J2EE overview

An Enterprise Application

- An enterprise means a business organization
- Enterprise applications are those software applications that facilitate various activities in an enterprise
- An enterprise application has the following challenges and complexity:
  - Diversity of information needs
    - Information is created and used in different ways
  - Complexity of business process
    - Involves complex information capture, processing and sharing
  - Diversity of applications
    - Applications are built using different architecture and technologies

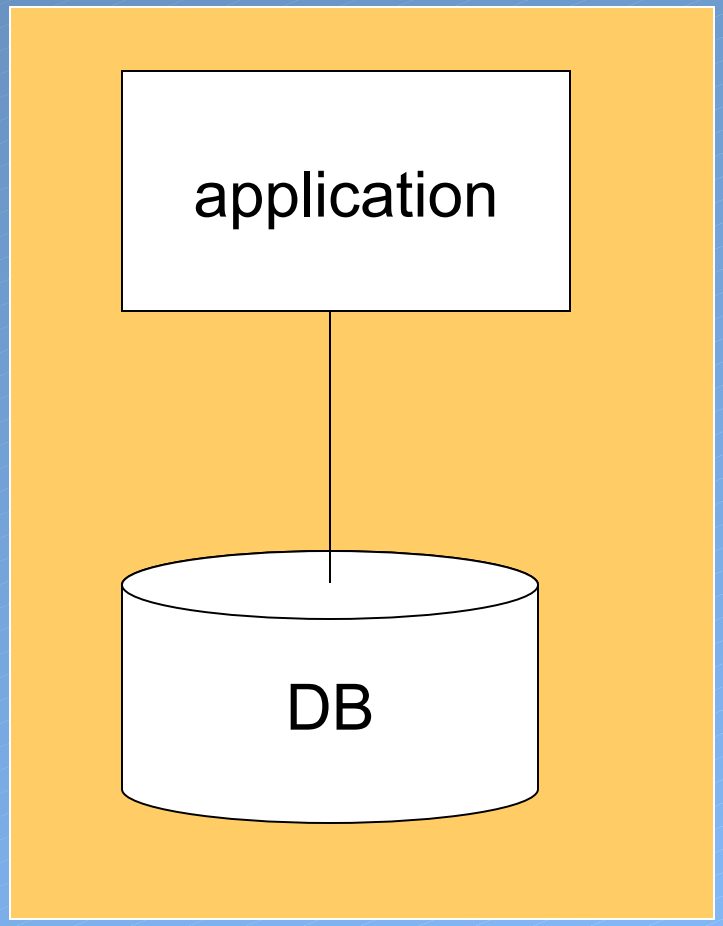
Requirements

for an Enterprise application

- **Programming productivity**
  - The applications should be developed and deployed as quickly as possible
- **Reliability and availability**
  - Downtime is fatal to a business
  - The applications must provide guarantee of business transaction
  - Business process should proceed completely and accurately
- **Security**
  - The application must be safe from illegal access and information theft
- **Scalability**
  - Should be able to handle large number of clients
  - Should ensure effective use of system resources
- **Integration**
  - **Should be compatible with existing applications**

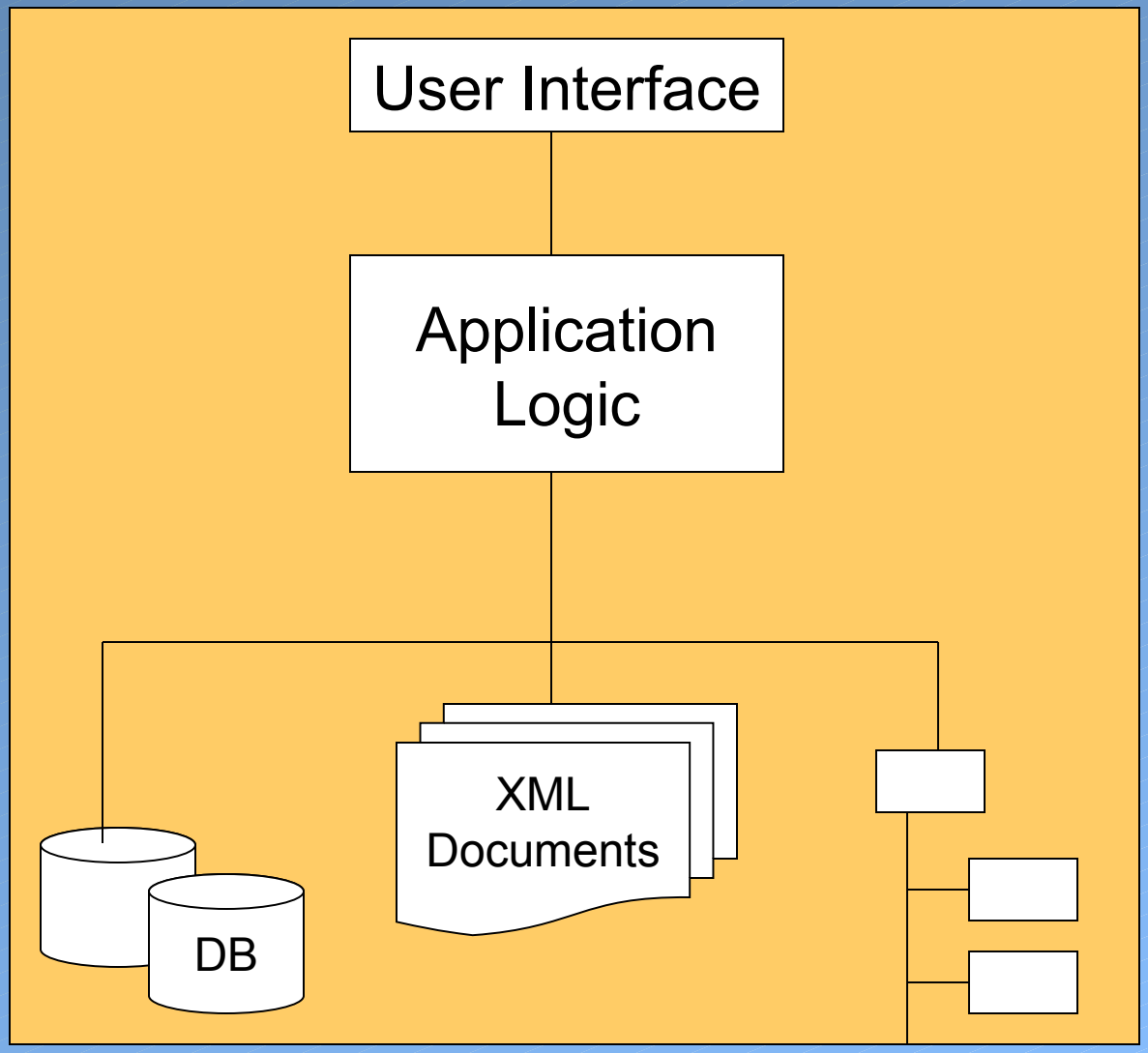
Enterprise Architecture Styles

- **Two Tier Architecture**

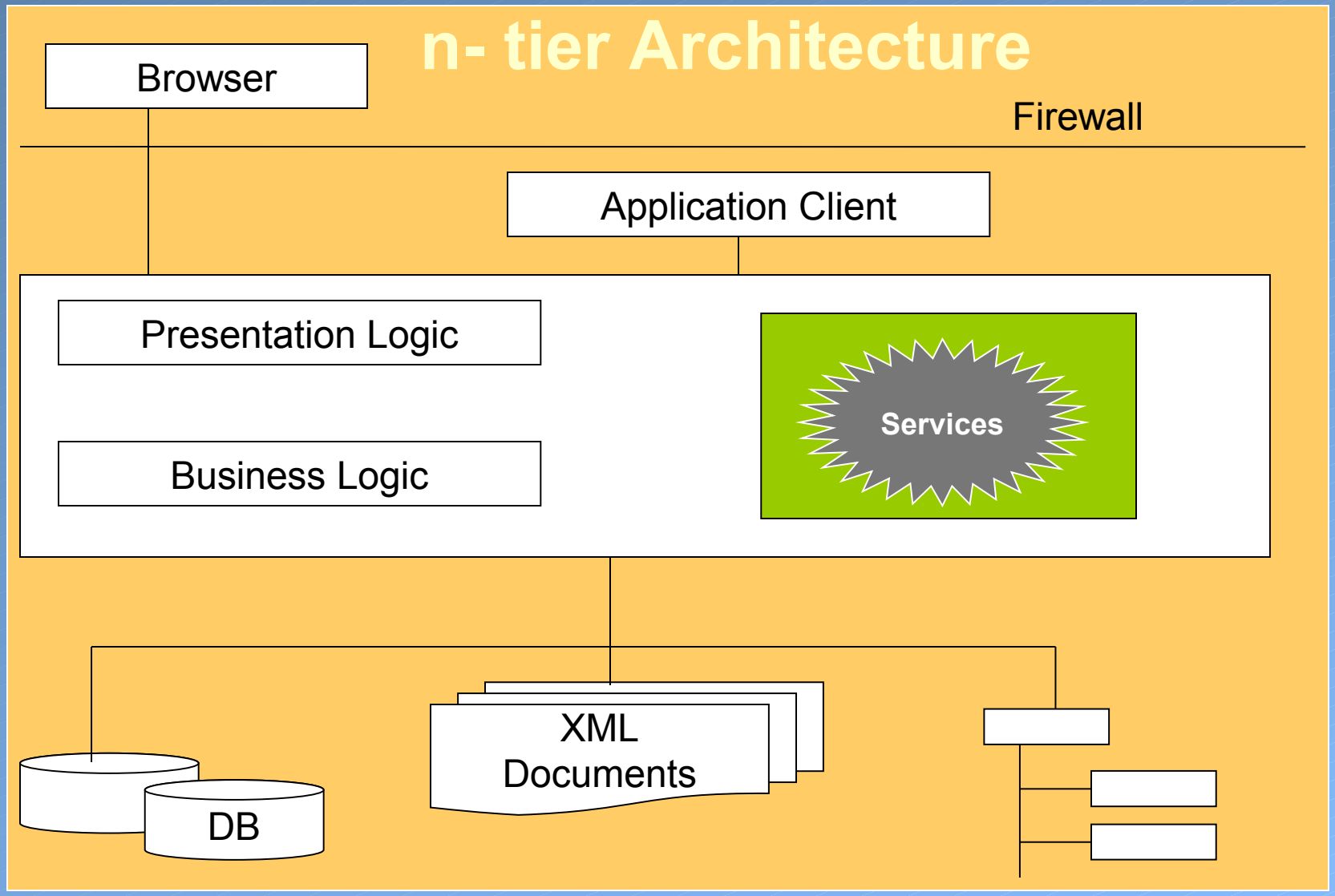


Enterprise Architecture Styles

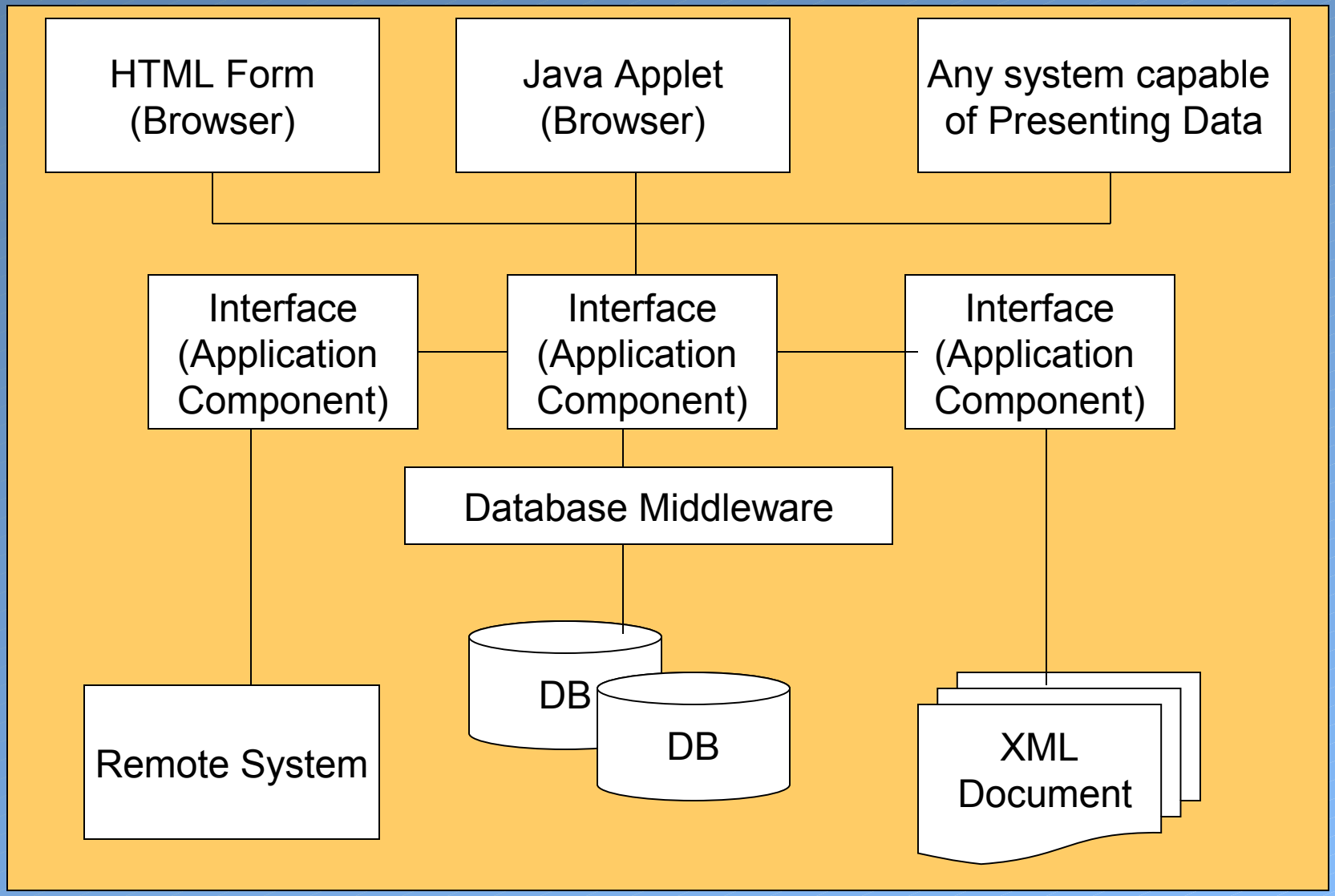
- Three Tier Architecture



Enterprise Architecture Styles



Enterprise Architecture Styles



J2EE Platform

- **J2EE is one of the best solutions so far to meet the requirements of today's Enterprise**
- **J2EE platform is a distributed application – server environment**
- **J2EE is a Java Environment providing**
  - A set of Java Extension APIs to build applications
  - A runtime infrastructure for hosting and managing applications

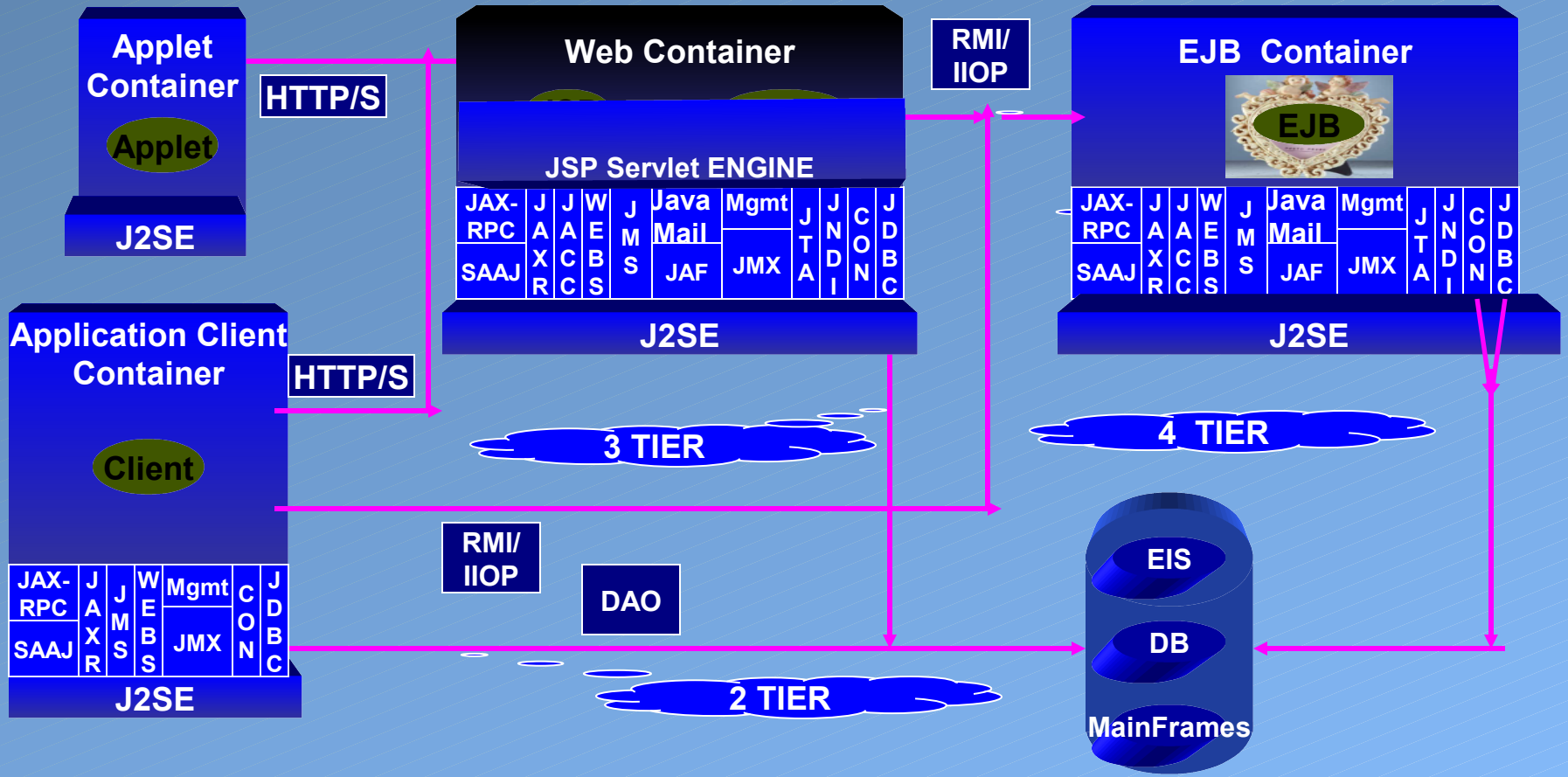
J2EE Architecture

- J2EE is a Container centric architecture
- J2EE platform includes one or more **Containers**

(A container is a runtime to manage components developed according to the API specification, and to provide access to the J2EE APIs)

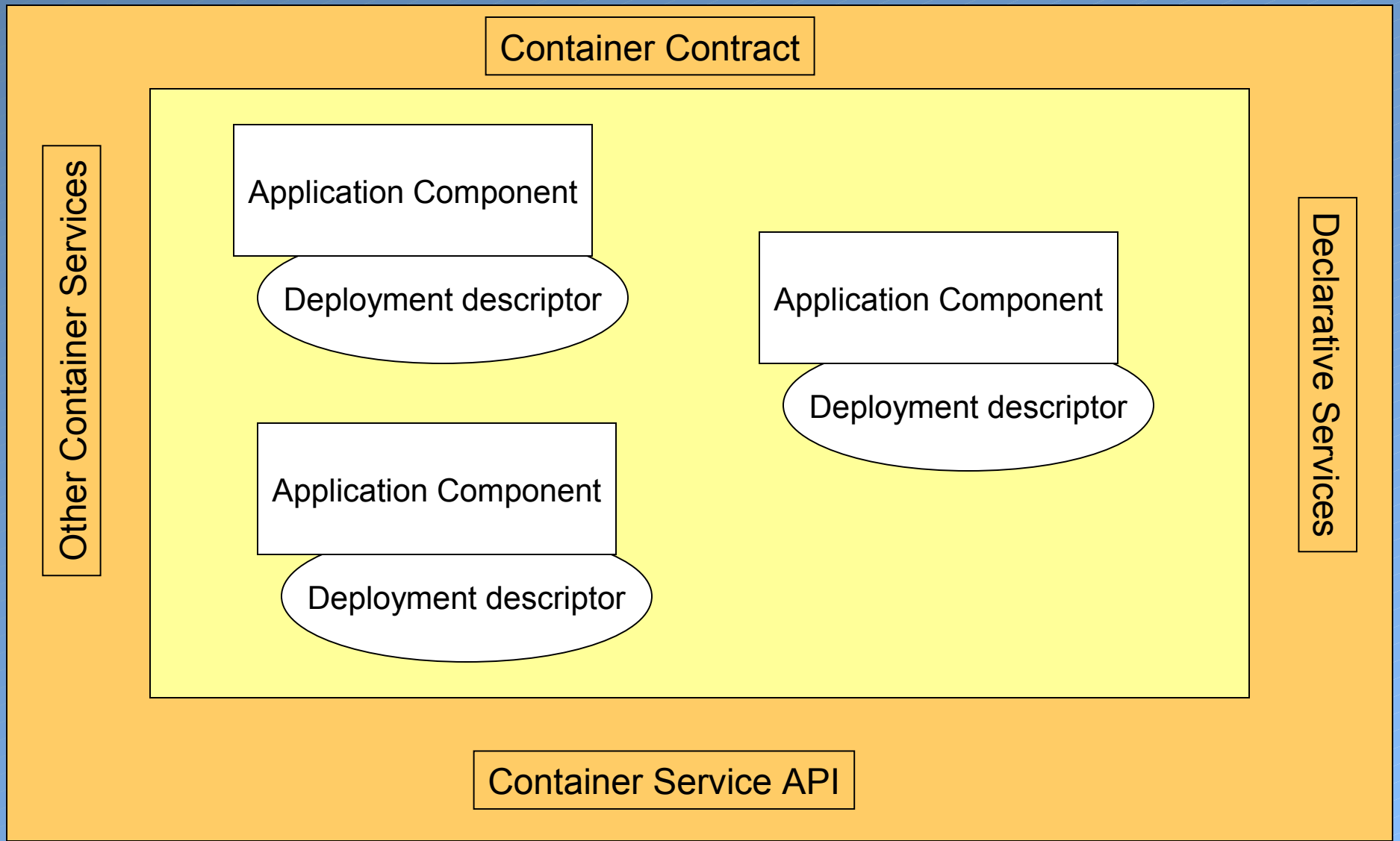
J2EE 1.4 APIs

J2EE defines a model for developing multi-tier, web based, enterprise applications with distributed components



For all the APIs refer http://java.sun.com/j2ee/1.4/docs/tutorial/doc/index.html

Container Architecture (1)



Container Architecture (2)

- Developers are required to provide
  - Application Components
    - Servlets, JSP Pages, EJBs etc
  - Deployment Descriptor
    - An XML file that describes the application

Container Architecture (3)

- The container Provides
  - Component Contract
    - A set of APIs specified by the container that an application component is required to extend or implement
  - Container Service API
    - Additional services provided by the container required for applications e.g JDBC, JTS, JNDI, JMS stc.
  - Declarative Services
    - Container interposes these services based on the deployment descriptor of the application component e.g Transaction Security etc.
  - Other Container Services
    - Life cycle management of components
    - Resource pooling like Object pooling and Connection Pooling
    - Populating JNDI namespace based on the Deployment names associated with EJBs
    - Populating JNDI namspace with objects necessary for utilizing container service APIs

J2EE Technologies

- The Component Technologies
  - Web Components
    - Servlets, JSP Pages
  - Enterprise JavaBean Components
    - Session Beans
    - Entity Beans
    - Message Driven Beans
- Service Technologies
    - JDBC, JTA, JNDI,JMS, JavaMail, JAAS
- Communication Technologies
  - Internet Protocols
    - HTTP, TCP/IP, SSL
  - Remote Object Protocols
    - RMI, RMI-IIOP
    - JavaIDL

Thank You