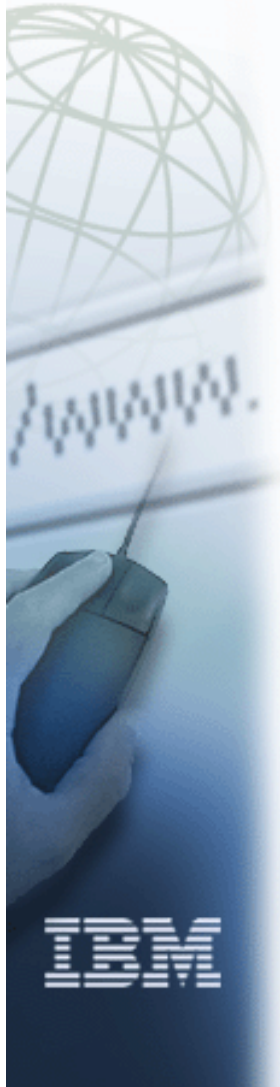
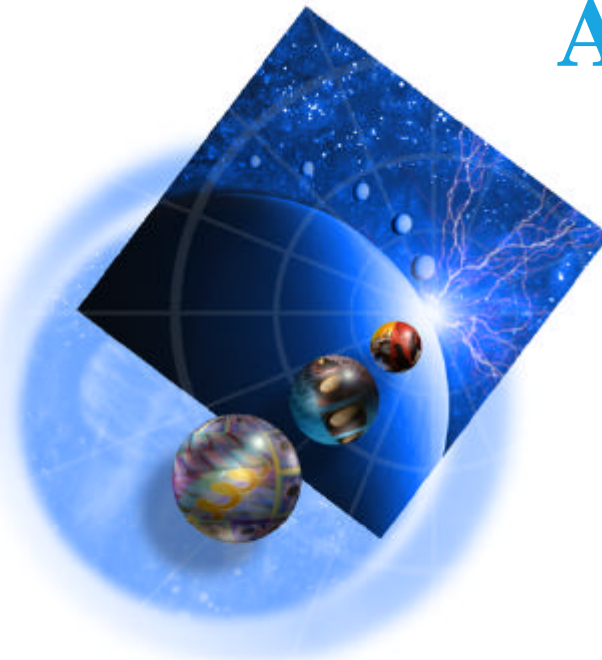




IBM  
WebSphere



# IBM WebSphere Family and Web Application Architecture



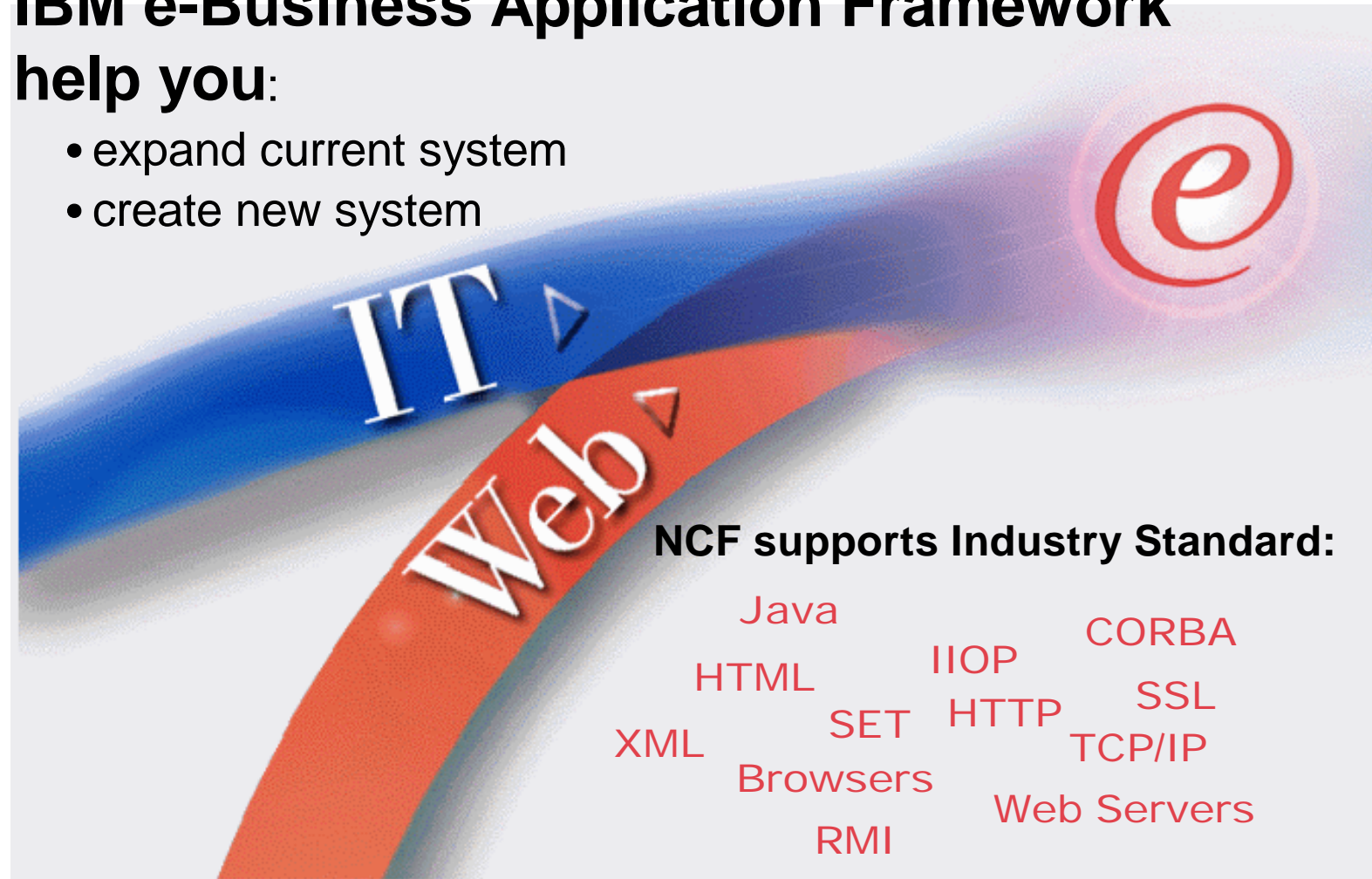


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## IBM e-Business base

### IBM e-Business Application Framework help you:

- expand current system
- create new system



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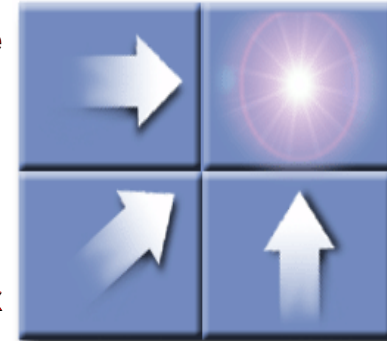
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## Web Application Evolution

► **In the early days focus on Web publication**

- Retrieve static informations via Web
- No much diversifies for the requirement from different client
- Accomplished via providing read-only, no-transactional service

Simple



Complex

Weak

Robust

► **Rapid developing to interactive personalized Web application**

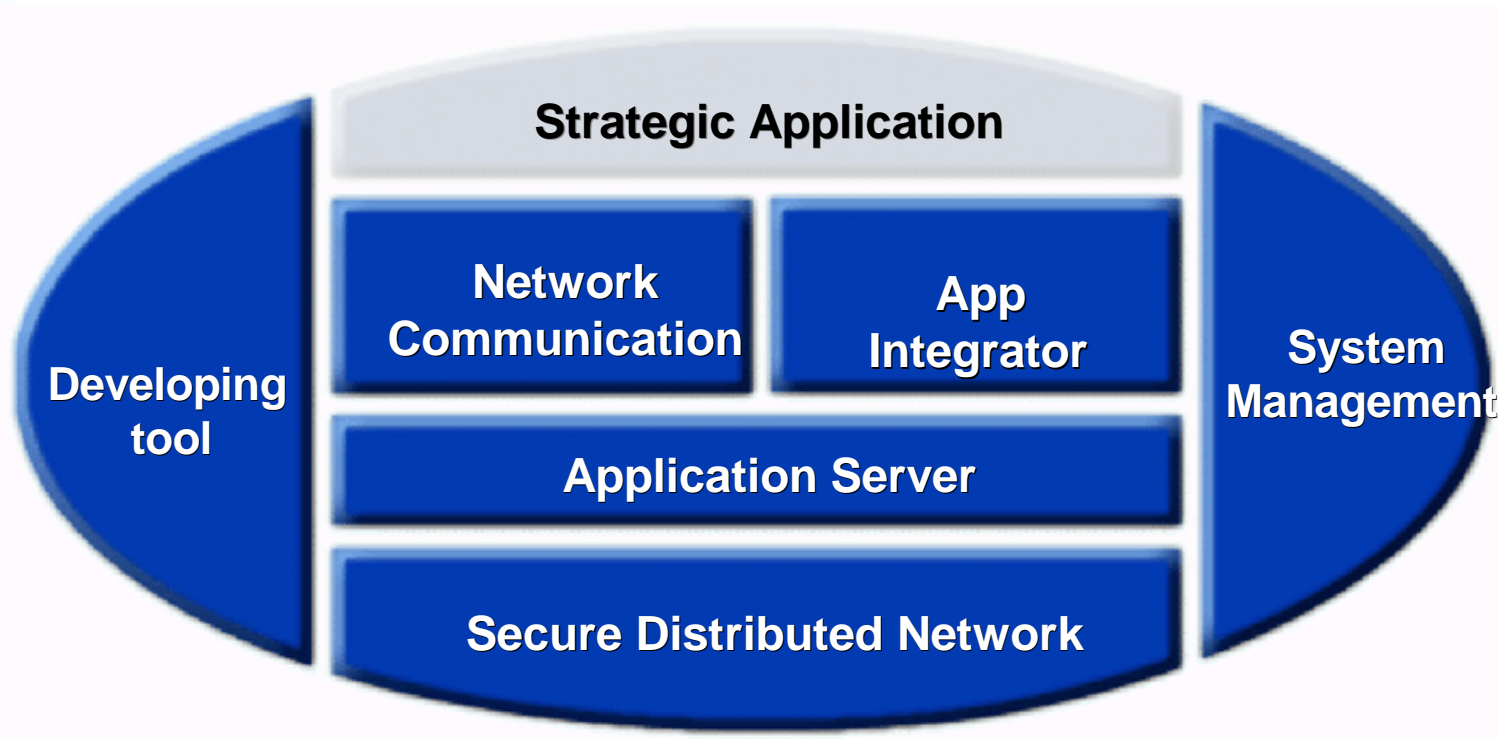
- Enable communication among customer, business partner and staff via Web
- Customer requirement tends to personalized, diverse
- Provide secure, reliable transaction services

► **Web Application Server to provide runtime environment and related services is necessary**

IBM



# e-Business Application Framework Component



**Build**

**Run**

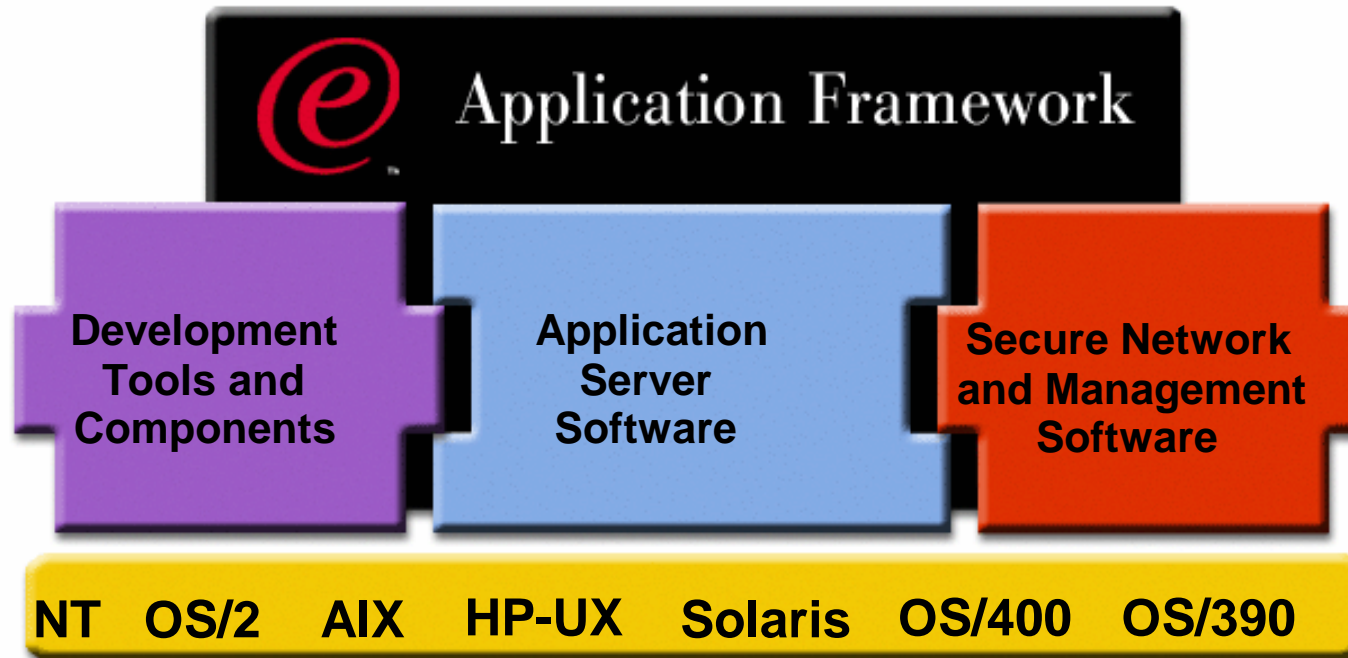
**Manage**

**IBM**



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## e-business Application Framework Elements



- Proven methodology simplifies development
- Multi-platform approach increases deployment flexibility
- Applications scale to support 24x7xmillions of users

IBM



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## Web Application Server

- Middleware running upon Web Server extend the static publication functionality of Web Server to an runtime application environment enable High efficient and reliable connection to backend Core Business System
  - ▶ High performance in RDB access
  - ▶ Advanced session management function
  - ▶ Provide Web Application management tools
  - ▶ Better performance than CGI application
  - ▶ Running upon current platform and Web Server

The IBM logo, consisting of the letters 'IBM' in a bold, sans-serif font, positioned at the bottom of a vertical sidebar. The sidebar also contains a wireframe globe and a hand holding a mouse pointing at a document with a URL.

IBM



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## IBM Web Application Strategy

- ▶ In developing IBM WebSphere, IBM followed a strategy which addresses the challenges by delivering the dependable tools required by today's web teams.
- ▶ WebSphere focuses on the tools and capabilities required by today's web teams
- ▶ WebSphere focuses on the tools and capabilities required by the multi-disciplinary web teams while providing capabilities to deliver 7x24 applications.
- ▶ Applications that scale & perform, which is what companies need to keep their successful e-business web sites available around the clock





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# IBM WebSphere Family

Complete e-Business Framework

## WebSphere Studio

- Workbench
- Wizards
- Content Authoring and Publishing
- JSP Debugging
- Site Development
- Tools Integration
- Content Management

## VisualAge

- Application Programming
- Component Development
- Team Development

**Build**

Business Application Components (SanFrancisco)

WebSphere Commerce Suite (Net.Commerce)

WebSphere Transcoding Publisher

## WebSphere Application Server

### Enterprise Edition

- Composed Business Components
- Transaction application environment
  - CICS
  - Encina

### Advanced Edition

#### Standard Edition

- Database Connection Manager
- Java Servlet Runtime and services
- JSP, XML

- Clustering and scaling, WLM
- Multi-process Servlets and EJS/EJB
- Database Connection Manager
- Java Servlet Runtime and services
- JSP, XML
- Personalization

- Clustering and scaling, WLM
- EJS/EJB
- CORBA
- Database Conn. Manager
- Java Servlet Runtime
- JSP, XML
- Personalization

- Content Analysis
- Usage Analysis

## WebSphere Site Analyser

- Reporting
- Visitor Analysis

- Connecting to e-marketplaces

## WebSphere B2B Integrator

- Workflow integration

- Caching
- Load Balancing

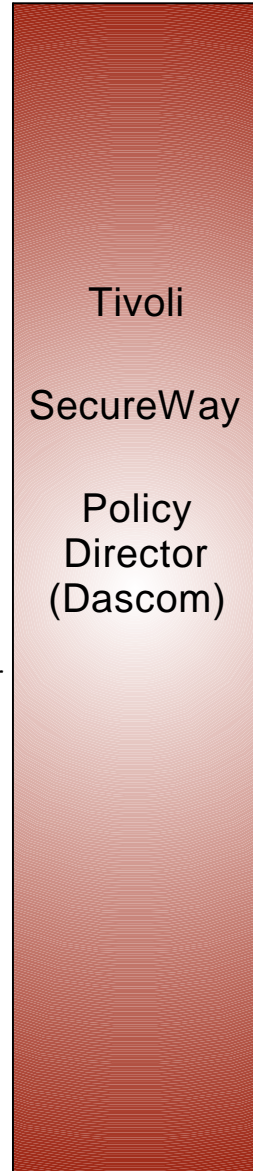
## WebSphere Performance Pack

- Filtering
- Distributed Files

Any HTTP Server (Apache, IIS, NES, Domino, IBM HTTP Server)

NT AIX Solaris OS/390 Linux NetWare AS/400 HP-UX

**Run**



Tivoli

SecureWay

Policy Director (Dascom)

**Manage**







# Web Programming Model

- Multi-tier component based.
- The first tier should be browser or other think client.
- The second tier (including Web Server and Application Server(optional)), provide static and dynamic information service. Based on Java Servlet, JavaBean, JSP Technology in WebSphere.
- The third tier provide core business services. In common they are mature commerce system, like DB2, CICS etc.



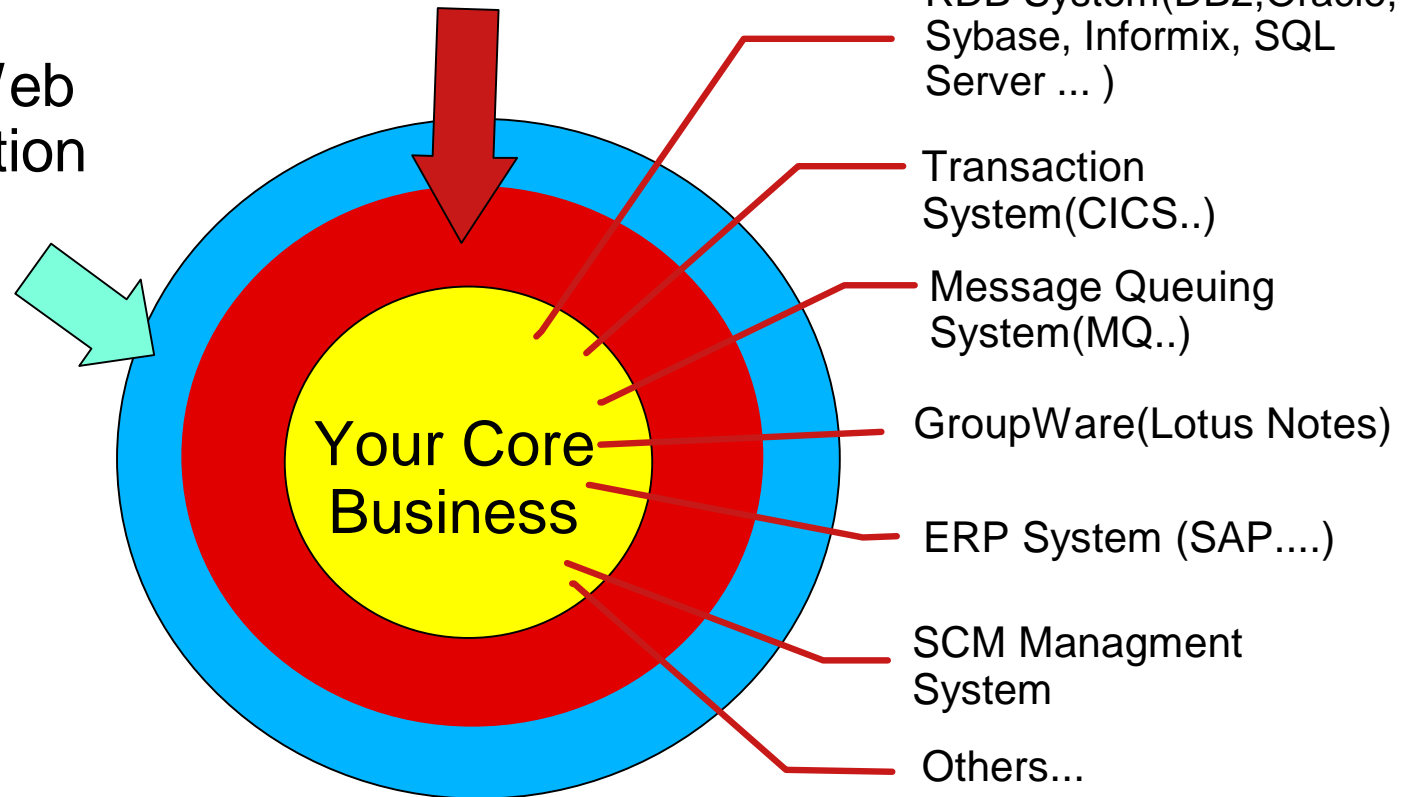


# What is WebSphere Application Server

?

## WebSphere Application Server

Your Web Application



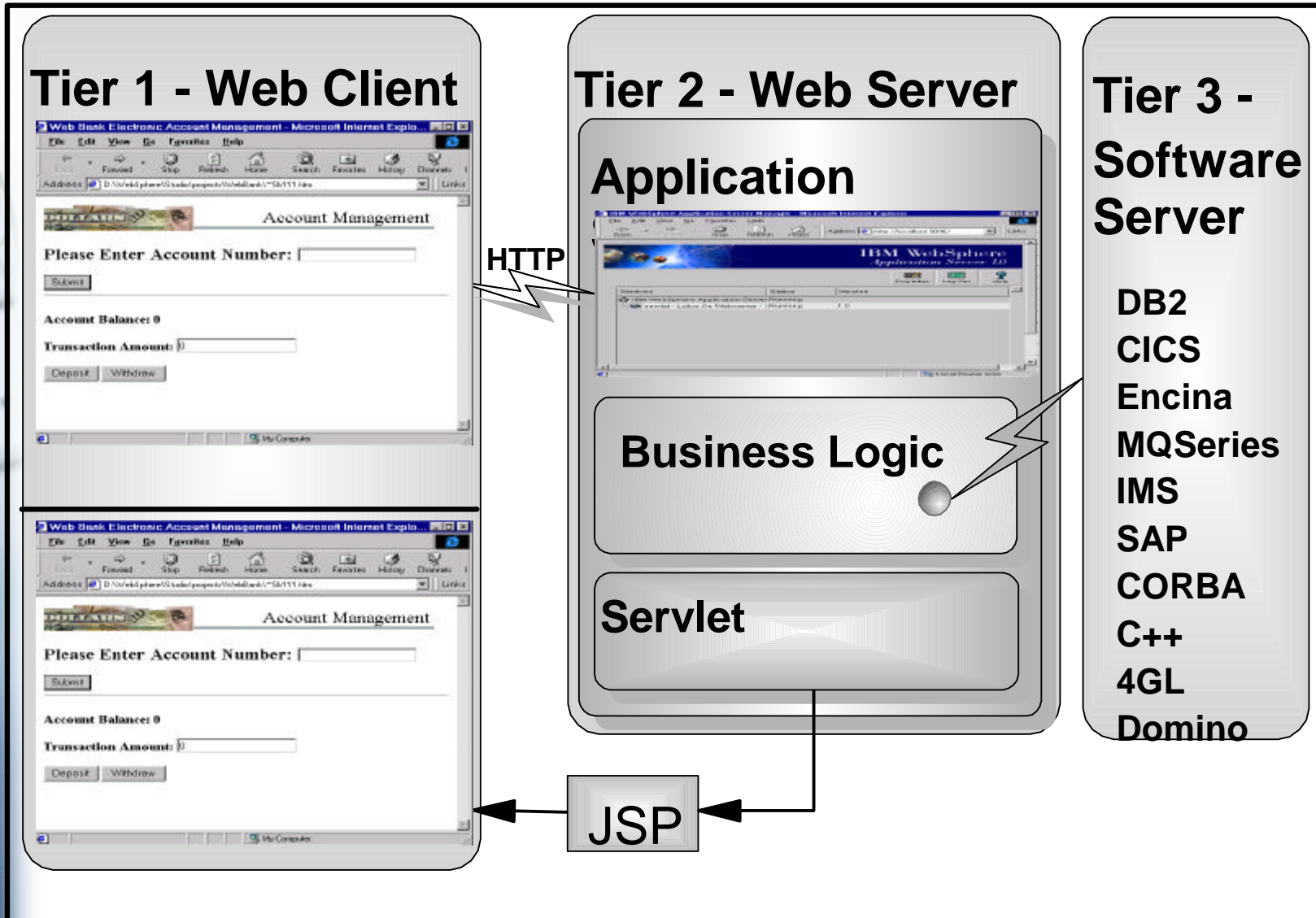
IIS, Netscape, Apache, Domino, Domino GO, etc

NT Solaris AIX OS/2 AS/400 OS/390 Linux



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# Web Application Topology

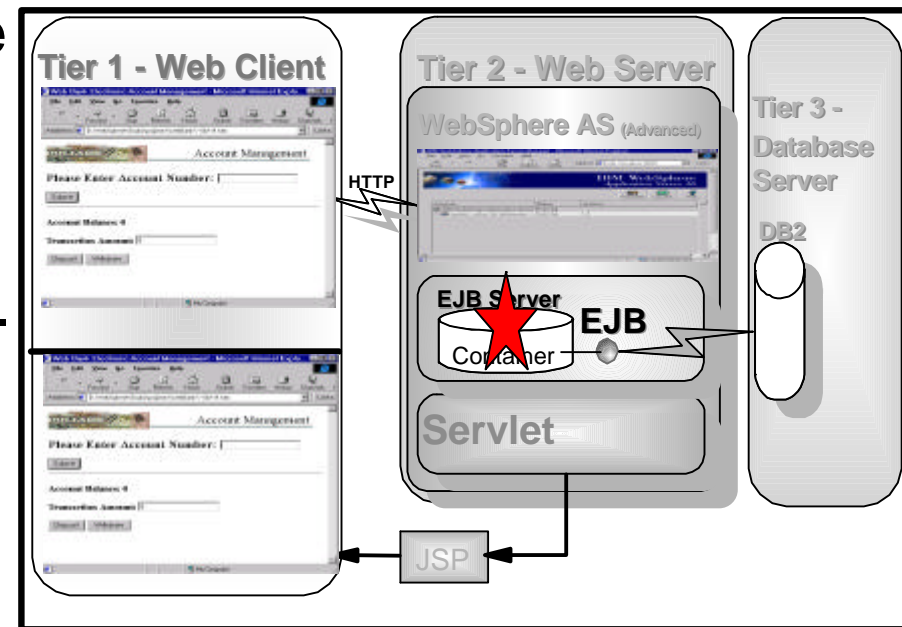




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## Business Logic

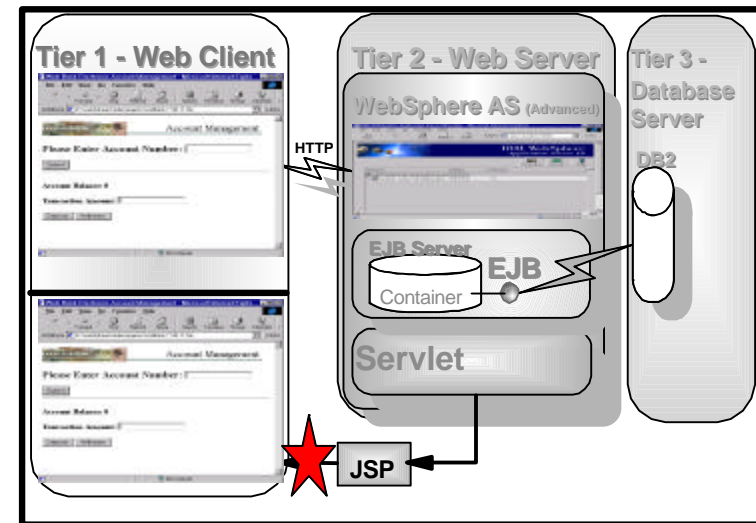
- Business logic serves as the **model** for a web application
  - ▶ Implemented as JavaBeans or Enterprise Java Beans (EJBs)
    - Access to software services
      - e.g. databases, transactions, applications, etc.





# JSP

- Serves as **view** for web application
  - ▶ Scripting technology
    - HTML + embedded Java
- JSP is compiled and HTML is returned to web client
- Key Benefits:
  - ▶ Build dynamic web applications easily
  - ▶ Separation of roles for web team

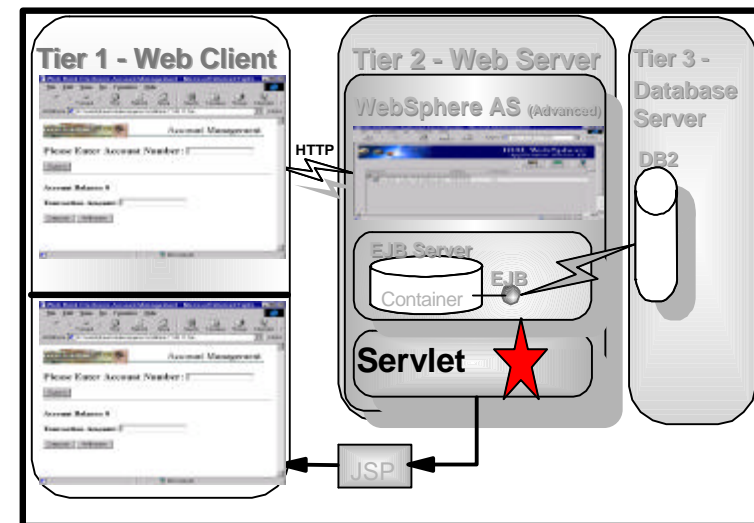




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## Servlet

- Serves as **controller** for web application
  - ▶ Parses parameters passed in from HTML page
  - ▶ Invokes business objects to process request
  - ▶ Invokes Java Server Page (JSP) to return results



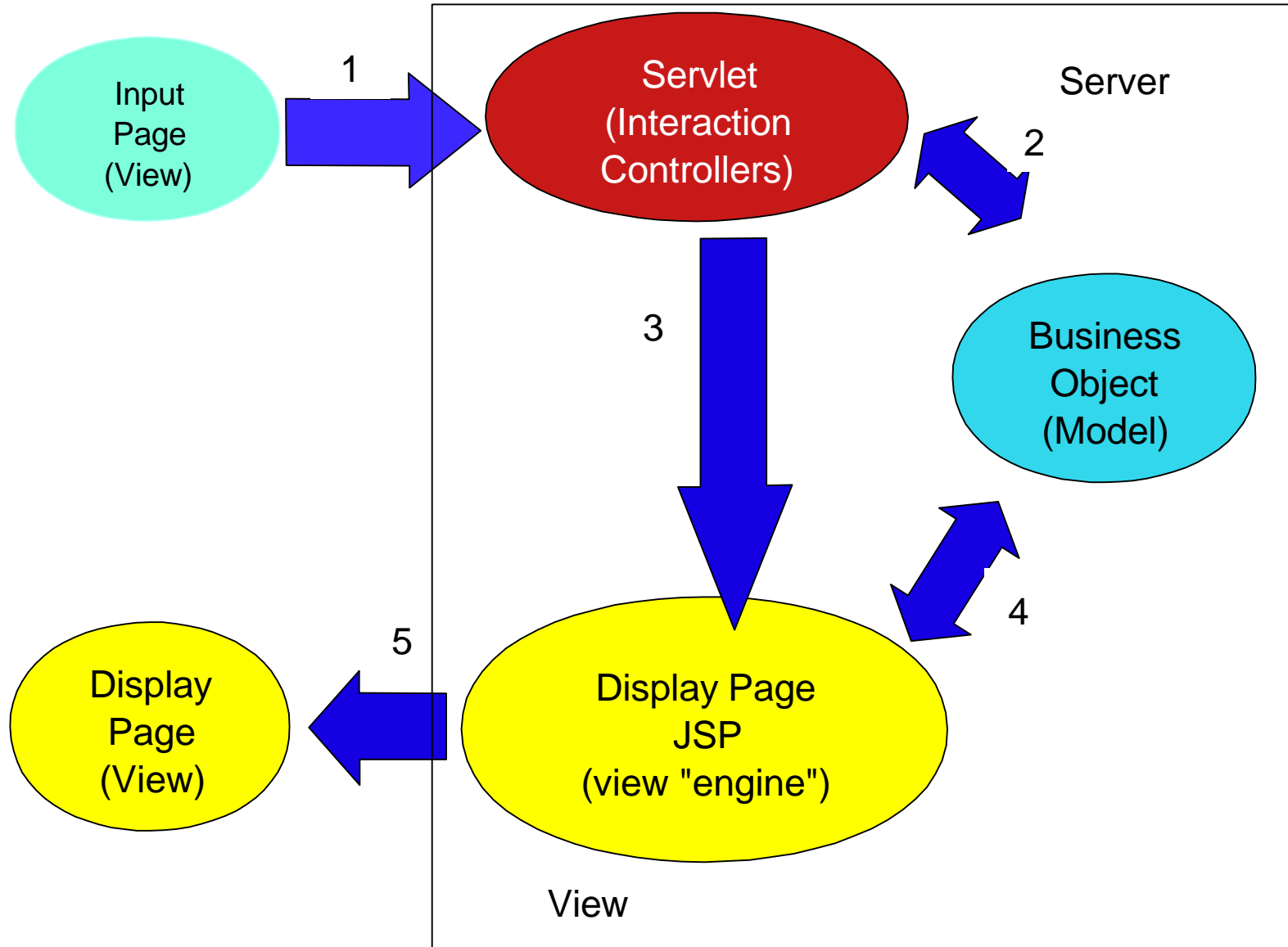
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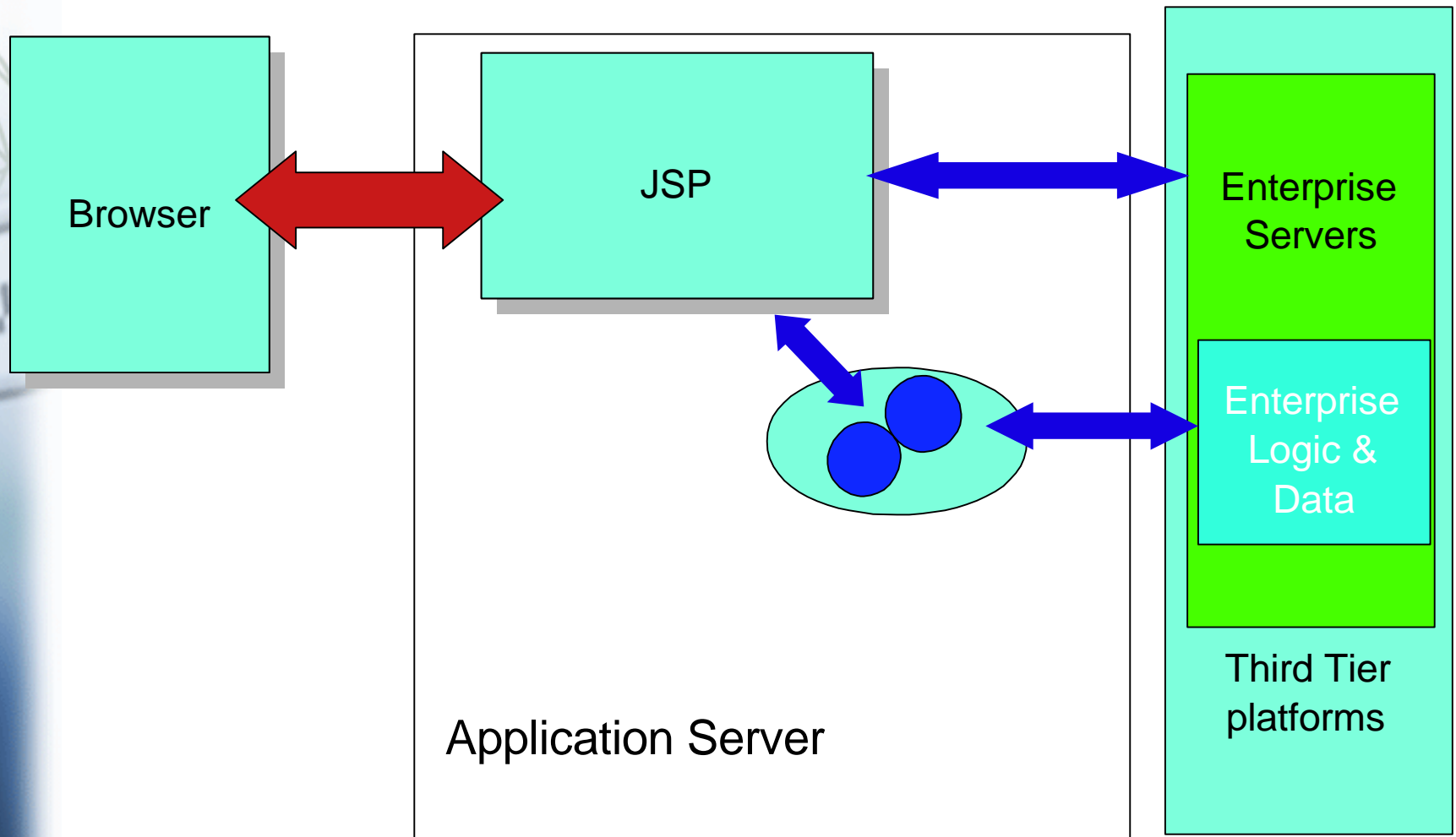
# Separating Presentation and Content (three components)





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## JavaServer Pages(another scenario)

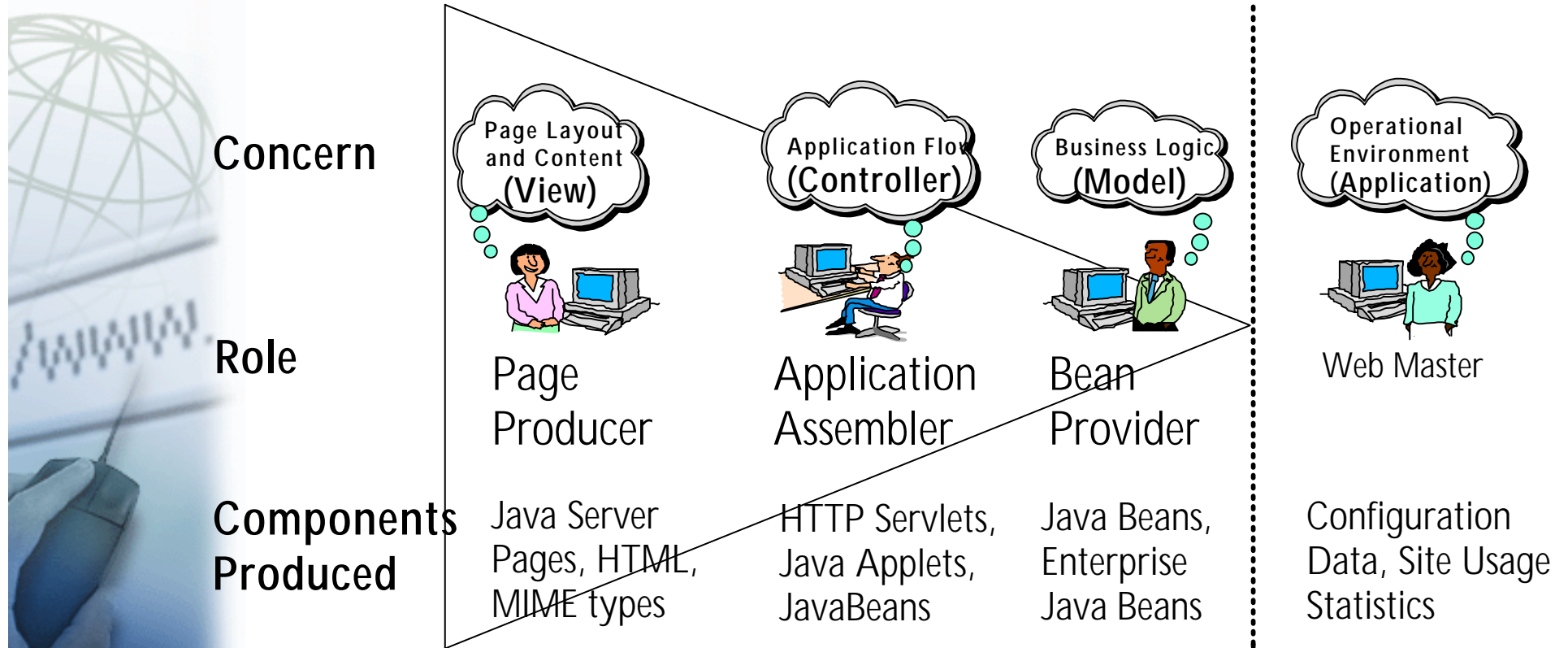


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# Web Application Roles and Responsibilities



"Let the right expert do the work independently."





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# Web Application Tasks and Tools



Analyst

**Task:**

- 1. Analysis & Design**
- 2. Develop Model**
- 3. Generate Bean Interfaces**

**Primary Tools:**

- Rational Rose
- XMI Toolkit
- VisualAge for Java



Bean Provider

**Task:**

- Generate Enterprise Access**
- Develop Business Logic**

**Primary Tool:**

- VisualAge for Java



Assembler

**Tasks:**

- Generate Web Application Templates**
- Develop Servlet**

**Primary Tools:**

- WebSphere Studio
- VisualAge for Java



Page Producer

**Tasks:**

- Develop HTML**
- Develop JSP**

**Primary Tools:**

- WebSphere Studio
- WebSphere Page Designer

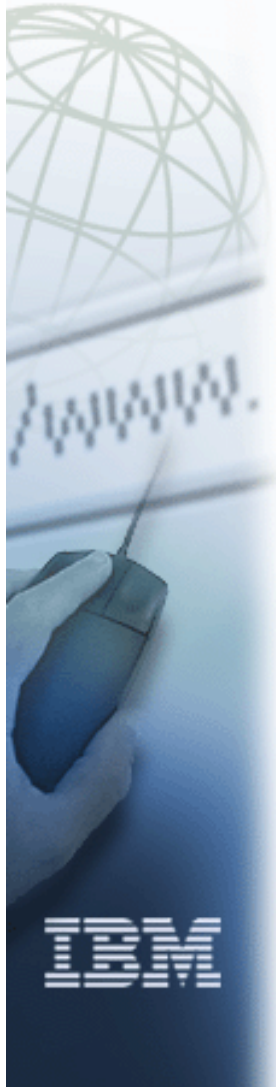
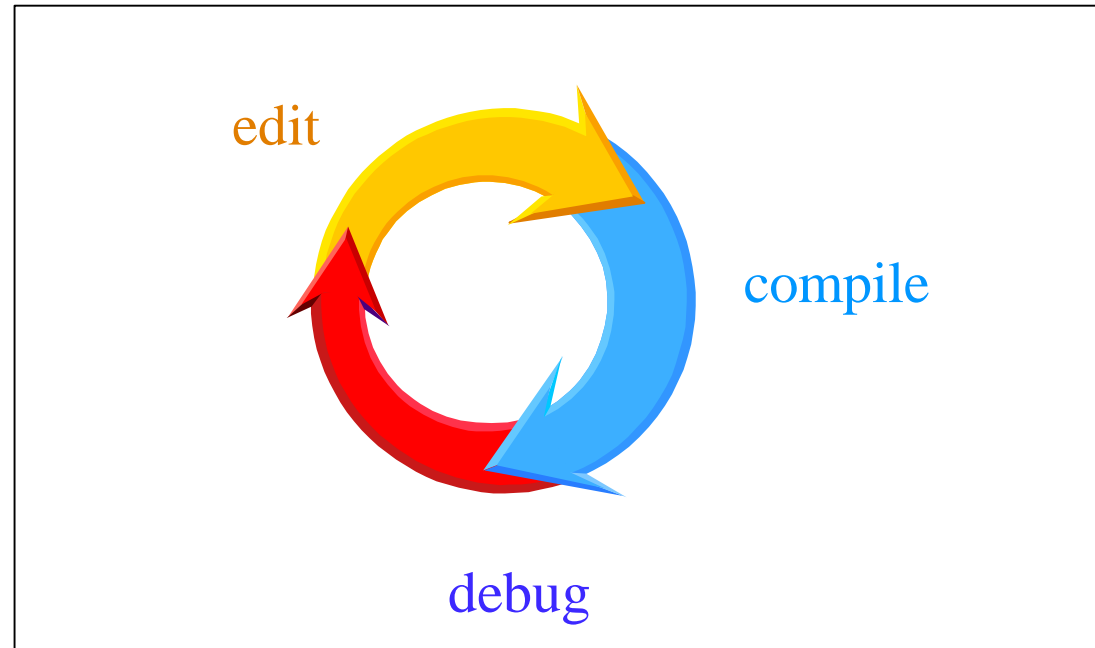




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# Rapid Application Development





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## VisualAge Java

VisualAge for Java is a professional Java IDE tool who has gained a lot of World-Wide award.

- VisualAge for Java Standard
- VisualAge for Java Professional
- VisualAge for Java Enterprise Edition





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## WebSphere Studio

- Studio Workbench
  - ▶ Manages Web projects, files, and link relationships
  - ▶ Team enabled - common view, check-in/out,
- Integrated Page Designer
  - ▶ Visual layout for dynamic JavaServer Pages (JSP)
  - ▶ Creates dynamic JSPs with the same ease of creating HTML
- Integrated Servlet Wizards

The IBM logo, consisting of the letters 'IBM' in a stylized, striped font.

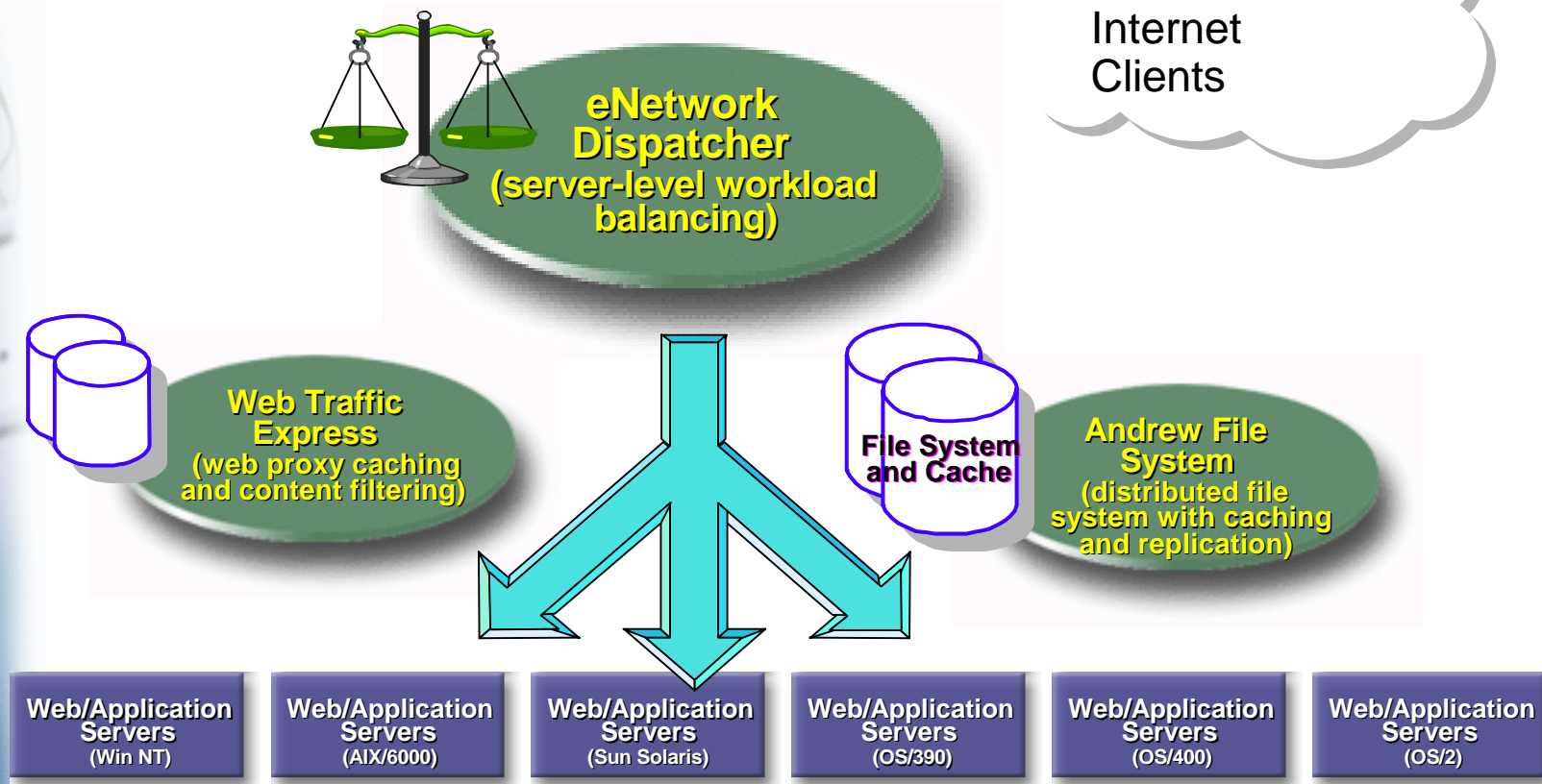
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# WebSphere Performance Pack

*Scaleability, Performance, and Availability*





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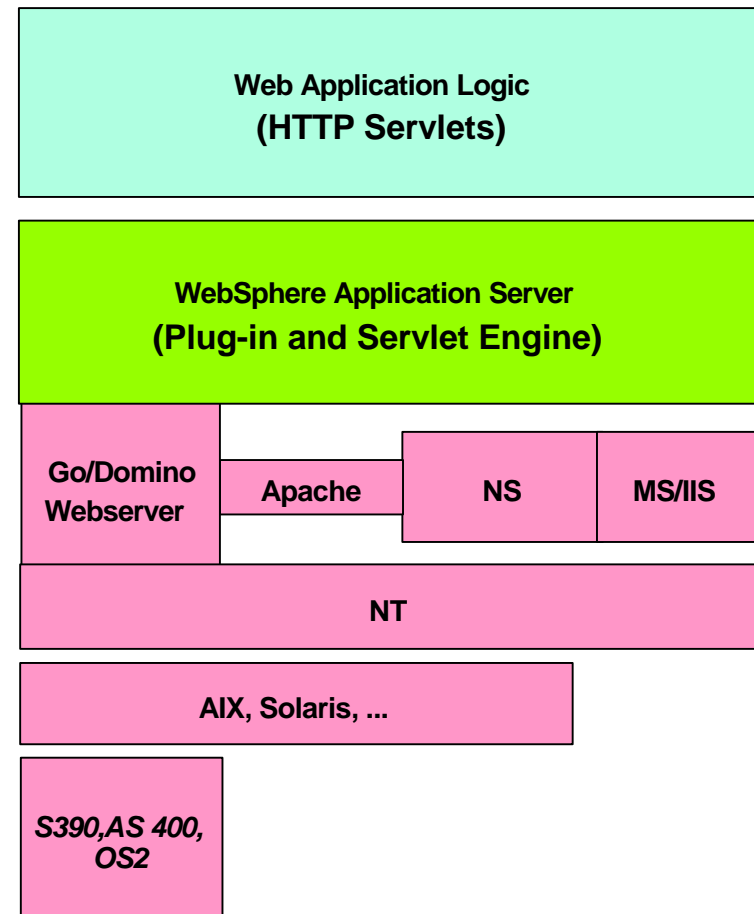
## WebSphere Application

- Servlet Engine
- Servlet V2.1
- JSP V1.0 & V0.91
- Session Management
- User Profile Management
- WLM Support
- XML Support
- EJB support
- CORBA support
- GUI Site Analysis Tools



# WebSphere Application Server Portability

- ▶ Support multiple popular WebServers
  - ▶ *Apache, Domino, Netscape, Microsoft IIS, Go Webserver*
- ▶ Support multiple platforms
  - *IBM AIX, MS Windows NT, SUN Solaris, OS/390, OS/400.*

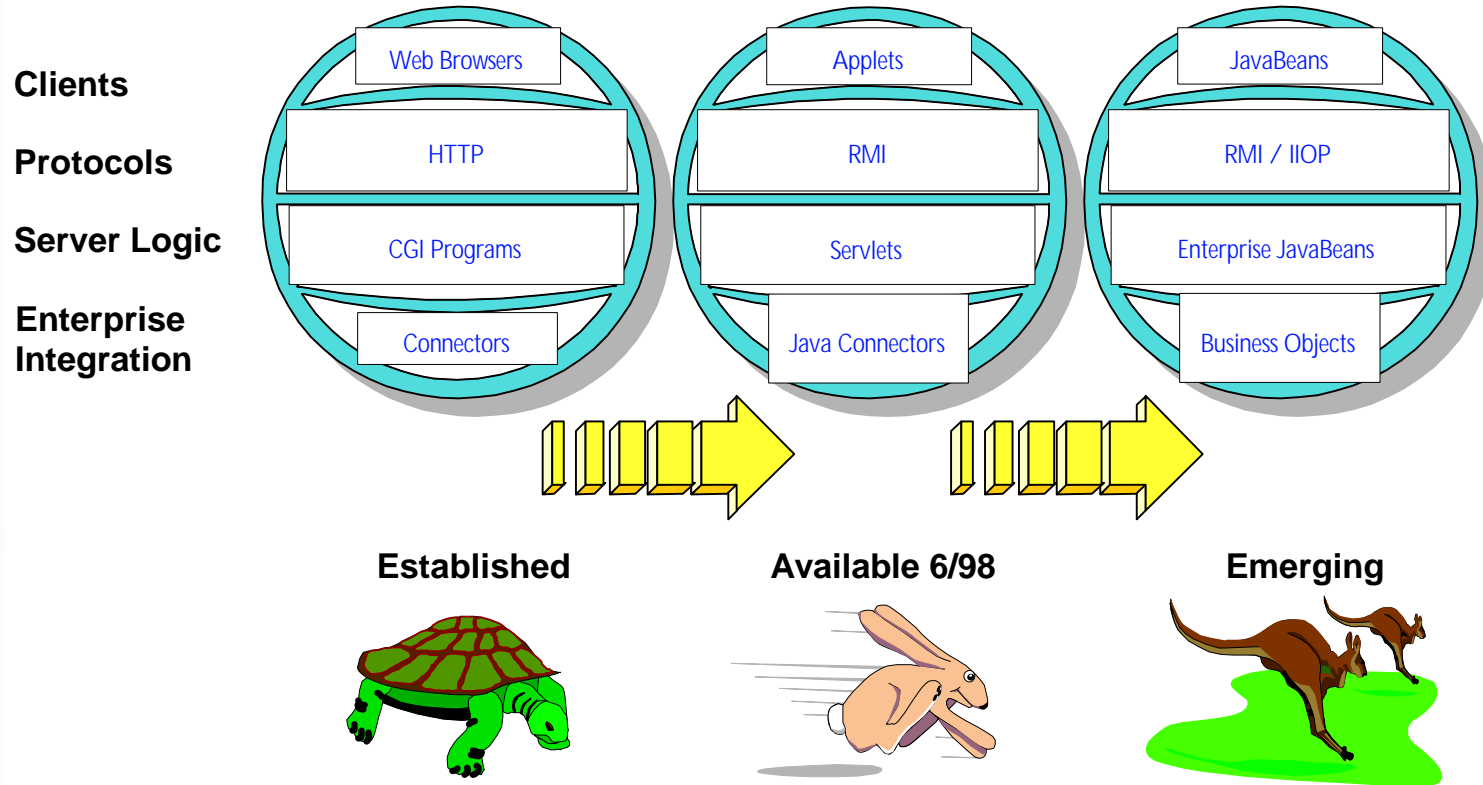






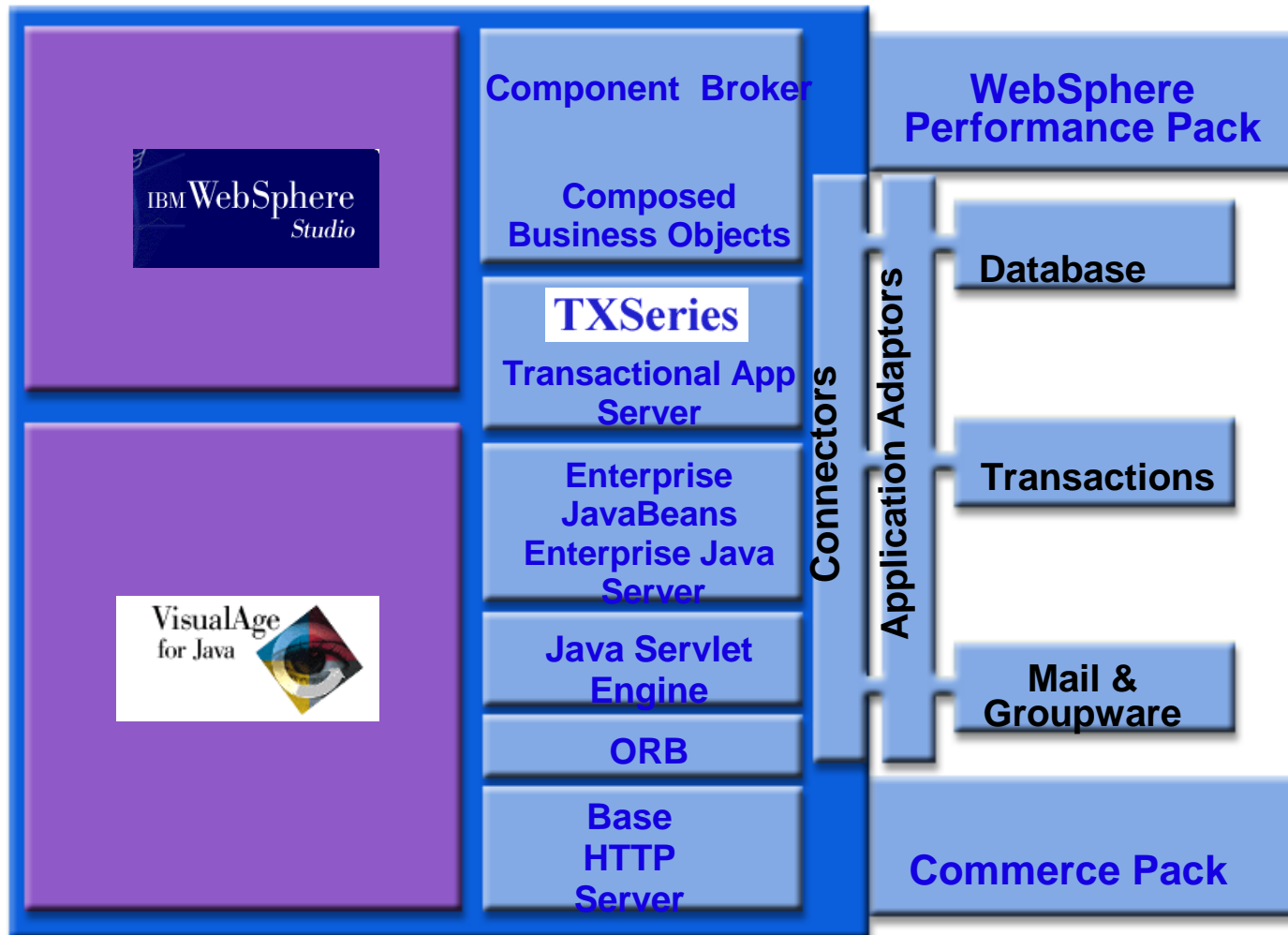
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# Web Application Runtime Evolution





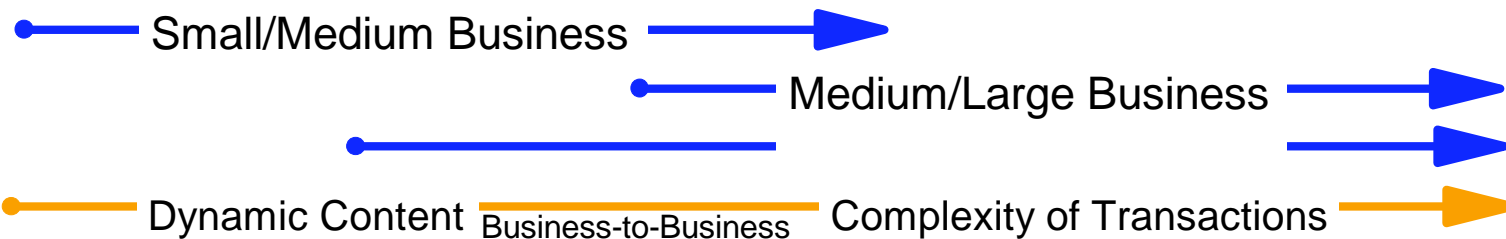
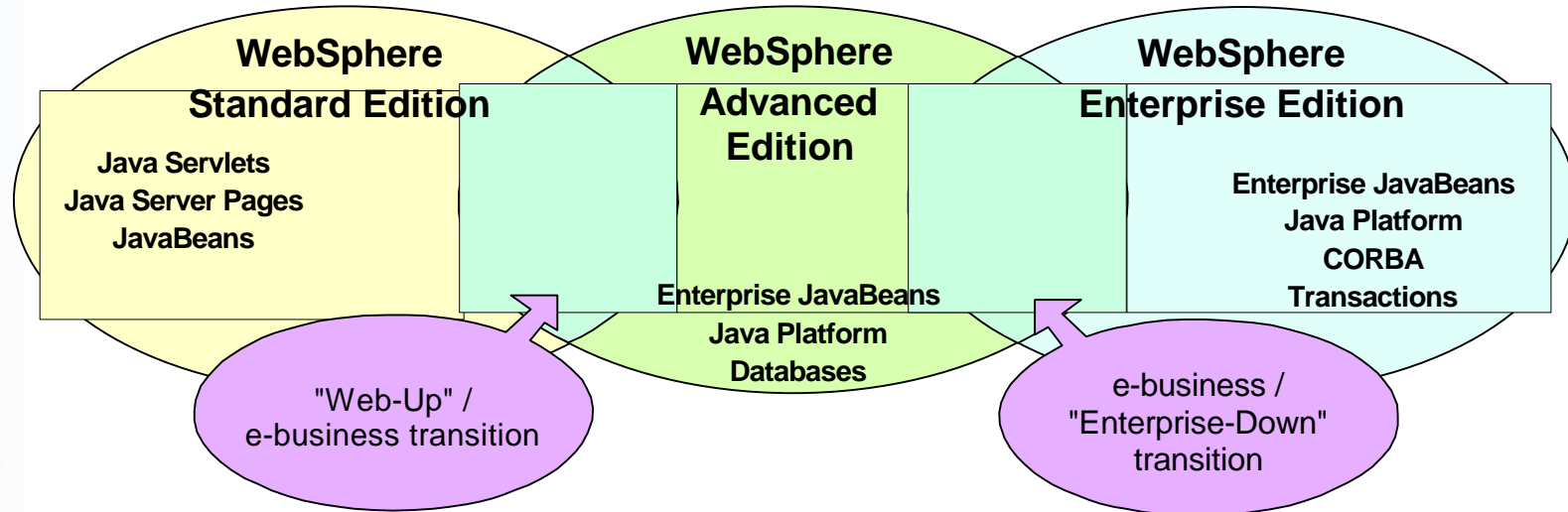
# WebSphere Application Server Enterprise Edition





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# WebSphere Market Analysis



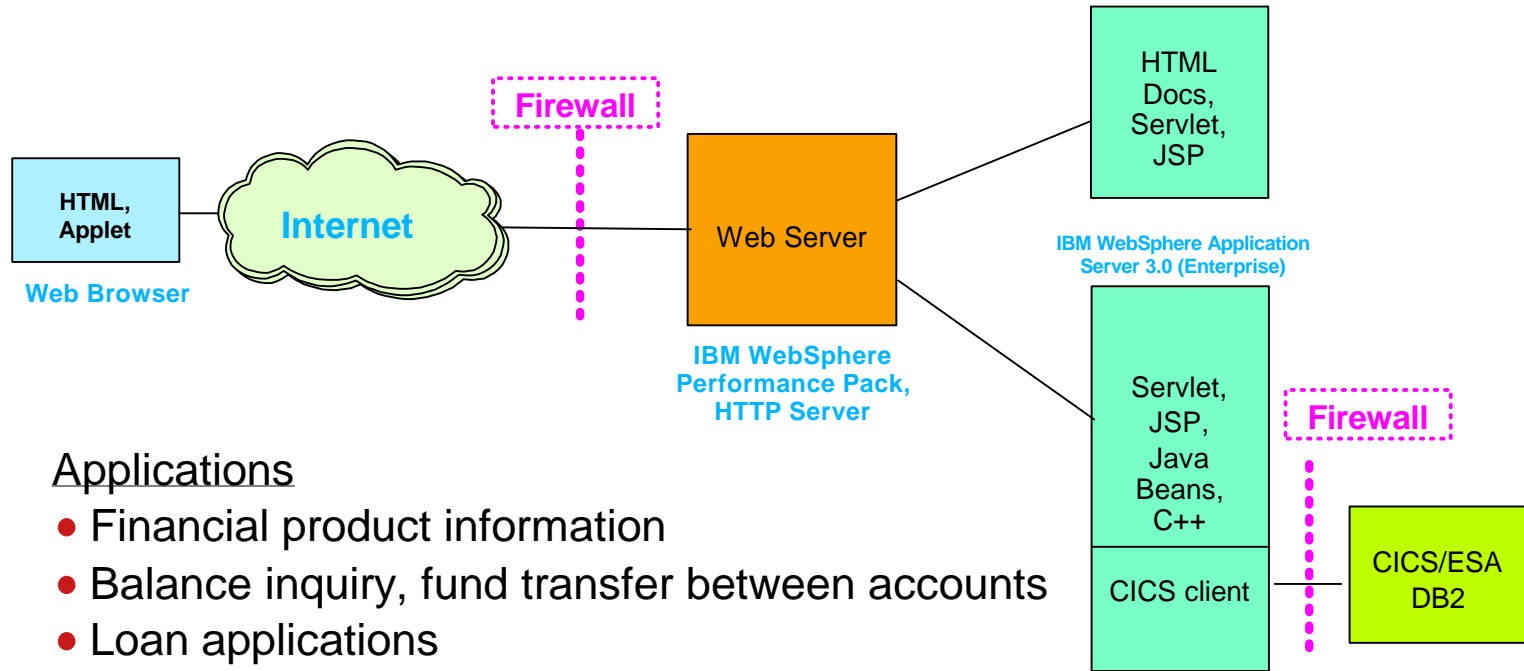
### Separation of Roles:

1. *Content Generation (Servlets)*
2. *Content Access (JavaBeans)*
3. *Content Display (Java Server Pages)*
4. *Advanced Content Access (Enterprise JavaBeans)*



# Software Architecture

## Internet/Intranet

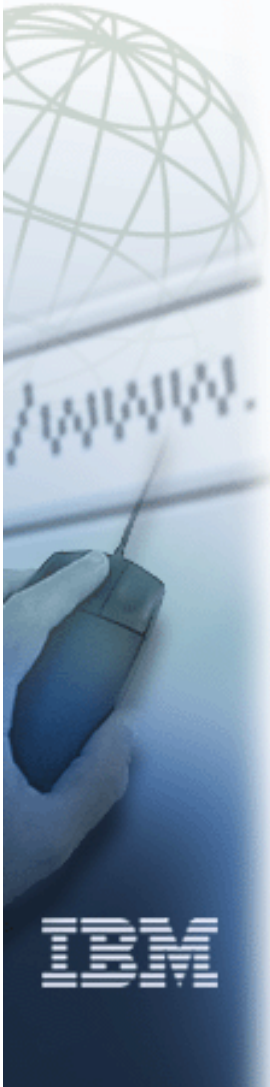


### Applications

- Financial product information
- Balance inquiry, fund transfer between accounts
- Loan applications
- Collecting customer demographic data

### Technical Features

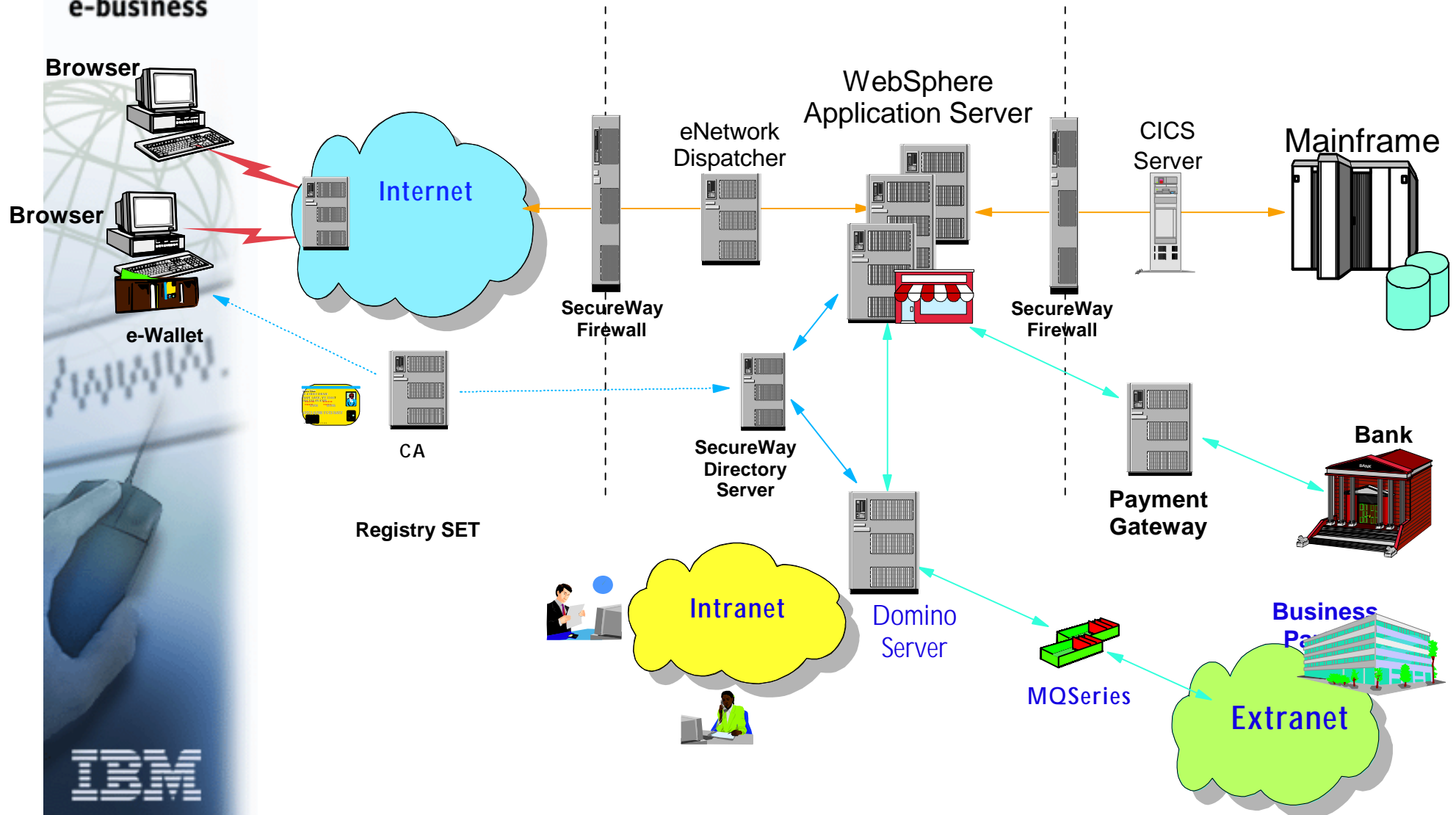
- Separation of Content and Application for load distribution
- Dual firewall for better security
- Servlet and JSP for dynamic content serving
- Java Beans and C++ for application logic





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# 3-tier Web Application



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## WebShpere Scalability

- Performance improve
  - TCP/IP level
  - Application level
- Security Control
  - FireWall
- System Management
  - Tivoli



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