



IBM Software Group

## WebSphere/Rational V6 Update

# WebSphere Application Server & Tools

Go to <http://JavaDevTools.com> for presentations, demos, tutorials and other resources

(a.k.a. This is the SAME website as <http://RationalCentral.com> & <http://WebSphereCentral.com>)

Name  
Title  
Company



# New Infocenter, including “Education Assistant”

- New Infocenter  
<http://ibm.com/software/webervers/appserv/infocenter.html>
- Education Assistant
  - Presentations narrated with sound
  - Tutorials
  - Reference information
- Installed with WAS and on ibm.com

WebSphere Application Server Library - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address <http://ibm.com/software/webervers/appserv/infocenter.html>

United States [change] Terms of use

Home Products Services & solutions Support & downloads My account

All software products Software > Application Servers > WebSphere Application Server >

**WebSphere Application Server** WebSphere software

Features and benefits System requirements Library Success stories News Trials and betas How to buy Events Training and certification Services Support Support for z/OS

**WebSphere Application Server**

V 6.0 V 5.1.x V 5.0.x V 4.0.x

WebSphere Application Server Version 6.0.x Information Center

Express - distributed platforms Show | Hide

WebSphere Application Server - distributed platforms Show | Hide

Network Deployment - distributed platforms Show | Hide

**Documentation - Information center format**  
[WebSphere Application Server Network Deployment, Version 6.0.x](#)  
[WebSphere Help System plug-in: Network Deployment](#)  
[WebSphere Help System plug-in: Javadoc](#)

**Documentation - Book format**  
[Migrating, coexisting, and interoperating](#) (PDF)  
[Installing your application serving environment](#) (PDF)  
[Administering applications and their environment](#) (PDF)  
[Setting up the application serving environment](#) (PDF)  
[Using the administrative clients](#) (PDF)  
[Securing applications and their environment](#) (PDF)  
[Developing and deploying applications](#) (PDF)  
[Troubleshooting and support](#) (PDF)

**Evaluation and overview**  
[Literature: Case studies, data sheets, and more](#)

**Tutorials, samples and demos**  
[IBM Education Assistant](#)  
[Accessing the Samples Gallery \(requires product installation\)](#)

**Release notes**  
[Release notes](#)

**Supported hardware and software**  
[Supported hardware and software](#)  
[Supported hardware](#)  
[Supported software](#)

**Papers and articles**  
[WebSphere Application Server zone on developerWorks](#)  
[WebSphere Developer Technical Journal](#)  
[White papers](#)  
[Links recommended by product support](#)

**Supplemental books**  
[WebSphere Redbooks Domain](#)

**Related software**  
 • WebSphere Application Server - Express  
 • WebSphere Application Server  
 • WebSphere Application Server Network Deployment  
 • WebSphere Application Server for iSeries  
 • WebSphere Application Server for z/OS  
 • WebSphere Extended Deployment  
 • Rational Application Developer for WebSphere Software  
 • Rational Web Developer for WebSphere Software  
 • Macromedia ColdFusion MX for WebSphere

**Related solutions**  
 • WebSphere Business Integration Server Foundation  
 • WebSphere Industry Solutions

**Resources**  
[WebSphere Help System \[?\]](#)

**Related libraries**  
[WebSphere Application Server for iSeries library](#)  
[WebSphere Application Server Express library](#)  
[IBM HTTP Server library](#)  
[WebSphere Application Server - Edge Components library](#)  
[WebSphere Extended Deployment library](#)  
[WebSphere Business Integration Server Foundation library](#)  
[WebSphere Business Integration Server Foundation for z/OS library](#)

# “Education Assistant” – RAD V6 and WAS V6

IBM Education Assistant - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Reload Home Search Favorites RSS Print Mail Web WAP Address Book

Address <http://www-306.ibm.com/software/info/education/assistant/noflash.shtml>

IBM

Home Products Services & solutions Support & downloads My account

## IBM Education Assistant

IBM Education Assistant

**Related links:**

- WebSphere training and technical enablement

**Software for the e-business on demand era**

IBM Education Assistant provides an organized collection of self-study educational materials that are simple, short, and focused. You can access content in several formats:

- Narrated Presentations - include audio explanation of the task or concept
- Show Me Demonstrations - illustrate how to complete a specific task
- Tutorials - step-by-step instructions to complete bigger or more complex tasks
- Additional resources - links to product documentation, Redbooks, and whitepapers

**How it works**

The IBM Education Assistant user interface allows you to select your configuration and specify how you want to display links to the educational material. Clicking on an education module link presents a navigational hierarchy of available educational content.


→ [Click here to go to the education modules](#)

# “Education Assistant” – RAD V6 and WAS V6


## IBM Education Assistant

### IBM® WebSphere® Application Server V6.0

#### Overview and new features

 Return to the IBM Education Assistant selection page

 [Icon key](#)

 New to WebSphere Application Server V6

[Architecture overview \(7 min\)](#)



869K

[Topology and terminology \(11 min\)](#)




907K

[Topology and terminology - Express \(5 min\)](#)



346K

 Overview and new features

[Main themes, product packaging and development tools \(11 min\)](#)





378K

[Overview of new features \(18 min\)](#)



508K


 Download the full content of this flow in zip format

 See all of the above topics in a list and provide feedback on this material


## IBM Education Assistant

### IBM® Rational® Application Developer V6.0

#### Overview and new features

 Return to the IBM Education Assistant selection page


 [Icon key](#)


 Overview and new features


[Rational Application V6 Overview and new features \(37 min\)](#)





789K


 Download the full content of this flow in zip format


 See all of the above topics in a list and provide feedback on this material


 Click here to expand or collapse a category and see education flowcharts


 A technical overview that provides background on a topic

 A guided demonstration that shows how to complete a specific task

 Step by step instructions to follow for completing a task

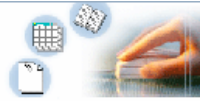
 Additional reading material

 Includes audio

 To view PDF format, get [Adobe Acrobat Reader](#)

# “Education Assistant” – RAD V6 – Modules

## IBM Education Assistant



Select your configuration:

IBM® Rational® Application Developer V6.0 ▼

Select how to display results:

Task based view ▼

Go

Click on links below to view educational material.

Application development	IBM Rational Application Developer V6
Getting started	<a href="#">Tool overview</a> <a href="#">Eclipse overview</a>
Installation and migration	<a href="#">Installation and migration</a>
J2EE™ application development	<a href="#">Developing Java™ and J2EE applications with Unified Markup Language (UML)</a> <a href="#">Analyzing coding practices in Java and J2EE applications</a> <a href="#">J2EE Web and EJB™ development</a>
Web application development	<a href="#">Developing Web applications (including J2EE Web applications)</a> <a href="#">Developing Web applications with JavaServer™ Faces (JSF)</a>
Portal application development	<a href="#">Developing portal applications</a>

Data application development	<a href="#">Developing applications with Service Data Objects (SDO)</a> <a href="#">Developing applications for databases</a>
XML application development	<a href="#">XML application development</a>
Web services applications	<a href="#">Developing Web services applications</a> <a href="#">Securing Web services applications</a> <a href="#">Testing Web services applications</a>
Test, debug and profile applications	<a href="#">Testing applications with WebSphere Application Server V6</a> <a href="#">Component testing applications</a> <a href="#">Debugging Java and J2EE applications</a> <a href="#">Profiling Java and J2EE applications</a>
Applying security	<a href="#">Applying J2EE security to EJBs and Web applications</a>



# “Education Assistant” – WAS V6 – Modules

## IBM Education Assistant

### Related links:

- WebSphere training and technical enablement

### Select your configuration:

IBM® WebSphere® Application Server V6.0

### Select how to display results:

Task based view

Go

Click on links below to view educational material.

Tasks	IBM WebSphere Application Server V6 and V6.0.1 for Distributed
Big picture and overview	<a href="#">Big picture, overview, product packaging, new V6 features, topology and terminology</a>
Installation and migration	<a href="#">Installation (WebSphere Application Server, IBM HTTP Server and Web server plug-in) and migration</a> <a href="#">WebSphere Application Server profiles</a>
Programming model	<a href="#">J2EE™ 1.4 programming model</a> <a href="#">JavaServer™ Faces (JSF) and Service Data Objects (SDO)</a> <a href="#">Web services</a> <a href="#">Programming model extensions (PME)</a>
System and application management	<a href="#">System, application and Web Server plug-in management</a>
Security	<a href="#">Security architecture and details</a>

Service integration technologies	<a href="#">Service integration technology, including messaging</a>
Scalability and high availability	<a href="#">Work load management and high availability details</a>
Other runtime functions	<a href="#">Class loader and JNDI naming</a> <a href="#">Transport Channel Service</a>
Performance	<a href="#">Performance, caches and tools</a>
Problem determination and serviceability	<a href="#">Problem determination - overview and details</a>



# New JavaDevTools.com Tutorial Demos and more...



**JavaDevTools.com**  
**"Navigating WebSphere, Rational, Workplace and other IBM Eclipse Based Tools..."**  
 Homepage for: RationalCentral.com, WebSphereCentral.com, WorkplaceDev.com, JavaSOA.com, Bill-Hahn.com

Disclaimer: This is a private web site intended for IBM Eclipse Tools enthusiasts. The materials on this site are offered as-is, no support, no warranties. This is not an official IBM website. To achieve the official IBM experience, please visit <http://ibm.com>.

**Welcome!** Rational Application Developer (RAD) is the foundation of the IBM Software Development Platform (SDP). The **links**, **demos** and **presentations** below can speed your navigation of IBM development tools. **Executives, managers, architects and developers** can use this site to learn more about Rational, WebSphere, Lotus and other IBM Eclipse-based development tools.

**Featured Demo**

- o [RAD V6 Introduction and Tour Demo](#)  
 This demonstration showcases RAD in action and concisely explains the breadth and depth of RAD V6. Executives, managers, architects and developers can use this overview and the referenced resources to quickly learn about the power and value of RAD V6.

**Most Popular Links**

- o [Presentations and Seminar Demos \(Downloads\)](#)
- o [Eclipse - Platform, Evolution, Ecosystem, and beyond \(Article\)](#)
- o [Rational - IBM Software Development Platform \(SDP\) Overview \(Whitepaper\)](#)
- o [WebSphere - IBM Enterprise Service Bus + WBI \(Whitepaper\)](#)
- o [Workplace - IBM Workplace Overview and Resources \(website\)](#)
- o [Portal DevZone - V5.0 Whitepaper and Portal V5.1 Enhancements](#)

**2005/03/24 Updates**

- o [RAD V6 Tutorial Demo Series has arrived!](#)

WebSphereCentral.com  
 RationalCentral.com  
 JavaDevTools.com

## o [RAD V6 Tutorial Demo Series has arrived!](#) (Getting Started Guide, Introduction and Tour)

Four scenarios with > 75 demos

- 1) End-2-End (Soup-to-nuts J2EE Build Scenarios)
- 2) Quick Success (Short Ad-hoc Build Scenarios, < 10 min each)
- 3) Banking and Finance (Web App/Site Scenario)
- 4) Financial Advisor Dashboard (Portal/Portlet Scenario)



# RAD V6 Tutorial Demo Series

## Executives and Managers

- *Watch and Learn:* Simply view the "Tutorial Demo" movies to see ROI in action...in just minutes!

## Architects and Developers

- *Watch and Do:* Use the "Tutorial Demo" movies to build the reference applications from scratch!

### #1 End-2-End Application

**End-2-End Page** (End2EndPage.jsp and .java)  
Call All

Type of Calls	Input-->Submit-->Results	Diagrams
<b>Web Services:</b> o Temperature (www.xmethods.net) o FastWeather (ServiceObjects.com)	<b>Temperature Web Service</b> FastWeather Web Service Zip Code: 11101 Cond: Clear License Key: WS14-PBJ1-K0Y3 City: Long Island City State: New York Temp°F: 28 Submit	Internet WebServiceProxy xmethods.net Temperature Web Service End2EndPage Internet WebServiceProxy www.ServiceObjects.com FastWeather Web Service End2EndPage
<b>XML:</b> o Create XML Doc o Receive XML Doc	<b>Create XML Doc</b> <b>Read XML Doc</b> Id: 123 Info: Hi XML! Submit XML: <?xml version="1.0" encoding="UTF-8"?> <E2E> Doc: <ID>123</ID> <INFO>Hi XML!</INFO> </E2E>	Create XML End2EndPage E2E XML Doc Read XML End2EndPage E2E XML Doc XML SDO Beans
<b>JSF:</b> Client-side data: o Table o Graphs	COUNTER COUNT CounterA 111 CounterB 200 Page 1 of 2   Jump to page: <input type="text"/> <b>Counter Usage</b> 	Counter Usage 

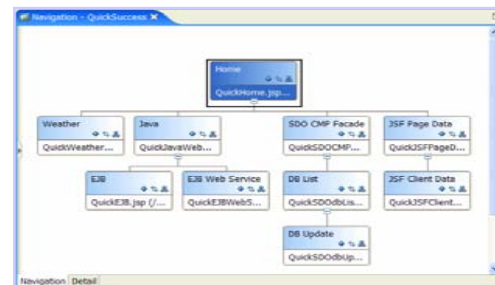
### #2 Quick Success Apps

Navigation - QuickSuccess Web Browser  
http://localhost:9080/QuickSuccess/faces/QuickHome.jsp

Welcome to the Quick Success Gallery

Home  
Weather  
Java  
EJB  
EJB Web Service  
SDO CMP Facade  
DB List  
JSF Page Data  
JSF Client Data

Portfolio Performance



### #3 Banking & Finance

Financial Advisor Dashboard

BankCustomers portfolio

Customer	First Name	Last Name	City	State	Zip	Work Phone	\$ Invested	\$ Projected	% Rate of Return
1	Arthur	Platinum	Long Island	NY	11101	773-123-1111	\$500,000.00	\$527,761.13	5.55%
2	Betty	Golden	Arlington	VA	22202	773-123-2222	\$500,000.00	\$527,568.79	5.51%
3	Charlie	Silver	Fort Lauderdale	FL	33303	773-123-3333	\$500,000.00	\$536,468.79	5.33%
4	Dennis	Copper	Burghill	OH	44404	773-123-4444	\$500,000.00	\$510,415.00	3.12%

Customer Portfolios Performance

Banking > Finance > Portfolio Management

Customer # 1

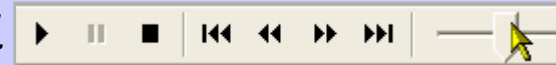
Analyze Customer Portfolio

Portfolio details for Arthur Platinum appear below  
Invested: \$500,000.00 Projected: \$527,761.13 Rate of return: 5.55%

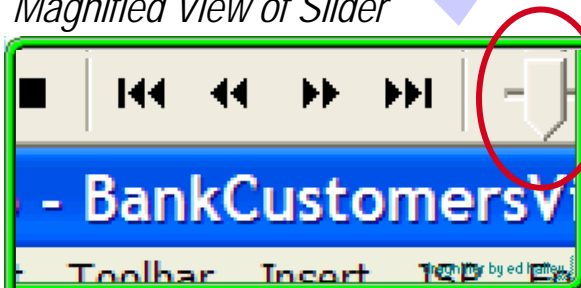
Portfolio	Allocation	Graphics	Market Simulation
Fund Asset #	Fund Name	% of Folio	\$ Invested Risk % Return \$ Projected
101	Blended - Income Plus Life Strategy	5%	\$25,000.00 1 2.124% \$25,531.00
102	Blended - Conservative Life Strategy	4%	\$20,000.00 2 2.240% \$20,849.00
103	Blended - Moderate Life Strategy	6%	\$30,000.00 3 6.374% \$31,612.30
104	Blended - Aggressive Life Strategy	7%	\$35,000.00 4 8.424% \$37,349.40
105	Money Market	5%	\$25,000.00 1 2.124% \$25,531.00
106	Bond - Stable Value	5%	\$25,000.00 1 2.123% \$25,518.79
107	Bond - Total Market	5%	\$25,000.00 2 8.372% \$26,592.71

# RAD V6 Tutorial Demo Series – How They Work...

- The embedded movie player has playback controls like a DVD player.
- The SLIDER allows accelerated forward/reverse playback control.



Magnified View of Slider



Web - Web Browser - IBM Rational Software Development Platform

File Edit Navigate Search Project Run Window Help

BankCustomersView.jsp BankPortfoliosView.jsp Web Browser X

http://localhost:9081/wps/myportal/ut/pl\_s7\_0\_A/7\_0\_407/.cmd/ad/.ar/1847068225/.pm/-/.c/6\_0\_3T3/.ce/7\_0\_40A/.p/5\_0\_3T1/.d/

BankCustomers portlet

### Bank Customers

Customers Portfolios Dashboard

Cust #	First Name	Last Name	Address	City	State	Zip	e-mail	Work Phone
1	Arthur	Platinum	123 Easy Street	Long Island	NY	11101	Cash.A.Plenty@mail.com	773-123-1111
2	Betsy	Golden	45 Plush Circle	Arlington	VA	22202	Gold.P.Lated@mail.com	773-123-2222
3	Charlie	Silver	67 Humble Avenue	Fort Lauderdale	FL	33303	Simply.E.Nuff@mail.com	773-123-3333
4	Denise	Copper	89 Trailer Park Drive	Burghill	OH	44404	Always.N.Debt@mail.com	773-123-4444

BankPortfolios portlet

### Bank Portfolio Management

Customer #

Analyze Customer Portfolio

Portfolio Allocation Graphics Market Simulation

Fund Acct #	Fund Name	% of Folio	\$ Invested	Risk	% Return	\$ Projected
301	Blended - Income Plus Life Strategy	5%	\$25,000.00	1	2.125%	\$25,531.25
302	Blended - Conservative Life Strategy	5%	\$25,000.00	2	4.25%	\$26,062.50
303	Blended - Moderate Life Strategy	5%	\$25,000.00	3	6.375%	\$26,593.75
304	Blended - Aggressive Life Strategy	5%	\$25,000.00	4	8.425%	\$27,106.25
305	Money Market	5%	\$25,000.00	1	2.125%	\$25,531.25
306	Bond - Stable Value	10%	\$50,000.00	1	2.125%	\$51,062.50

Paused 00:59/01:06

## End-2-End Application

Demo

"Accelerate development...  
increase productivity...  
maximize ROI !\$! "

## Iterative Development Demos

➔ Model, Build, Test, Debug, Deploy

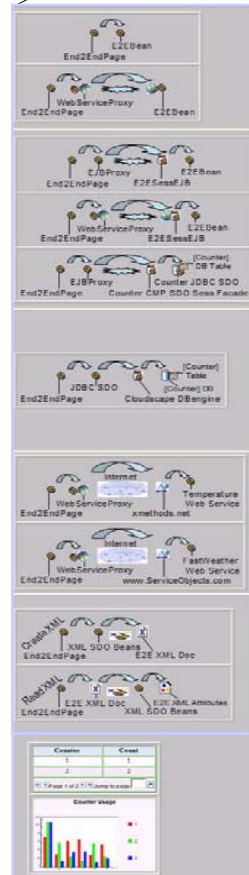
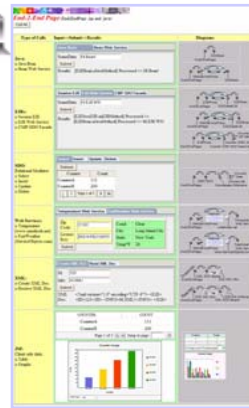
- UML Model Visualizations
- Dynamic Development
- Automated Deployment

## J2EE+ Builder Demos

➔ Includes JSF, SDO, Web Services

- Java
- Databases
- Web Services
- Drag-n-Drop GUI

#1

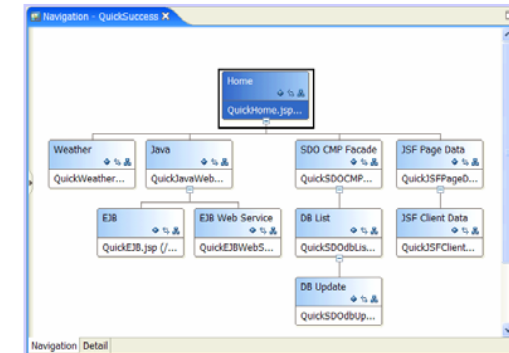
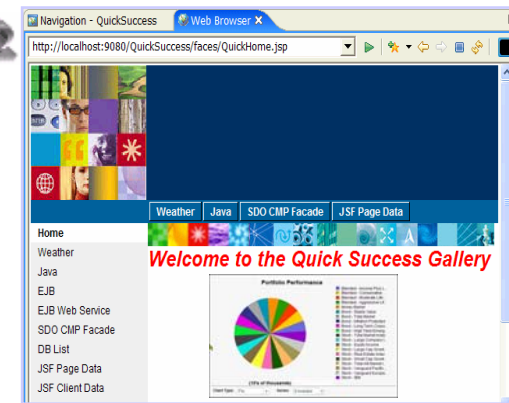


## Quick Success Applications

Demo

- Easy build scenarios
- You watch or build
- < 10 minutes each

#2

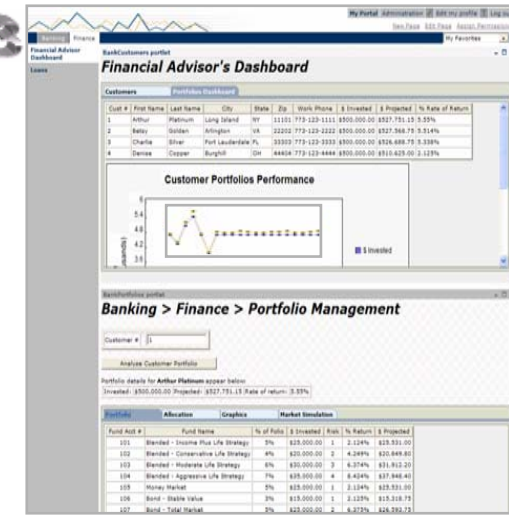


## Banking & Finance Web/Portal Applications

Demo

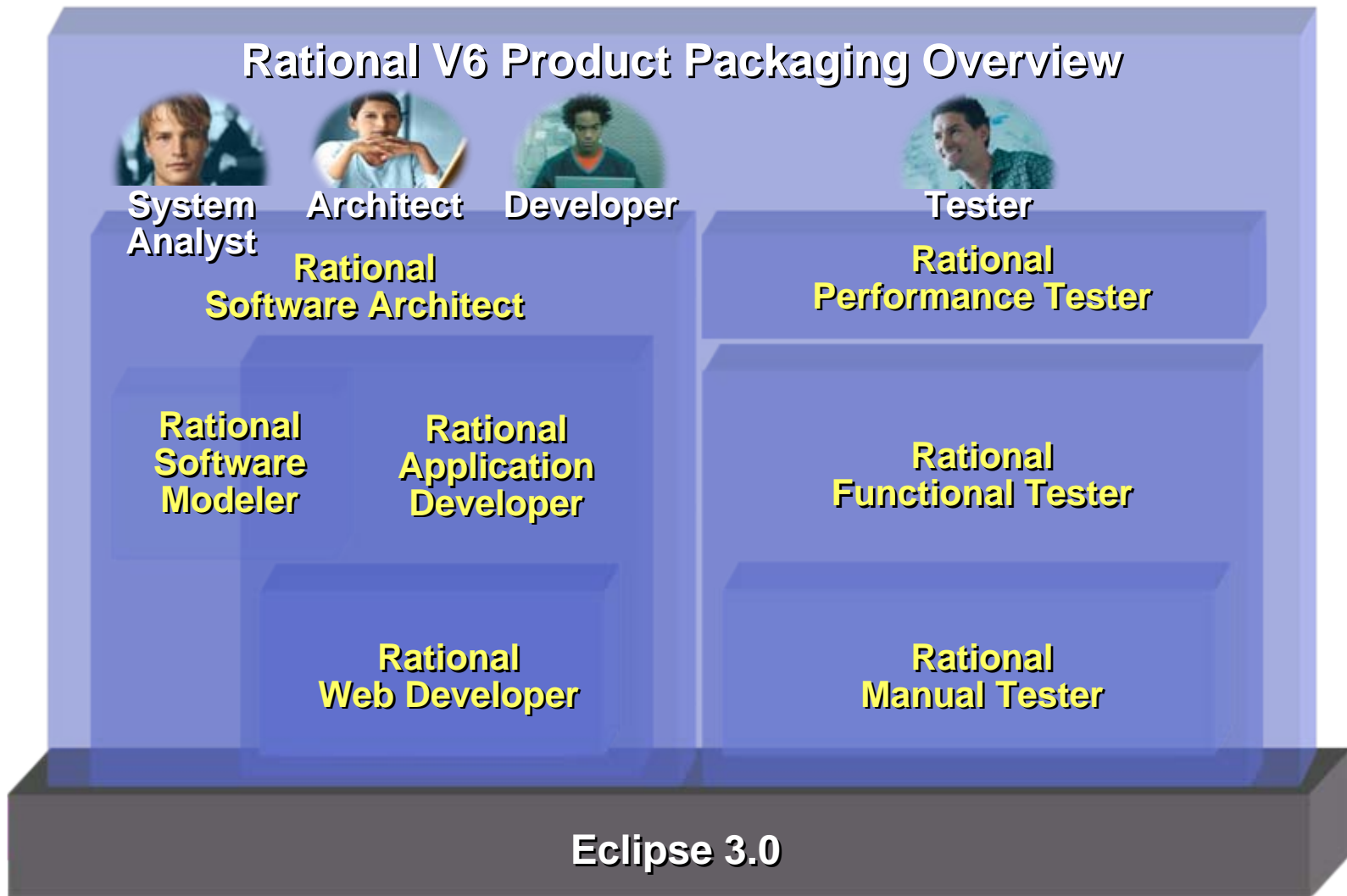
- Banking Accounts
- Portfolio Management
- Financial Advisor Dashboard

#3





# V6 Packaging Overview – Design, Construction and Software Quality Testing



# V6 Design and construction tools

- UML 2.0
- Pattern/Transform Authoring
- Reusable Asset Browser

- UML Language Transforms
- Structural Review & Control
- C/C++ Development Tools

**IBM Rational  
Software  
Modeler**

**IBM Rational  
Application Developer**

**IBM Rational  
Web Developer**

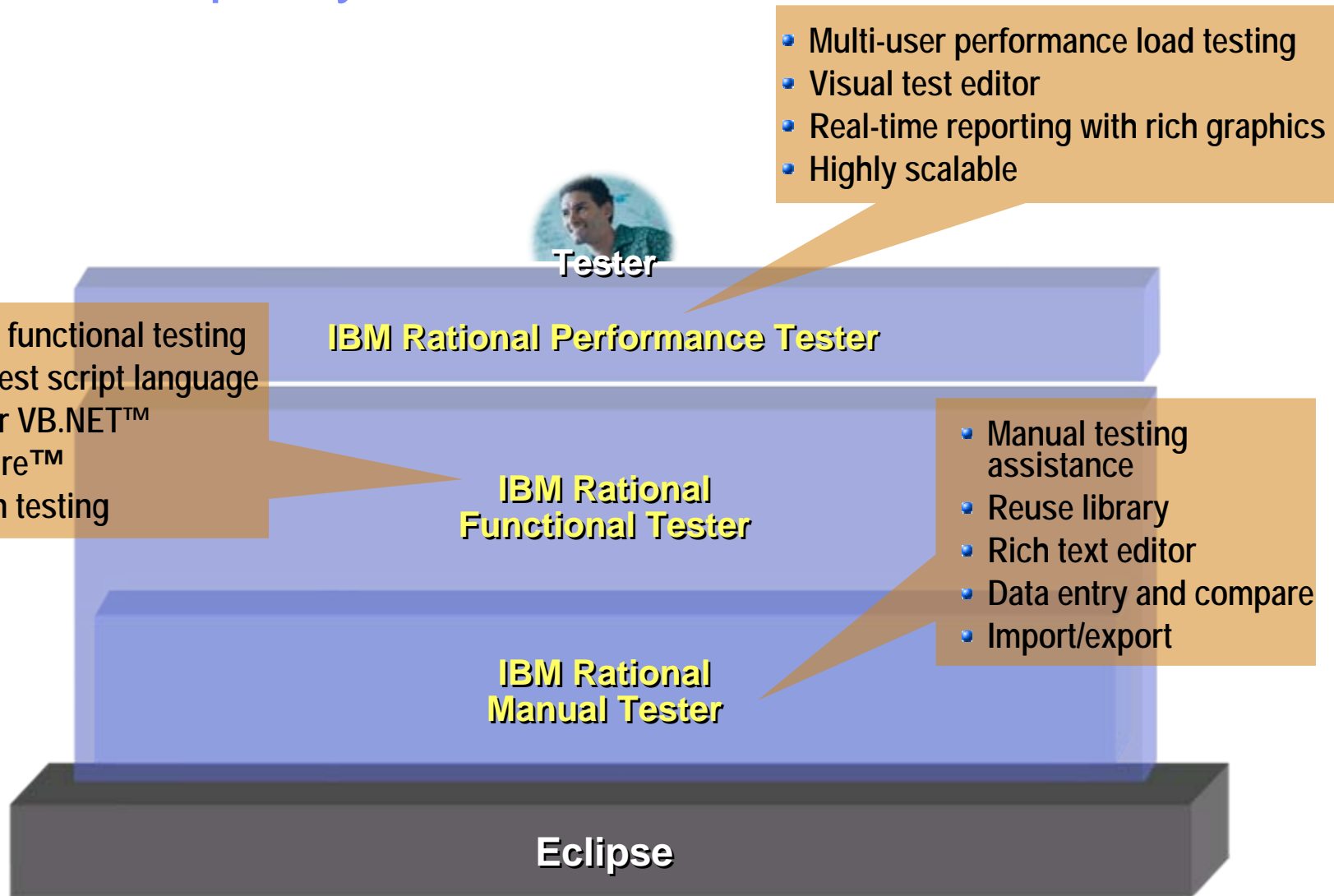
**Eclipse**

- Web Development
- Web Services Development
- Rich Client Development
- XML & Database Tools
- Java Generation Tools
- Unit Test

- J2EE/EJB & Portal Development
- Component Testing
- Code Review & Runtime Analysis
- UML Visual Editors
- Configuration Management



# V6 Software quality tools



## V6 Highlights - Areas of Innovation - Enhancements and New Capabilities

### ■ Lifecycle Integrations (Enhanced Rational/WebSphere Eclipse based Integrations)

- Requirements Explorer View
- Model Explorer View
- ClearCase Views for managing changing artifacts
- ClearQuest Views for managing collaborative activities
- Testing Tools Views

### ■ RAD/RSA Design & Construction Tooling Enhancements

- JSF, SDO, Web Services, etc.
- J2EE 1.4/1.3/1.2 and WAS V6.x/V5.x
- Portal/Portlet Integration
- Enhanced Unit/Component Testing
- Code Review and Runtime Analysis for Profiling
- Built-in Coder-friendly UML Visualizations for Class/Sequence diagrams
- Crystal Reports
- And much more...

### ■ New UML2 Engine

- New code base
- End-2-End UML2 modeling
- Easier GUI development
- Transformations between models and generating Java/C/C++ code

### ■ Software Quality Testing Tools Enhancements (Manual, Functional and Performance Testing)



## V6 Highlights - Areas of Innovation - Enhancements and New Capabilities

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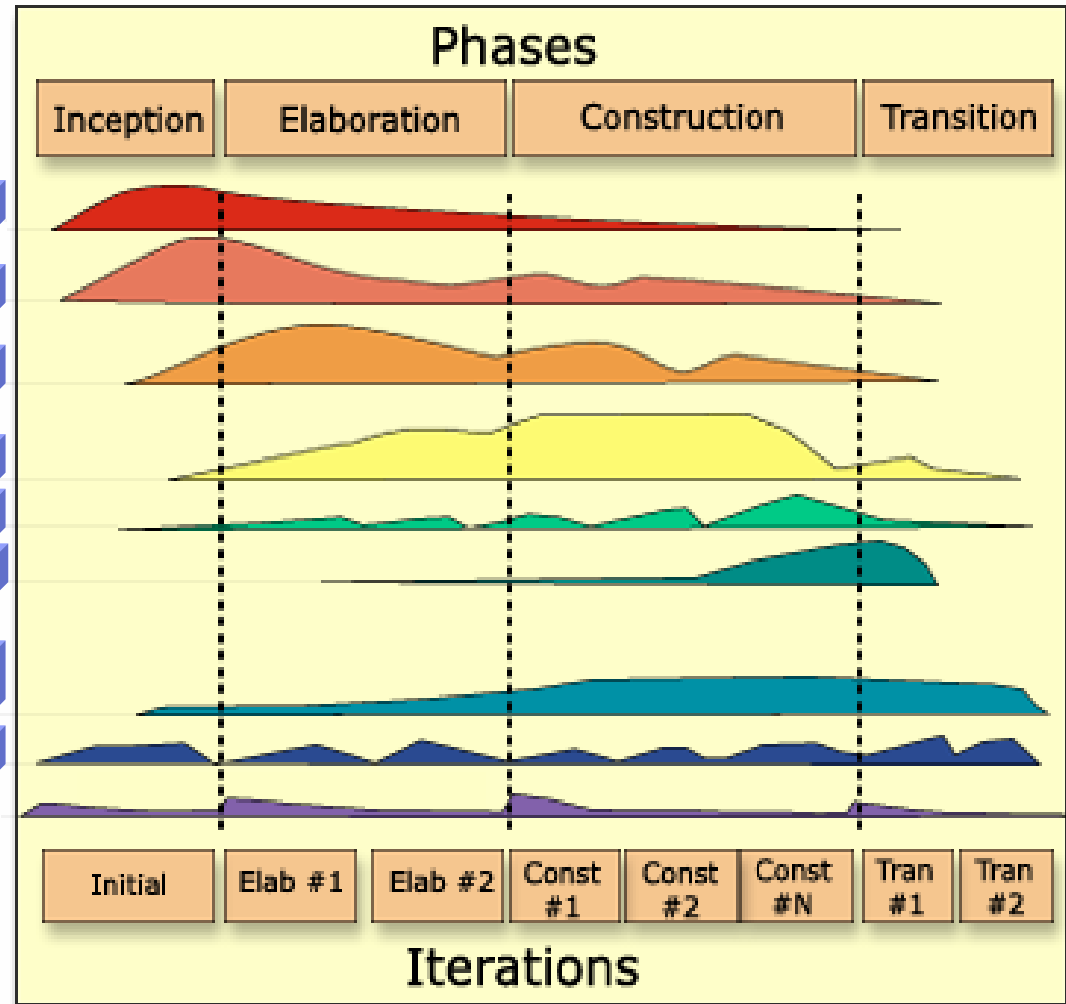
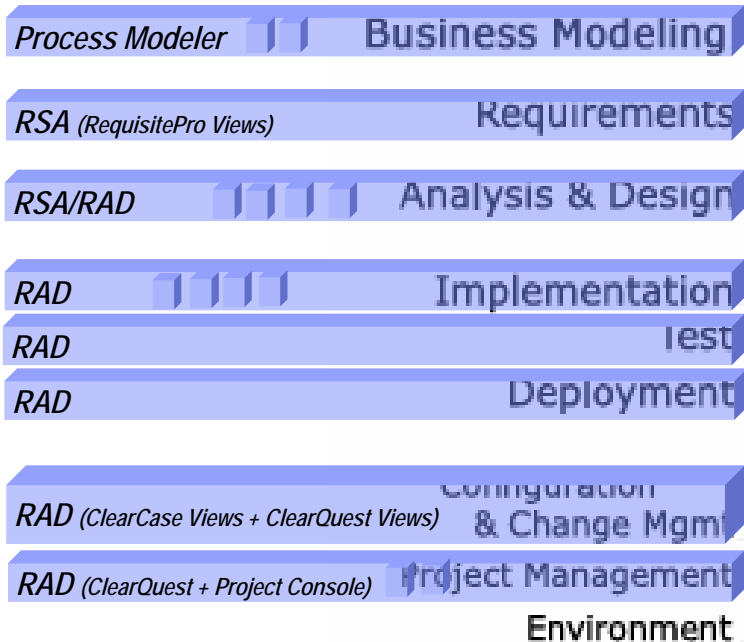
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### ■ Software Quality Testing Tools Enhancements (Manual, Functional and Performance Testing)



# Lifecycle Tools – Across The Development Disciplines

## Disciplines



## Simplified Packaging and Names

V4 & V5	V6
WSAD	RAD (Rational App Developer)
Rose XDE	RSM (Rational SW Modeler)
WSAD + XDE	RSA (Rational SW Architect)

# Lifecycle Tools are Integrated as Views in V6 <sup>1</sup>

## Disciplines

Business Modeling

Requirements

Analysis &amp; Design

Implementation

Test

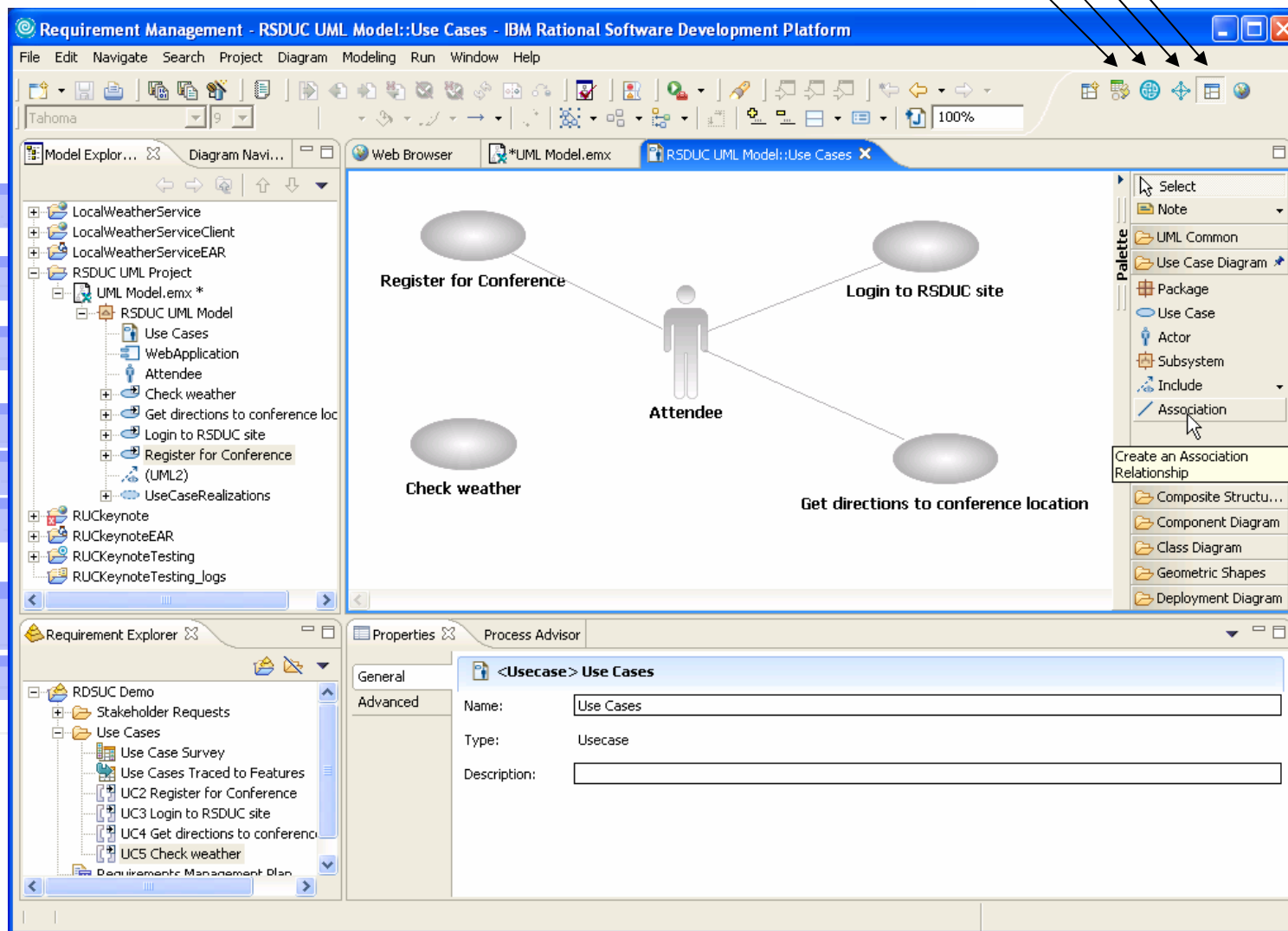
Deployment

Configuration

&amp; Change Mgmt

Project Management

Environment



## V6 Highlights - Areas of Innovation - Enhancements and New Capabilities

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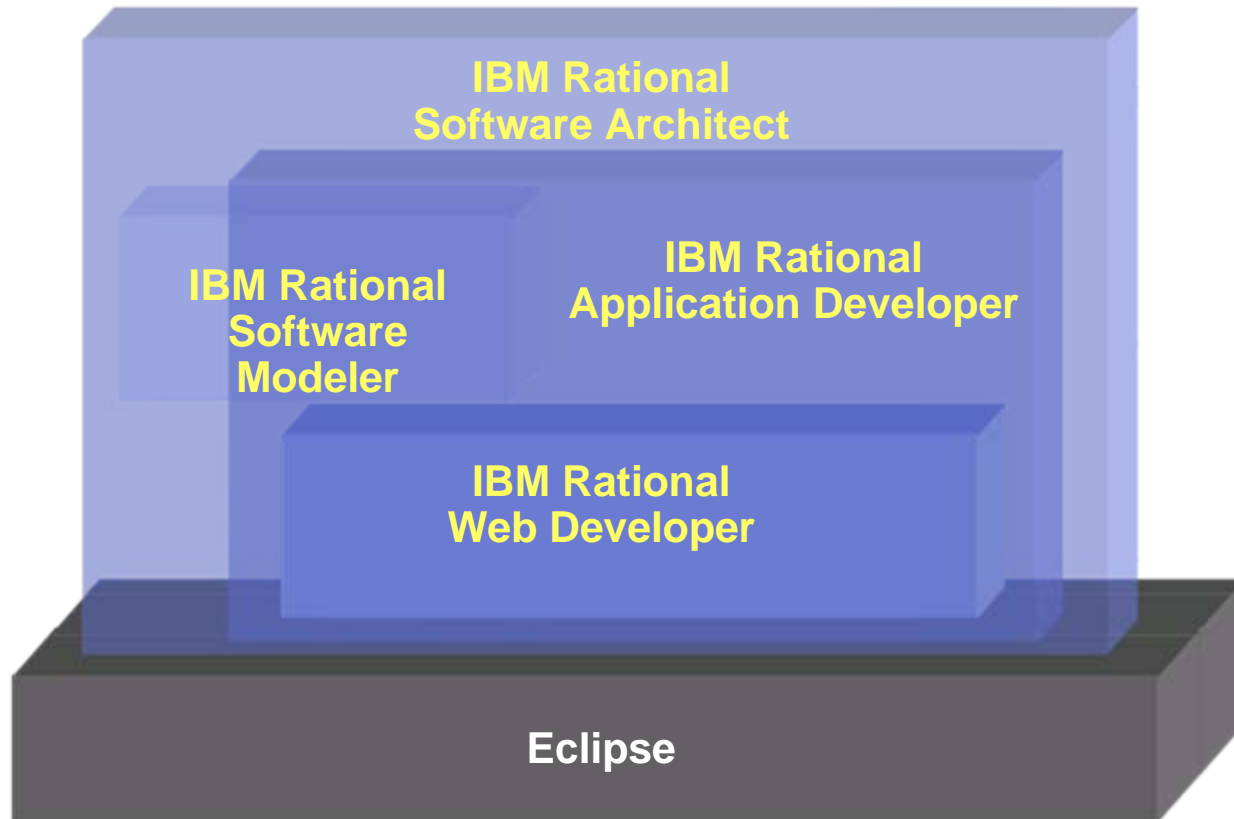
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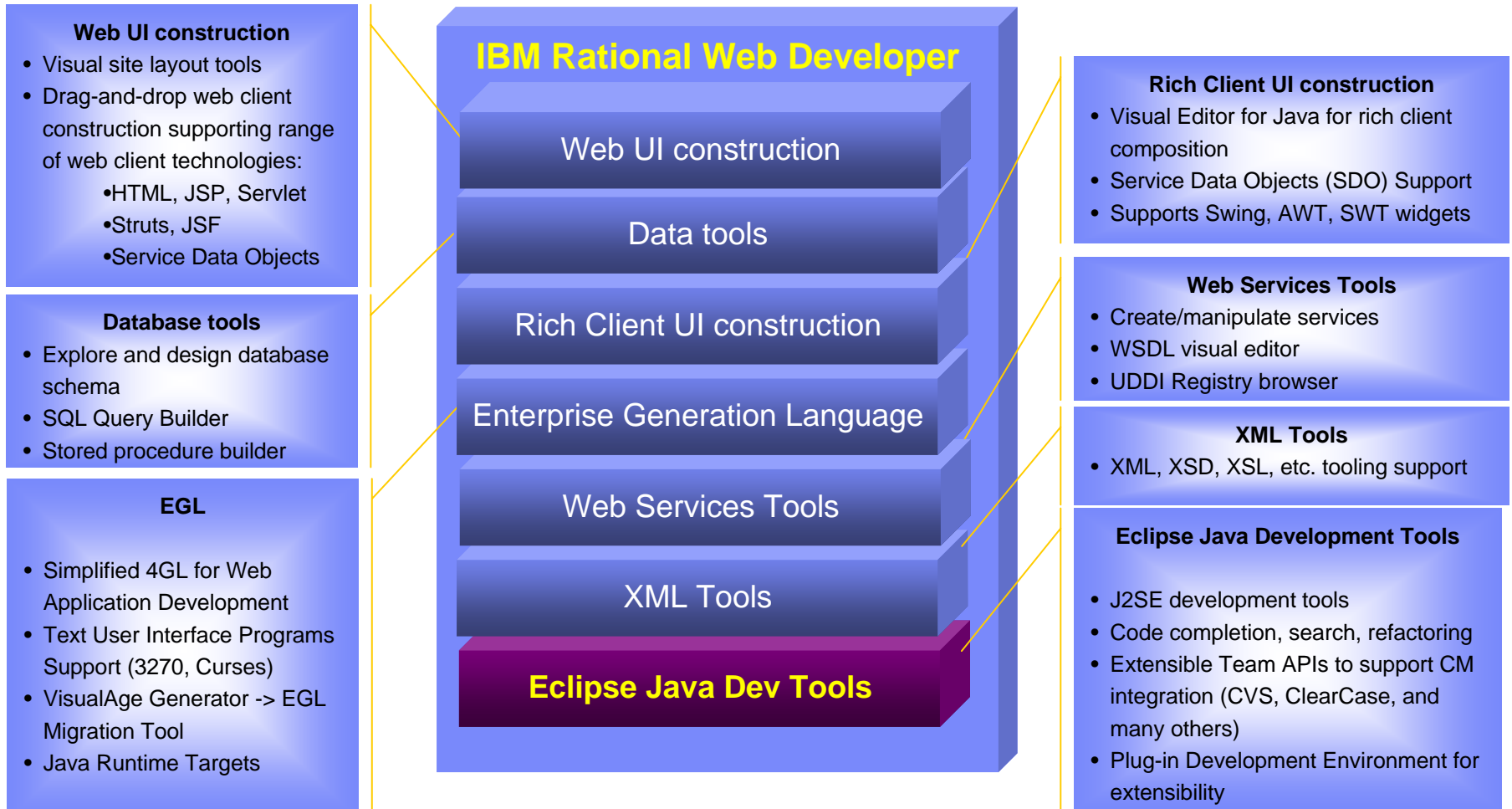
# Design and construction tools



# IBM Rational Web Developer

*Follow on to WebSphere Studio Site Developer*

*New Rapid Application Development capabilities focused on ease of use*



# IBM Rational Application Developer

*Follow on to WebSphere Studio Application Developer*

## J2EE/EJB Tooling

- J2EE construction tools
- Supports WebSphere and WebLogic
- Supports J2EE 1.3 and 1.4
- Rapid Deployment for WAS v6
- Integrated WAS test environments
- O/R mapping

## Code Analysis Tools

- Both static source code analysis and dynamic runtime analysis
- Source code analysis for rule violation detection: Globalization, J2EE/J2SE Best Practices, Private API Usage, Performance
- Sequence diagram runtime trace with performance, thread and code coverage annotation
- Advanced memory leak detection
- Remote data collection across multiple servers
- User-defined run-time probes
- Interactive reports and metrics

## IBM Rational Application Developer

Component/Unit Test

J2EE/EJB Tooling

Portal/Portlet Design Tools

Code Analysis Tools

UML Visual Editors

Rational Web Developer

RUP Configuration for J2EE

ClearCase LT

## Component/Unit Test

- JUnit-based testing of Java components, EJBs and Web Services
- Test prioritization recommendation based on code analysis
- Automated test case generation through usage of test patterns
- Datapool editor for data-driven testing
- Optimized unit testing through a set of metrics in the test creation wizard
- Test creation wizard offers a set of test patterns to automatically generate test

## Portal/Portlet Design Tools

- Visual Portal site and page layout tools
- Visual Portlet layout and preview
- Integrated Portal test environment

## UML Visual Editors

- Class diagrams for Java/EJB structure
- Sequence diagrams for method body visualization
- IDEF1X/IE diagrams for Database and XML schema
- Dynamic topic diagrams
- Javadoc integration
- Visual refactoring

# V6 – Every Top 10 Category Is Enhanced

## Adaptable - Eclipse-based Workbench

**#1** Customizable **Perspectives** and **Views** support **roles-based** tools

## Automated - IDE Infrastructure (Code, Build, Test, Debug, Deploy)

**#2** **Dynamic build engine** incrementally updates and hot-deploys (on-the-fly, while you type)

**#3** **Testing and Debugging** for Java, Web Services, XML, database and EJB

## Accelerated - End-2-End Builders

**#4** Java language coding tools



**#5** Web App Builders: Pages, Sites, Portals, Portlets, Struts, JavaServer Faces



**#6** Web Services and XML Builders



**#7** Database Builders



**#8** J2EE and EJB Builders



**#9** SOA workflow builders (Service Oriented Architecture)



**#10** Legacy/Enterprise development, integration and Web Services tools



# Eclipse V3 enhancements

- **More responsive User Interface**
  - From enhanced concurrency support and asynchronous task management
- **New look and feel**
  - Based on user feedback
- **Reduced User Interface complexity through progressive disclosure**
  - Capabilities support enables a tool to filter the views, wizards, actions, etc available initially available to use
  - At trigger points more advanced function is revealed
  - Users can adjust the amount of initial function  
Teams can share preference settings
  - Expanded user settings/preferences support with multiple scopes
- **Most existing V2.x Eclipse tools work with Eclipse 3.x and RAD V6**
  - High degree of binary compatibility between V2.x Eclipse plug-ins and Eclipse V3-based products
  - Please consult your vendor to determine the status of the tools you use



# J2EE 1.4/1.3/1.2

- **Web Services and XML support**

- Standards / Portability - XML Schema definitions for all deployment descriptors
- JAX-P 1.2 - New properties for XML parsers
- JAX-R - XML registry API
- JAX-RPC - APIs for representing WSDL-based services as RPCs in Java (&vice-versa)
- JSR 109 - Web services programming and deployment model
- SAAJ 1.1 - SOAP Attachments API for Java

- **Other**

- Servlet 2.4
- JSP 2.0
- Extensible deployment descriptors
- Request/response listeners
- Expression Language
- Simple Tag Extension

- **JDBC 3.0**

- Meta data and cursor support

- **Messaging**

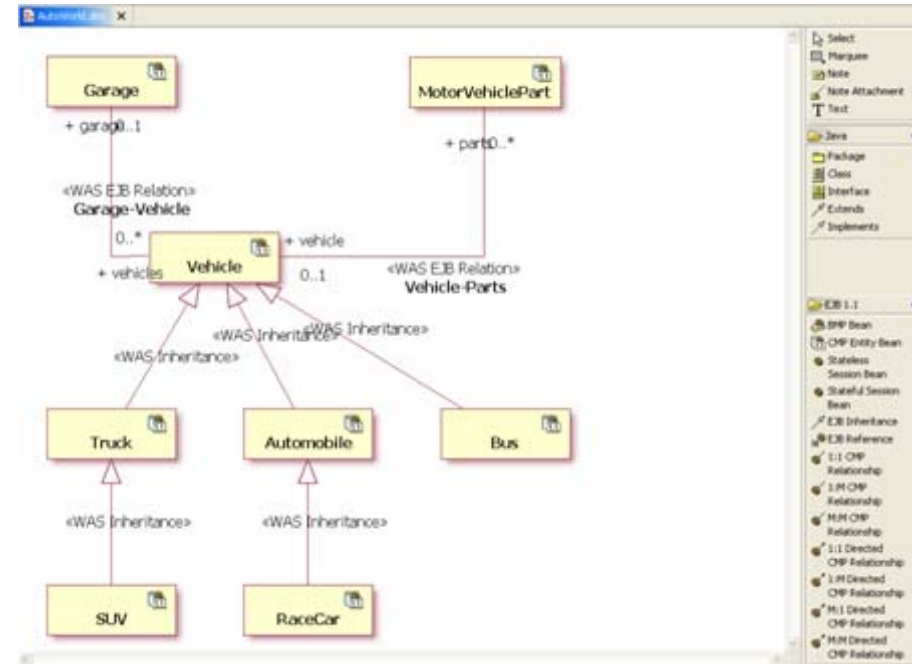
- EJB 2.1
- Typed message beans (used for any inbound JCA including pluggable JMS provider)
- Timer service Web service end-point support





# UML 2 Diagrams - Visually Browse/Edit

- **Expanded UML editing**
  - UML class diagrams for Java, EJB
  - IDEF1X, and IE editing for data objects
  - Edit/refactor through diagrams
- **Browse, Navigate and Query through diagrams**
  - Topic diagrams for automatic diagram creation
  - UML 2.0 interaction diagrams for visualizing method bodies
- **Javadoc integration for diagrams**
  - Improved printing support
- **Usability and workflow improvements**
  - Assisted diagramming
  - Browse diagrams
  - In-diagram editing
  - Diagram Explorer
- **Low overhead way of adopting UML and visual development**



# J2EE Development *Automated by JSF*

Input → Process → Output

## • Input

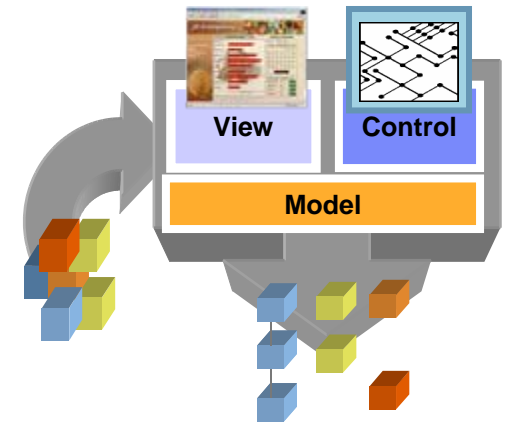
- Constructing web page forms, formatting, validation, etc.
- GUI widget richness
- Calling appropriate "Action" when button pressed, etc.
- Passing data to business logic

## • Processing

- Integrating to web services, databases, backends, biz logic, etc.
- Maintaining user session and application state information
- MVC layering, page flow and business logic modularity

## • Output

- Forwarding control to results screen/page
- Displaying data, GUI controls, formatting, etc.



# Developing Richer Thin Client Applications, More Quickly

- Drag-n-drop development of J2EE applications (*No Coding Required*)

The screenshot displays the IBM WebSphere Portal interface within a Microsoft Internet Explorer browser. The browser's address bar shows the URL <http://yclidesktop.raleigh.ibm.com/wps/myportal/.scr/LoggedInIn>. The portal features a navigation bar with links such as 'Home', 'Banking Account', 'Portfolio', 'Mortgage/Loans', 'Bill Pay', and 'ExtremePlace'. The main content area is divided into several sections:

- Accounts:** A sidebar menu with links for 'Order Checks', 'Payment', and 'Help'.
- Banking Accounts:** A table displaying account information.
- Account Details:** A section for 'Account Number: 96666' showing a list of transactions.
- Transfer Funds:** A form titled 'Make Transfer' with fields for 'From', 'To', and 'Amount'.
- Expense Allocation:** A pie chart showing the distribution of expenses across various categories.

Callouts highlight specific features:

- Database Query:** Points to the 'Accounts' sidebar.
- Web Service:** Points to the 'Make Transfer' form.
- Tabbed Panels:** Points to the 'Banking Account' tab in the navigation bar.
- Graphing Controls:** Points to the 'Expense Allocation' pie chart.
- Spreadsheet Control:** Points to the 'Account Details' table.

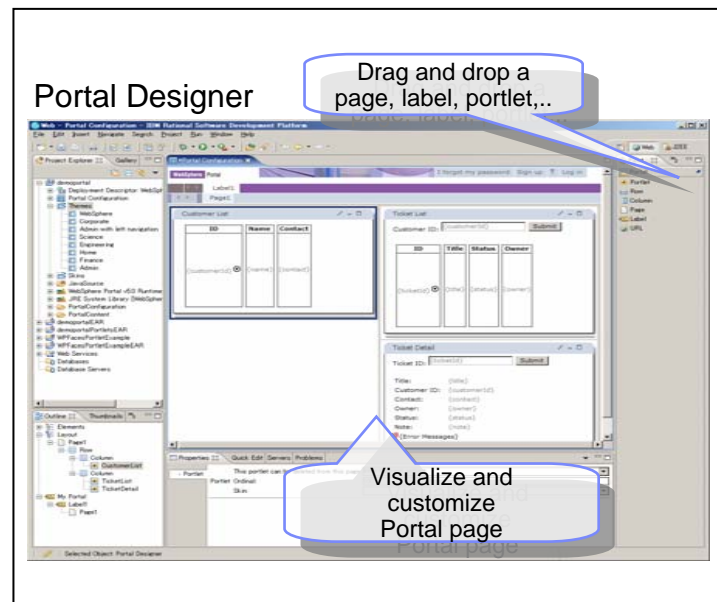
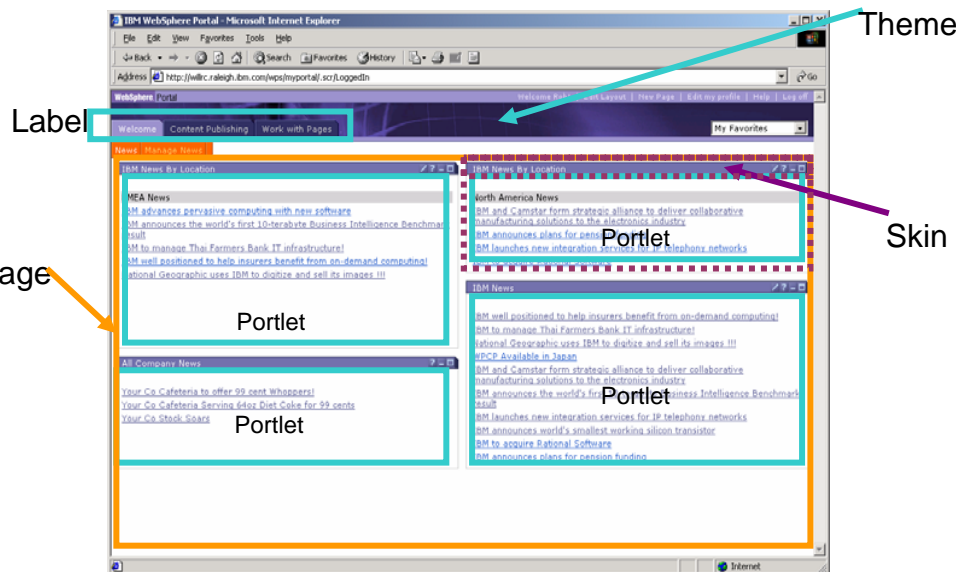
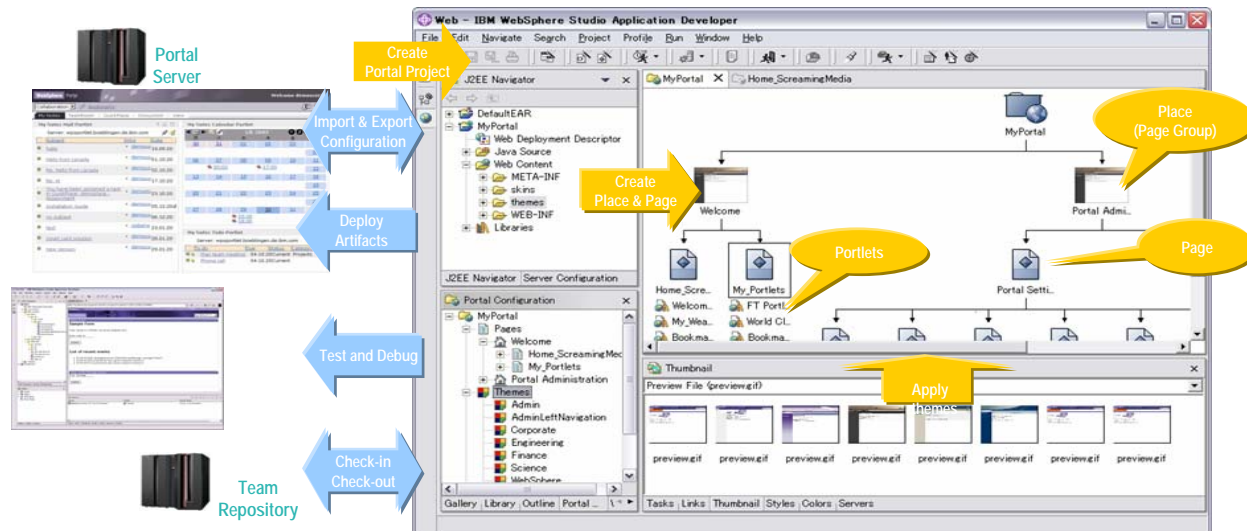
Account #	Account Type	Balance
96,666	Credit	2,000.00
74,444	Checking	1,432.44
85,555	Saving	2,567.56

Trans #	Amount	Date	Type	Expense Purpose
355	72.62	2000-11-06	Visa	Taxes
356	31.78	2001-06-16	Visa	Entertainment/Travel
357	61.02	2000-08-25	Visa	Clothing
358	21.75	2000-01-25	Visa	Transportation
359	13.01	2001-03-24	Visa	Telephone
360	24.51	2002-01-20	Visa	Transportation
361	15.87	2001-02-11	Visa	Food
362	13.81	2001-05-23	Visa	Telephone

**Expense Allocation**

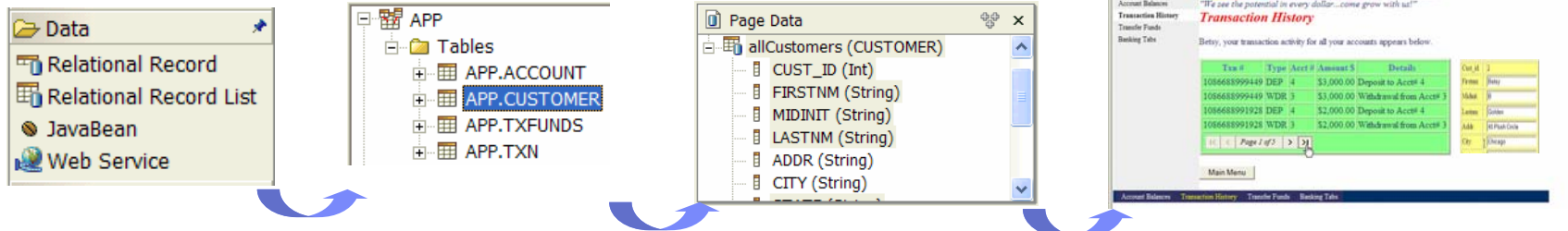
- Mendical/Dental
- Mortgage/Rent
- Food
- Gas/Electric
- Cloth
- Insurance
- Dependent Care
- Taxes
- Entertainment/Travel
- Transportation
- Telephone

# Portal Designer: Site, Page, Themes, Skins

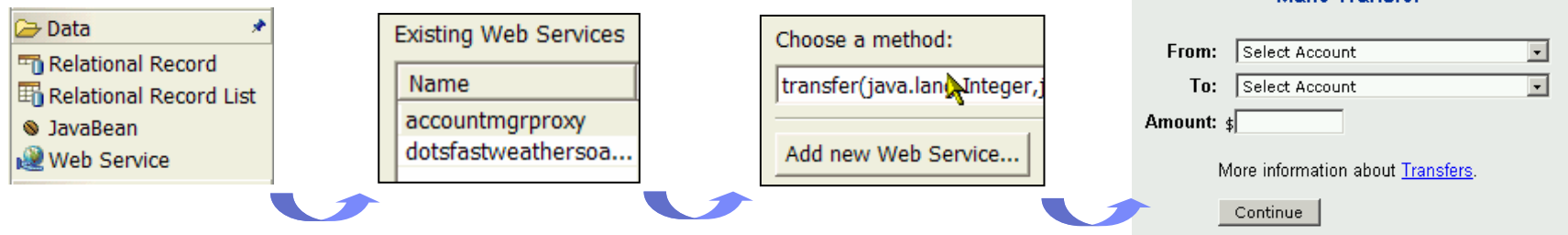


# Simplifying J2EE Development

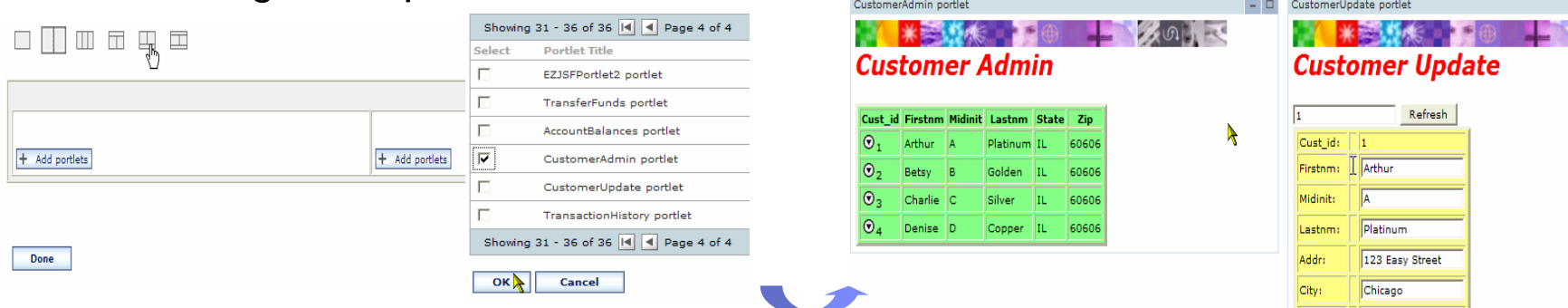
- Database development drag-n-drop ease-of-use <sup>1 2</sup>



- Web Services development drag-n-drop ease-of-use <sup>1 2</sup>

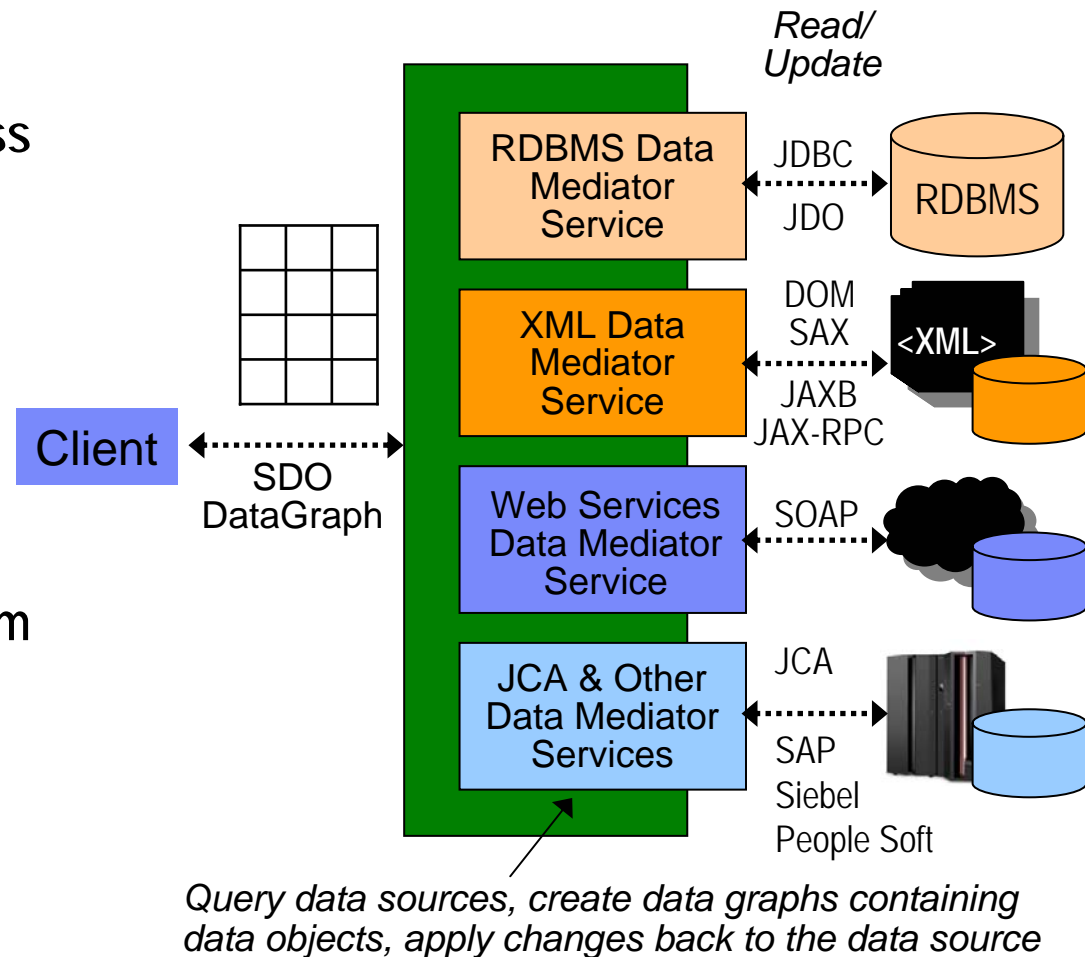


- Portals drag-n-drop ease-of-use <sup>1 2</sup>



# Service Data Objects (SDO): Unified Access to Heterogeneous Data Sources

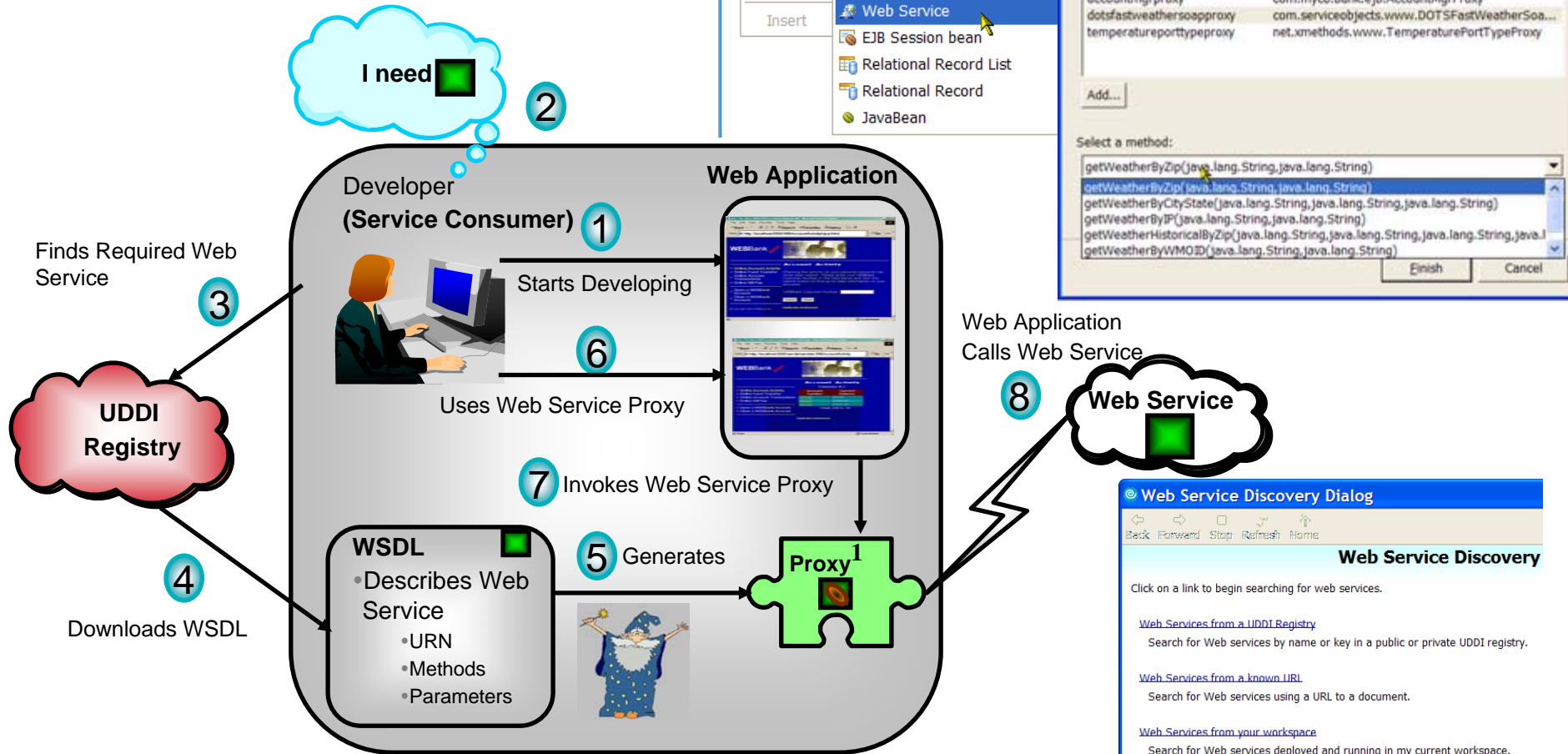
- Provides a common programming interface to access data from multiple heterogeneous sources
- Supports both static and dynamic data APIs
- Supports connected and disconnected operation
- Decouples application code from data access code
- Designed for use with tools to increase programmer productivity



Service Data Objects (SDO) is a specification created by IBM & BEA, submitted to JCP as JSR 235 in December 2003. Expert Group Formation Stage, not part of J2EE yet



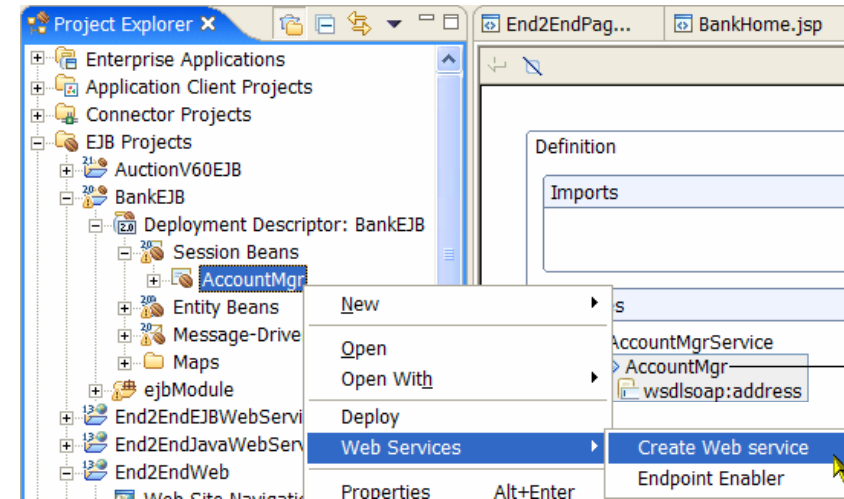
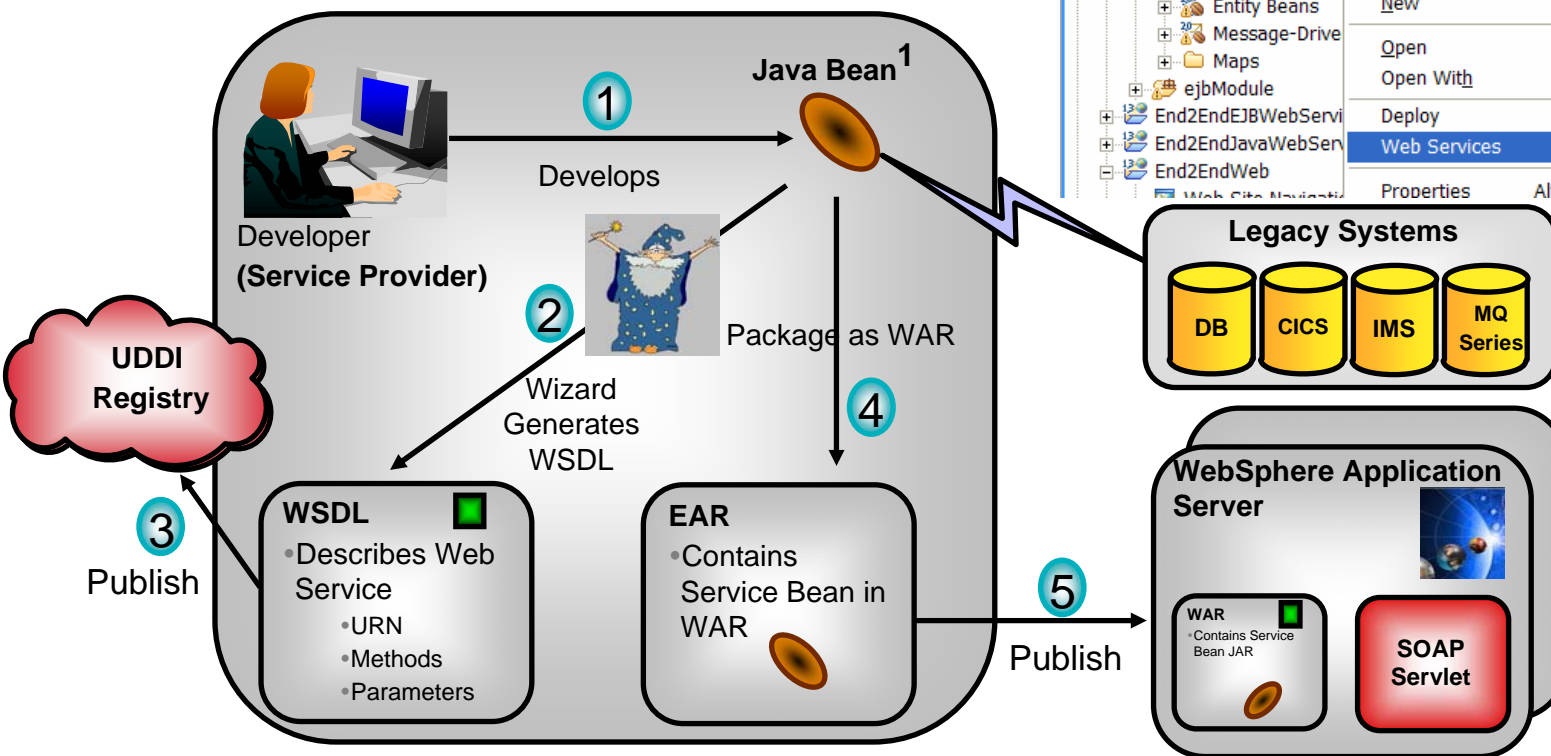
# Consuming a Web Service (No Coding Required!)



<sup>1</sup> Good Note: A Java app/component can be generated (a.k.a Web Service **Proxy Bean**) that can call existing Web Services, including: web services accessible JavaBeans, EJBs, database queries, URLs, Microsoft .NET web services, any web service on the internet, etc.

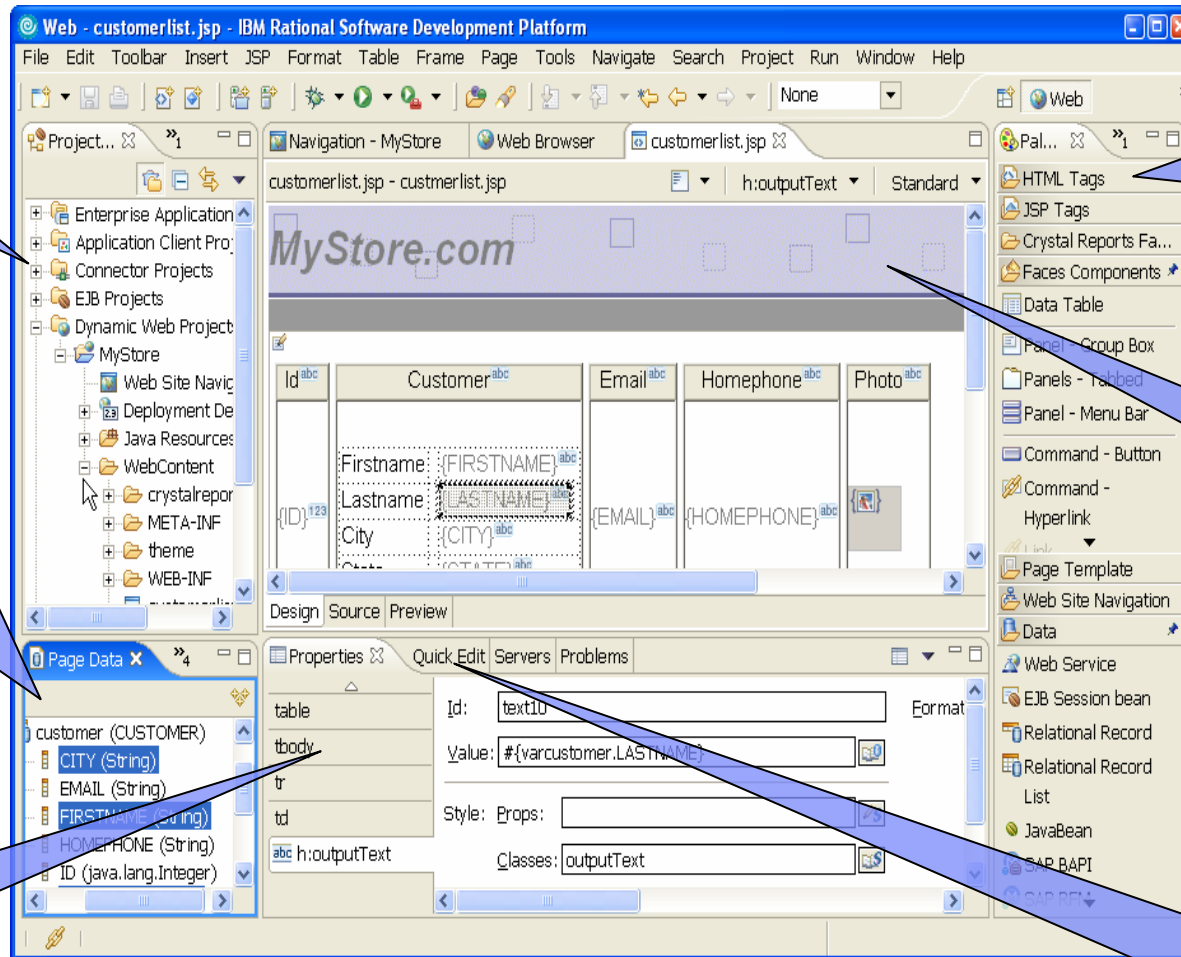


# Building a Web Service (No Coding Required!)



<sup>1</sup> Good Note, a Web Service can be built from a variety of artifacts such as JavaBeans, EJBs, database queries, etc.

# JSF Tool Views in RAD



Simplified "Project Explorer" hides the complexity of J2EE

The Data View lets you configure and drag and drop data to automatically create a data bound UI

SDO, Web Services, JavaBeans and EJBs access and update data without writing any code!

Property views allow easy customization of the selected component

Construct pages by dragging and dropping rich web components from a customizable Palette

Page templates separate out common page elements in a single template file

The Quick Edit View allows scripting of client or server side events in Java or Java Script.

Code assist writes the code for you!

- Accelerate GUI, Web Services, Database, Portlet and MVC development
- Visual drag-n-drop development of UI, events, actions, page navigation, etc.
- Simplify J2EE development for non-Java programmers and VB/MS.NET developers
- Enhance Web Application Development for J2EE experts

## V6 “WebSphere Rapid Deploy” (WRD)




- To simplify the **development** experience for WebSphere applications by:
  - Increase the seamlessness of the iterative Build/Test cycle
  - Reduce or eliminate server restarts
    - During initial artifact creation (i.e. create Java, EJBs, Web Services, etc.)
    - During iterative build scenarios (i.e. coding the logic in Java, etc.)
- To simplify the **deployment** experience for WebSphere applications by:
  - Automating the process of installing an application on WebSphere
  - Reducing the amount of information that must be configured manually on WAS (i.e. Datasources, etc.)
  - Automating the process of activating incremental changes to an application on a running server (i.e. Add/Change code/configuration of an application)



# Dynamic Development (Avoiding the “RESTART” Situations)

## Two main stages in RAD V6 dynamic development

- Creating New Artifacts
- Changing Existing Artifacts

-  AUTOMATIC hot re-deployment of changes
-  Manual quick APPLICATION level restart
-  Manual SERVER restart quick app level restart

WS Rapid Deploy (WRD) Dynamic Development Scenarios		
Development Activity	WAS5.1	WAS6.0
Create EAR Project	Plan to Restart Server	Dynamic (WRD)
Create Web Project	Plan to Restart Server	Dynamic (WRD)
Create EJB Project	Plan to Restart Server	Dynamic (WRD)
Create EJB with Logic	Restart Server (Manually)	Dynamic (WRD)
Change EJB	Restart Project EAR (Manually)	Dynamic (WRD)
Create JSP	Dynamic (Web Container)	Dynamic (Web Container)
Change JSP	Dynamic (Web Container)	Dynamic (Web Container)
Create JavaBean in Web Project	Dynamic (Web Container)	Dynamic (Web Container)
Change JavaBean in Web Project	Dynamic (Web Container)	Dynamic (Web Container)
Create JavaBean in regular Java Project and Reference from EJB or Web project artifacts	Restart Project EAR (Manually)	Dynamic (WRD)
Change JavaBean in regular Java Project	Restart Project EAR (Manually)	Dynamic (WRD)
Create Web Service (Exposing a JavaBean or EJB)	Restart Server	Dynamic (WRD)
Change a Web Service	Restart Server	Dynamic (WRD)

# Component Test Automation

- Enable easy creation, execution, and maintenance of dynamic unit tests of J2EE components including:



- Java classes (J2SE 1.4)



- EJBs (1.1, 2.0 and 2.1, supporting both remote and local interfaces)



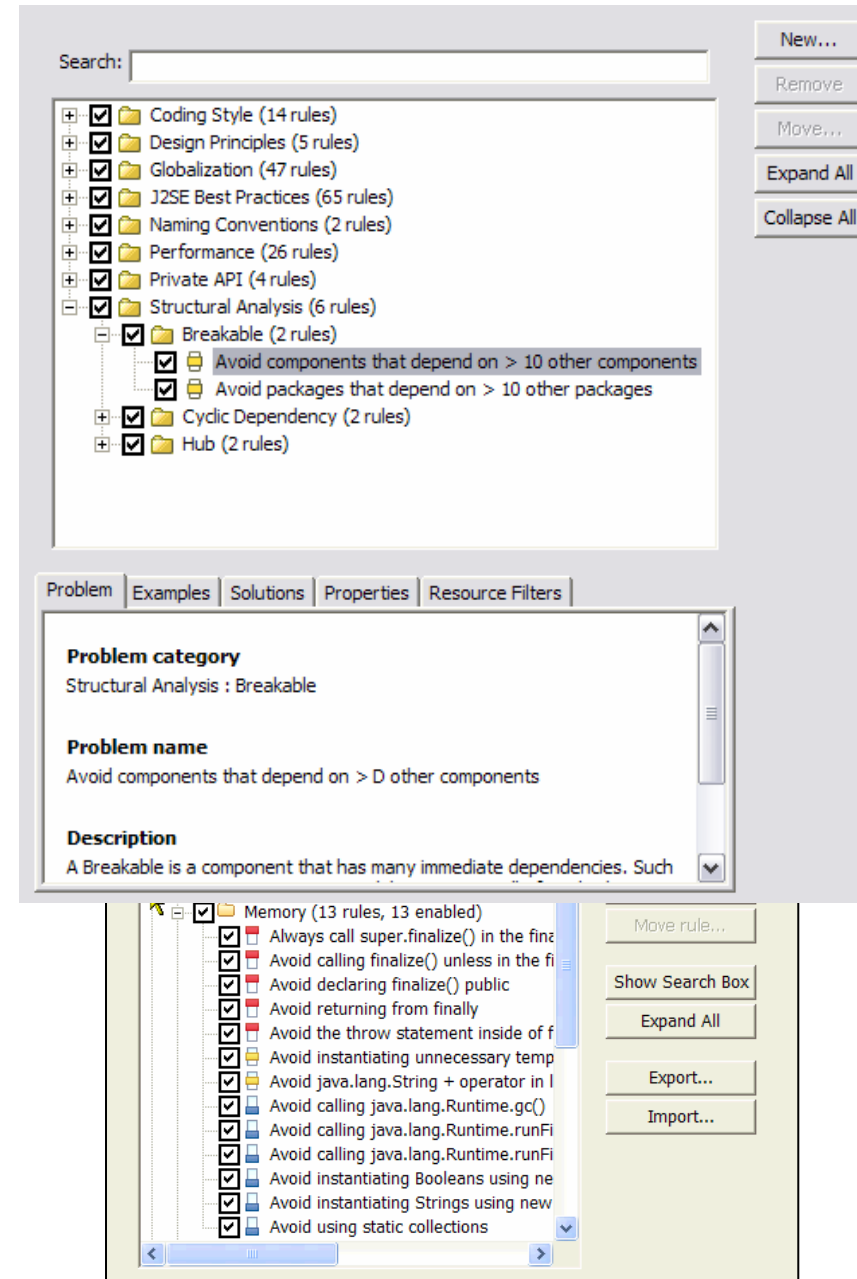
- Web Services (J2EE based, and .Net Web Services)

- Based on the JUnit framework
- Provide testing guidance
  - What to test first based on static metrics
- Automated test case generation
  - Based on test patterns
- Data driven testing
- Automated regression testing
- Integrated with Code Coverage
- Implementation of the OMG Testing Profile



# Code Reviews

- **Analyze Project/Workspace to find problems of various types:**
  - Globalization
  - J2EE Best Practices
  - J2SE Best Practices
  - Private API Usage
  - Performance
  - Naming Conventions
- **Produce interactive reports with violations and metrics**
- **Provides explanations, examples, and quick fixes for problems**
- **Allow users to create, enable and disable validation rules**
- **Allow users to create their own rules based on rule templates**
  - Complete Code Review (200+ rules)
  - Quick Code Review (34 rules)





# Runtime Performance Profiling Analysis

- Coverage, Execution Flow, Method Statistics, Performance, UML2 Sequence Diagram, Method Invocation, heap, etc. views in Profiling Perspective

- Coverage Details
- Coverage Statistics
- Execution Flow
- Method Details
- Method Statistics
- Performance Call Graph
- Statistical Data
- UML2 Class Interactions
- UML2 Object Interactions
- UML2 Thread Interactions

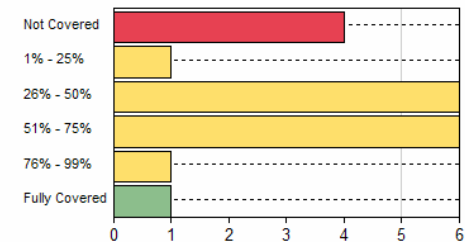
Method Statistics - unknown at WSTECH408 [ PID:3932 ]

Filter:  ☒ Case-sensitive

Method Names	Class Names	Base Time	Average Bas...	<Cumulative ...	Calls
doCallAllButtonAction() java.l...	End2EndPage	0.000345	0.000345	10.767578	1
doDotsfastweathersoaproxy...	End2EndPage	0.000059	0.000059	5.148228	1
doE2esessejproxyAnEJBMet...	End2EndPage	0.000050	0.000050	1.260860	1
doGetCounterRoot(java.lang...	CounterFacadeBean	0.000122	0.000061	0.934367	2
doApplyChanges(commonj.s...	CounterFacadeBean	0.000032	0.000032	0.625236	1
doListCountersFetchAction() j...	End2EndPage	0.000233	0.000116	0.472211	2
doTemperatureporttypeproxy...	End2EndPage	0.000042	0.000042	0.385597	1
doE2eXMLdocProcessingCrea...	End2EndPage	0.000058	0.000058	0.310873	1
doCounterFacadeLocalGetAll...	End2EndPage	0.000026	0.000026	0.203601	1
doUpdateCounterFetchAction...	End2EndPage	0.000098	0.000098	0.181781	1
doE2eservicebeanproxyAWSJ...	End2EndPage	0.000043	0.000043	0.082099	1



### Line Level Coverage Distribution



### Callers

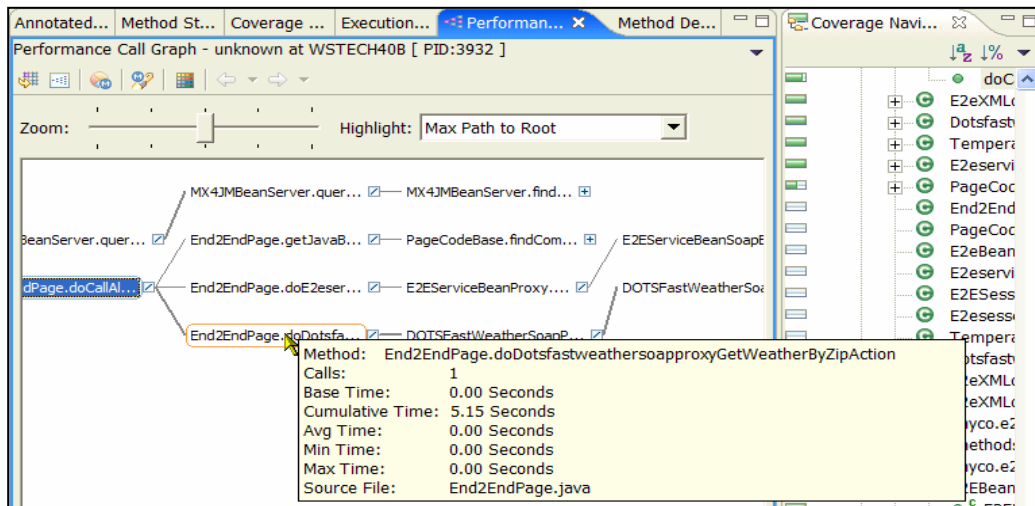


Caller	Perc...	Calls	>Propagate
Thread: WebContainer : 5	21.53	1	
Thread: WebContainer : 7	20.03	1	
Thread: WebContainer : 2	19.11	1	
Thread: WebContainer : 9	39.33	1	

### Descendants



Descendant	Perc...	Calls	>Propag
CustomerKey.CustomerKey	0.00	4	
FolioKey.FolioKey	0.00	4	
EJSLocalCMPFolioHome_6b6f...	1.44	4	
EJSLocalCMPFolio_6b6f4b12.g...	1.42	4	
AccountKey.AccountKey	0.00	4	
EJSLocalCMPAccountHome_9...	0.13	4	
EJSLocalCMPAccount_955e96...	0.07	4	
FinaKey.FinaKey	0.01	80	
EJSLocalCMPFinaHome_1a67...	54.58	80	
EJSLocalCMPFolio_6b6f4b12.g...	0.10	4	
EJSLocalCMPFina_1a67ea0b.s...	6.82	80	





## V6 Highlights - Areas of Innovation - Enhancements and New Capabilities

### ■ Lifecycle Integrations (Enhanced Rational/WebSphere Eclipse based Integrations)

- Requirements Explorer View
- Model Explorer View
- ClearCase Views for managing changing artifacts
- ClearQuest Views for managing collaborative activities
- Testing Tools Views

### ■ RAD/RSA Design & Construction Tooling Enhancements

- JSF, SDO, Web Services, etc.
- J2EE 1.4/1.3/1.2 and WAS V6.x/V5.x
- Portal/Portlet Integration
- Enhanced Unit/Component Testing
- Code Review and Runtime Analysis for Profiling
- Built-in Coder-friendly UML Visualizations for Class/Sequence diagrams
- Crystal Reports
- And much more...

### ■ New UML2 Engine

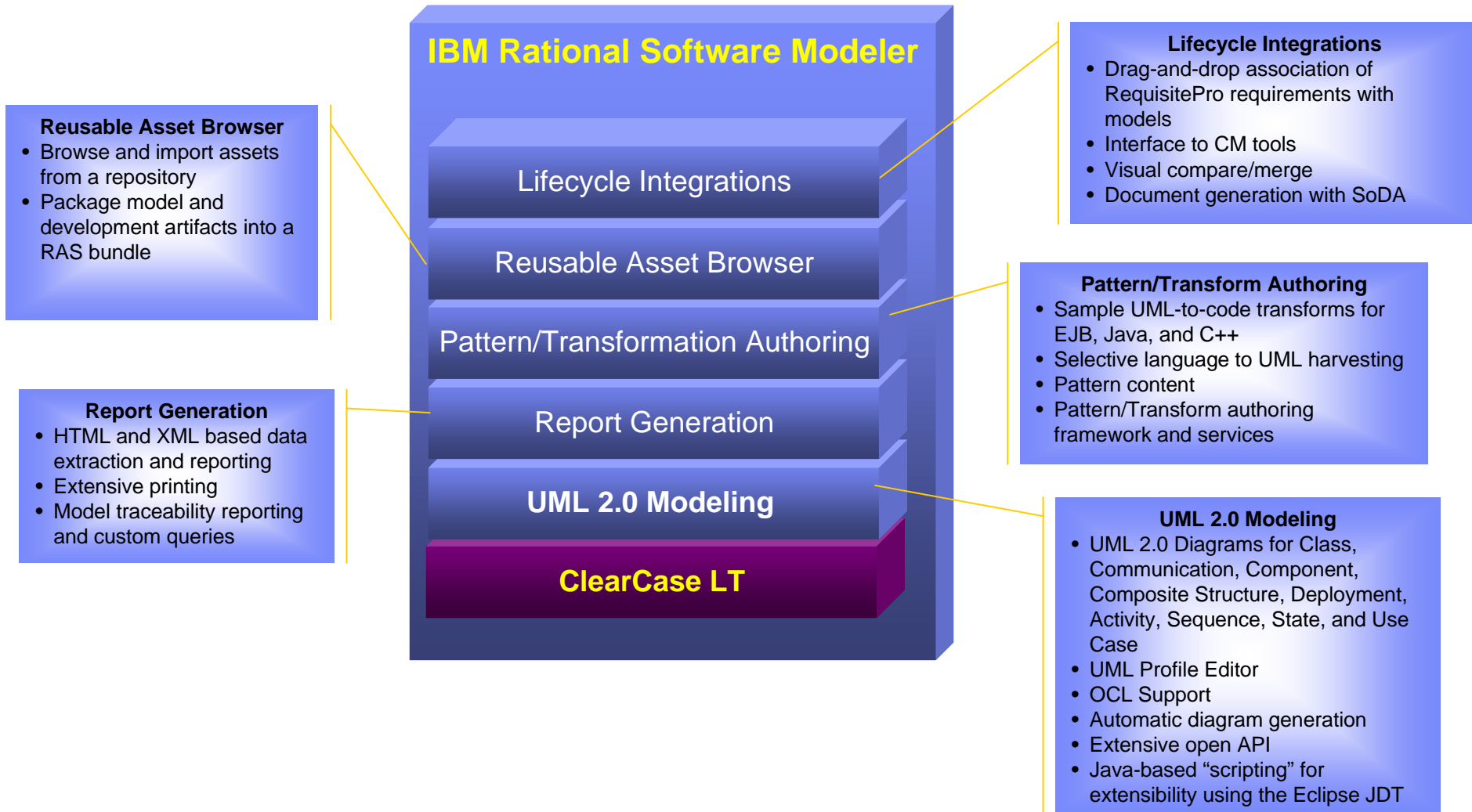
- New code base
- End-2-End UML2 modeling
- Easier GUI development
- Transformations between models and generating Java/C/C++ code

### ■ Software Quality Testing Tools Enhancements (Manual, Functional and Performance Testing)



# IBM Rational Software Modeler

*Follow on to Rose XDE*



# IBM Rational Software Architect

*Follow on to customers using WSAD + Rose XDE*

## Application Analyzer

- Automatic anti-pattern and pattern detection
- Architectural discovery, analysis, metrics, and stability reporting
- Implementation level architectural rules

## Modeler

- UML 2.0 Diagrams for Class, Communication, Component, Composite Structure, Deployment, Activity, Sequence, State, and Use Case
- OCL Support
- Automatic diagram generation
- Pattern content
- Pattern/Transform authoring framework and services
- Extensive open API
- Java-based "scripting" for extensibility
- HTML and XML based data extraction and reporting
- Extensive printing
- RAS tools

## IBM Rational Software Architect

Java Structural Analysis

UML Language Transforms

## Software Modeler

C/C++ Development Tools

## Application Developer

RUP Configuration for SW Architects

## ClearCase LT

## Transformations

- Sample UML-to-code transforms for EJB, Java, and C++
- Selective language to UML harvesting

## C/C++ Support

- C/C++ editors and build management
- Compiler and debugger integration
- UML code editors

## WSAD v6

- JSF, SDO, Struts
- Java GUI editor
- Web diagram editor
- Site designer
- Web Services development tools
- Database editing tools
- EGL
- EJB development tools
- UML code editors: EJB, Java, Data
- Static Analysis
- Runtime Analysis
- Component test automation
- Portal/Portlet development tools

**Typical Starting Point: CODE → MODEL → ...**

- Facilitates understanding and application's behavior by providing visualization of detailed code
- Diagrams can be integrated in Javadoc reports

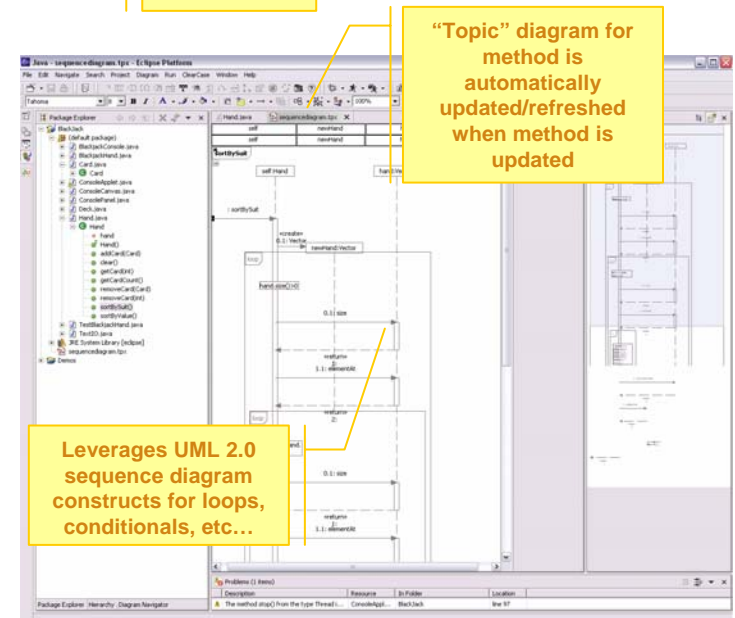
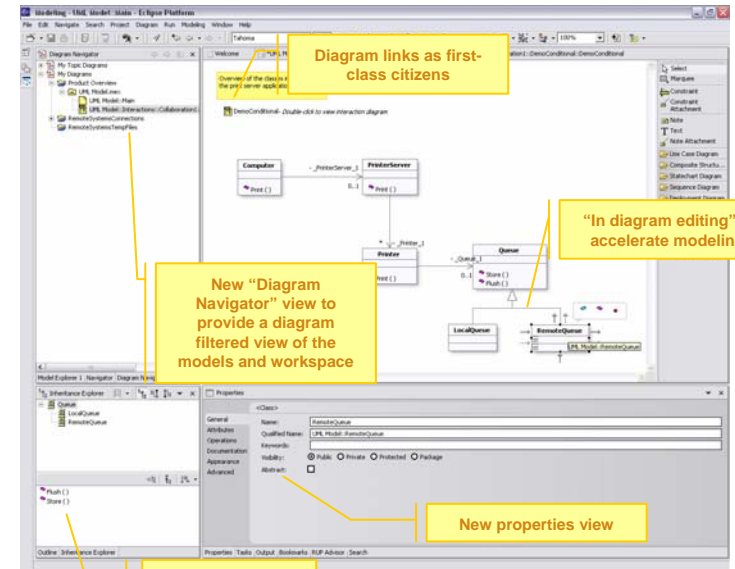
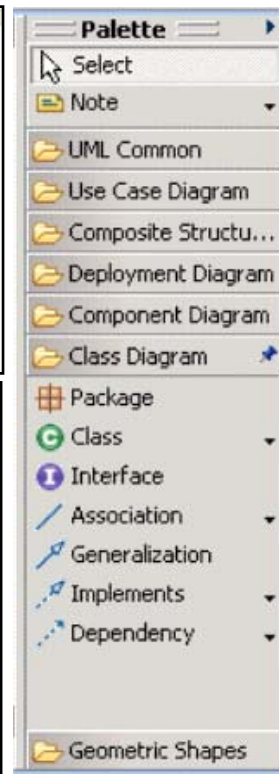
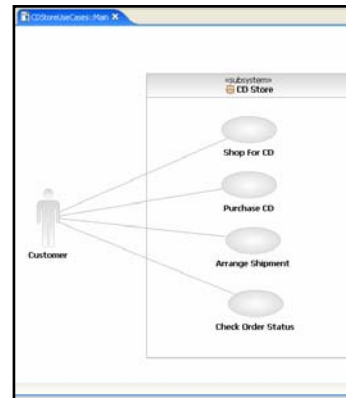
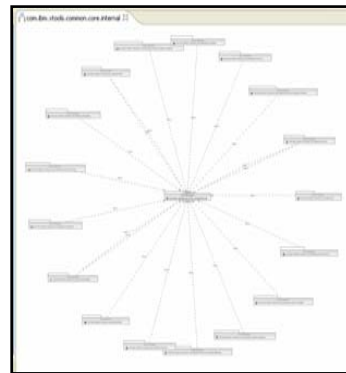
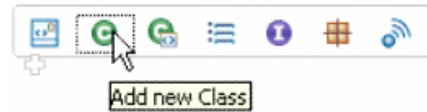
The screenshot displays the Eclipse IDE with the following components:

- Package Explorer:** Shows the project structure with packages like `Hand.java`, `Card.java`, and `Deck.java`.
- Java Editor:** Displays the source code for `Hand.java`. The code includes methods for `getCard(int position)`, `sort()`, `shuffle()`, and `deal()`. A yellow callout points to the `sort()` method, stating: "Integrated with the Java Package view".
- UML Sequence Diagram:** Visualizes the execution flow of the `sort()` method. It shows objects like `Hand`, `Card`, and `Deck` interacting. A yellow callout points to the diagram, stating: "Topic diagram for method is automatically updated/refreshed when method is updated".
- UML Diagrams:** A yellow callout points to the UML diagram, stating: "Leverages UML 2.0 sequence diagram constructs for loops, conditionals, etc...".
- UML Diagram:** A yellow callout points to the UML diagram, stating: "Alternate abstract view of method behavior".
- UML Diagram:** A yellow callout points to the UML diagram, stating: "Select method to be visualized using UML".

# New UML2 Modeling Ease-of-Use

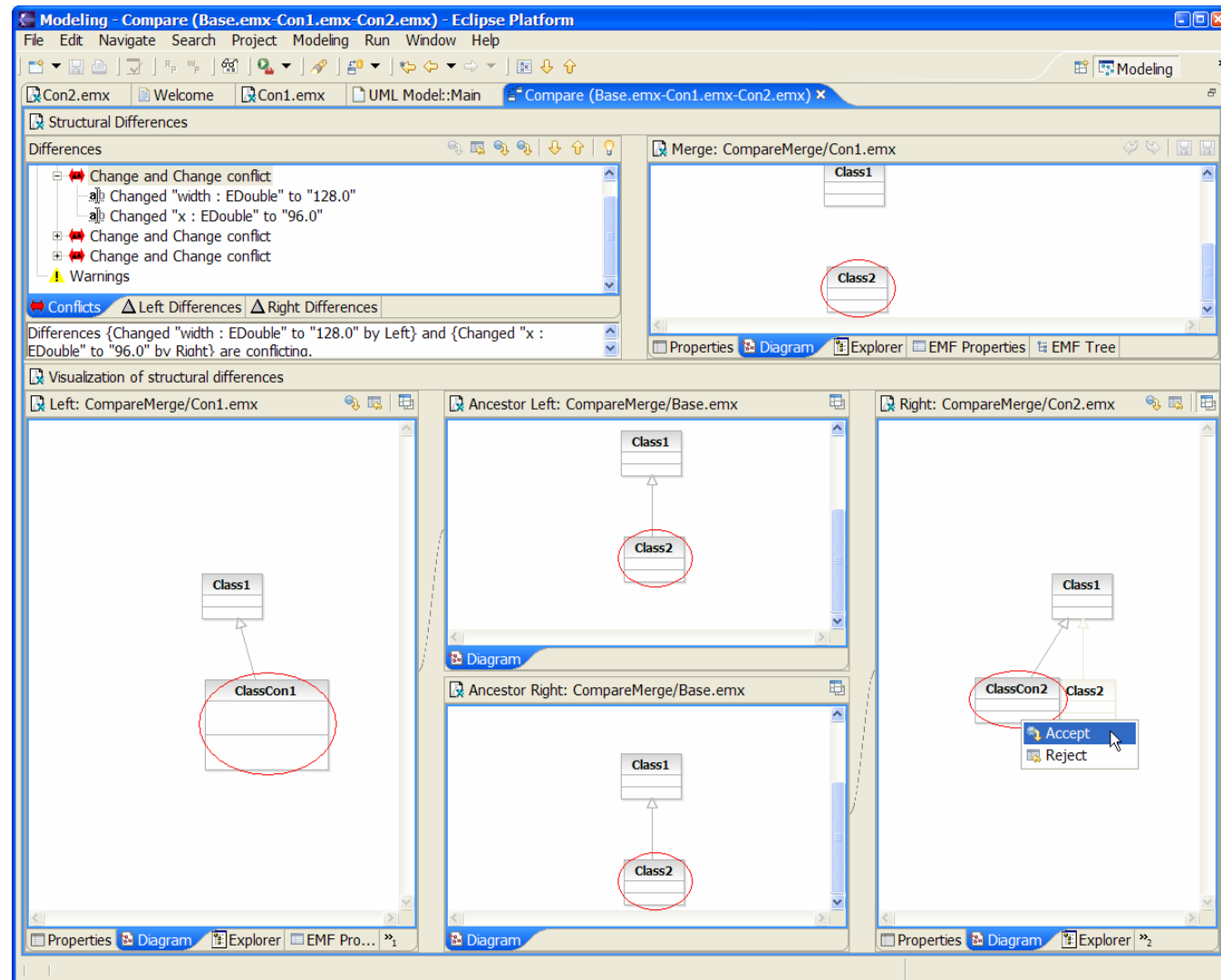
**Typical Starting Point: MODEL → CODE → ...**

- Simplify creating UML2 diagrams with contextually appropriate UML element creation, via popup toolbars
- Visualize Java code using dynamic code introspection that provides hyperlinked diagrams (Class and Sequence diagrams)
- New custom views to improve the editing experience



# Models compare & merge

- Allows merging of models at model semantic level—not raw XML / text
- Facilitates parallel development

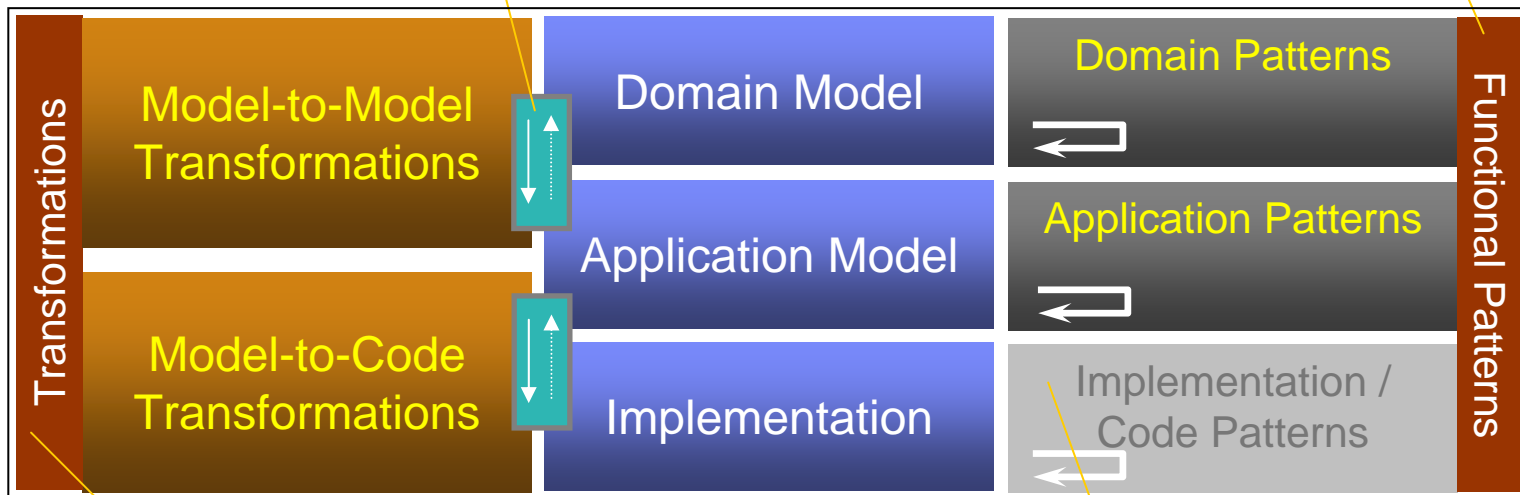




# Patterns and transformations

Transformations can be authored to create traceability links between the source and the target of the transformation.

Patterns can be authored/applied and used as recipes or building blocks to refine a model or implementation at its level of abstraction.



Rule/constraints-based transformations can be authored to transform models in a batch style operation. Transformations are authored using Java and the Eclipse PDE. Transformations can leverage functional patterns when they execute.

In a future release, the patterns capabilities will be extended to the implementation level (ex.: J2EE patterns).



# Process guidance

- RUP Configuration for SW Architects
  - With updates for SOA and UML 2.0
- Tool Mentors provide guidance for activities
- User customizable views with user defined content
- Integrated with Eclipse

**Improved navigation of RUP in Eclipse. User configurable content in view.**

**Search is integrated with Eclipse search**

**RUP Advisor provides context sensitive guidance**

The screenshot displays the Eclipse IDE with the Rational Unified Process (RUP) configuration. The **Process Browser** on the left shows a tree view of RUP components, including **Software Architect**, **Concepts**, **Whitepapers**, **Construct Architectural Proof-of-Concept**, **Assess Viability of Architectural Proof-of-Concept**, **Prioritize Use Cases**, **Architectural Analysis**, **Describe Distribution**, **Describe the Run-time Architecture**, **Identify Design Mechanisms**, **Incorporate Existing Design Elements**, **Structure the Implementation Model**, **Identify Design Elements**, **Designer**, **User-Interface Designer**, **Database Designer**, **Implementer**, **Integrator**, **Additional Roles**, **Analysis & Design**, **Implementation**, and **Configuration & Change Management**.

The **Search** dialog is open, showing a search query of **use case realizations**. The **Advanced** search options are checked, and the **Topics** list includes **Tool Mentors**, **Concept pages**, **Checkpoints**, **Guidelines**, **Templates**, **Workflows Details**, and **General Content**.

The **Process Advisor** window is open, displaying the **Role: Software Architect** page. It provides a description of the role and a list of **Tool Mentors** (9) and **Artifacts** (13) relevant to the role. The **Tool Mentors** list includes:
 

- Tool Mentor: Detailing a Use Case Using Rational Software Architect
- Tool Mentor: Designing Use Cases Using Rational Software Architect
- Tool Mentor: Finding Actors and Use Cases Using Rational Software Architect
- Tool Mentor: Performing Use-Case Analysis Using Rational Software Architect
- Tool Mentor: Structuring the Use-Case Model Using Rational Software Architect
- Tool Mentor: Setting Up for a Project Using Rational Software Architect
- Tool Mentor: Designing Classes Using Rational Software Architect
- Tool Mentor: Performing Architectural Analysis Using Rational Software Architect
- Tool Mentor: Identifying Design Elements Using Rational Software Architect

 The **Artifacts** list includes:
 

- Artifact: Design Subsystem
- Artifact: Design Model
- Artifact: Analysis Model
- Artifact: Software Architecture Document
- Artifact: Reference Architecture
- Artifact: Interface
- Artifact: User-Interface Prototype

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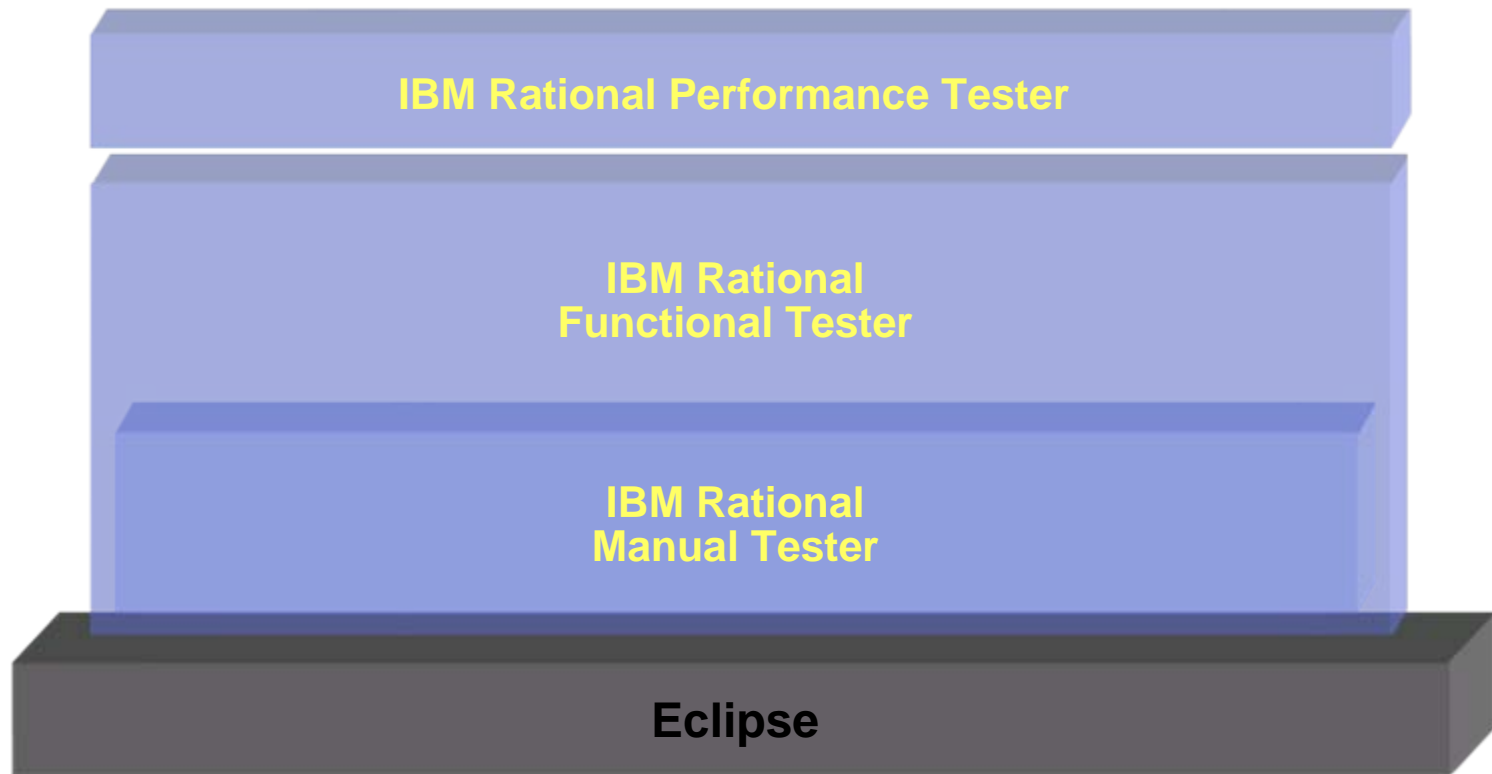
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- Easier GUI development
- Transformations between models and generating Java/C/C++ code

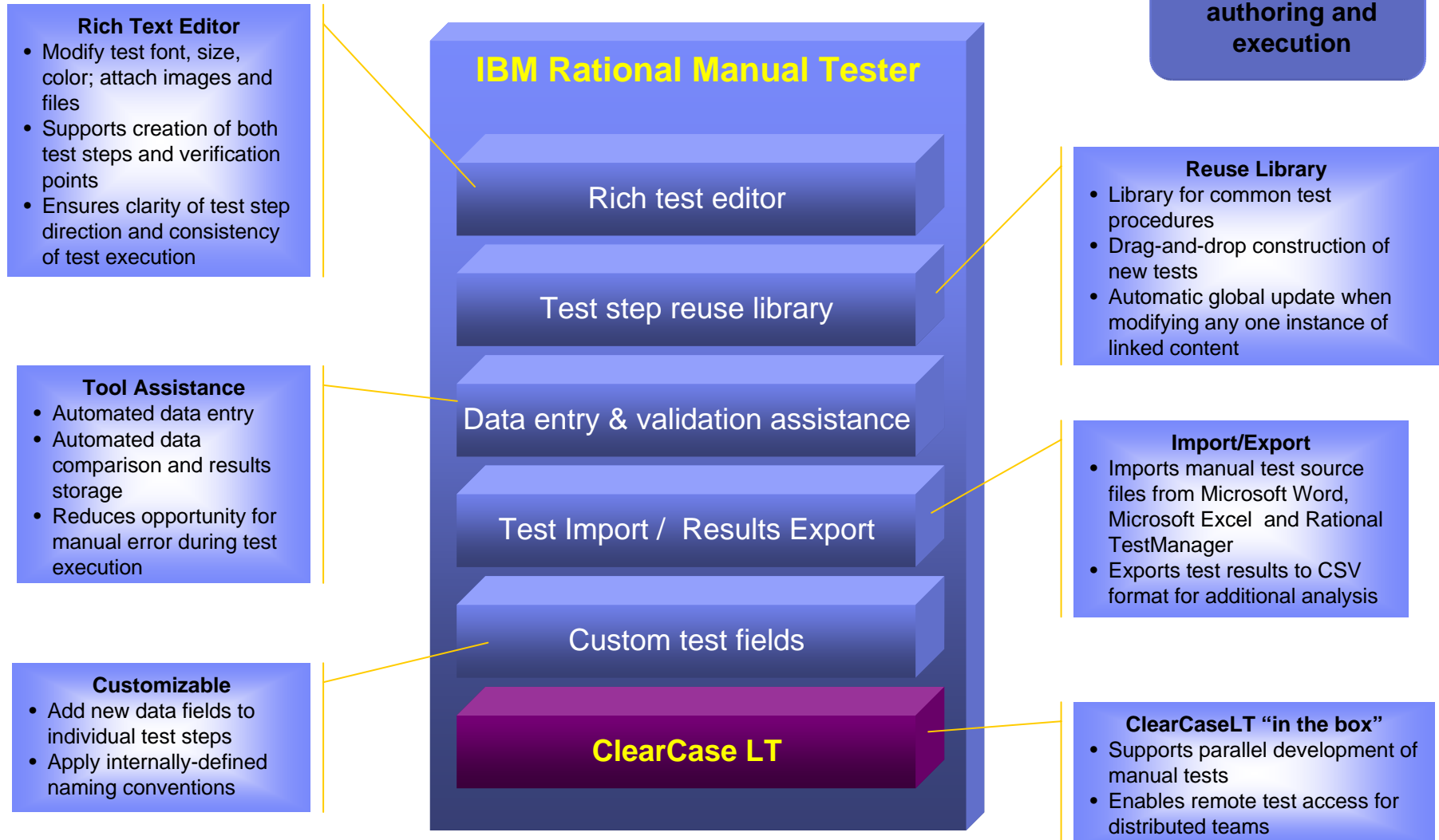
### ■ Software Quality Testing Tools Enhancements (Manual, Functional and Performance Testing)



# Software quality tools



# IBM Rational Manual Tester



# Manual Testing - Rational Manual Tester



- *What*
  - ▶ Manual test authoring, organization and execution
- *For*
  - ▶ Business analysts
  - ▶ Testers
- *Why*
  - ▶ Reduce impact of software change and human error on manual testing efforts

**Rich test editor**

**Test step reuse library**

**Customizable fields**

**Attached images and files**

**Central repository for distributed team access**

The screenshot shows the IBM Rational Manual Tester application window. The interface includes a menu bar (File, Edit, Capture, Run, Window, Help), a toolbar, and several panes. The left pane shows an 'Outline' of test steps for a 'Sell Fund' test, including 'Launch Browser', 'Enter Address', 'Logon For Trading', 'NewName', 'Confirm that the', 'Enter User Name', 'Enter Password', 'Select "Start in:"', 'Does the "Submit"', 'Does the "Remer"', 'Check the "Reme"', 'Click "Submit"', 'Logged in ok?', 'Navigate to Trading', 'Click "Investing"', 'Click "Executions"', 'Verify that tradin', 'Sell Mutual Fund', 'Click "Mutual Fun', 'TEST', and 'Click Boxes'. The main editor area displays a test step 'Launch Browser by clicking the icon shown on your Desktop:' with an attached image of a 'Launch Inter...' icon. Below this, it shows a screenshot of the 'IBM United States - Microsoft Internet' browser window with the address bar set to 'http://www.ibm.com'. The right pane shows a 'Reuse' library with test steps like 'Launch Browser', 'Enter Address http://', 'Logon For Trading', 'Navigate to Trading', 'Sell Mutual Fund', and 'Verify Transaction in'. A 'Properties' pane at the bottom right shows fields for 'Name', 'Value', 'Scheme...', 'pare ...', 'Description', 'Launch Brov', and 'Evolution...'. Callouts point to various features: 'Rich test editor' points to the main editor area; 'Test step reuse library' points to the right pane; 'Customizable fields' points to the 'Properties' pane; 'Attached images and files' points to the browser screenshot; and 'Central repository for distributed team access' points to the bottom of the interface.

# IBM Rational Functional Tester

**Automated  
functional  
regression testing**

## GUI Technologies

- Automates regression testing of Java, .NET, Web and terminal emulator-based applications

## Data-driven Testing

- Simplified data-driven testing enabled by wizards and Excel-like data tables

## Eclipse availability

- When using Java scripting, runs inside Eclipse/RSA/RAD shell
- Full Eclipse JDT features are accessible
- Accessible to developers from within their IDE

## ClearCaseLT “in the box”

- Supports parallel development of manual tests
- Enables remote test access for distributed teams

## IBM Rational Functional Tester

Tests Java, .NET, Web and terminal emulator-based apps

Java and VB.NET-based test scripts

Wizard and table-assisted data-driven tests

Linux-based test authoring

**Eclipse Java Dev Tools**

**Manual Tester**

**ClearCase LT**

## Test Script Language

- User has choice of two test script languages – Java and VB.NET
- Use of Java implies editing and debugging in Eclipse/RAD/RSA-based editor
- Use of VB.NET implies usage of Microsoft VS.NET-based editor/debugger
- Identical capabilities in both editors

## Improved Linux support

- Users can author and modify test scripts on Linux (no script recorder)
- Scripts can also be executed on Linux

## Manual Tester in the box

- Customers receive one Manual Tester license per Functional Tester license
- Improve return on manual testing efforts while adopting automated test methods



# GUI Test Automation - Rational Functional Tester

## What

- Functional and regression test automation
- Activity automation

## For

- Project specific QA teams
- Experienced testers
- GUI developers

## Why

- Ensure proper use case implementation before deployment
- Support fact-based evaluations of project readiness and application quality

Tester

The screenshot displays the Rational Functional Tester (RFT) IDE. The main editor shows a VB.NET script named 'TestMain' with the following code:

```
Function TestMain(ByVal args() As Object) As Object
    Dim oApp As Object = New ClassicsJavaA()
    oApp.FrameName = ClassicsCD
    Tree2().Click(AtPath("Composers->Beethoven->Tree2()"))
    Tree2().Click(AtPath("Composers->Beethoven->PlaceOrder()"))
    PlaceOrder().Click()

    ' Frame: Member Logon
    PasswordText().Click(AtPoint(12, 12))
    MemberLogon().InputChars("foo")
    RememberPassword().ClickToState(rememberPassword)
    OK().Click()

    ' Data Driven Code insert
    Private Test Datapool*
    Name: Place an Order
    CardNumberIncludeTheSpace
    CreditCombo().SetText(DpS
    ExpirationDateText().SetT
    NameText().SetText(D String("NameText"))
```

The 'Script Explorer' on the right shows a tree structure with 'Script2' and 'Test Objects' including 'Private Test Object M', 'CardNumberIncludeTf', 'CityStateZipText', 'ClassicsJava', 'CreditCombo', 'ExpirationDateText', 'MemberLogon', 'NameText', and 'OK'.

The 'Private Test Datapool\*' table at the bottom contains the following data:

	CardNumberInc...	creditCombo	Expirat...	NameText	StreetText	CityStateZipText	Ph...
0	44444444444444	Visa	0505	Trent Culpito	75 Wall St 22nd Fl	NY, NY 12212	212
	123412341234	Amex	0206	Brian Fred	1212 Foo Ln	NY, NY 12214	1212

Annotations pointing to the screenshot include:

- Eclipse or VS.NET-based editor and debugger** (pointing to the main script editor)
- ScriptAssure™ for test script resiliency** (pointing to the script code)
- Version control ready** (pointing to the Solution Explorer)
- Java, VS.NET, Web and terminal-based application support** (pointing to the Test Objects list)
- Data-driven test assistance** (pointing to the Private Test Datapool table)
- Java in Eclipse or VB.NET in VS.NET** (pointing to the script code)



# IBM Rational Performance Tester

## Load testing technology

- New load test recorder and execution engine
- Supports HTTP/S; additional protocol support

## High scalability

- High scalability, low footprint due to hyper-threaded architecture
- Significant improvement over Robot technology

## Platform Support

- Multiple platform support for load generation

## ClearCaseLT “in the box”

- Supports parallel development of manual tests
- Enables remote test access for distributed teams

## IBM Rational Performance Tester

HTTP/S load testing

Visual test construction and editing

High scalability hyper-threaded execution architecture

Graphical test scheduler and user profiler

Windows and Linux load generation support

Eclipse Java Dev Tools

ClearCase LT

## Load and performance testing

### Visual Test Editor

- Test viewer requires no coding for test modification and execution
- Automated identification and variation of dynamic data
- Insertion of Java code is supported for advanced customization needs

### Test scheduler

- Graphical user profiling and transaction modeling
- Eases modeling of user populations

### Eclipse-based

- Runs inside Eclipse/RSA/RAD shell
- Accessible to developers from within their IDE

# Performance Testing - Rational Performance Tester

- *What*
  - ▶ Load and performance testing
- *For*
  - ▶ Testers
  - ▶ Deployment Managers
- *Why*
  - ▶ Validation of Web-application scalability under variable multi-user loads prior to deployment



Deployment  
Manager

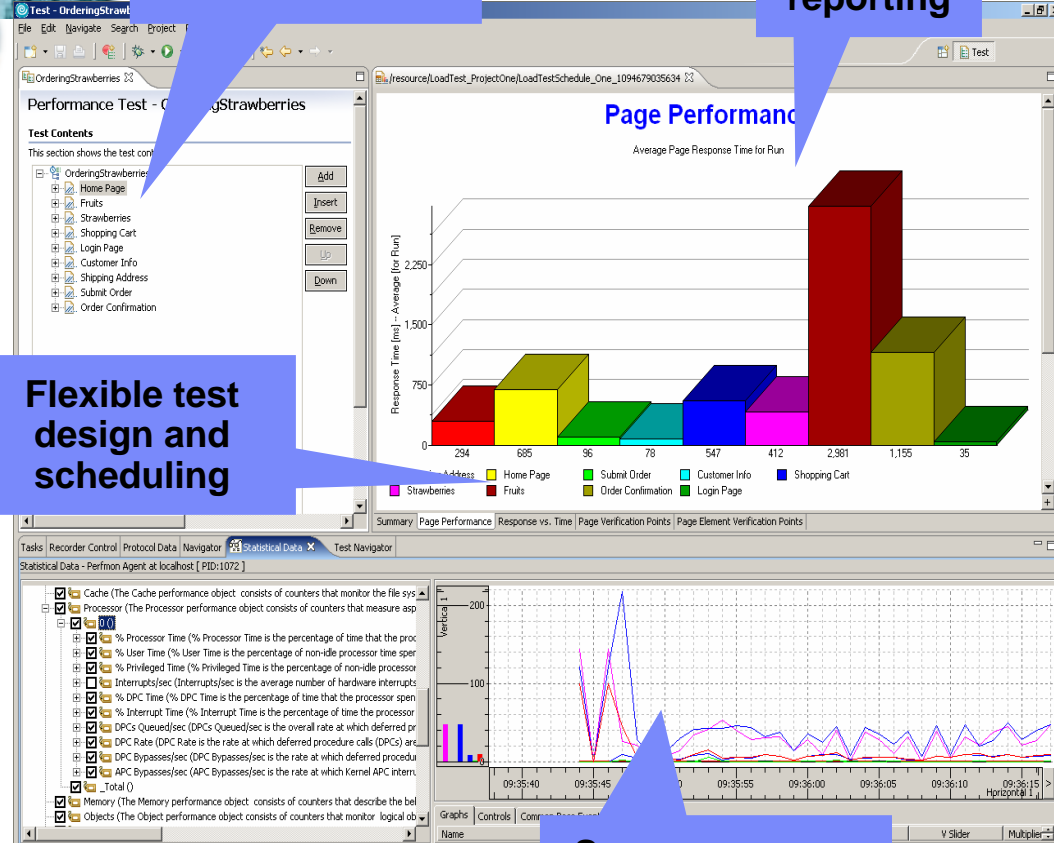
Tester

Visual test editor

Real-time  
reporting

Flexible test  
design and  
scheduling

Server resource  
data collection





## WAS V6 What's New - Agenda

- New Infocenter and Education Assistant
- Concepts and Terminology
- Programming Model
- System Management
- Rapid Deployment
- Enterprise Service Bus
- Clustering and High Availability
- Security



# WAS V6 What's New - Agenda

- **New Infocenter and Education Assistant**
- Concepts and Terminology
- Programming Model
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- Security



# New Infocenter, including “Education Assistant”

- New Infocenter  
<http://ibm.com/software/webervers/appserv/infocenter.html>
- Education Assistant
  - Presentations narrated with sound
  - Tutorials
  - Reference information
- Installed with WAS and on ibm.com

WebSphere Application Server Library - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address <http://ibm.com/software/webervers/appserv/infocenter.html>

United States [change] Terms of use

Home Products Services & solutions Support & downloads My account

All software products Software > Application Servers > WebSphere Application Server >

**WebSphere Application Server** WebSphere software

Features and benefits System requirements Library Success stories News Trials and betas How to buy Events Training and certification Services Support Support for z/OS

**WebSphere Application Server**

V 6.0 V 5.1.x V 5.0.x V 4.0.x

WebSphere Application Server Version 6.0.x Information Center

Express - distributed platforms Show | Hide

WebSphere Application Server - distributed platforms Show | Hide

Network Deployment - distributed platforms Show | Hide

**Documentation - Information center format**  
[WebSphere Application Server Network Deployment, Version 6.0.x](#)  
[WebSphere Help System plug-in: Network Deployment](#)  
[WebSphere Help System plug-in: Javadoc](#)

**Documentation - Book format**  
[Migrating, coexisting, and interoperating](#) (PDF)  
[Installing your application serving environment](#) (PDF)  
[Administering applications and their environment](#) (PDF)  
[Setting up the application serving environment](#) (PDF)  
[Using the administrative clients](#) (PDF)  
[Securing applications and their environment](#) (PDF)  
[Developing and deploying applications](#) (PDF)  
[Troubleshooting and support](#) (PDF)

**Evaluation and overview**  
[Literature: Case studies, data sheets, and more](#)

**Tutorials, samples and demos**  
[IBM Education Assistant](#)  
[Accessing the Samples Gallery \(requires product installation\)](#)

**Release notes**  
[Release notes](#)

**Supported hardware and software**  
[Supported hardware and software](#)  
[Supported hardware](#)  
[Supported software](#)

**Papers and articles**  
[WebSphere Application Server zone on developerWorks](#)  
[WebSphere Developer Technical Journal](#)  
[White papers](#)  
[Links recommended by product support](#)

**Supplemental books**  
[WebSphere Redbooks Domain](#)

**Related software**  
 • WebSphere Application Server - Express  
 • WebSphere Application Server  
 • WebSphere Application Server Network Deployment  
 • WebSphere Application Server for iSeries  
 • WebSphere Application Server for z/OS  
 • WebSphere Extended Deployment  
 • Rational Application Developer for WebSphere Software  
 • Rational Web Developer for WebSphere Software  
 • Macromedia ColdFusion MX for WebSphere

**Related solutions**  
 • WebSphere Business Integration Server Foundation  
 • WebSphere Industry Solutions

**Resources**  
[WebSphere Help System \[?\]](#)

**Related libraries**  
[WebSphere Application Server for iSeries library](#)  
[WebSphere Application Server Express library](#)  
[IBM HTTP Server library](#)  
[WebSphere Application Server - Edge Components library](#)  
[WebSphere Extended Deployment library](#)  
[WebSphere Business Integration Server Foundation library](#)  
[WebSphere Business Integration Server Foundation for z/OS library](#)



# “Education Assistant” – RAD V6 and WAS V6

IBM Education Assistant - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Reload Home Search Favorites

Address <http://www-306.ibm.com/software/info/education/assistant/noflash.shtml>

**IBM**

Home Products Services & solutions Support & downloads My account

## IBM Education Assistant

IBM Education Assistant

**Related links:**

- WebSphere training and technical enablement

### Software for the e-business on demand era

IBM Education Assistant provides an organized collection of self-study educational materials that are simple, short, and focused. You can access content in several formats:

- Narrated Presentations - include audio explanation of the task or concept
- Show Me Demonstrations - illustrate how to complete a specific task
- Tutorials - step-by-step instructions to complete bigger or more complex tasks
- Additional resources - links to product documentation, Redbooks, and whitepapers

### How it works

The IBM Education Assistant user interface allows you to select your configuration and specify how you want to display links to the educational material. Clicking on an education module link presents a navigational hierarchy of available educational content.

→ [Click here to go to the education modules](#)

**Select your configuration:**  
Please select a configuration  
Please select a configuration  
IBM® WebSphere® Application Server, V6.0 and V6.0.1  
IBM® WebSphere® Application Server for z/OS, V6.0.1  
IBM® WebSphere® Application Server, V5  
IBM® Rational® Application Developer, V6.0

# WAS V6 What's New - Agenda

- New Infocenter and Education Assistant
- **Themes, Packaging and Primer**
- Programming Model
- System Management
- Rapid Deployment
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- Security



# WAS V6 Main Themes

## • Platform enablement

- The e-Business “operating system” for enterprise infrastructure
- The Service Oriented Architecture (SOA), Enterprise Service Bus (ESB), for enterprise integration
- The foundation for other middleware products

## • Ease of use

- Reduced complexity while increasing the integration of roles
- Accelerate simplified development and deployment (WebSphere Rapid Deployment)
- Build on the flexible Systems Management model from WebSphere V5, with many new enhancements

## • Enterprise Class Deployment

- Enterprise Qualities of Service
- Enterprise Service Bus (ESB) infrastructure integrated into the Application Server
  - Unifies Service Oriented Architecture synchronous and asynchronous messaging
  - JMS, Web Services, message brokering, publish/subscribe and mediation
- Unified Clustering Framework and High Availability services

## • Standards-based architecture and programming model

- J2EE 1.4/1.3/1.2, Web Services, Service Data Objects (SDO), JavaServer Faces (JSF), etc.



# WAS V6 Packaging

## WebSphere Application Server Network Deployment

Clustering

Node Agent

Deployment Manager

Web Services Gateway

WebSphere Application Server  
and  
WebSphere Application Server Express (up to 2 CPUs)

Web-based Admin

Web Services

EJB Container

Messaging

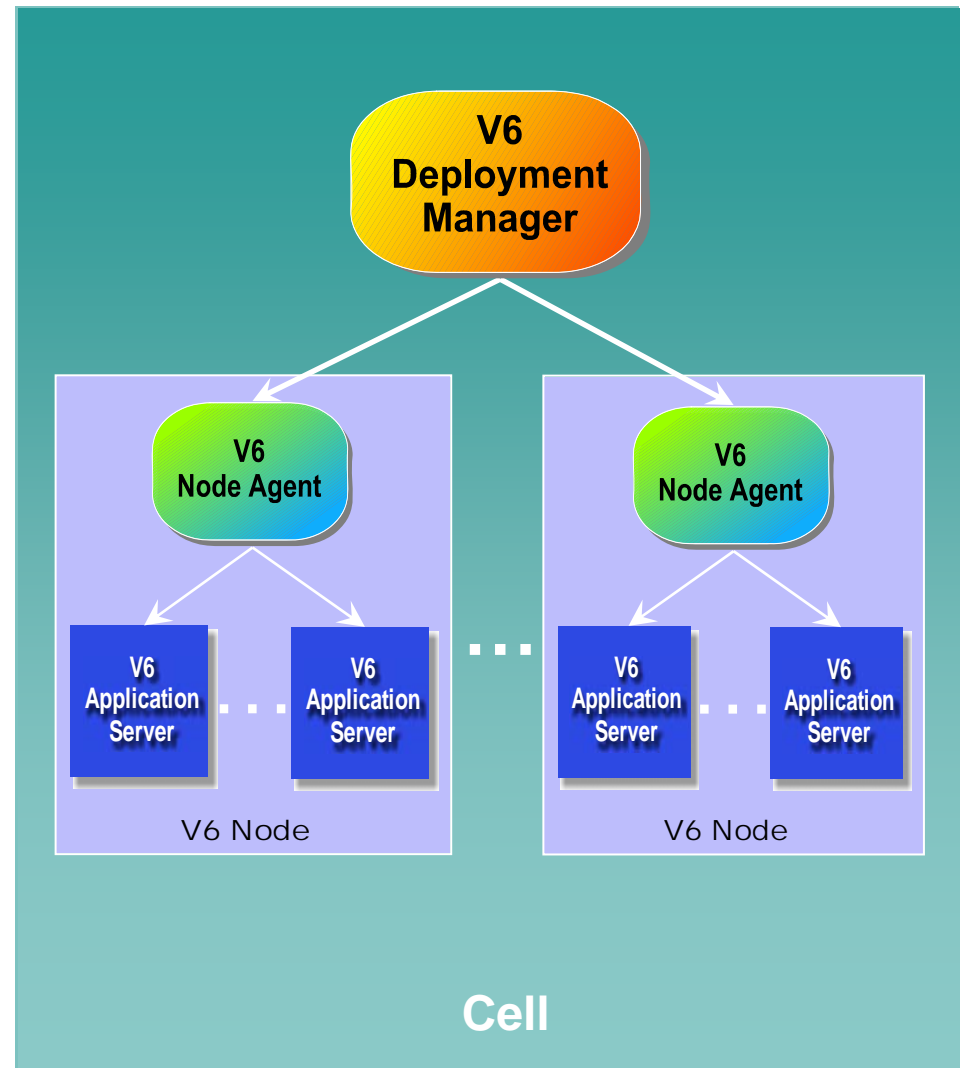
Web Container

JDK

PMEs

# Network Deployment Concepts

- A Node is a logical grouping of servers
  - Each node is managed by a single node agent process
- A Deployment Manager process manages the node agents
  - Holds the configuration repository for the entire management domain, called a Cell
  - Administrative Console runs inside the Deployment Manager



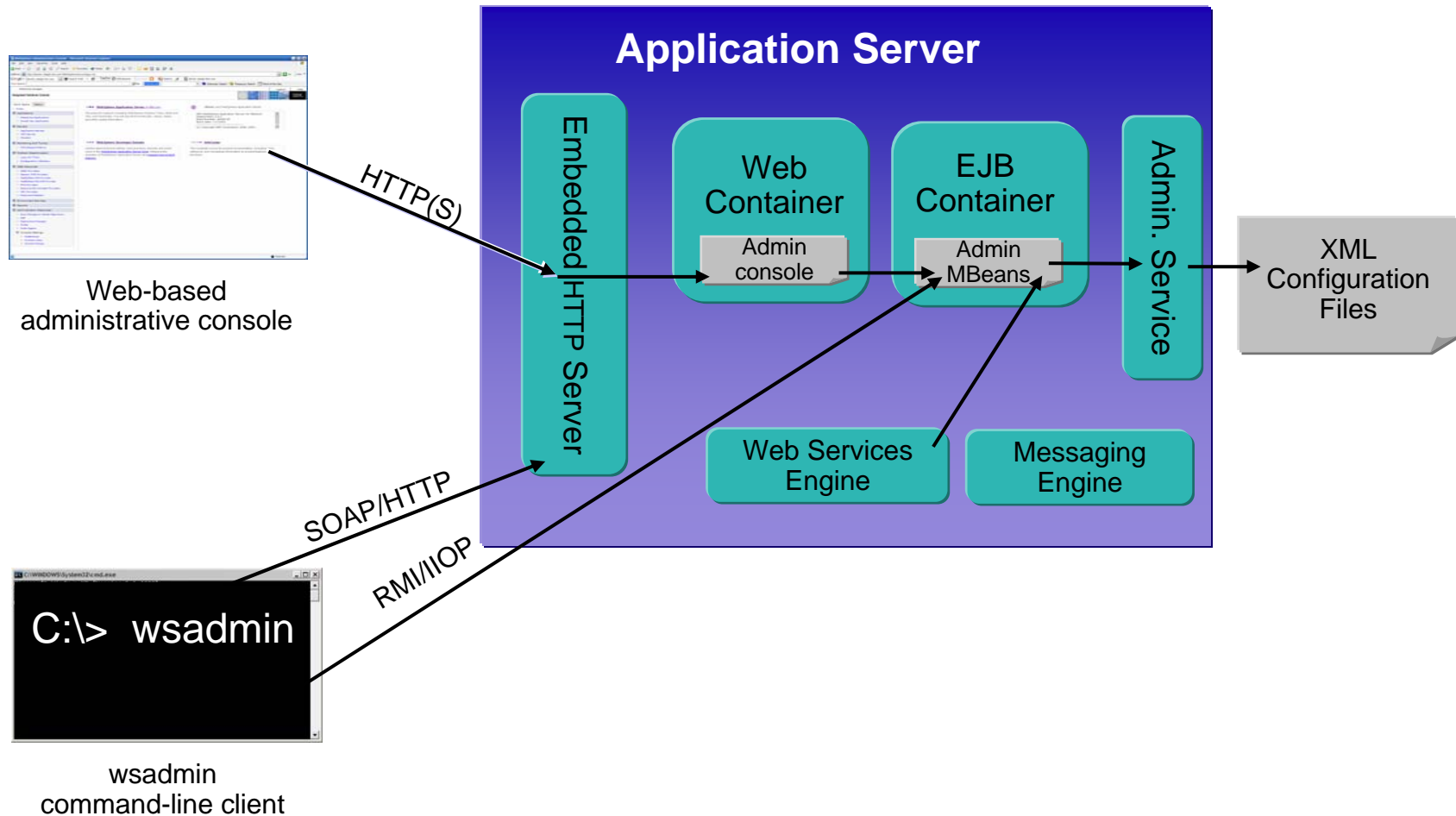
# Managed vs. Unmanaged Nodes

- A managed node is a node that contains a node agent
  - Used to be called a “node” in v5
- An unmanaged node is defined in the topology, but does not have a node agent process
  - Enables the rest of the environment to be aware of the node
    - Useful for defining HTTP servers as part of the topology, enabling creation of different plug-in configurations for different HTTP servers
  - Lack of a node agent prohibits any management by WebSphere (except for the IBM HTTP Server v6.0)





# Administering the Server



# WAS V6 Packaging Content

Content	Express	Application Server	Network Deployment
Core Application Server	Standalone Node	Standalone Node	Deployment Manager, Standalone Node, Managed Node
IBM HTTP Server v6 Web Server plug-ins	Yes	Yes	Yes
Application Client (not on zLinux)	Yes	Yes	Yes
Data Direct JDBC drivers <sup>1</sup>	Yes	Yes	Yes
Development and Deployment Tools <sup>2</sup>	Rational Web Developer ASTK	Rational Application Developer *Trial* ASTK	Rational Application Developer *Trial* ASTK
Database included in the package	DB2 Express <sup>1</sup> (Dev. Use only)	DB2 Express <sup>1</sup> (Dev. Use only)	DB2 Enterprise Server
Edge Components	No	No	Yes
IBM Tivoli Directory Server (LDAP server)	No	No	Yes
Tivoli Access Manager Server	No	No	Yes

Windows platform only <sup>1</sup>Windows and Linux/Intel platforms only <sup>2</sup>

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# J2EE 1.4 (1.3, 1.2 also supported to ease migration)

## Web Services and XML support

- **Standards / Portability** - XML Schema definitions for all deployment descriptors
- **JAX-P 1.2** - New properties for XML parsers
- **JAX-R** - XML registry API
- **JAX-RPC** - APIs for representing WSDL-based services as RPCs in Java (and vice-versa)
- **JSR 109** - Web services programming and deployment model
- **SAAJ 1.1** - SOAP Attachments API for Java

## Pluggable Messaging

- **EJB 2.1**
  - Typed message beans (used for any inbound JCA including pluggable JMS provider)
  - Timer service
  - Web service end-point support
- **JMS 1.1**
  - Unification of point-to-point and pub-sub interfaces
- **J2CA 1.5**
  - In-bound connections (supporting pluggable JMS provider, generalized for other types)
  - RA lifecycle support
  - Work manager (threads for resource adapters)

## ISV Enablement

- **JMX 1.2 / JSR-077 (J2EE Management)**
  - Notification emitters, and standard patterns
  - Information model representing J2EE application server concepts
- **JSR-088 (J2EE Deployment)**
  - XML-based deployment interfaces for J2EE
- **JACC 1.0**
  - Java Authorization Contract with Containers
  - APIs for registering J2EE component authorization policies

## Other

- **Servlet 2.4**
  - Extensible deployment descriptors
  - Request/response listeners
- **JSP 2.0**
  - Expression Language
  - Simple Tag Extension
- **JDBC 3.0**
  - Meta data and cursor support
- **JavaMail 1.3 updates**



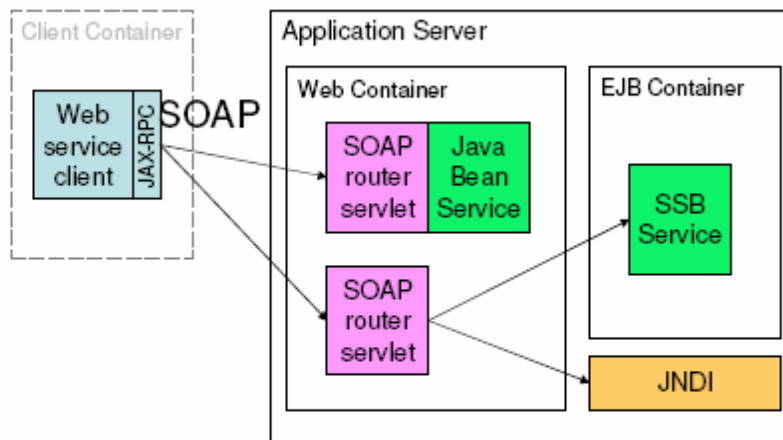
# Changes in Web Services

WebSphere 4.0 & 5.0	WebSphere 5.02/5.1	WebSphere 6.0
<b>Apache SOAP</b> <ul style="list-style-type: none"> <li>The programming model, deployment model and engine</li> </ul> <b>Proprietary APIs</b> <ul style="list-style-type: none"> <li>Because Java standards for Web services didn't exist</li> </ul> <b>Not WS-I compliant</b>	<b>JAX-RPC (JSR-101) 1.0</b> <ul style="list-style-type: none"> <li>New standard API for programming Web services in Java</li> </ul> <b>JSR-109 1.0</b> <ul style="list-style-type: none"> <li>New J2EE deployment model for Java Web services</li> </ul> <b>SAAJ 1.1</b> <b>WS-Security</b> <ul style="list-style-type: none"> <li>Extensions added</li> </ul> <b>WS-I Basic Profile 1.0</b> <ul style="list-style-type: none"> <li>Profile compliance</li> </ul> <b>UDDI4J version 2.0 (client)</b> <b>Apache Soap 2.3 enhancements</b> The engine is a new high performance SOAP engine supporting both HTTP and JMS	<b>JAX-RPC (JSR-101) 1.1</b> <ul style="list-style-type: none"> <li>Additional type support</li> <li>xsd:list</li> <li>Fault support</li> <li>Name collision rules</li> <li>New APIs for creating Services</li> <li>isUserInRole()</li> </ul> <b>JSR-109 - WSEE</b> <ul style="list-style-type: none"> <li>Moved to J2EE 1.4 schema types</li> <li>Migration of web services client DD moving to appropriate container DDs</li> <li>Handlers support for EJBs</li> <li>Service endpoint interface (SEI) is a peer to LI/RI</li> </ul> <b>SAAJ 1.2</b> <ul style="list-style-type: none"> <li>APIs for manipulating SOAP XML messages</li> <li>SAAJ infrastructure now extends DOM (easy to cast to DOM and use)</li> </ul> <b>WS-Security</b> <ul style="list-style-type: none"> <li>WSS 1.0</li> <li>Username Token Profile 1.0</li> <li>X.509 Token Profile 1.0</li> </ul> <b>WS-I Basic Profile 1.1</b> <ul style="list-style-type: none"> <li>Attachments support</li> </ul> <b>JAXR support</b> <b>UDDI v3 support</b> <ul style="list-style-type: none"> <li>Includes both the registry implementation and the client API library</li> <li>Client UDDI v3 API different than JAXR (exposes more native UDDI v3 functionality)</li> </ul>

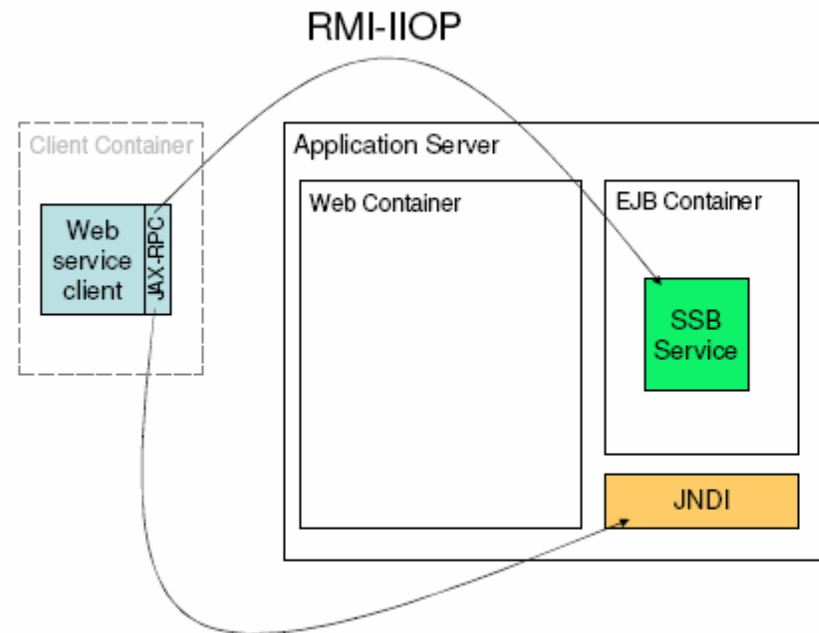


# Web Services – Multi-Protocol Efficiency

- Enhancements with JAX-RPC to support direct invocation of Stateless Session Bean Web Services



Existing SOAP/HTTP Invocation

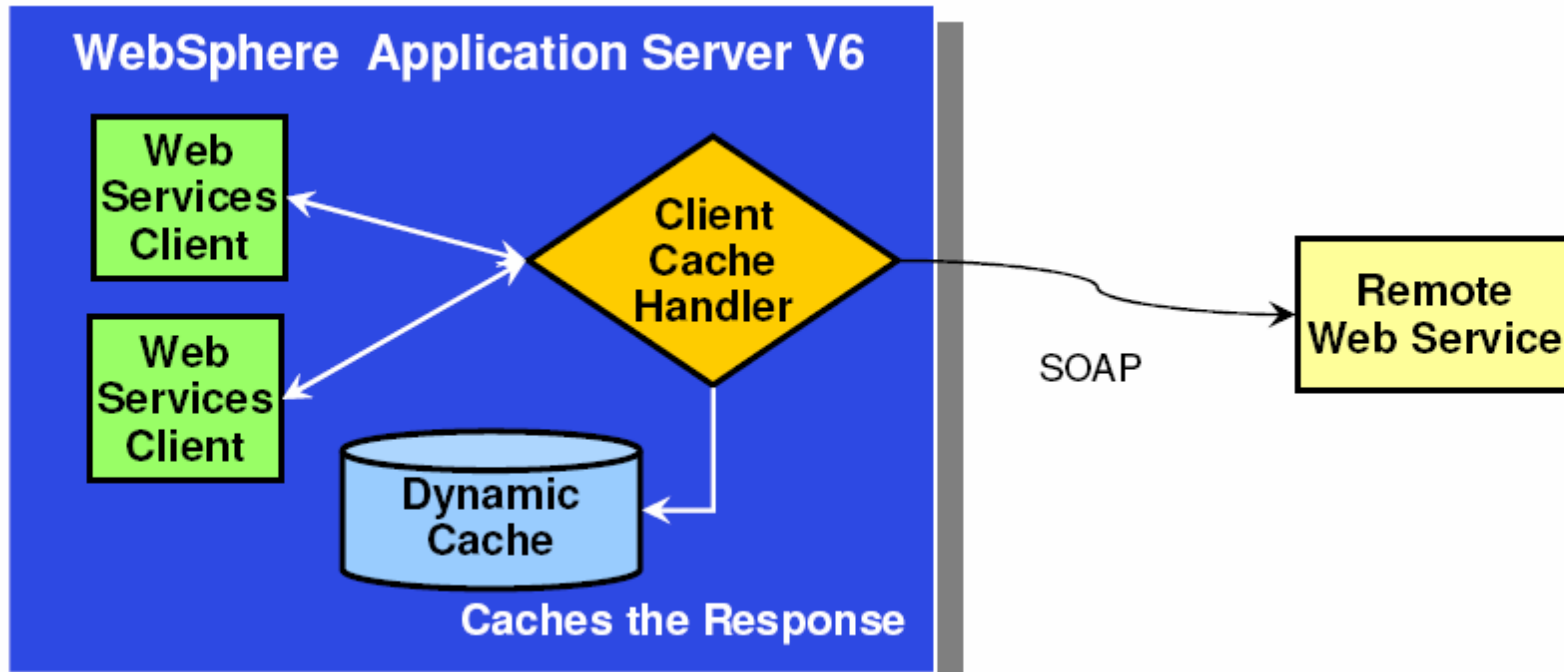


New Direct EJB Invocation




# Web Services – Client Caching Efficiency

- In addition to server-side caching, V6 supports caching for Web Services clients running within a V6 Application Server



# Programming Model Extensions (PME)

Programming Model Function Extensions (moving from WBI-SF to V6 Express and Network Deployment)	WebSphere Application Server V6 and WebSphere Application Server V6 - Express	WebSphere Application Server V6 Network Deployment	WebSphere Business Integration Server Foundation
<ul style="list-style-type: none"> <li>▶ Last Participant Support</li> <li>▶ Internationalization Service</li> <li>▶ WorkArea Service</li> <li>▶ ActivitySession Service</li> <li>▶ Extended JTA Support</li> <li>▶ Startup Beans</li> <li>▶ Asynchronous Beans</li> <li>▶ Scheduler Service</li> <li>▶ Object Pools</li> <li>▶ Dynamic Query</li> <li>▶ Web Services Gateway Filter Programming Model (with migration support)</li> <li>▶ Distributed Map</li> <li>▶ Application Profiling</li> </ul>	Yes	Yes	Yes
<ul style="list-style-type: none"> <li>▶ Back-up Cluster Support</li> </ul>	No	Yes	Yes
<ul style="list-style-type: none"> <li>▶ Workflow / Choreographer</li> <li>▶ Business Rule Beans (BRBeans)</li> <li>▶ CMP / Anything</li> </ul> 	No	No	Yes

# WAS V6 What's New - Agenda

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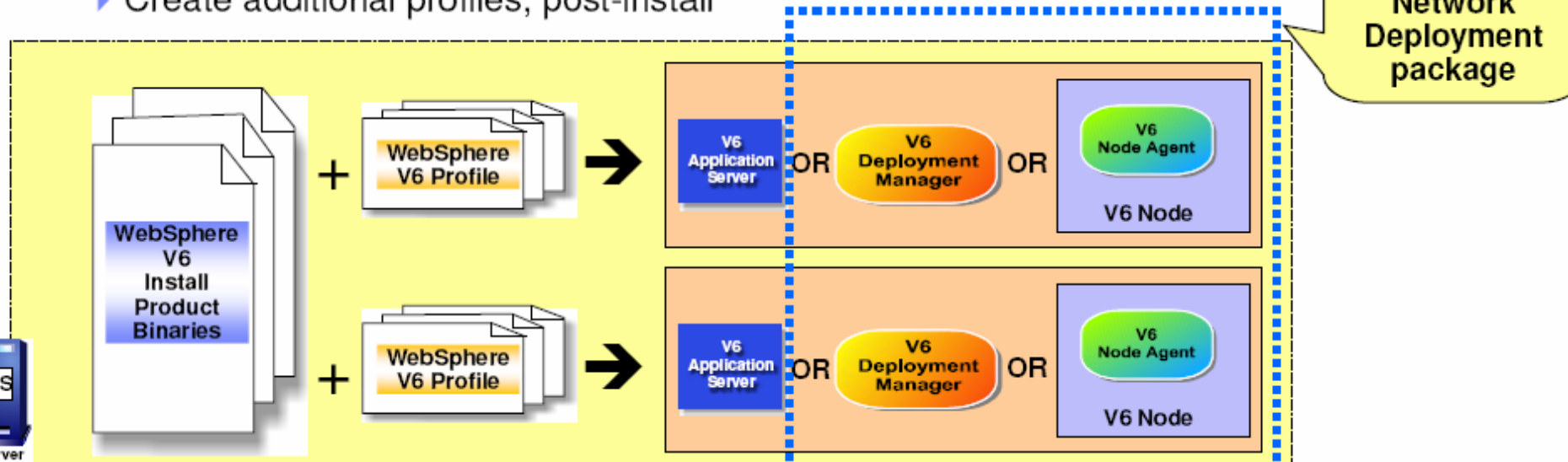
# Systems Management Foundation Enhancements

- Extends V5 System Management Model
  - ▶ Reduces learning curve for managing V6 environments
- Support for J2EE 1.4 specification
  - ▶ JMX 1.2, J2EE Management (JSR-077) and J2EE Deployment (JSR-088) features
- Support for extensible Server types
  - ▶ Web Server
  - ▶ Generic Server
- Improved Administrative Console appearance and functionality
  - ▶ Console views change based on context
    - Version
    - Platform
    - Installed Capabilities
  - ▶ Integrated Tivoli® Performance Viewer
  - ▶ Integrated IBM HTTP Server V6 management



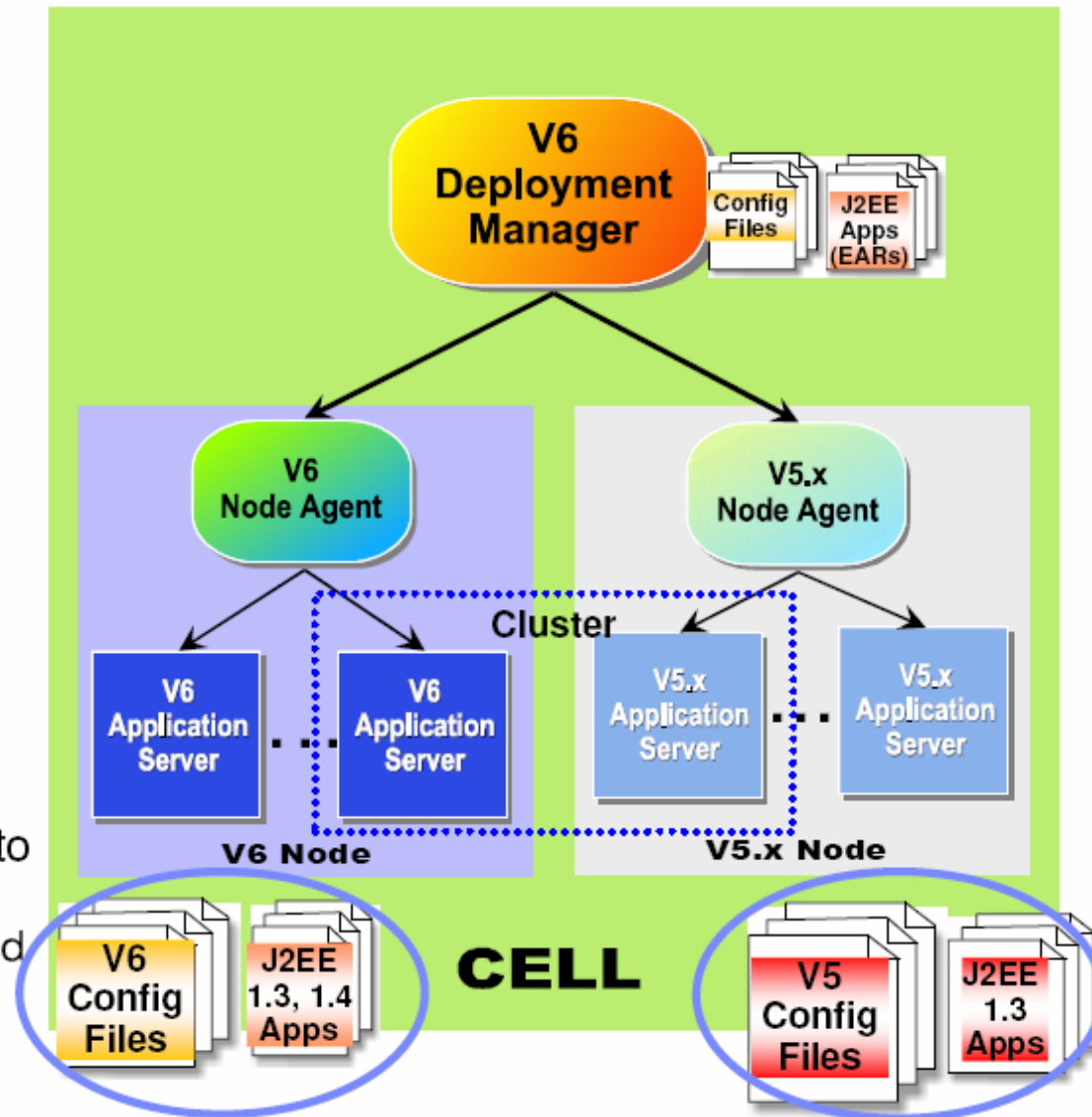
# Profiles – “Virtual App Servers”

- WebSphere Application Server V6 files are divided into two categories
  - Product Files - shared application binaries for WebSphere
  - User Files - set of user customizations
    - Includes WebSphere configuration, installed applications, resource adapters, properties, log files, transaction log files, etc.
- Each Profile defines a WebSphere runtime environment
  - Stand-alone Application Server, Deployment Manager (DMgr) or Managed Node
  - Profiles share product binaries
- Installer creates a WebSphere profile
  - Create additional profiles, post-install



# Mixed V6.x and V5.x Nodes in a Single Cell

- Support of mixed V6 and V5.x nodes in a **single cell**
  - DMgr **must** be at V6 level
- V5.x nodes can be on different platforms
- Some or all nodes (including Deployment Manager) may share physical machine/LPAR
- Configuration files for V5.x code follows the V5.x definition
- Supports mixed V5 and V6 cluster members
- Some temporary limitations apply to a mixed Node
  - Please review these limitations, listed in the Migration presentation





# Application Management Features

- Fine-grained Application Update
  - ▶ Ability to add, update or remove parts of the installed application and restart the changed part
- System Applications
  - ▶ J2EE Applications that are an integral part of the WebSphere Application Server and not subject to user manipulation
    - Example: Administrative console, File transfer
- Rollout Application Update Option
  - ▶ Automatic roll out of application update in a clustered environment
    - Ensures no service interruption of the application
    - Stops, updates and starts the application one cluster member at a time, while the other cluster members continue to run the application



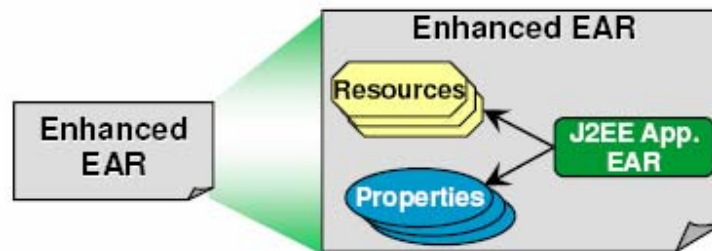
# Configuration Archive

- Basically the same as a regular WebSphere Application Server configuration, with two main differences:
  - ▶ It may be a subset of a full configuration
  - ▶ Configuration information is virtualized to make it portable
    - Removes any specific information, like the host name
- WebSphere Configuration Archives are used to import/export configurations
- Allows simple creation of many servers with the same configuration



# Enhanced EAR

- EAR file that contains most of the application information needed to install in the Application Server
  - ▶ J2EE EAR, Deployment information and some application resources (JDBC) and properties (like setting class loader policy)



- Enhanced EAR support integrated with Rational Application Developer, Application Server Toolkit and WebSphere Application Server V6
- Benefits: Improved productivity
  - Application resources/properties come with the application
  - Application install process creates the necessary resources within the server or cluster
  - Moving application from one server to another also moves the resources

# WAS V6 What's New - Agenda

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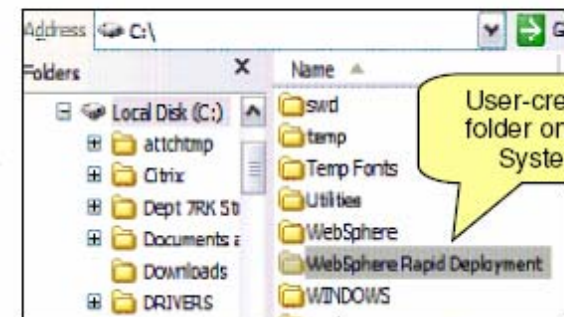
# WebSphere Rapid Deployment (WRD) Overview

- Goal – Simplify development and deployment of applications
- Comprised of following key concepts:
  - ▶ Annotation-based Programming
  - ▶ Deployment Automation
  - ▶ Change Trigger Processing
- WRD is a collection of Eclipse plug-ins that run in two modes:
  - ▶ **Integrated with tools** - IBM Rational Web/Application Developer and Application Server Toolkit (AST)
  - ▶ **Non-GUI** mode on a user-defined file system directory, defined as WRD workspace

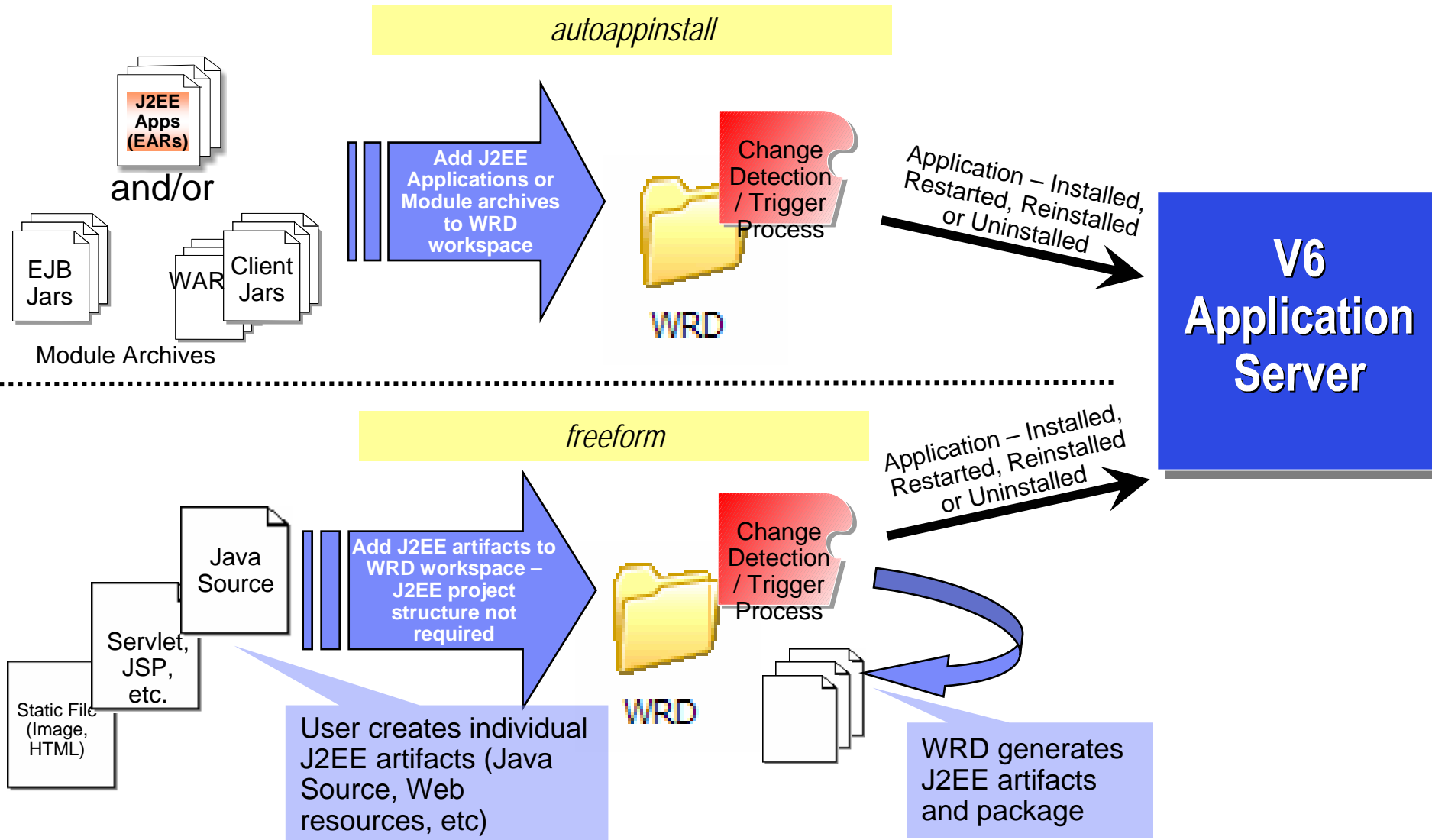
WRD runs within the tool or Non-GUI, from user defined WRD workspace



OR



# WRD Styles: autoappinstall and freeform








# Dynamic Development (Avoiding the “RESTART” Situations)

## Two main stages in RAD V6 dynamic development

- Creating New Artifacts
- Changing Existing Artifacts

-  AUTOMATIC hot re-deployment of changes
-  Manual quick APPLICATION level restart
-  Manual SERVER restart quick app level restart

WS Rapid Deploy (WRD) Dynamic Development Scenarios		
Development Activity	WAS5.1	WAS6.0
Create EAR Project	Plan to Restart Server	Dynamic (WRD)
Create Web Project	Plan to Restart Server	Dynamic (WRD)
Create EJB Project	Plan to Restart Server	Dynamic (WRD)
Create EJB with Logic	Restart Server (Manually)	Dynamic (WRD)
Change EJB	Restart Project EAR (Manually)	Dynamic (WRD)
Create JSP	Dynamic (Web Container)	Dynamic (Web Container)
Change JSP	Dynamic (Web Container)	Dynamic (Web Container)
Create JavaBean in Web Project	Dynamic (Web Container)	Dynamic (Web Container)
Change JavaBean in Web Project	Dynamic (Web Container)	Dynamic (Web Container)
Create JavaBean in regular Java Project and Reference from EJB or Web project artifacts	Restart Project EAR (Manually)	Dynamic (WRD)
Change JavaBean in regular Java Project	Restart Project EAR (Manually)	Dynamic (WRD)
Create Web Service (Exposing a JavaBean or EJB)	Restart Server	Dynamic (WRD)
Change a Web Service	Restart Server	Dynamic (WRD)

# WAS V6 What's New - Agenda

- New Infocenter and Education Assistant
- Themes, Packaging and Primer
- Programming Model
- System Management
- Rapid Deployment
- **Enterprise Service Bus**
- Clustering and High Availability
- Security

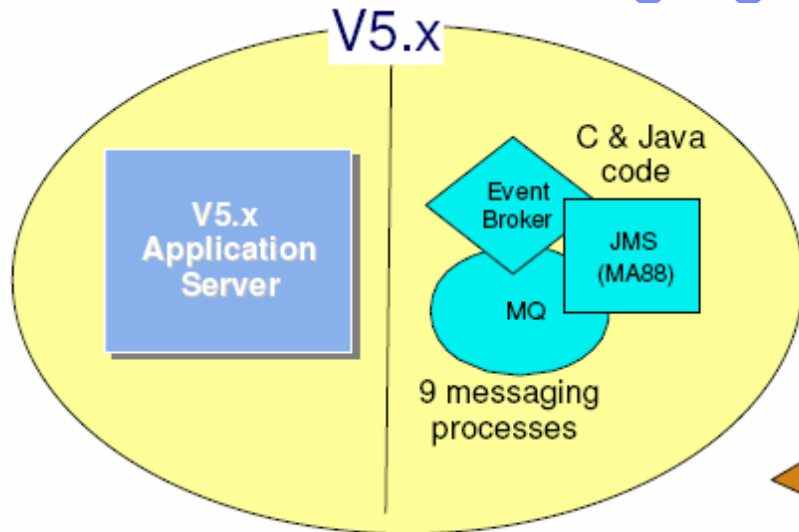


# WebSphere Service Integration Technologies

- Service Integration Bus provides the framework needed to support Service Oriented Architecture (SOA)
- Enables WebSphere Application Server to provide services as part of an Enterprise Service Bus (ESB)
- JMS Messaging, Web Services and SIBWS are built upon Service Integration Technologies

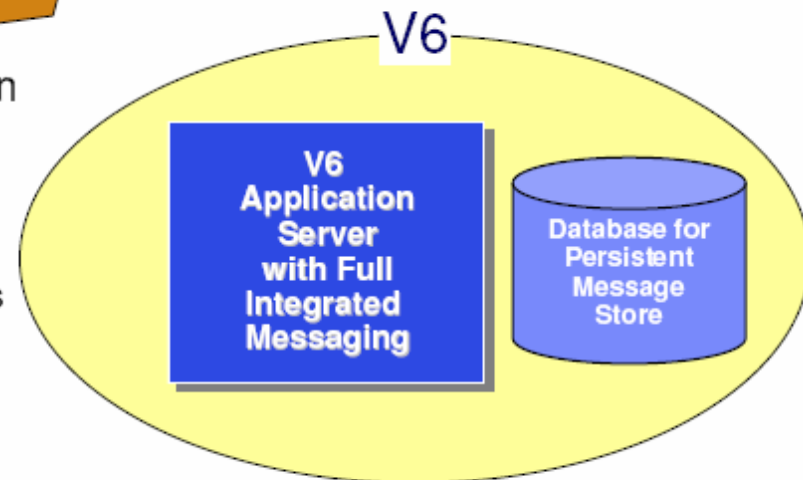


# Embedded Messaging Server Support: (V5 → V6)

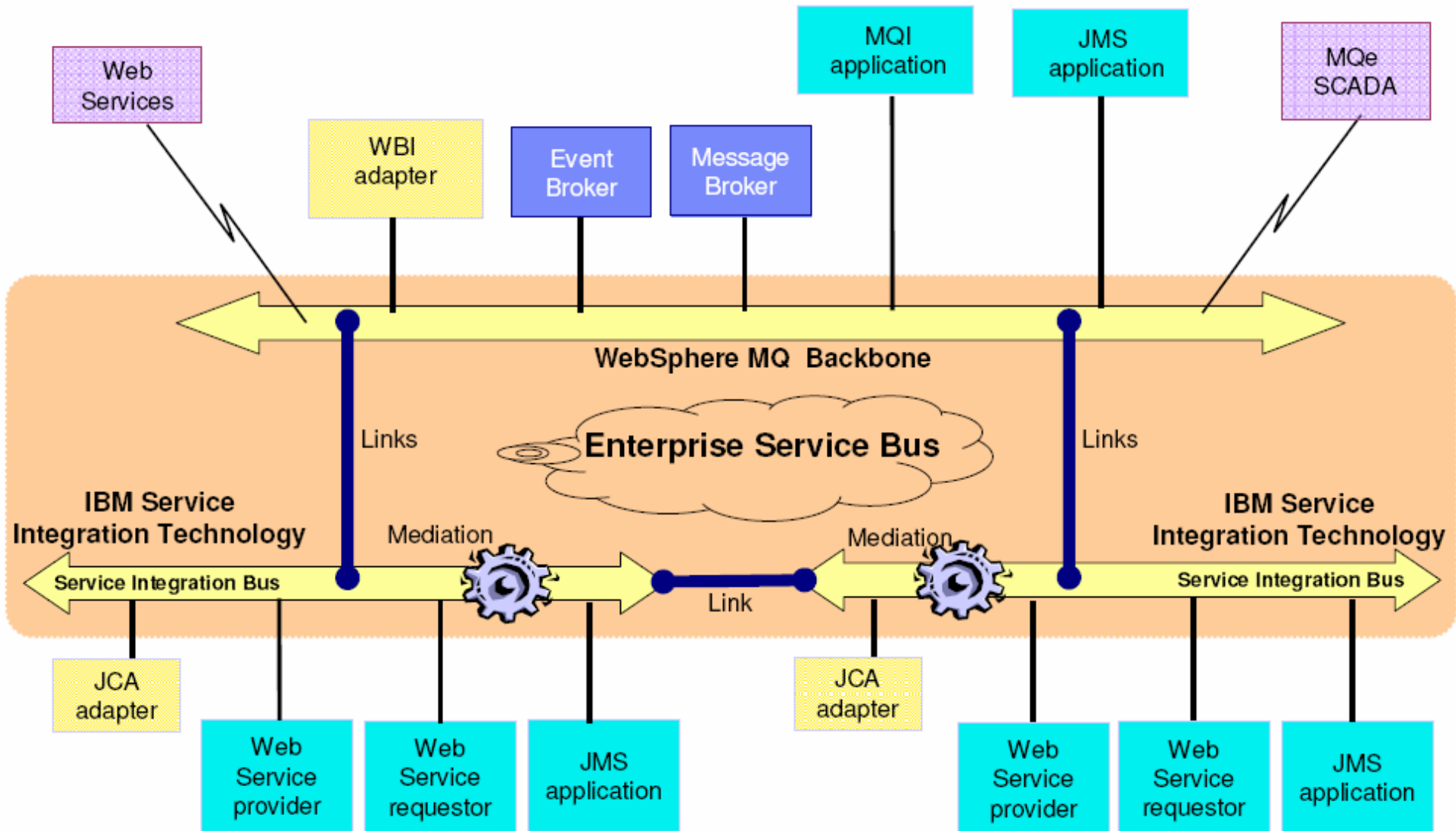


- In V5, the Embedded messaging server was a subset of WebSphere MQ 5.3 and Event Broker – not integrated within the Application Server
- Limitations:
  - ▶ Issues with scalability and single point of failure
  - ▶ No connectivity to external WebSphere MQ
  - ▶ Security not fully integrated

- In V6, the messaging provider is fully integrated within the Application Server as part of the Service Integration infrastructure
- Additional advantages:
  - ▶ In a Network Deployment Cell, messaging infrastructure is scalable and highly available eliminating SPOF
  - ▶ Full connectivity to external WebSphere MQ and other V6 Cells and co-existence with WebSphere MQ
  - ▶ Security fully integrated
  - ▶ Flexible Quality of Message delivery



# ESB Service Integration Bus → Unified Administration



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# Clustering Enhancements

- Support for failover of Stateful Session EJBs (SFSB)
  - ▶ Uses Data Replication Service, similar to HTTP Session failover
  - ▶ Interacts with WLM to provide routing data based upon failover
- Data Replication Service (DRS) enhancements:
  - ▶ Faster underlying transport
  - ▶ Simplified configuration





# Unified Clustering

- Management consistency for clustering of different resources
  - ▶ Operational ease of use - The view and use of clusters will be administered in a unified and consistent manner for all protocols (HTTP, EJB, JMS, JCA, etc)
- Consistency - New WLM functions (weighted distribution, eWLM integration, SLA, hardware provisioning, etc.) are implemented once for all protocols
- High Availability - Makes WLM a highly available service which makes cluster and routing information always available

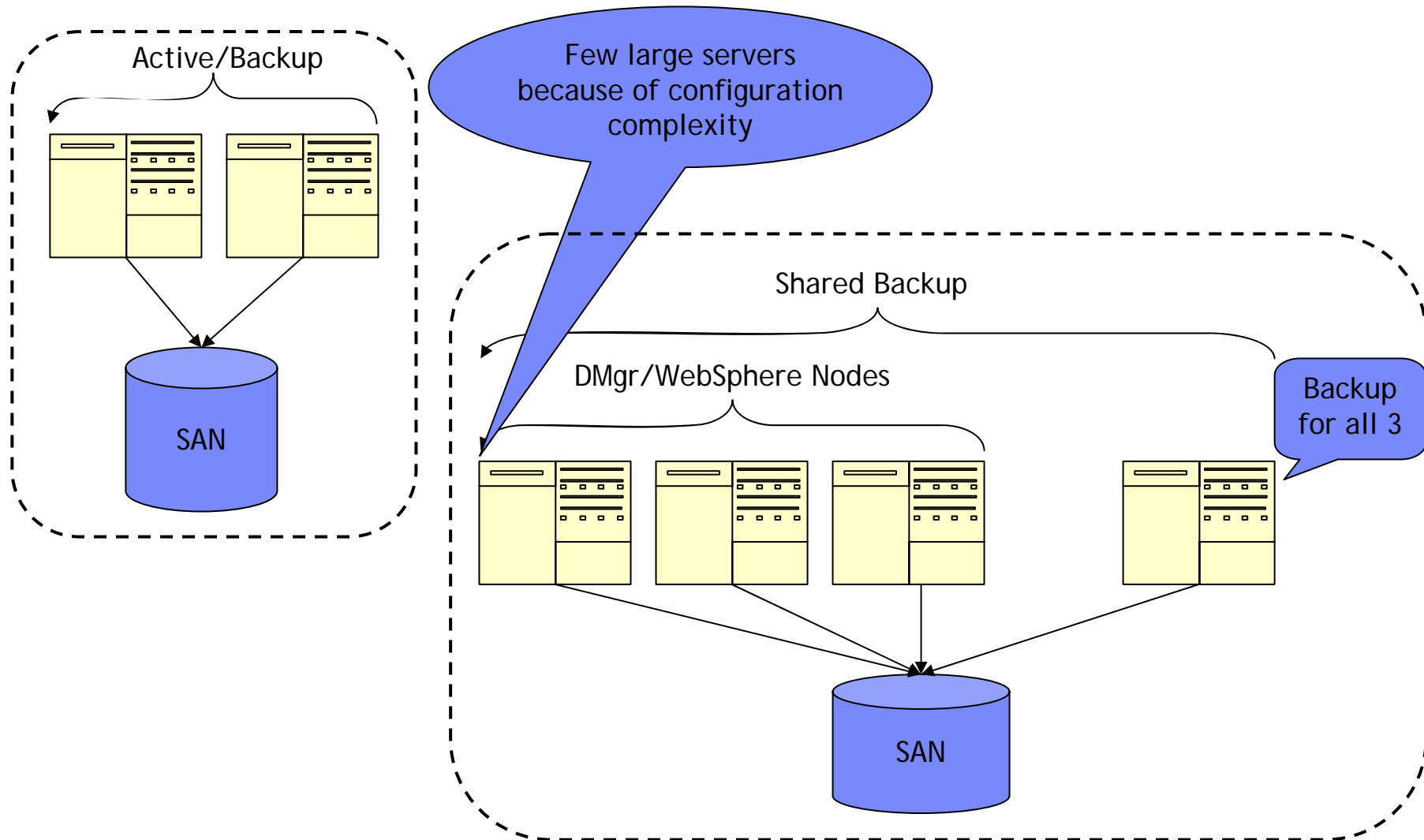


# High Availability

- Significant improvements in high availability
  - ▶ Can be used as part of an overall 99.999% availability solution.
- High Availability Manager is responsible for running key services on available servers rather than on a dedicated one (such as the DMgr)
- Can take advantage of fault-tolerant storage technologies such as NAS
  - ▶ Significantly lowers the cost and complexity of HA configurations
- Hot standby and peer failover for critical singleton services
  - ▶ WLM routing, PMI aggregation, JMS messaging, Transaction Manager, etc.
  - ▶ Failed singleton starts up on an already-running JVM
  - ▶ Planned failover takes < 1 second
- The configuration of highly available systems is simplified
  - ▶ Works out of the box in most cases



# Clustering for High Availability Configurations



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# Security Highlights

- Java Authorization Contract with Containers (JACC) 1.0 support
  - ▶ Allows plug-in of your Authorization servers
  - ▶ JACC compliant TAM (Tivoli Access Manager) shipped with V6 Network Deployment
  - ▶ Continues to support the non-JACC native authorization (similar to V5)
- Security Attribute Propagation from WebSphere Application Server V5.1.1
- Implements WS-Security 1.0



# Resources

- <http://JavaDevTools.com> (a.k.a. RationalCentral.com and WebSphereCentral.com)  
(Presentations, references, tutorials, white papers, articles, links, etc.)
- <http://ibm.com/developer>  
(IBM developerWorks for technologies and products)
  - [ibm.com/developer/websphere](http://ibm.com/developer/websphere)  
(WebSphere Developers Domain)
  - [ibm.com/developer/rational](http://ibm.com/developer/rational)  
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