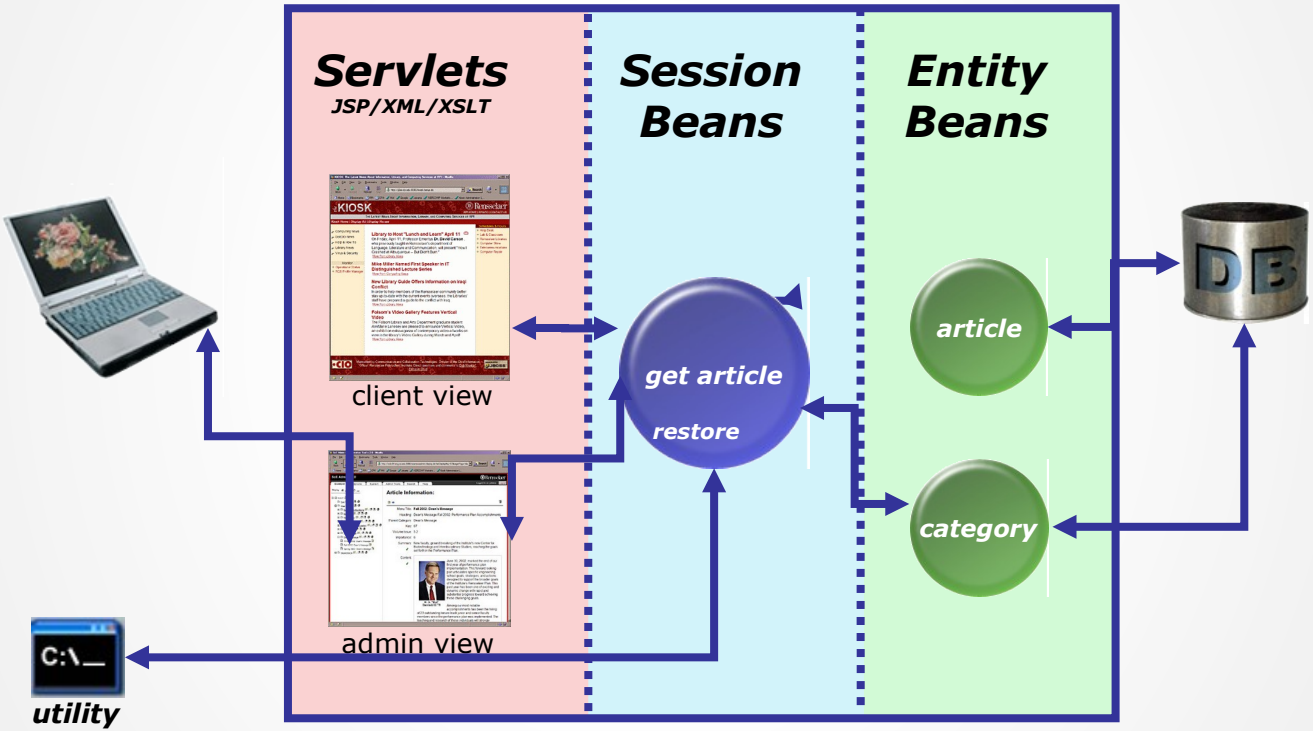
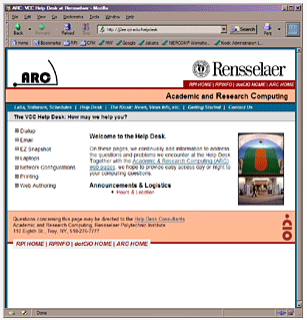
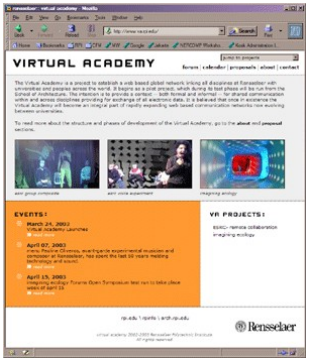


Clones



http://j2ee.rpi.edu/helpdesk

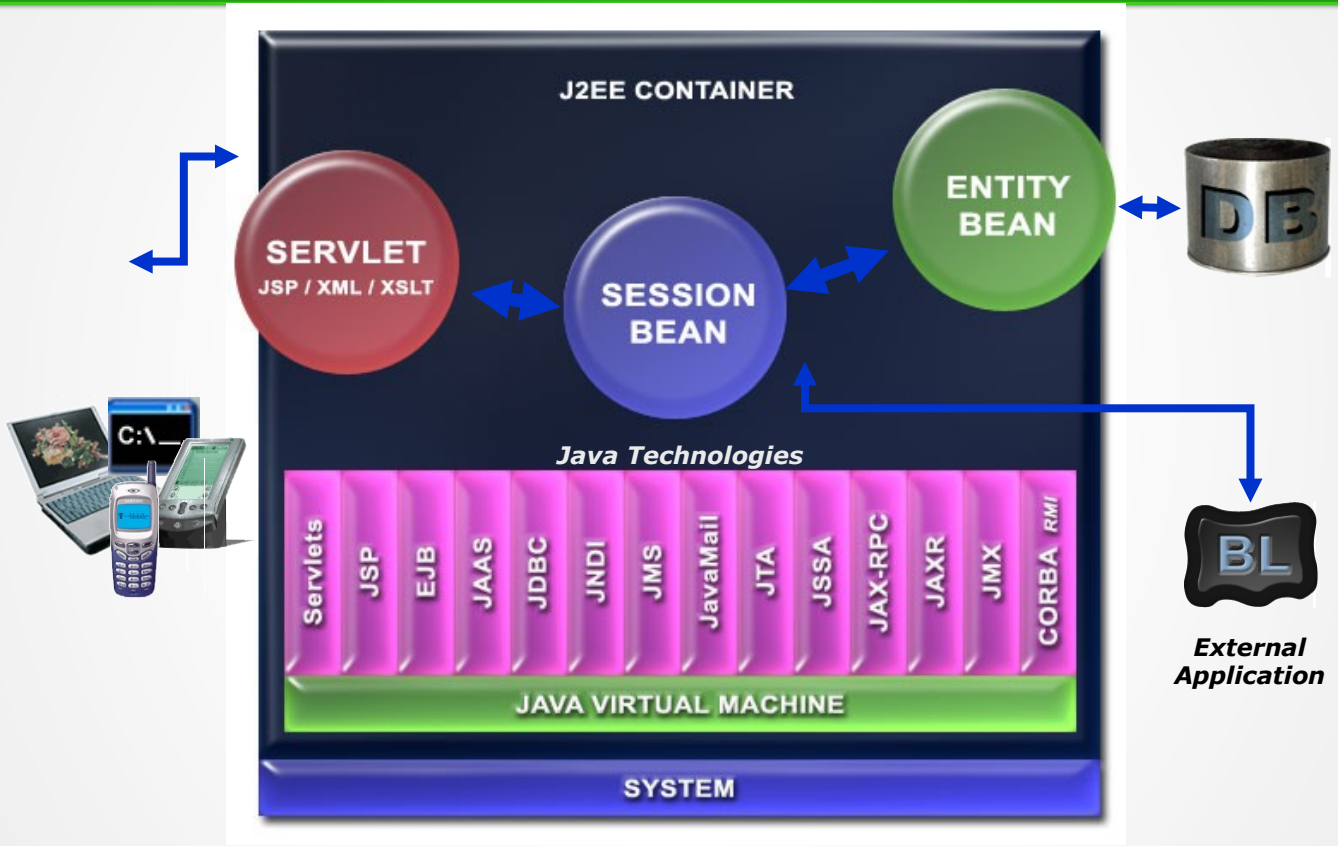


http://www.va.rpi.edu

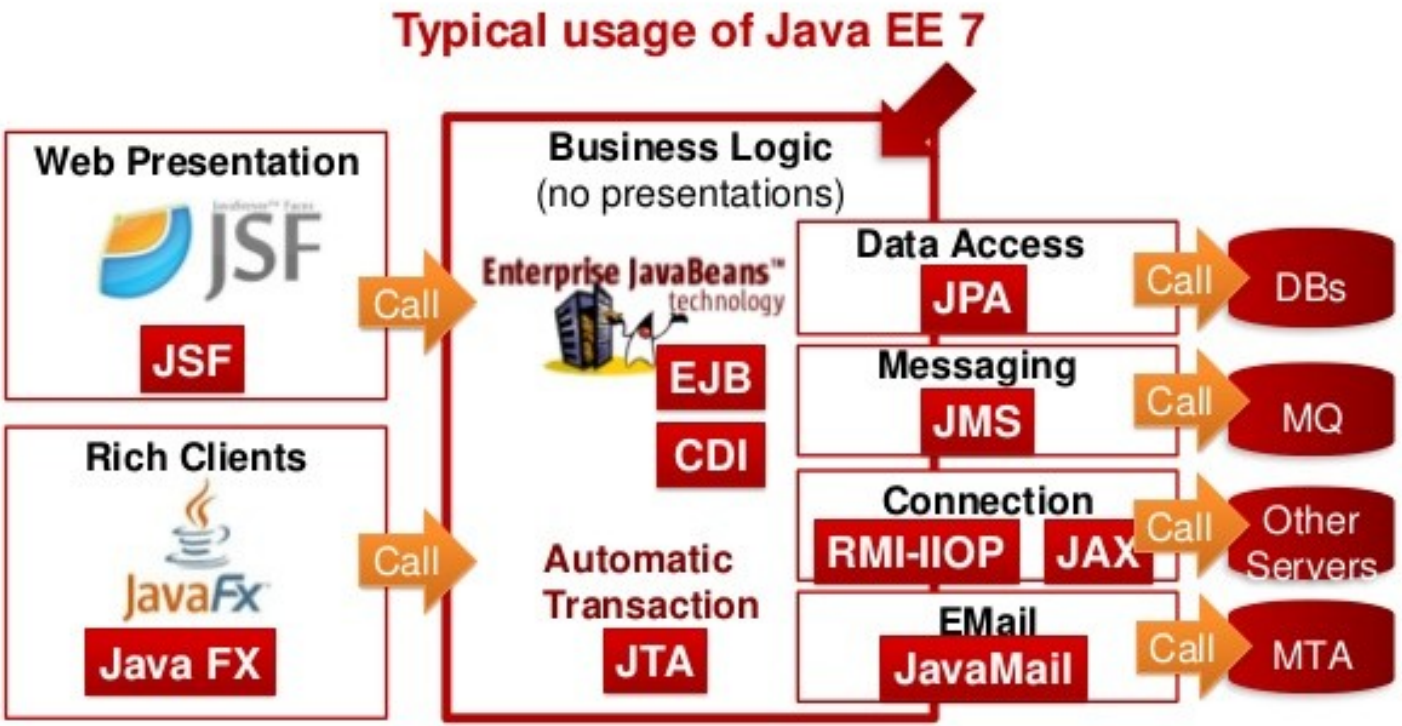
http://j2ee.rpi.edu/kiosk

http://www.eng.rpi.edu/frame_news.html

The JavaEE Framework



Java EE 7


Typical usage of Java EE 7
Web Presentation
JSF
JSF
Rich Clients
JavaFx
Java FX
Call
Call
Business Logic
(no presentations)
Enterprise JavaBeans™ technology
EJB
CDI
Automatic Transaction
JTA
Data Access
JPA
Call
DBs
Messaging
JMS
Call
MQ
Connection
RMI-IIOP
JAX
Call
Other Servers
EMail
JavaMail
Call
MTA

WEB ENABLING TECHNOLOGIES

- Servlets
- JSP
- JSTL/EL
- AJAX
- WebSockets
- International and Localisation
- Web Design Patterns and Frameworks
- Java Server Faces(JSF)
- Spring and Hibernate

Key Technologies

BUSSINESS LOGIC AND EIS

- Enterprise Java Beans (EJB)
- Java Messaging Service (JMS)
- Context and Dependency Injections (CDI)
- Java Persistence API (JPA / Hibernate)
- JNDI
- Java API for XML
- SOAP based Web Services
- REST based Services
- Java EE Security Framework
- Java Transactions API

Java EE Begins