



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

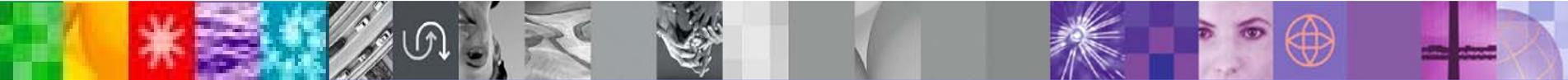
Company



IBM Software Group

Application Development Tools

→ V6 Accelerated Learning ←



Name
Title
Company

New Infocenter, including “Education Assistant”

- New Infocenter
<http://ibm.com/software/webservers/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/webservers/appserv/infocenter.html>

United States [change] Terms of use

IBM

Home Products Services & solutions Support & downloads My account

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

WebSphere Application Server

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

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

WebSphere Application Server

WebSphere software

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](#)

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 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

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	Tool overview Eclipse overview
Installation and migration	Installation and migration
J2EE™ application development	Developing Java™ and J2EE applications with Unified Markup Language (UML) Analyzing coding practices in Java and J2EE applications J2EE Web and EJB™ development
Web application development	Developing Web applications (including J2EE Web applications) Developing Web applications with JavaServer™ Faces (JSF)
Portal application development	Developing portal applications

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



“Education Assistant” – WAS V6 – Modules

IBM Education Assistant



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

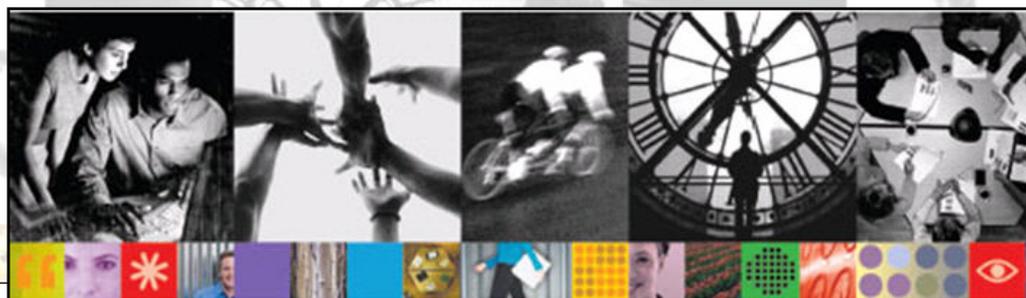
Click on links below to view educational material.

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

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



New JavaDevTools.com Tutorial Demos and more...


[JavaDevTools.com](#)
[IBM Links](#)
[About Bill Hahn](#)

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!](#)

- 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)

WebSphereCentral.com
RationalCentral.com
JavaDevTools.com

RAD V6 Tutorial Demo Series

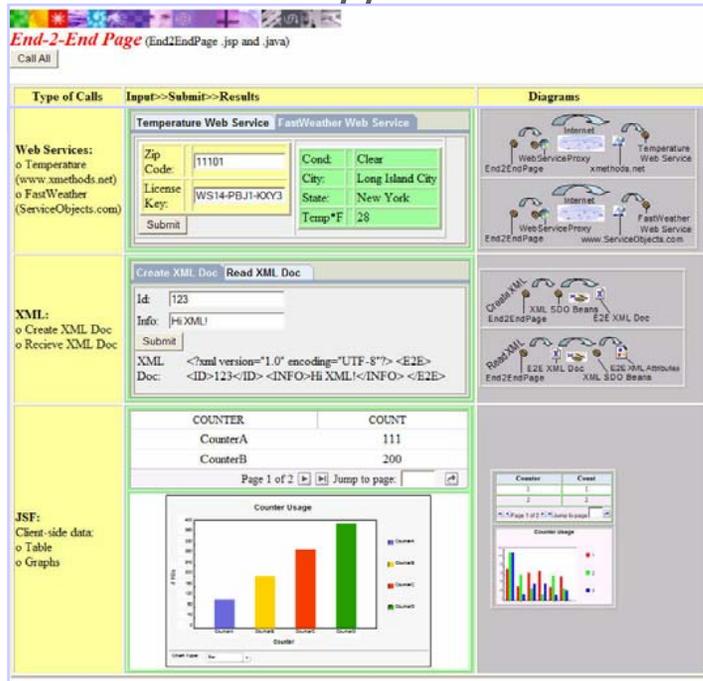
Executives and Managers

- *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

Web Services:

- o Temperature (www.smethods.net)
- o FastWeather (ServiceObjects.com)

XML:

- o Create XML Doc
- o Receive XML Doc

JSF:

- o Client-side data:
- o Table
- o Graphs

Temperature Web Service FastWeather Web Service

Zip Code: 11101 Cond: Clear
 City: Long Island City
 License Key: WS14-PBJ1-00Y3 State: New York
 Temp°F: 28

Create XML Doc Read XML Doc

Id: 123
 Info: Hi XML
 XML: <?xml version="1.0" encoding="UTF-8"?> <E2E>
 Doc: <ID>123</ID> <INFO>Hi XML!</INFO> <E2E>

COUNTER COUNT

CounterA	111
CounterB	200

Page 1 of 2 | Jump to page: []

Counter Usage



#2 Quick Success Apps



Navigation - QuickSuccess

http://localhost:9060/QuickSuccess/faces/QuickHome.jsp

Welcome to the Quick Success Gallery

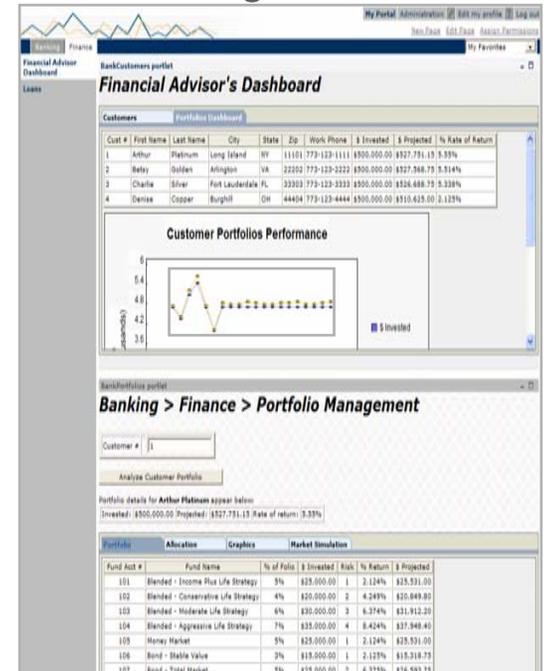
Home
 Weather
 Java
 EJB
 EJB Web Service
 SDO CMP Facade
 DB List
 JSF Page Data
 JSF Client Data

Navigation - Detail

```

    graph TD
        Home[Home] --> Weather[Weather]
        Home --> Java[Java]
        Home --> SDO[SDO CMP Facade]
        Home --> JSF[JSF Page Data]
        Weather --> QuickWeather[QuickWeather]
        Java --> QuickJava[QuickJavaWeb]
        SDO --> QuickSDO[QuickSDO]
        JSF --> QuickJSF[QuickJSFPage]
        QuickWeather --> QuickEJB[QuickEJB]
        QuickJava --> QuickEJB
        QuickSDO --> QuickDB[QuickDB]
        QuickJSF --> QuickDB
        QuickEJB --> QuickDB
        QuickDB --> QuickDBUpdate[QuickDBUpdate]
        QuickDBUpdate --> QuickSDO
    
```

#3 Banking & Finance



Financial Advisor Dashboard

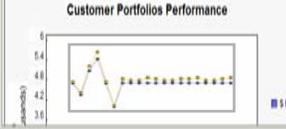
Bankers portfolio

Financial Advisor's Dashboard

Customers

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	\$527,751.13	5.55%
2	Betty	Golden	Arlington	VA	22202	773-123-2222	\$500,000.00	\$527,568.73	5.51%
3	Charlie	Silver	Fort Lauderdale	FL	33303	773-123-3333	\$500,000.00	\$526,688.73	5.33%
4	Dennis	Copper	Burghil	OH	44404	773-123-4444	\$500,000.00	\$510,625.00	2.12%

Customer Portfolios Performance



Banking > Finance > Portfolio Management

Customer # 1

Analyze Customer Portfolio

Portfolio details for Arthur Platinum appear below
 Invested: \$500,000.00 Projected: \$527,751.13 Rate of return: 5.55%

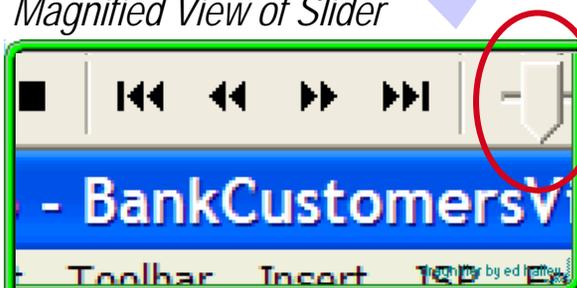
Fund Act #	Fund Name	% of Folio	Invested	Risk	% Return	Projected
101	Blended - Income Plus Life Strategy	5%	\$25,000.00	1	2.124%	\$25,531.00
102	Blended - Conservative Life Strategy	4%	\$20,000.00	2	2.247%	\$20,849.00
103	Blended - Moderate Life Strategy	6%	\$30,000.00	3	6.374%	\$31,912.00
104	Blended - Aggressive Life Strategy	7%	\$35,000.00	4	8.424%	\$37,948.40
105	Honey Market	3%	\$15,000.00	1	2.124%	\$15,531.00
106	Bond - Stable Value	3%	\$15,000.00	1	2.123%	\$15,518.75
107	Bond - Total Market	5%	\$25,000.00	2	6.375%	\$26,992.75

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/p/_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

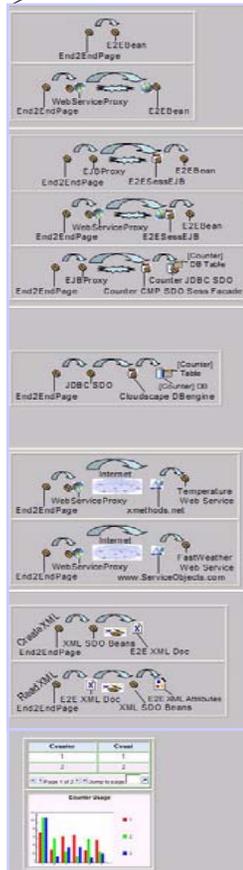
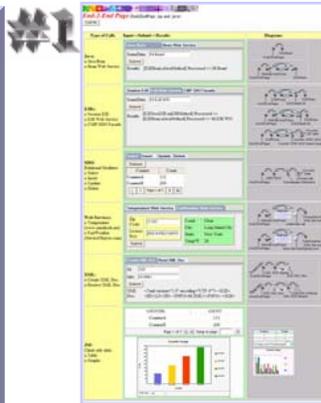
➔ Model, Build, Test, Debug, Deploy

- UML Model Visualizations
- Dynamic Development
- Automated Deployment

J2EE+ Builder Demos

➔ Includes JSF, SDO, Web Services

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



Quick Success Applications

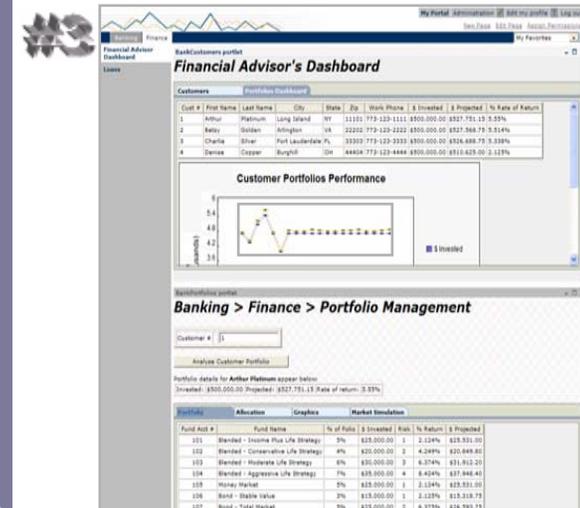
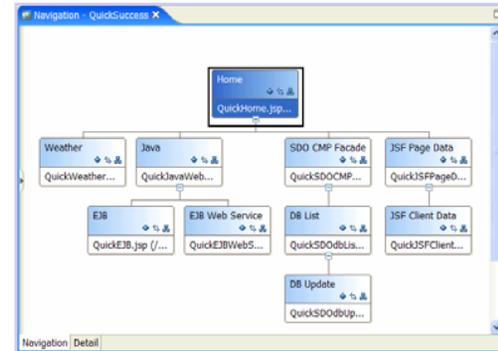
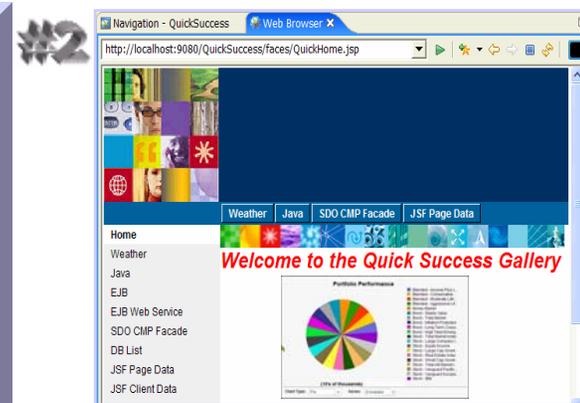
Demo

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

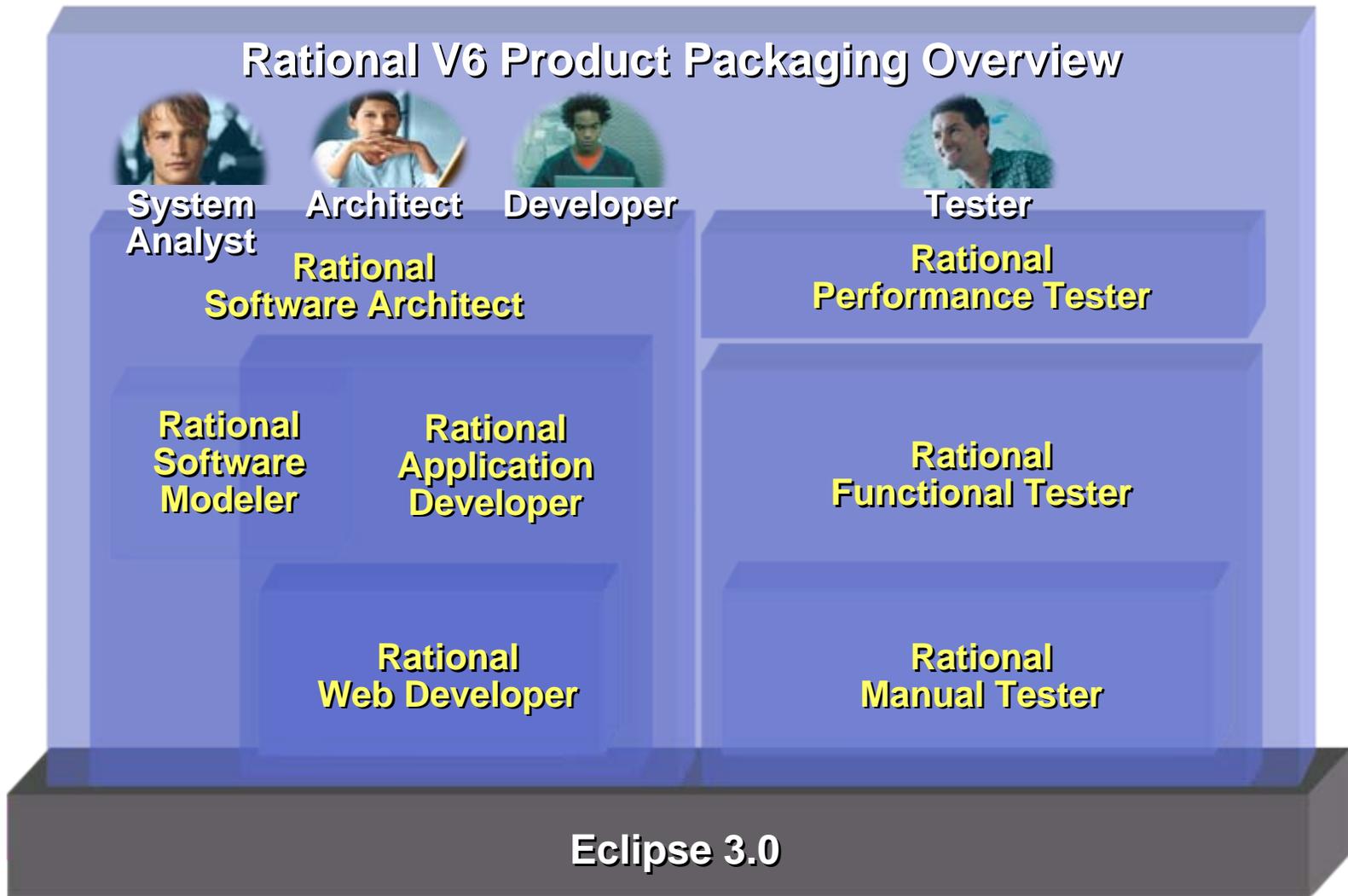
Banking & Finance Web/Portal Applications

Demo

- Banking Accounts
- Portfolio Management
- Financial Advisor Dashboard



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



Tester

- Multi-user performance load testing
- Visual test editor
- Real-time reporting with rich graphics
- Highly scalable

IBM Rational Performance Tester

- Automated functional testing
- Choice of test script language
 - Java™ or VB.NET™
- ScriptAssure™
- Data-driven testing

IBM Rational Functional Tester

- Manual testing assistance
- Reuse library
- Rich text editor
- Data entry and compare
- Import/export

IBM Rational Manual Tester

Eclipse



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)



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Lifecycle Tools – Across The Development Disciplines

Disciplines

Process Modeler Business Modeling

RSA (RequisitePro Views) Requirements

RSA/RAD Analysis & Design

RAD Implementation

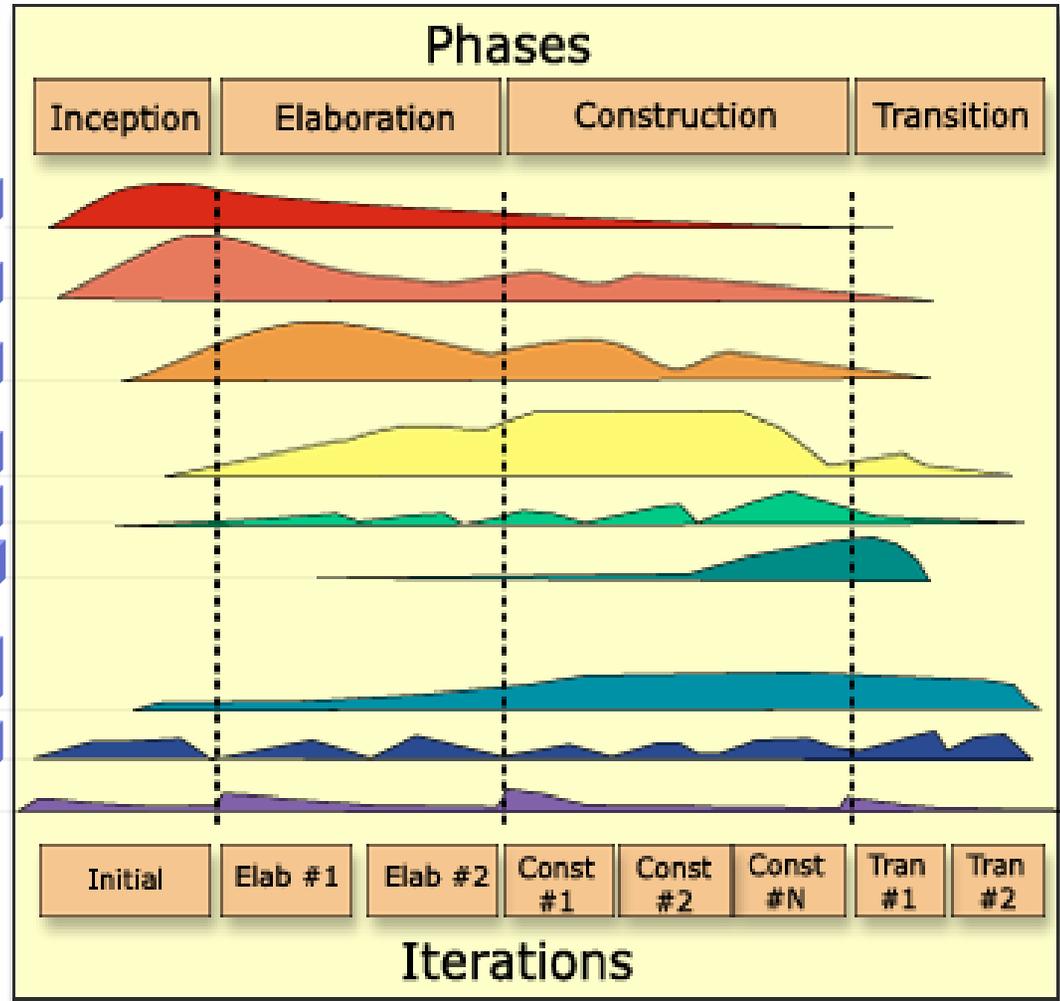
RAD Test

RAD Deployment

RAD (ClearCase Views + ClearQuest Views) Configuration & Change Mgmt

RAD (ClearQuest + Project Console) Project Management

Environment



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 ¹

- Requirement Management perspective
- ClearCase perspective
- ClearQuest perspective
- Functional Test perspective

Disciplines

- Business Modeling
- Requirements
- Analysis & Design
- Implementation
- Test
- Deployment
- Configuration & Change Mgmt
- Project Management
- Environment

The screenshot displays the IBM Rational Software Development Platform interface. The main window shows a UML Use Case Diagram with an actor named 'Attendee' connected to five use cases: 'Register for Conference', 'Login to RSDUC site', 'Check weather', and 'Get directions to conference location'. The 'Requirement Explorer' on the left shows a project structure with 'RSDUC UML Model' containing 'Use Cases'. The 'Properties' window at the bottom right shows details for a selected use case: Name: 'Use Cases', Type: 'Usecase', and Description: (empty).



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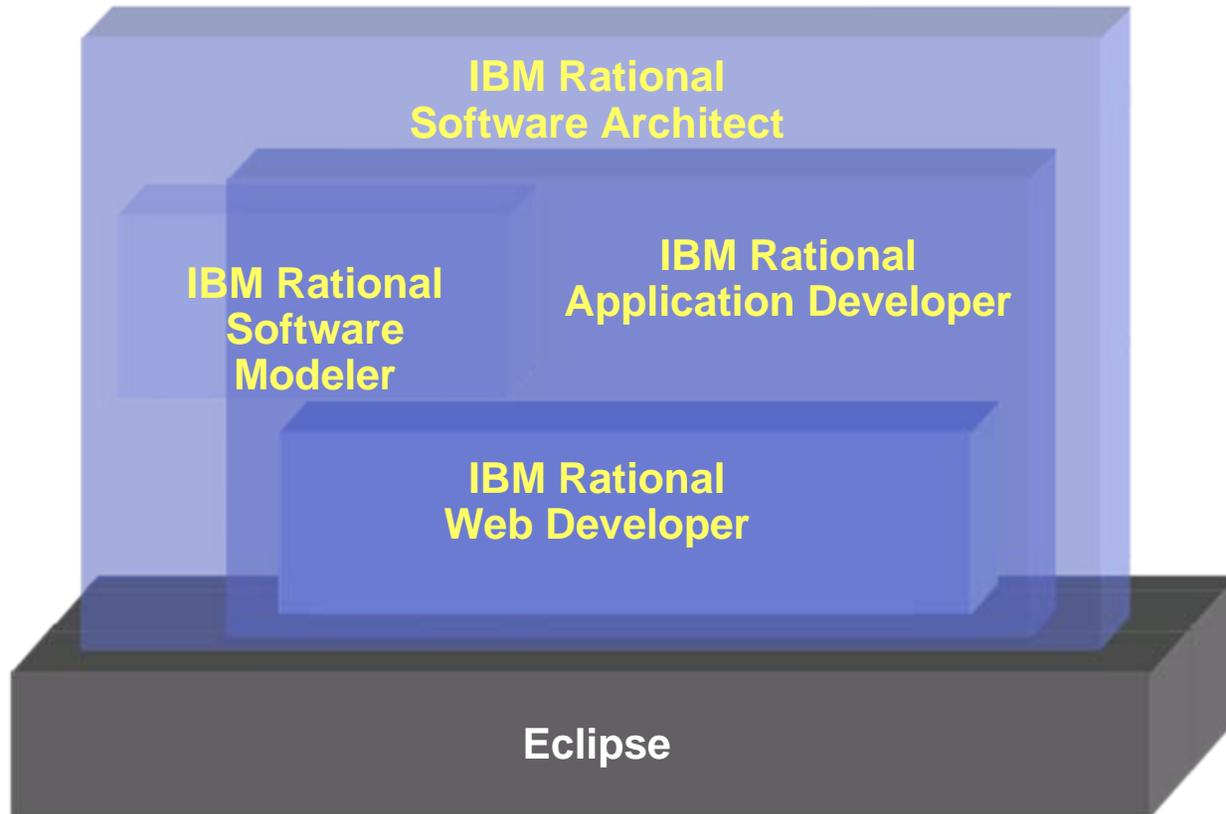
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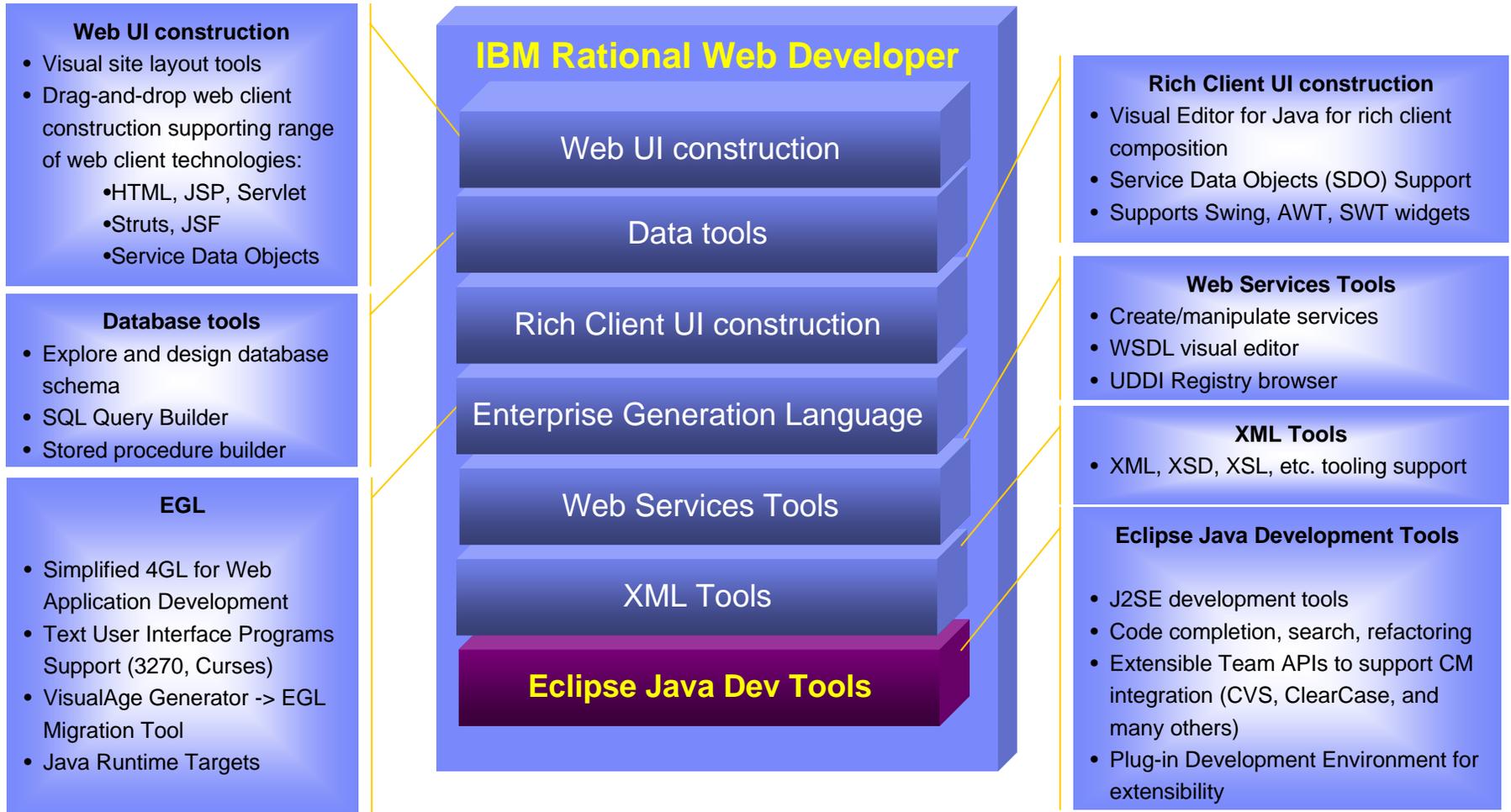
Design and construction tools



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

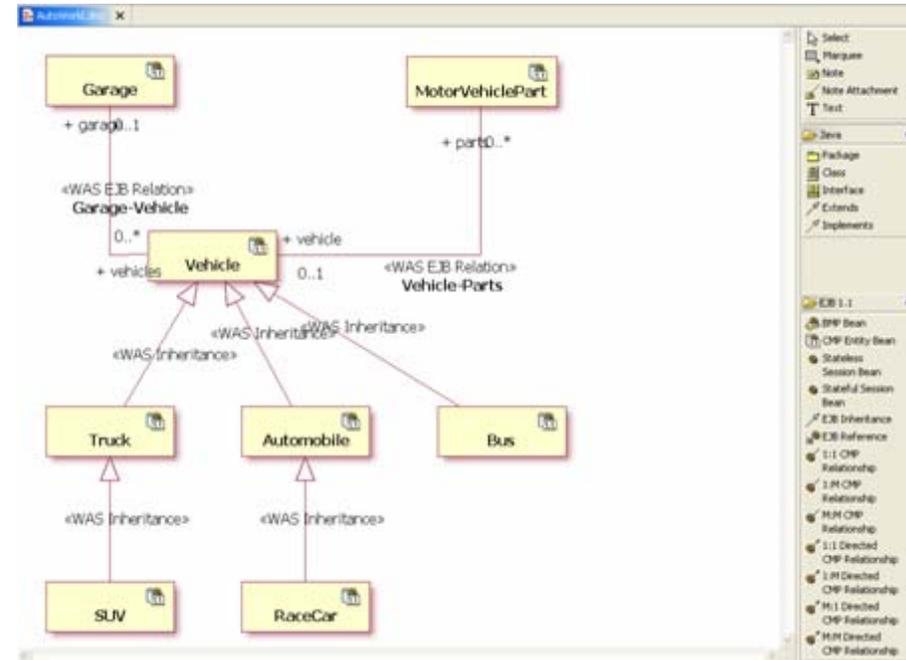
• **Messaging**

- 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

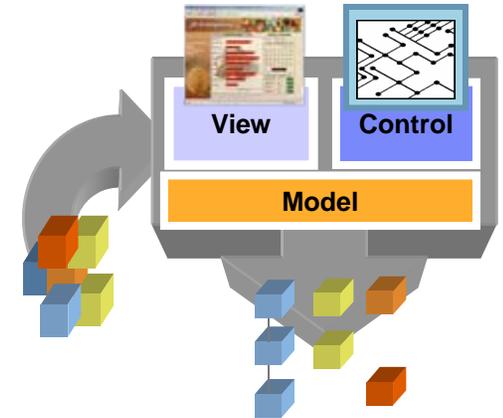
- Constructing web page forms, formatting, validation, etc.
- GUI widget richness
- Calling appropriate "Action" when button pressed, etc.
- Passing data to business logic

• 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 shows a web browser window displaying an IBM WebSphere Portal. The browser title is "IBM WebSphere Portal - Microsoft Internet Explorer". The address bar shows "http://yclidesktop.raleigh.ibm.com/wps/myportal/.scr/LoggedInIn". The page has a navigation menu with tabs: Home, Banking Account, Portfolio, Mortgage/Loans, Bill Pay, and ExtremePlace. The main content area is divided into several panels:

- Accounts:** A sidebar menu with options: Order Checks, Payment, Help.
- Banking Accounts:** A table showing account details.

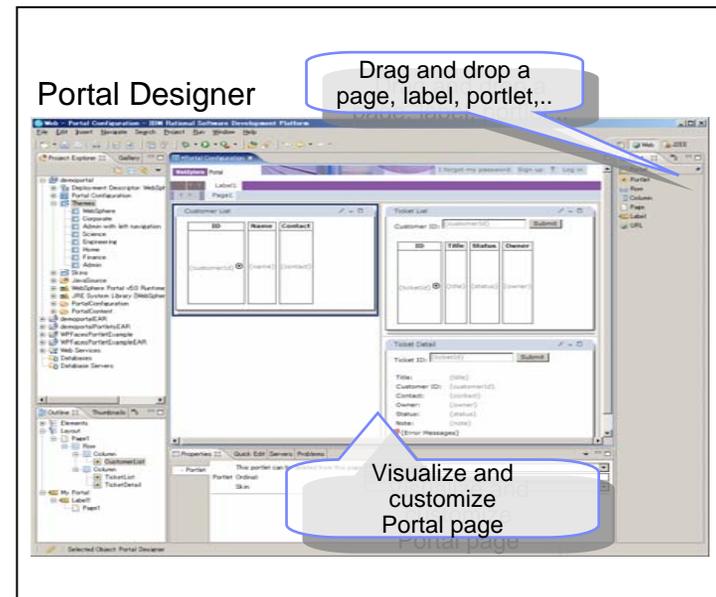
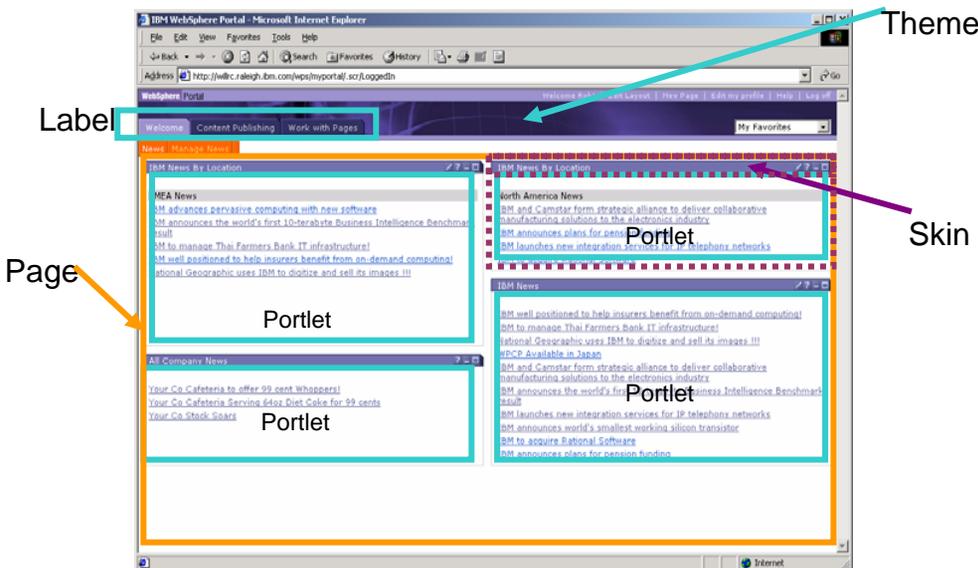
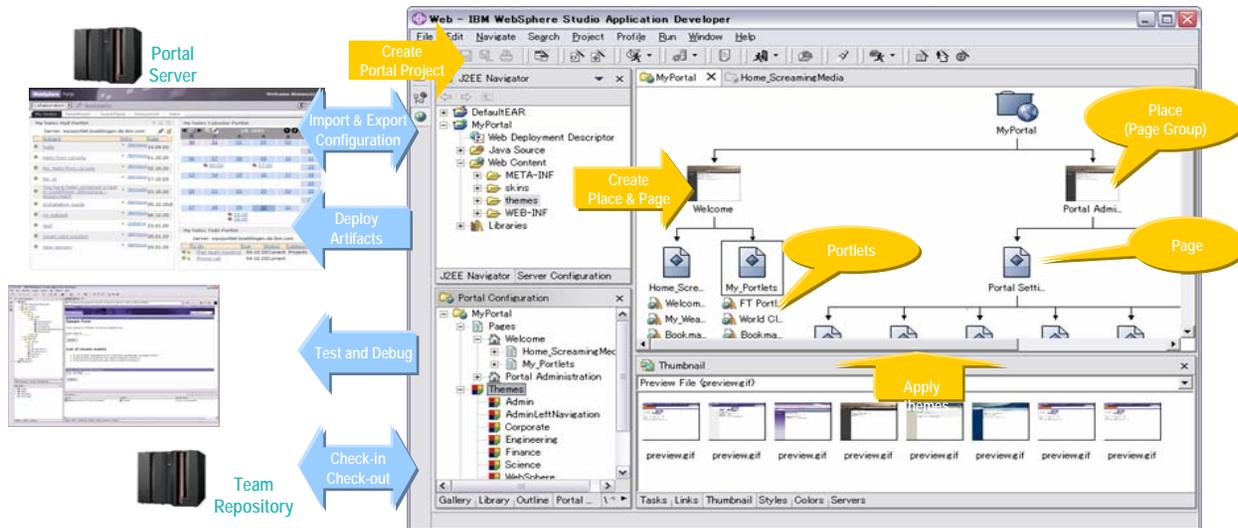
Account #	Account Type	Balance
96,666	Credit	2,000.00
74,444	Checking	1,432.44
85,555	Saving	2,567.56
- Account Details:** A table showing transaction history for Account Number: 96666.

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
- Transfer Funds:** A form titled "Make Transfer" with fields for "From:" (Select Account), "To:" (Select Account), and "Amount: \$". A "Continue" button is at the bottom.
- Expense Allocation:** A pie chart showing the distribution of expenses. A legend lists categories: Mendical/Dental, Mortgage/Rent, Food, Gas/Electric, Cloth, Insurance, Dependent Care, Taxes, Entertainment/Travel, Transportation, and Telephone.

Callouts highlight the following features:

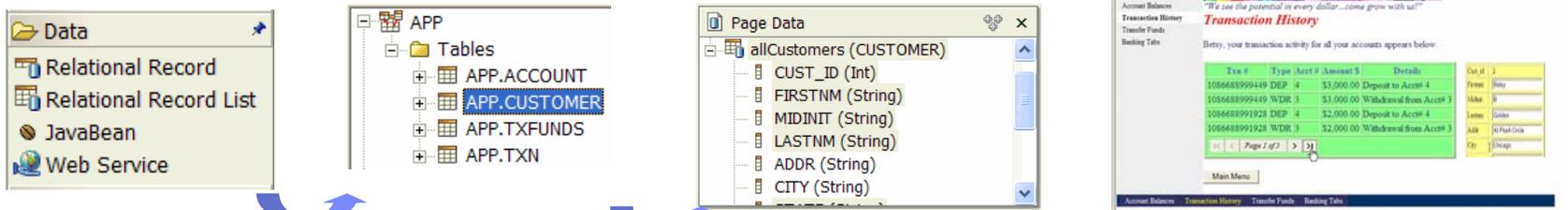
- Database Query:** Points to the Banking Accounts table.
- Web Service:** Points to the "Make Transfer" form.
- Graphing Controls:** Points to the Expense Allocation pie chart.
- Tabbed Panels:** Points to the navigation tabs at the top.
- Spreadsheet Control:** Points to the Account Details table.

Portal Designer: Site, Page, Themes, Skins

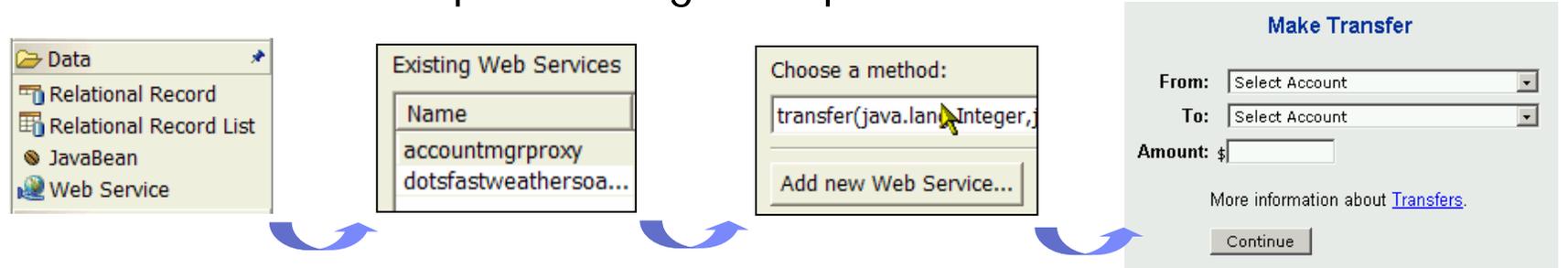


Simplifying J2EE Development

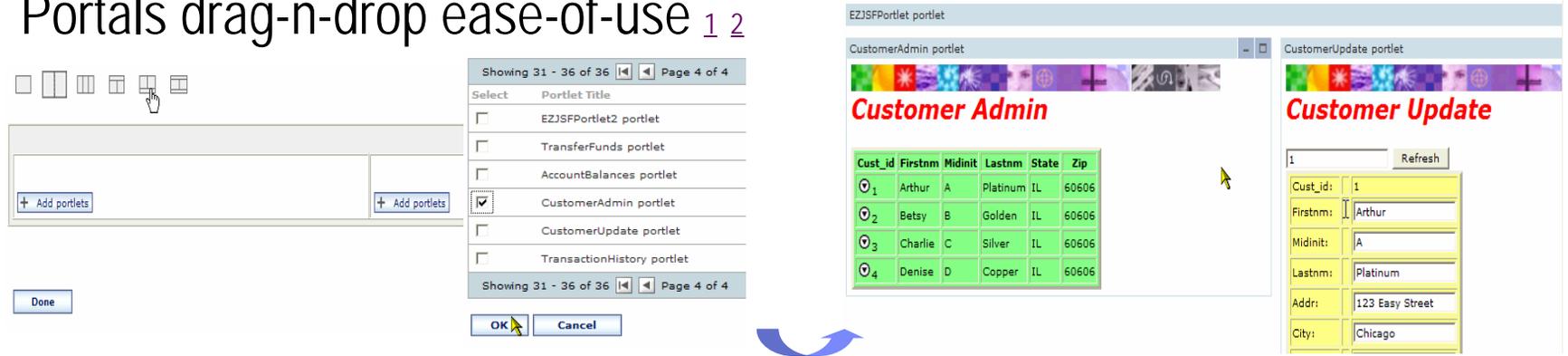
- Database development drag-n-drop ease-of-use ^{1 2}



- Web Services development drag-n-drop ease-of-use ^{1 2}

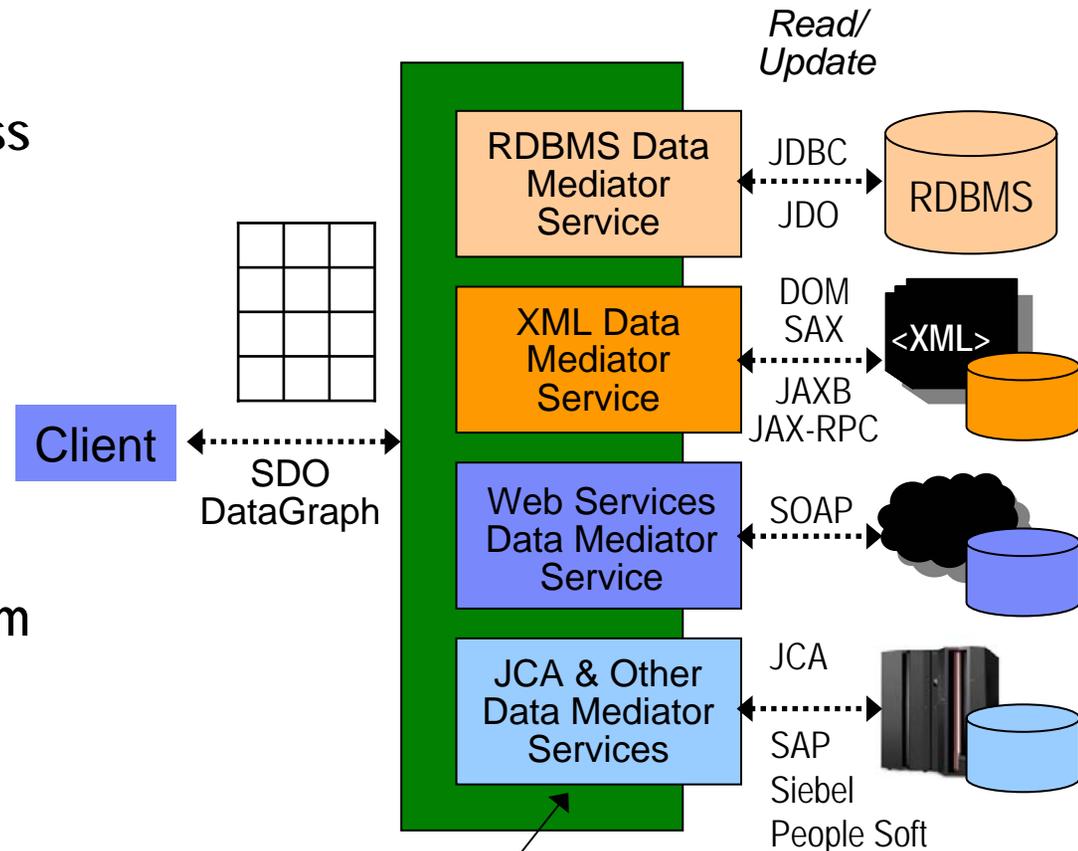


- Portals drag-n-drop ease-of-use ^{1 2}



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

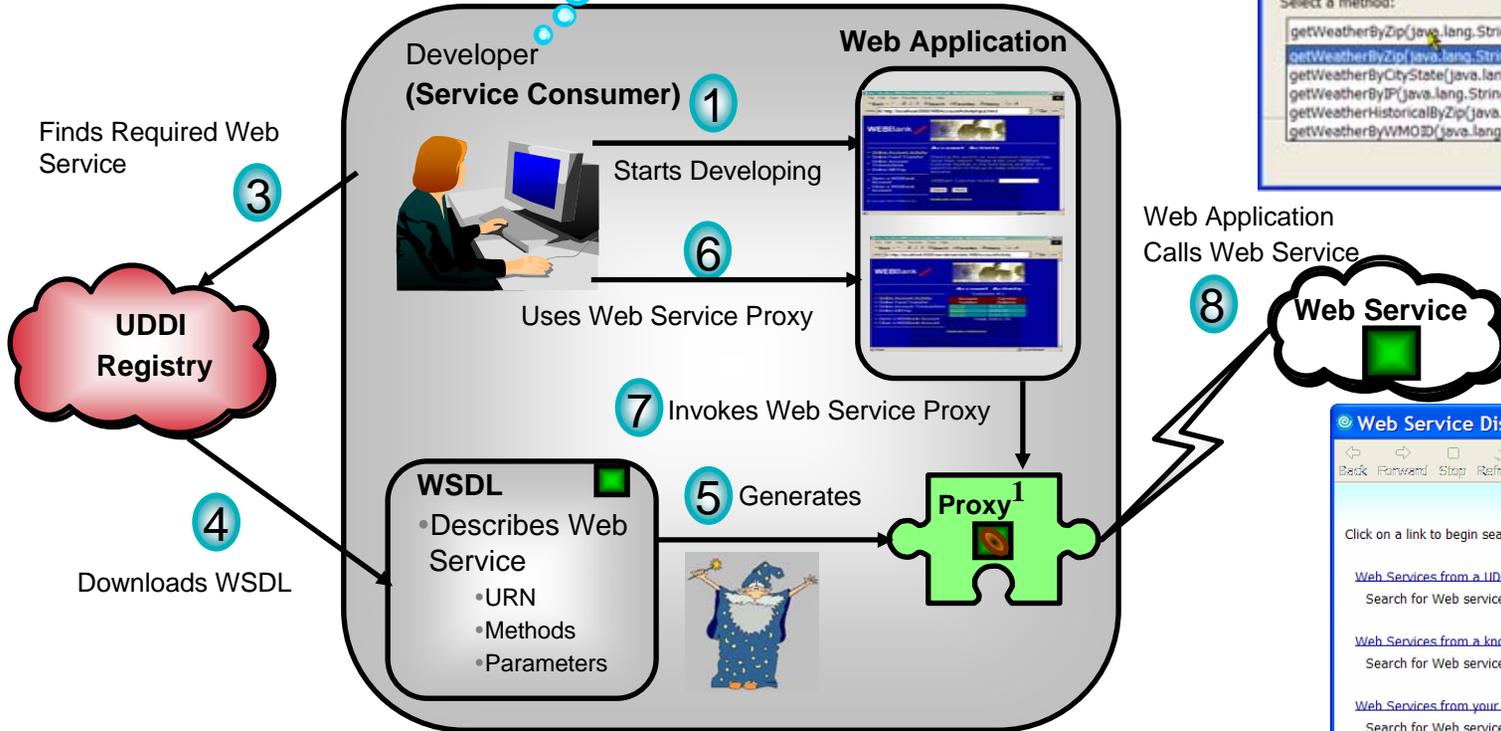
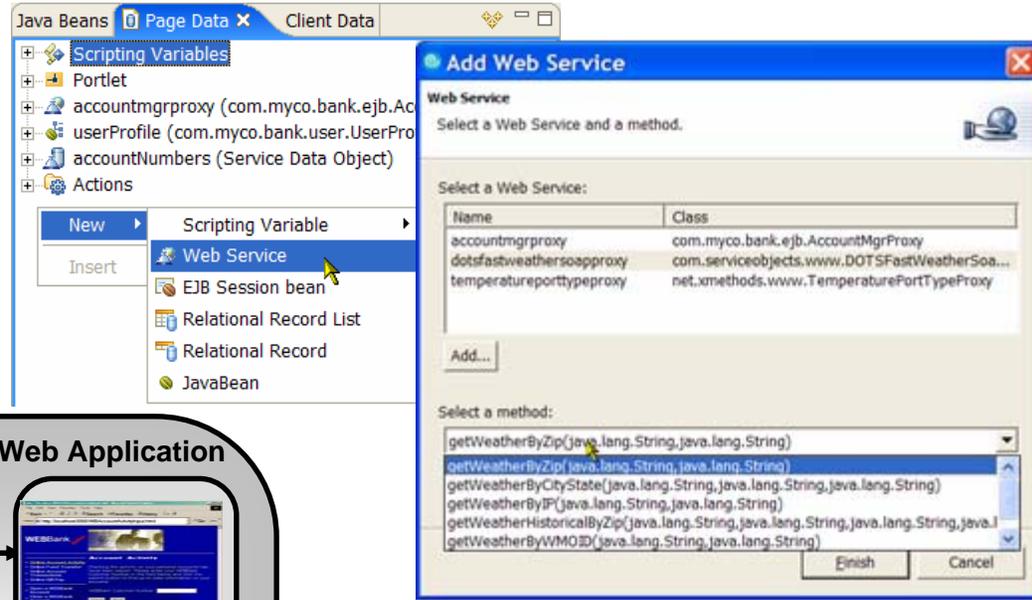
- Provides a common programming interface to access data from multiple heterogeneous sources
- Supports both static and dynamic data APIs
- Supports connected and disconnected operation
- Decouples application code from data access code
- Designed for use with tools to increase programmer productivity



Query data sources, create data graphs containing data objects, apply changes back to the data source

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

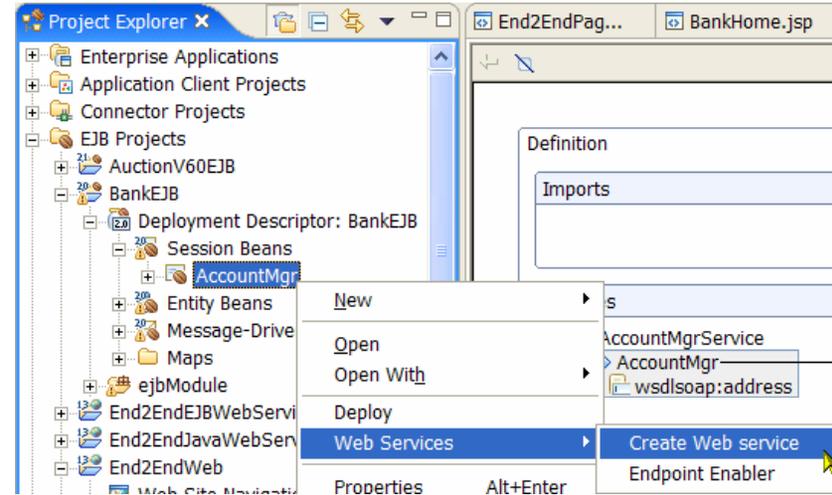
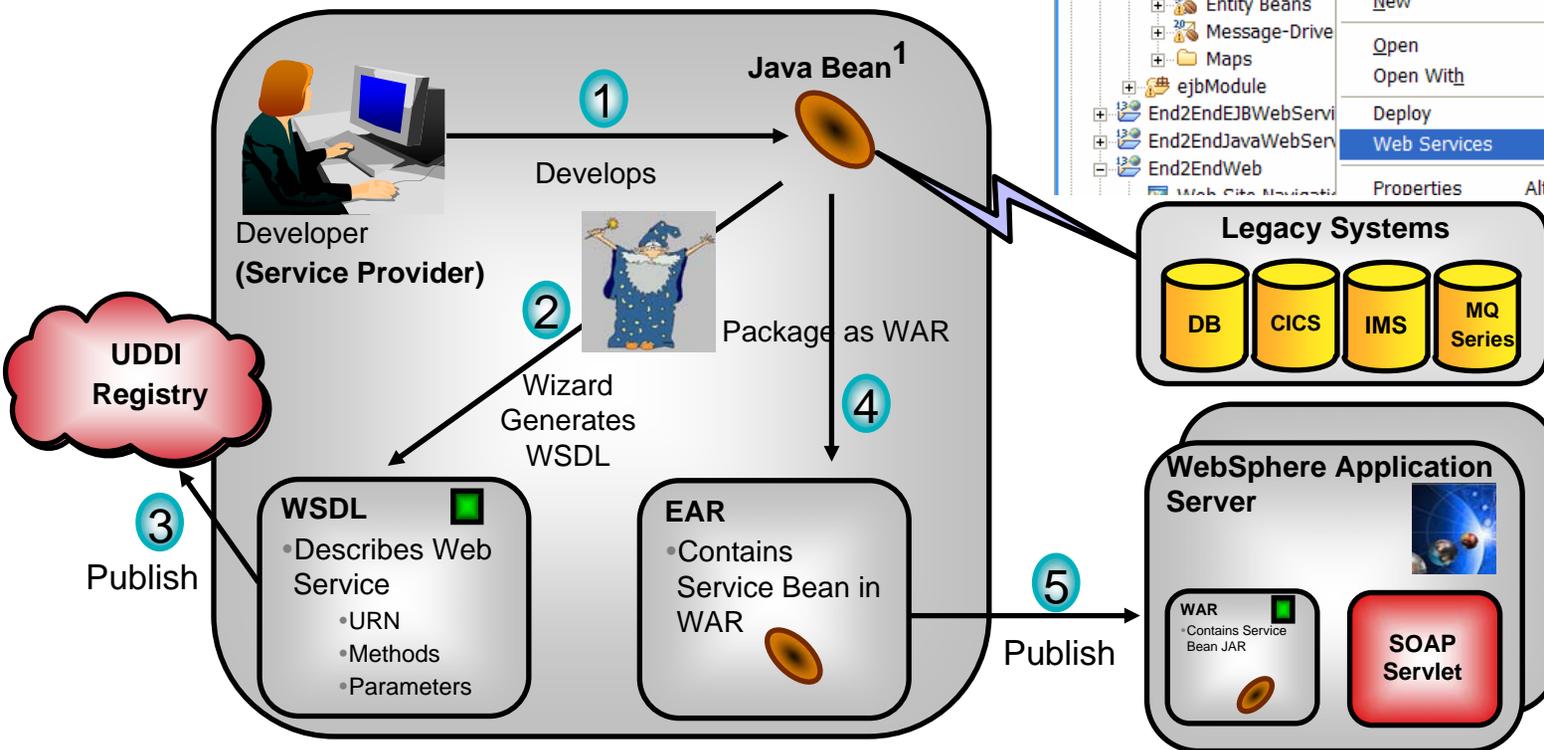
Consuming a Web Service (No Coding Required!)



1 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!)



¹ 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

The screenshot shows the IBM Rational Software Development Platform (RAD) interface. The main window displays a design view of a web page titled "MyStore.com". The page contains a table with columns for "Id", "Customer", "Email", "Homephone", and "Photo". The data rows show fields like "Firstname", "Lastname", and "City". The left pane shows the Project Explorer with a tree view of the application structure. The right pane shows a palette of web components like HTML Tags, JSP Tags, and Faces Components. The bottom pane shows the Properties view for the selected table component, with fields for "Id", "Value", "Style", and "Classes".

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)

The screenshot displays the IBM Code Review tool interface. At the top right, there are buttons for 'New...', 'Remove', 'Move...', 'Expand All', and 'Collapse All'. Below these is a search bar. The main area shows a tree view of rule categories, including Coding Style (14 rules), Design Principles (5 rules), Globalization (47 rules), J2SE Best Practices (65 rules), Naming Conventions (2 rules), Performance (26 rules), Private API (4 rules), Structural Analysis (6 rules), Breakable (2 rules), Avoid components that depend on > 10 other components, Avoid packages that depend on > 10 other packages, Cyclic Dependency (2 rules), and Hub (2 rules). Below the tree view is a tabbed interface with tabs for 'Problem', 'Examples', 'Solutions', 'Properties', and 'Resource Filters'. The 'Problem' tab is active, showing details for a 'Structural Analysis : Breakable' problem. The 'Problem name' is 'Avoid components that depend on > D other components' and the 'Description' is 'A Breakable is a component that has many immediate dependencies. Such'. Below this is another tree view showing a list of rules under the 'Memory' category, including 'Always call super.finalize() in the finally block', 'Avoid calling finalize() unless in the finally block', 'Avoid declaring finalize() public', 'Avoid returning from finally', 'Avoid the throw statement inside of finally', 'Avoid instantiating unnecessary temporary objects', 'Avoid java.lang.String + operator in literals', 'Avoid calling java.lang.Runtime.gc()', 'Avoid calling java.lang.Runtime.runFinalizersOnExit()', 'Avoid calling java.lang.Runtime.runFinalization()', 'Avoid instantiating Booleans using new', 'Avoid instantiating Strings using new', and 'Avoid using static collections'. To the right of this list are buttons for 'Move rule...', 'Show Search Box', 'Expand All', 'Export...', and 'Import...'.

Runtime Performance Profiling Analysis

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

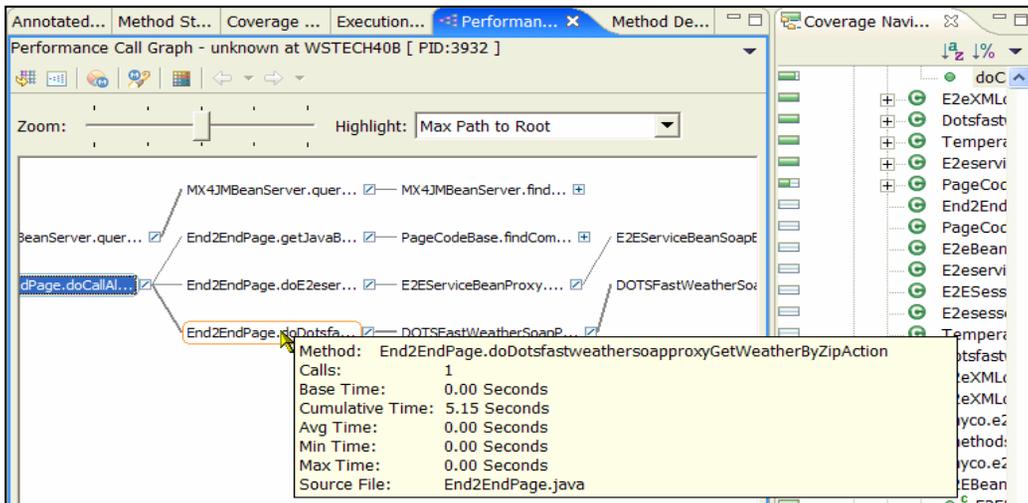
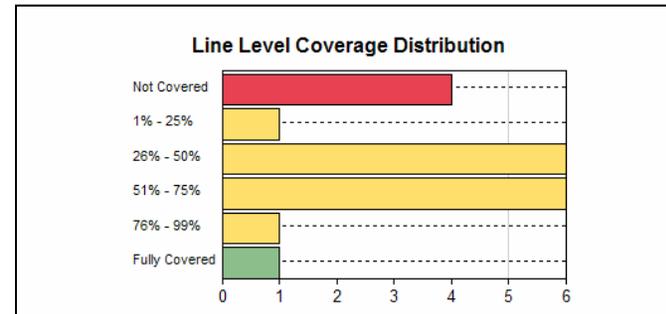


- Coverage Details
- Coverage Statistics
- Execution Flow
- Method Details
- Method Statistics
- Performance Call Graph
- Statistical Data
- UML2 Class Interactions
- UML2 Object Interactions
- UML2 Thread Interactions

Method Statistics - unknown at WSTECH40B [PID:3932]

Filter: do* 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



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

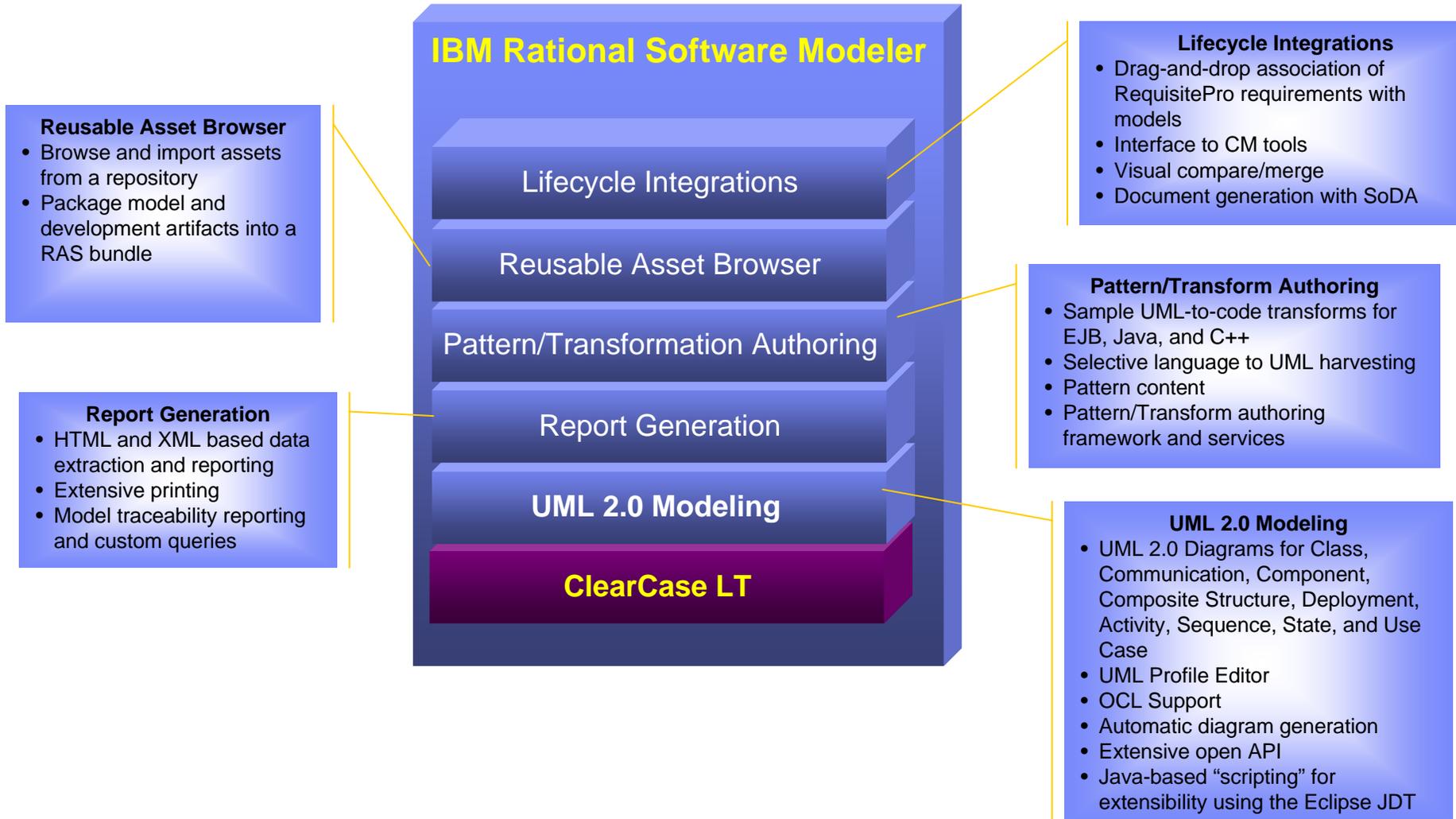
- New code base
- End-2-End UML2 modeling
- Easier GUI development
- Transformations between models and generating Java/C/C++ code

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



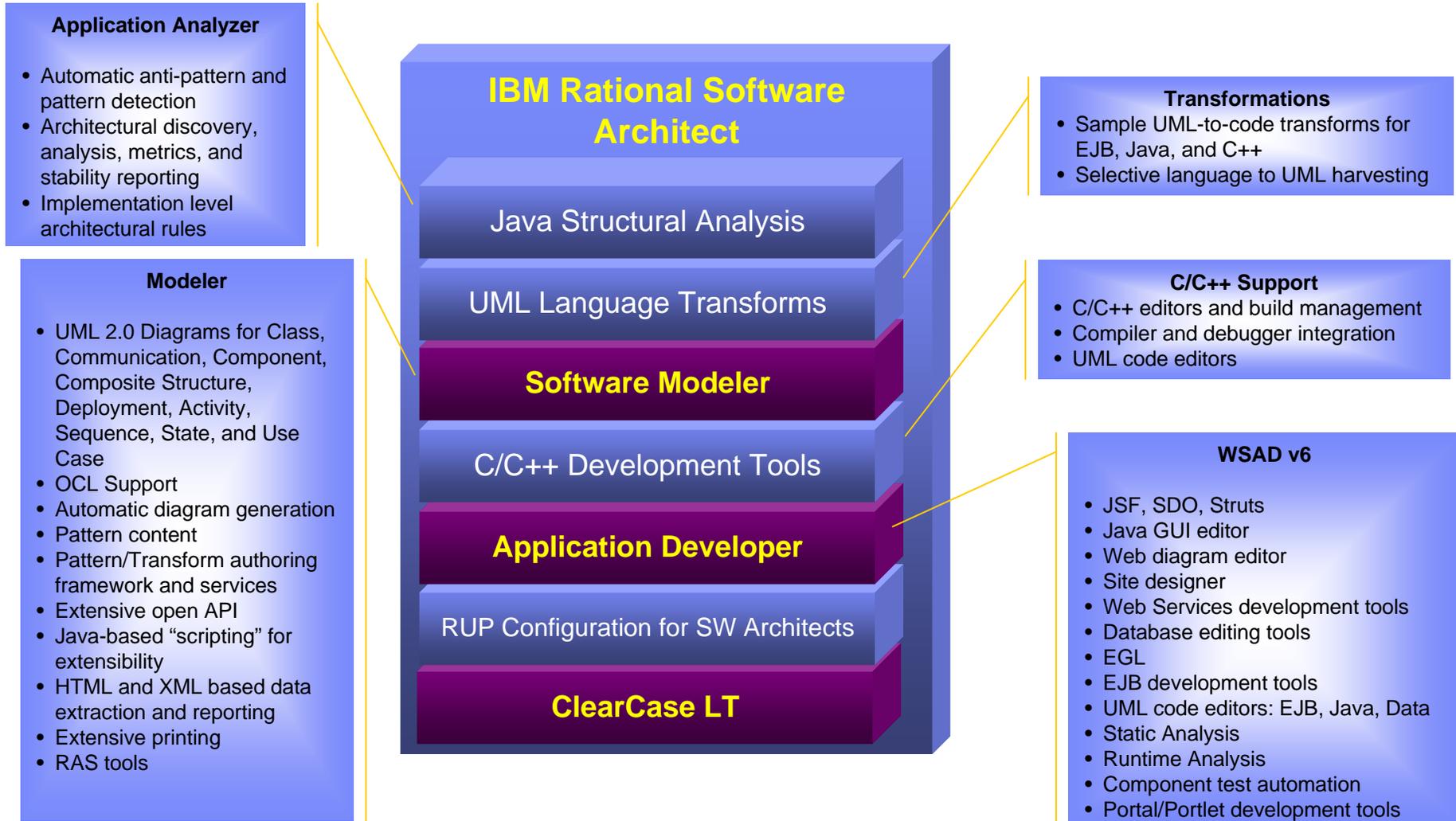
IBM Rational Software Modeler

Follow on to Rose XDE



IBM Rational Software Architect

Follow on to customers using WSAD + Rose XDE



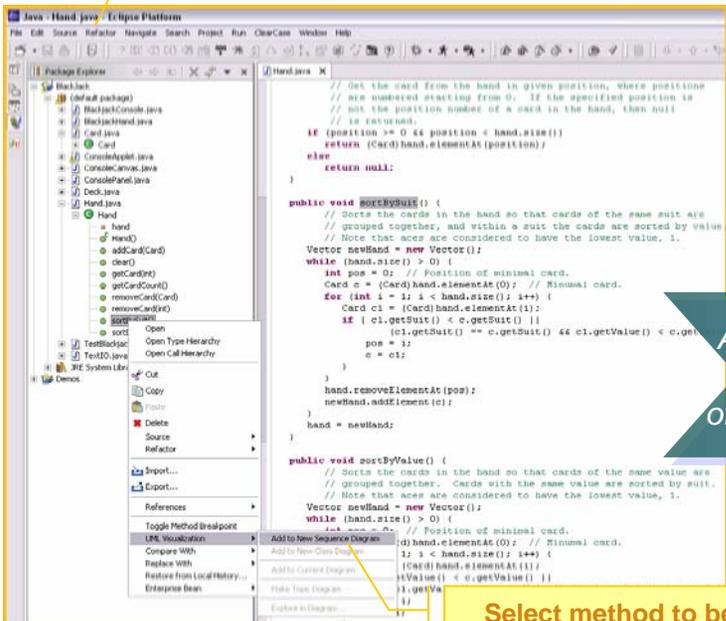


“Visualize” Java Classes, Methods, DBs and Relationships

Typical Starting Point: CODE → MODEL → ...

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

Integrated with the Java Package view

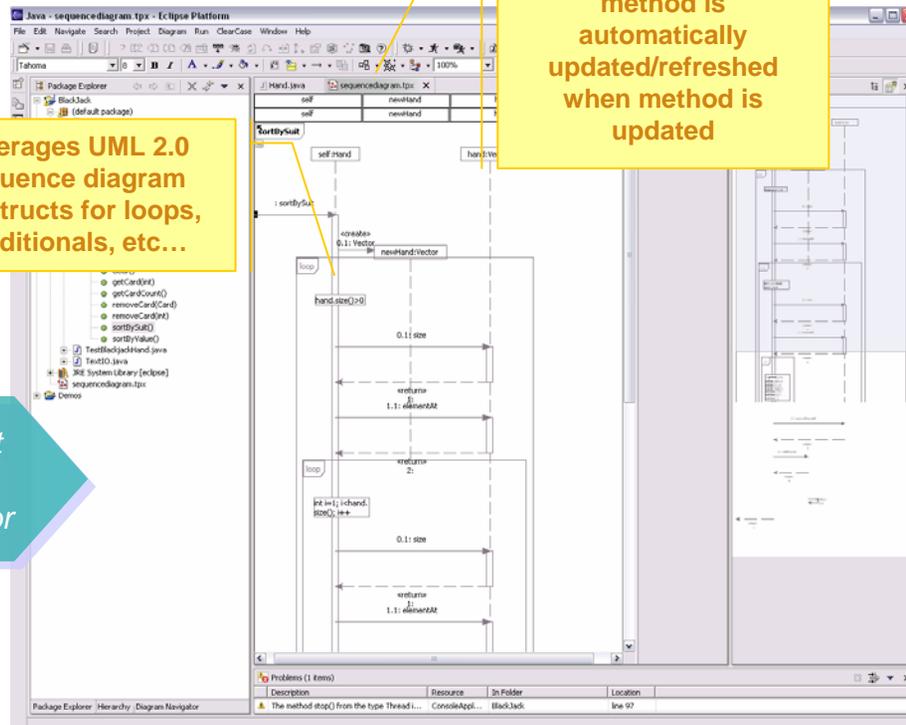


Leverages UML 2.0 sequence diagram constructs for loops, conditionals, etc...

Alternate abstract view of method behavior

Select method to be visualized using UML

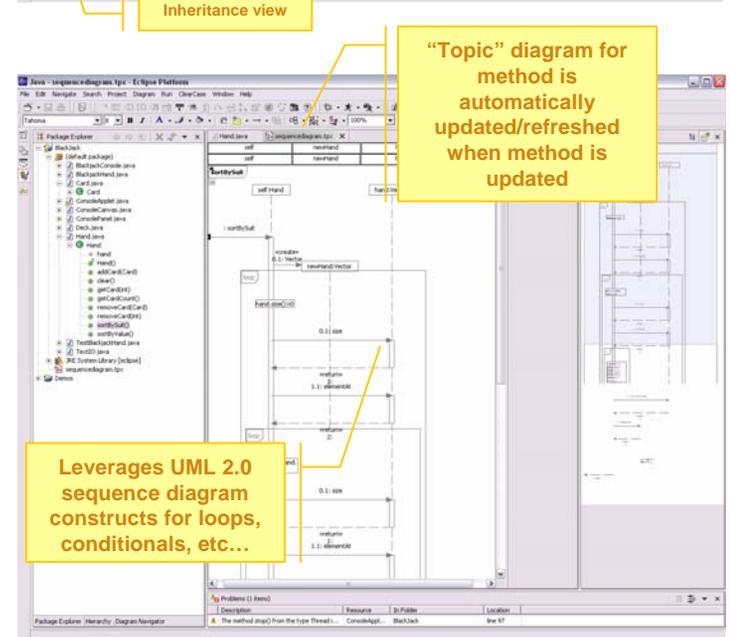
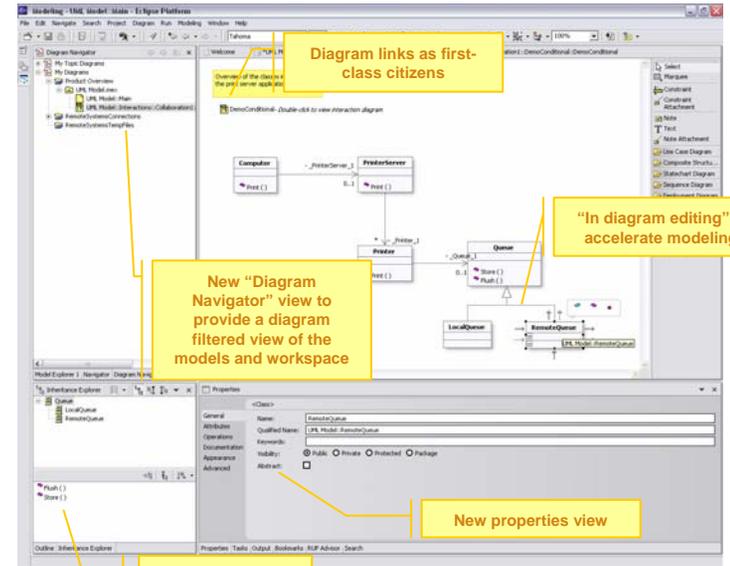
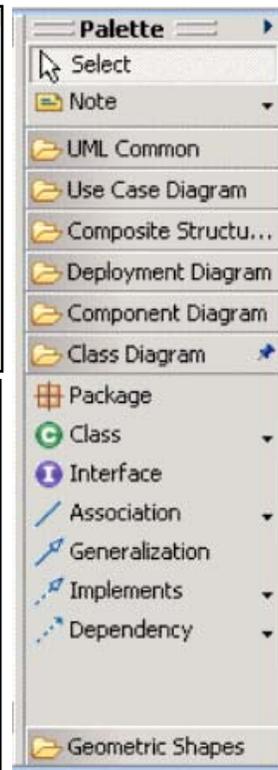
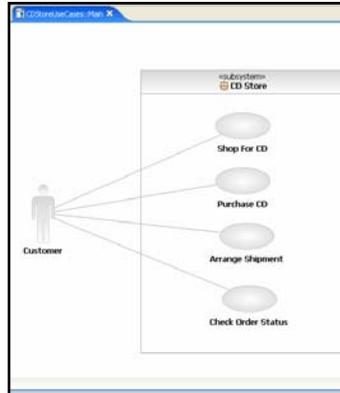
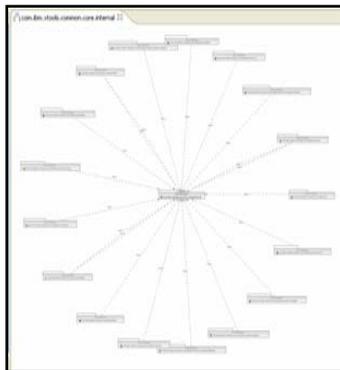
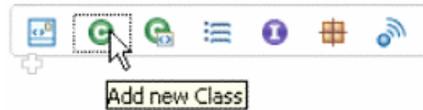
“Topic” diagram for method is automatically updated/refreshed when method is updated



New UML2 Modeling Ease-of-Use

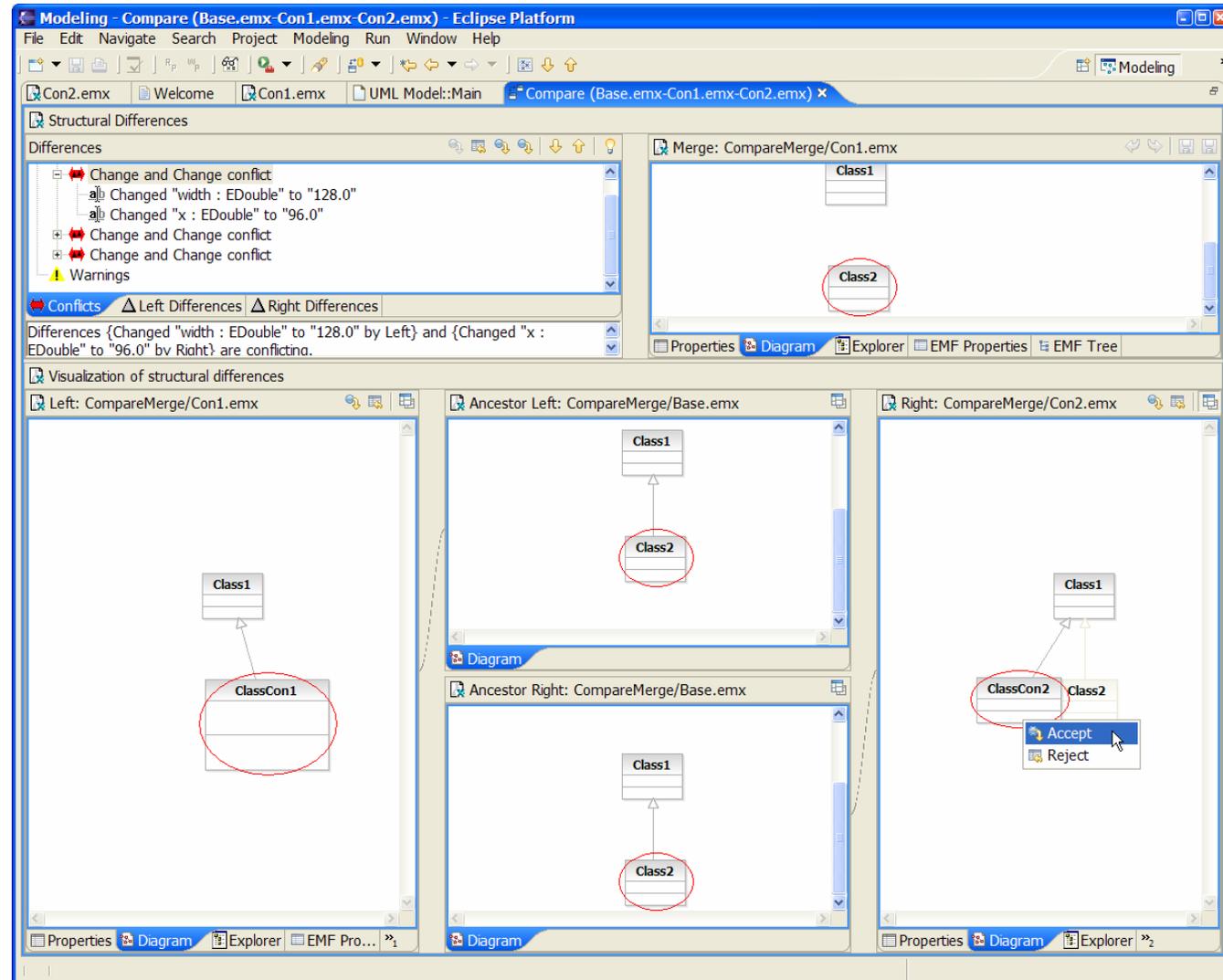
Typical Starting Point: MODEL → CODE → ...

- 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

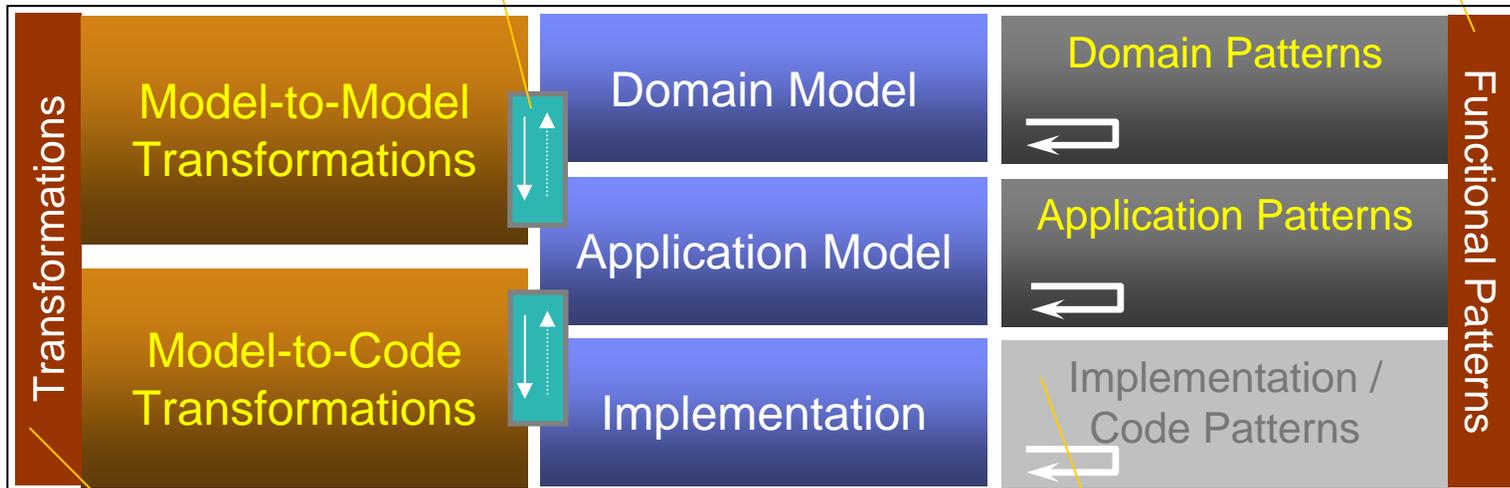
- Allows merging of models at model semantic level—not raw XML / text
- Facilitates parallel development



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.

Role: Software Architect

The software architect role is responsible for the software architecture, which includes the key to constrain the overall design and implementation for the project.

Topics

- Description
- Related Information
- Staffing
- Further Reading

Search

Search query: use case realizations

Advanced

Topics:

- Tool Mentors
- Artifacts
- Activities
- Roles
- Workflow Details
- General Content

Tool Mentors (9)

- 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

Artifacts (13)

- Artifact: Use Case Realization
- Artifact: Package
- Artifact: Class
- Artifact: Class
- Artifact: Use Java Bean (EJB)
- Artifact: Design Subsystem
- Artifact: Design Model
- Artifact: Analysis Model
- Artifact: Software Architecture Document
- Artifact: Reference Architecture
- Artifact: Interface
- Artifact: User-Interface Prototype

RUP Advisor provides context sensitive guidance

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- Crystal Reports
- And much more...

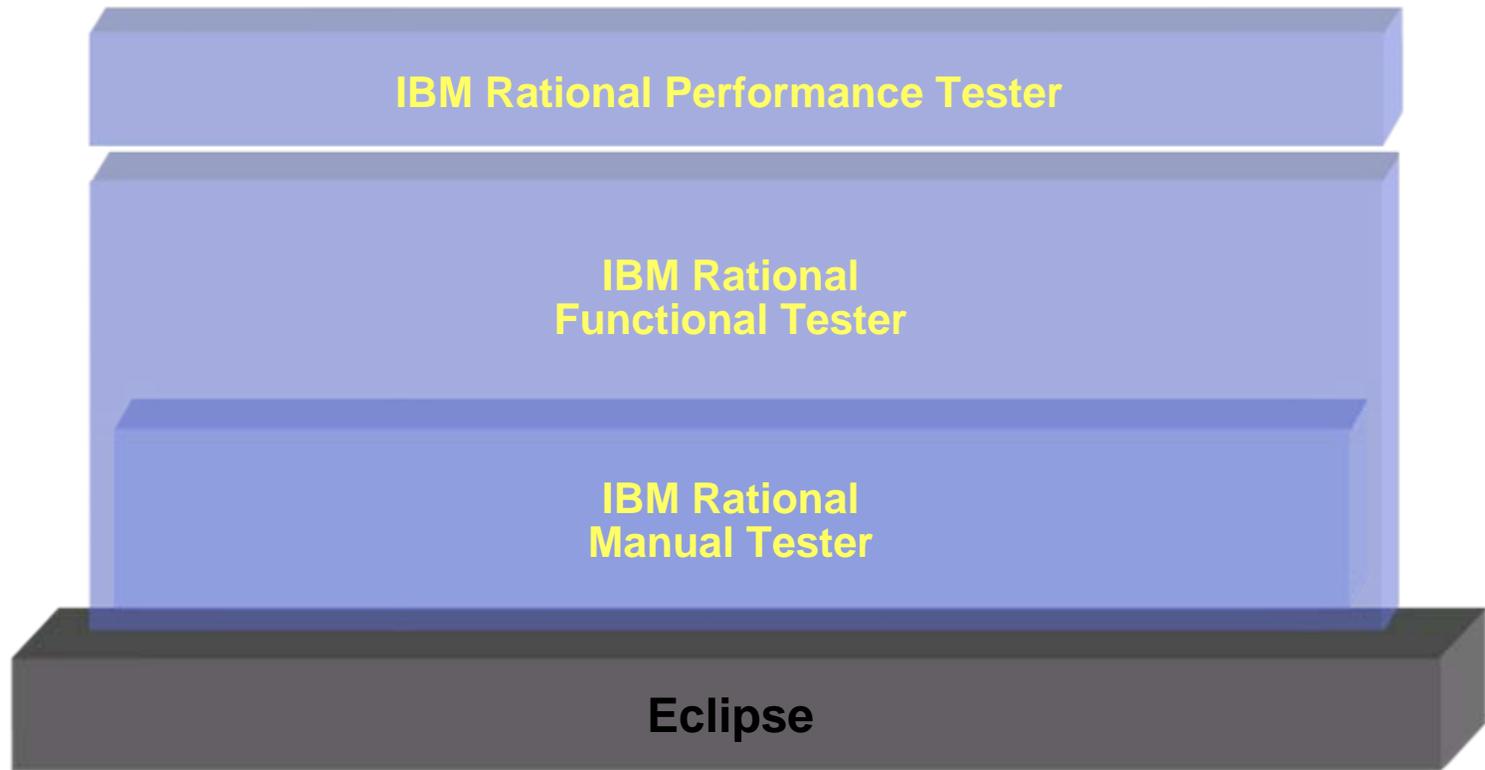
• New UML2 Engine

- 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)

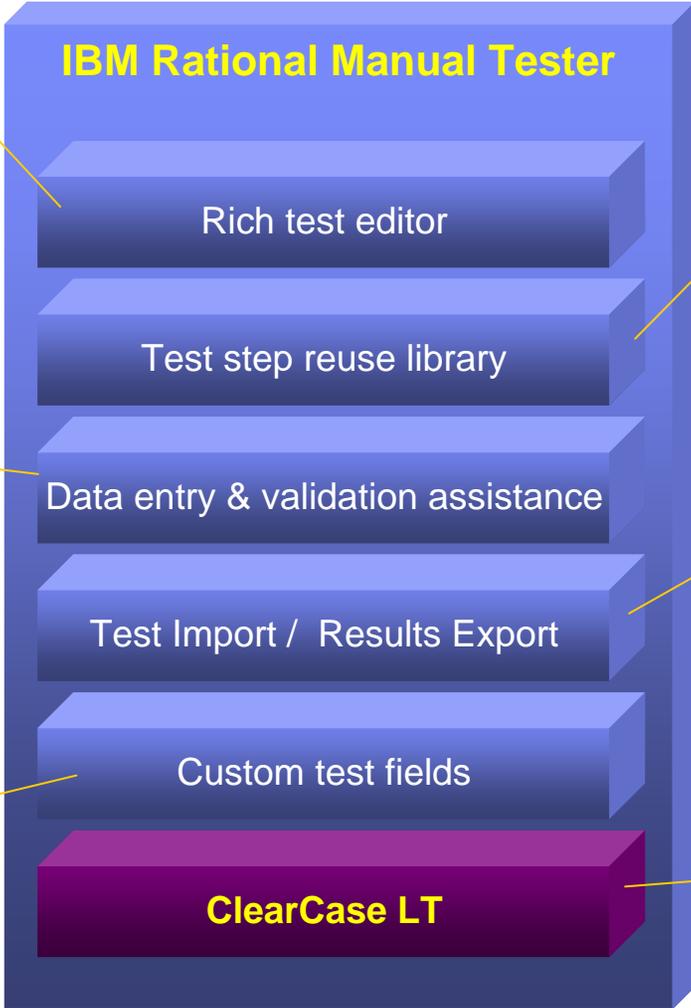


Software quality tools



IBM Rational Manual Tester

Manual test authoring and execution



- Rich Text Editor**
- Modify test font, size, color; attach images and files
 - Supports creation of both test steps and verification points
 - Ensures clarity of test step direction and consistency of test execution

- Reuse Library**
- Library for common test procedures
 - Drag-and-drop construction of new tests
 - Automatic global update when modifying any one instance of linked content

- Tool Assistance**
- Automated data entry
 - Automated data comparison and results storage
 - Reduces opportunity for manual error during test execution

- Import/Export**
- Imports manual test source files from Microsoft Word, Microsoft Excel and Rational TestManager
 - Exports test results to CSV format for additional analysis

- Customizable**
- Add new data fields to individual test steps
 - Apply internally-defined naming conventions

- ClearCaseLT "in the box"**
- Supports parallel development of manual tests
 - Enables remote test access for distributed teams



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

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. A central pane displays a test step with instructions and a screenshot of a web browser. Callout boxes point to various features:

- Rich test editor**: Points to the central test step editor area.
- Test step reuse library**: Points to the 'Reuse' pane on the right, which lists reusable test steps like 'Launch Browser', 'Enter Address http://...', 'Logon For Trading', 'Navigate to Trading', 'Sell Mutual Fund', and 'Verify Transaction in...'.
- Customizable fields**: Points to the 'Properties' pane on the right, which shows a table with 'Property' and 'Value' columns.
- Attached images and files**: Points to a screenshot of a web browser window titled 'IBM United States - Microsoft Internet' with the address 'http://www.ibm.com'.
- Central repository for distributed team access**: Points to the 'Outline' pane on the left, which shows a hierarchical tree of test cases and steps.



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

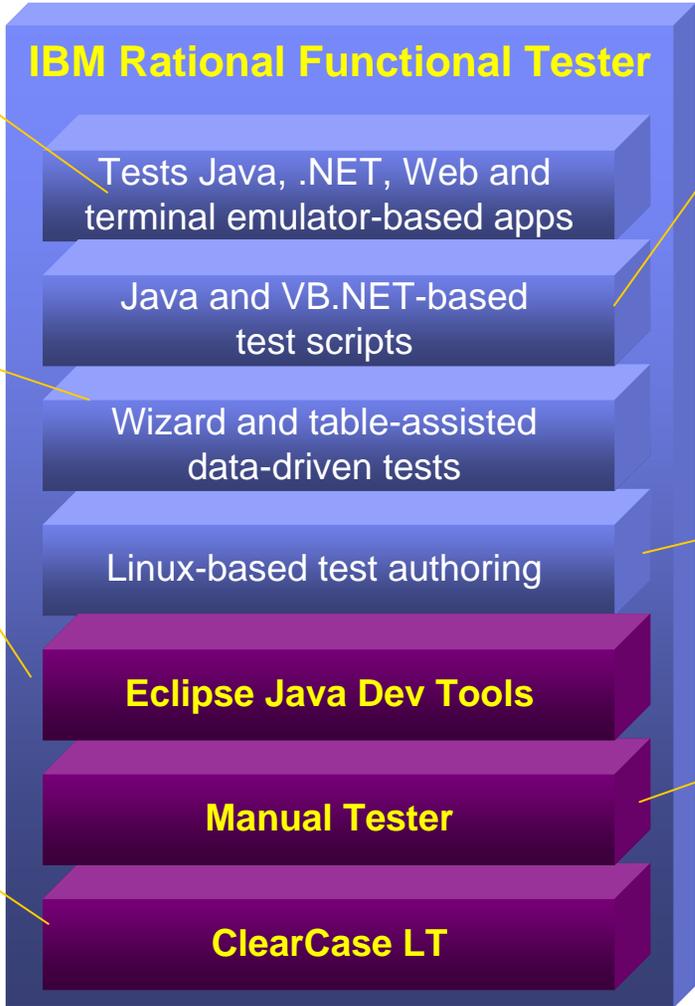
- Simplified data-driven testing enabled by wizards and Excel-like data tables

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



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

The screenshot shows the Rational Functional Tester IDE interface. A circular inset in the top left shows a person's face with the word "Tester" above it. The main window displays a project named "Project1" with a "Script2.vb" file open. The code editor shows a `TestMain` function with test steps like `Tree2().Click` and `PlaceOrder().Click`. A "Private Test Datapool" table is visible at the bottom, containing test data for card numbers, credit cards, and expiration dates. Several blue callout boxes highlight key features: "Eclipse or VS.NET-based editor and debugger", "ScriptAssure™ for test script resiliency", "Version control ready", "Java, VS.NET, Web and terminal-based application support", "Data-driven test assistance", and "Java in Eclipse or VB.NET in VS.NET".



IBM Rational Performance Tester

Load and performance testing

Load testing technology

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

High scalability

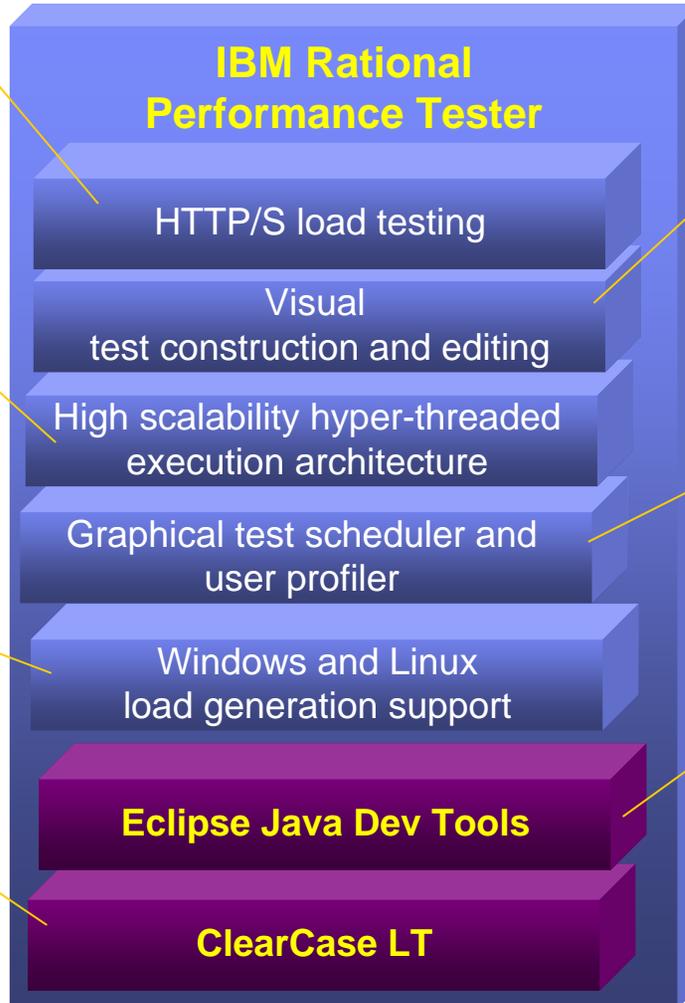
- High scalability, low footprint due to hyper-threaded architecture
- Significant improvement over Robot technology

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



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



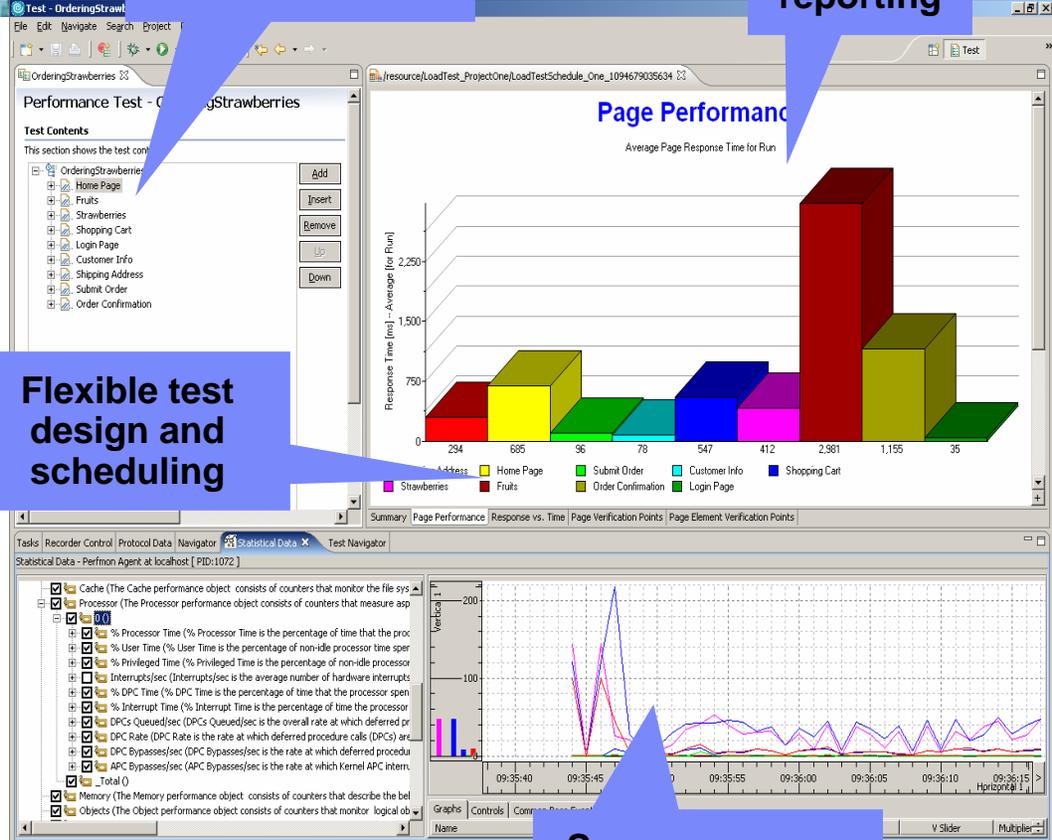
Deployment Manager

Visual test editor

Real-time reporting

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

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



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

Library

Success stories

News

Trials and betas

How to buy

Events

Training and certification

Services

Support

Support for z/OS

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

WebSphere Application Server

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](#)

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 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](#)

WAS V6 What's New - Agenda

- New Infocenter and Education Assistant
- **Themes, Packaging and Primer**
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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

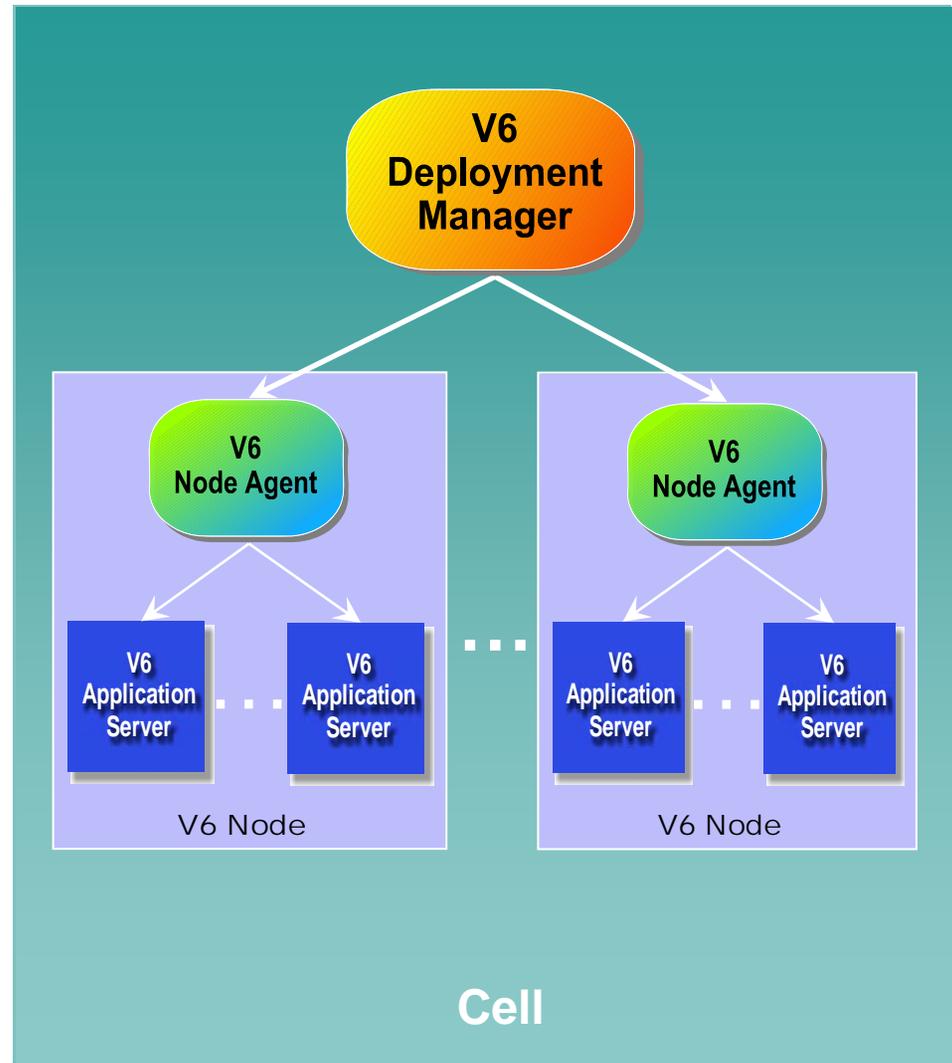
JDK

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

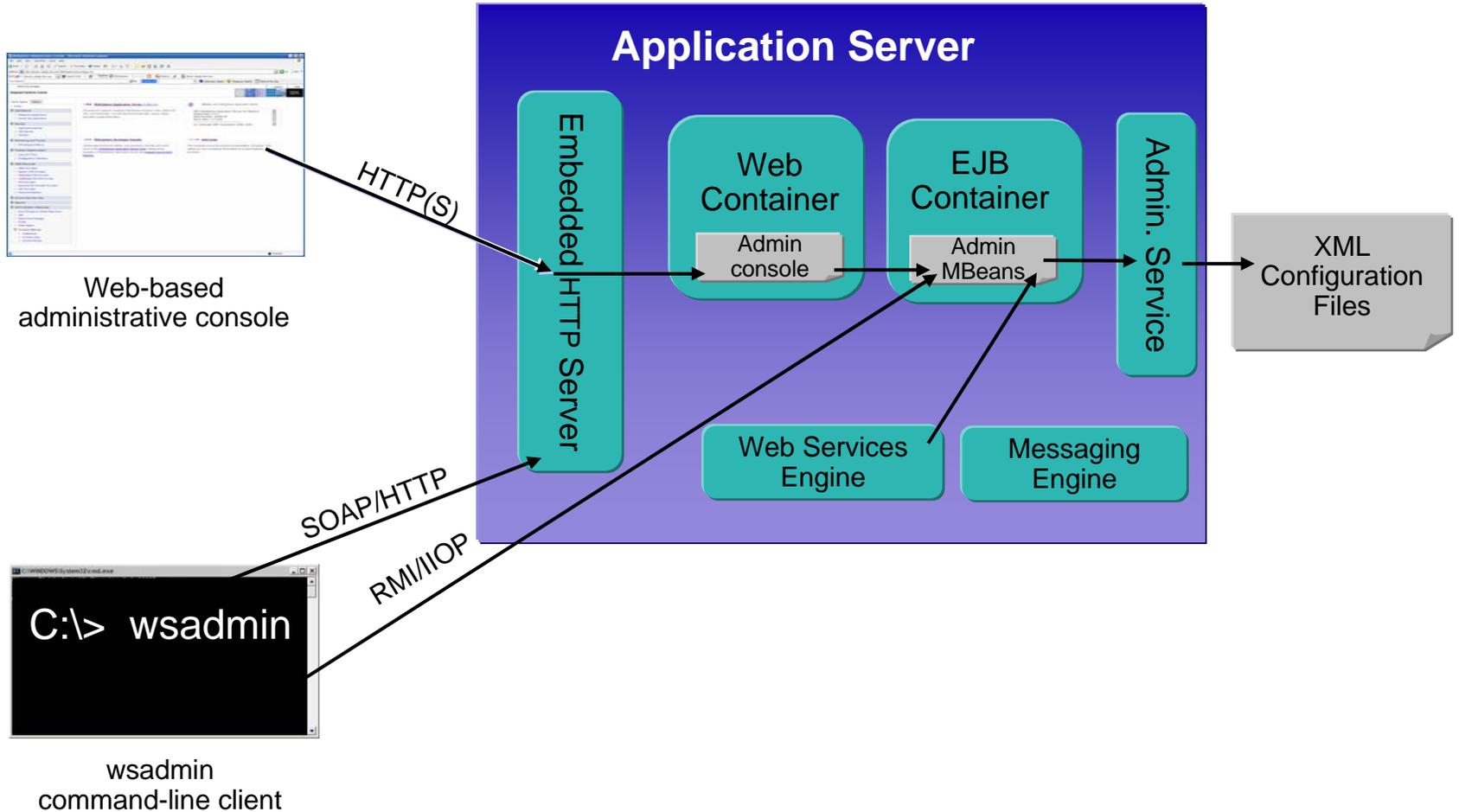


Managed vs. Unmanaged Nodes

- 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 ¹	Yes	Yes	Yes
Development and Deployment Tools ²	Rational Web Developer ASTK	Rational Application Developer *Trial* ASTK	Rational Application Developer *Trial* ASTK
Database included in the package	DB2 Express ¹ (Dev. Use only)	DB2 Express ¹ (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 ¹

Windows and Linux/Intel platforms only ²



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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



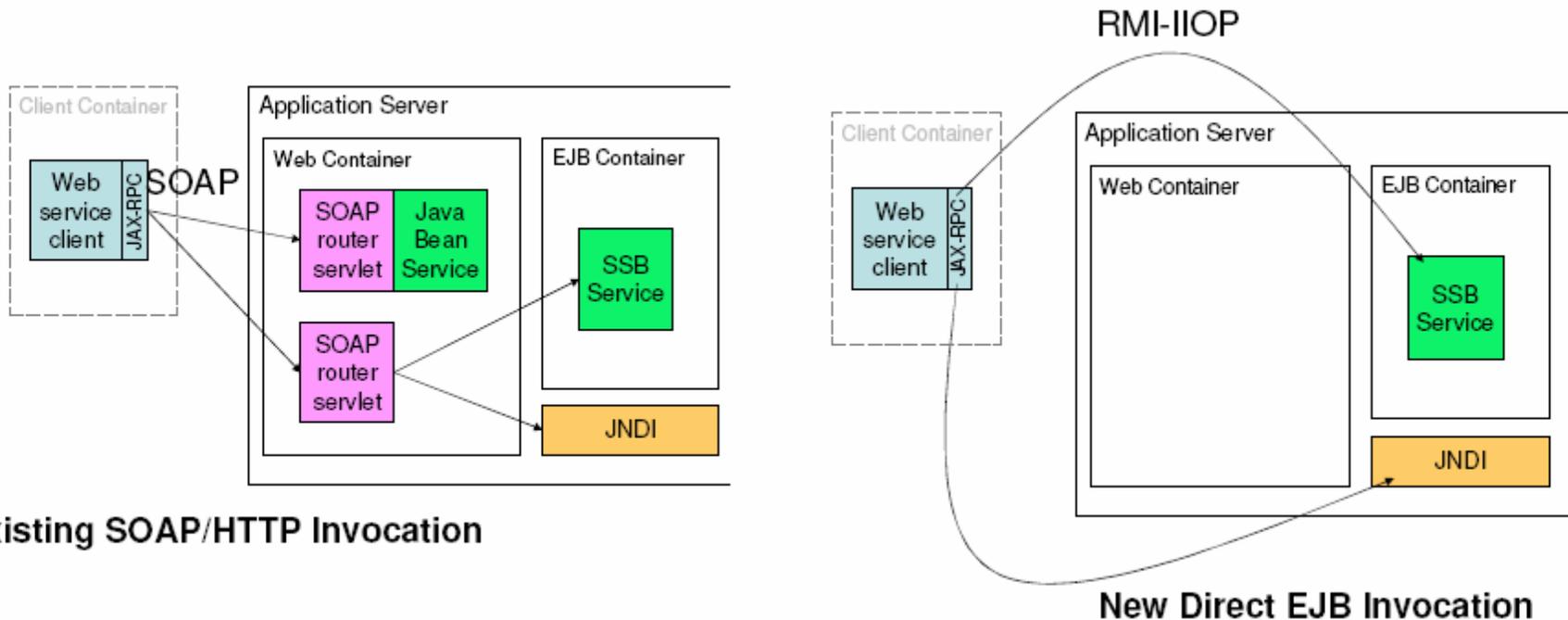
Changes in Web Services

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



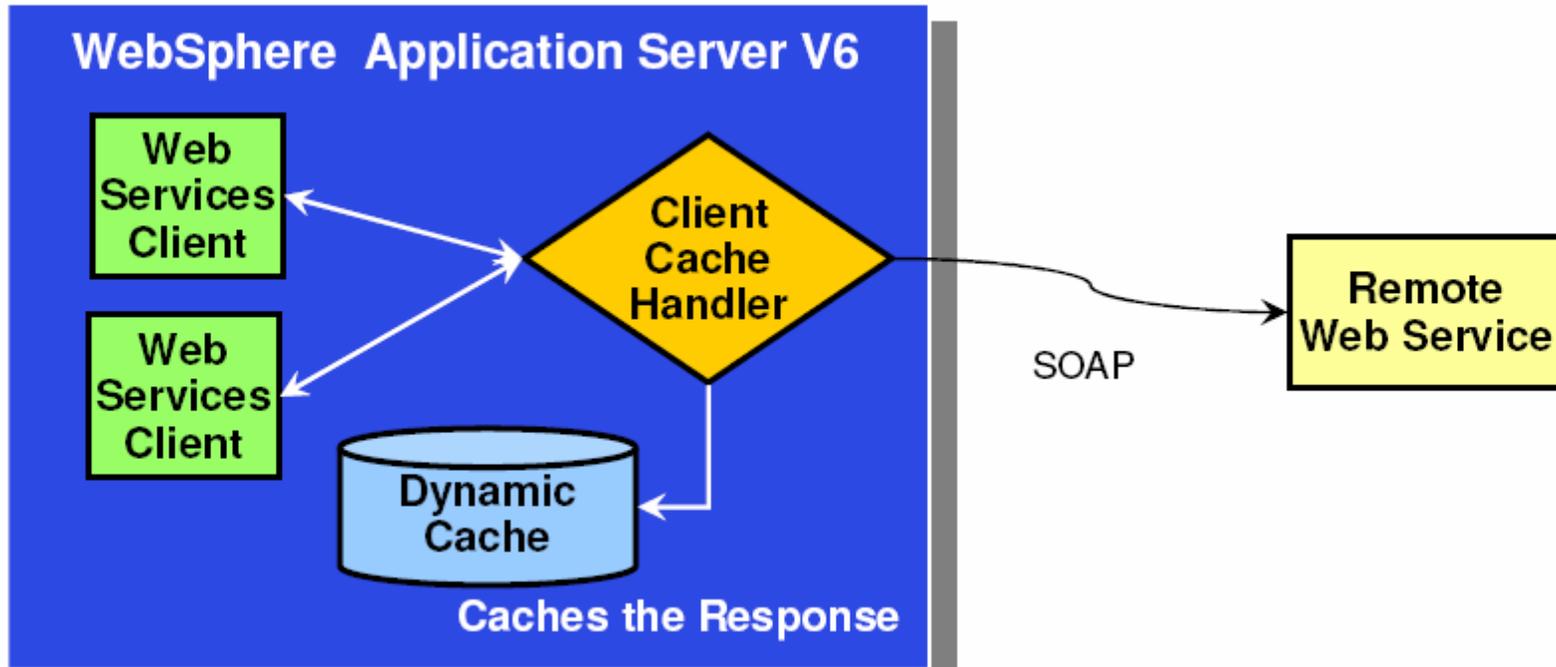
Web Services – Multi-Protocol Efficiency

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



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"> ▶ Last Participant Support ▶ Internationalization Service ▶ WorkArea Service ▶ ActivitySession Service ▶ Extended JTA Support ▶ Startup Beans ▶ Asynchronous Beans ▶ Scheduler Service ▶ Object Pools ▶ Dynamic Query ▶ Web Services Gateway Filter Programming Model (with migration support) <ul style="list-style-type: none"> ▶ Distributed Map ▶ Application Profiling 	Yes	Yes	Yes
<ul style="list-style-type: none"> ▶ Back-up Cluster Support 	No	Yes	Yes
<ul style="list-style-type: none"> ▶ Workflow / Choreographer ▶ Business Rule Beans (BRBeans) ▶ CMP / Anything 	No	No	Yes



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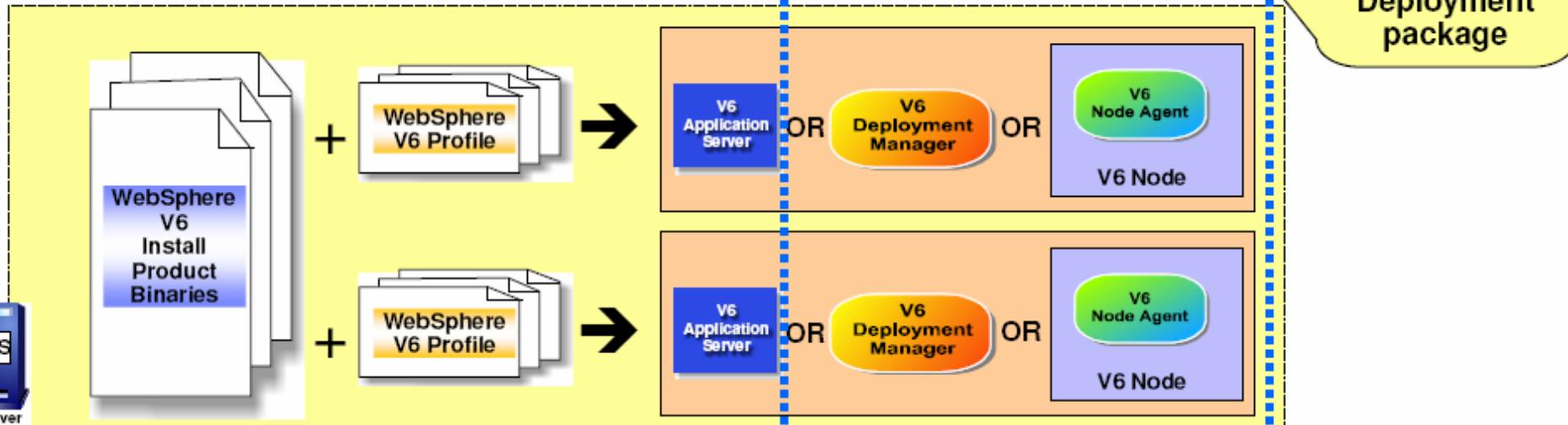
Systems Management Foundation Enhancements

- 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



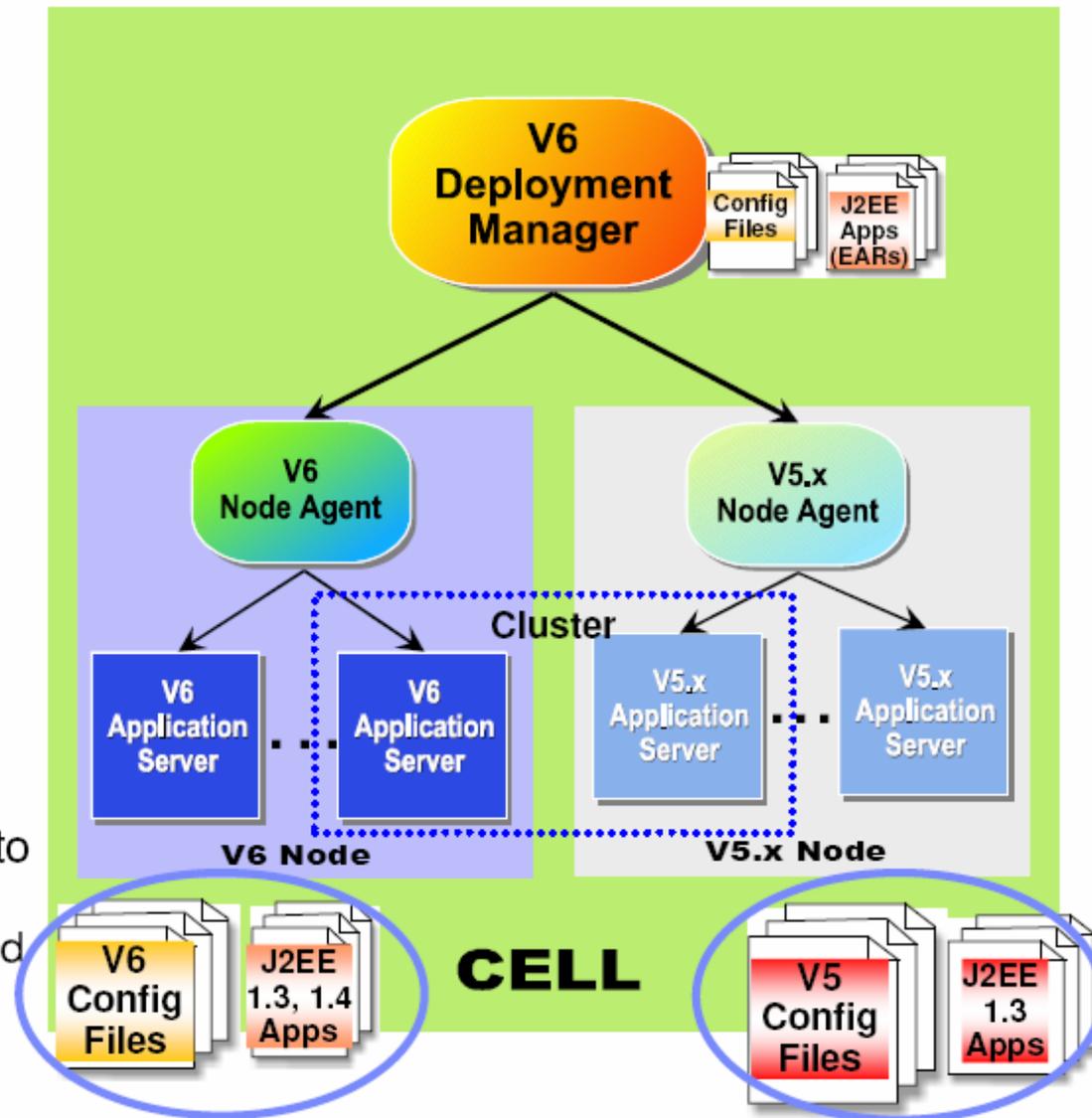
Profiles – “Virtual App Servers”

- 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



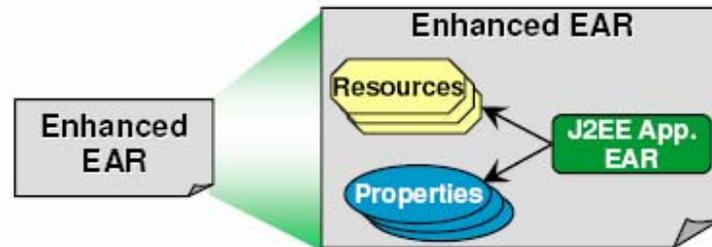
Configuration Archive

- 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



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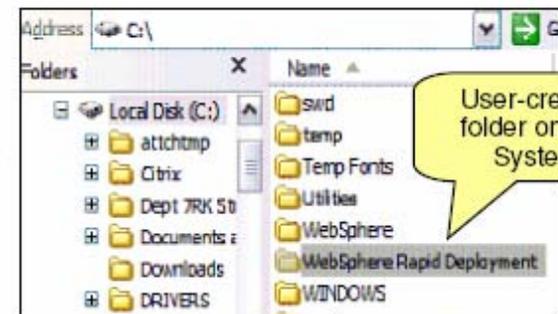
WebSphere Rapid Deployment (WRD) Overview

- 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

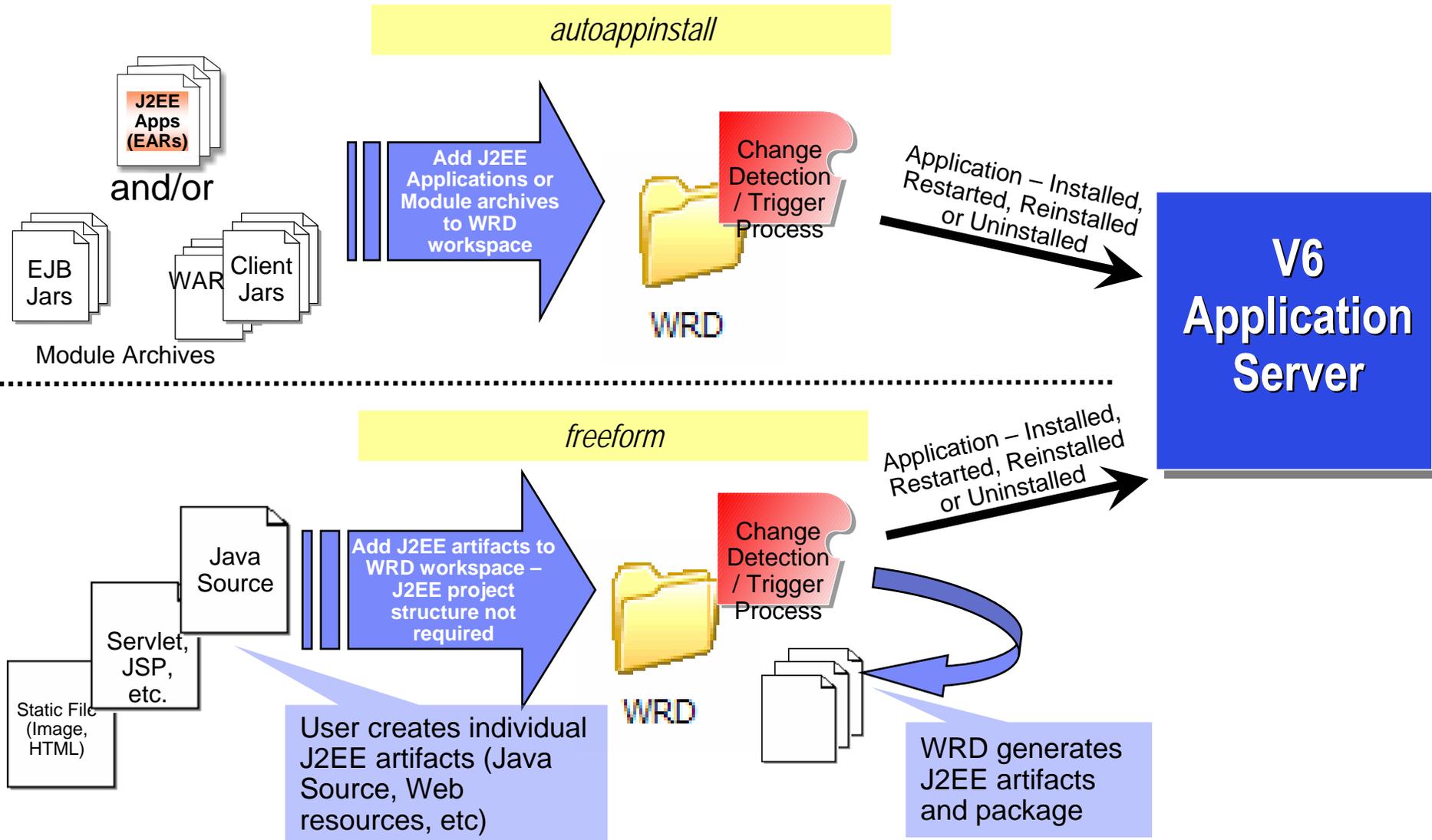
WRD runs within the tool or Non-GUI, from user defined WRD workspace



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)

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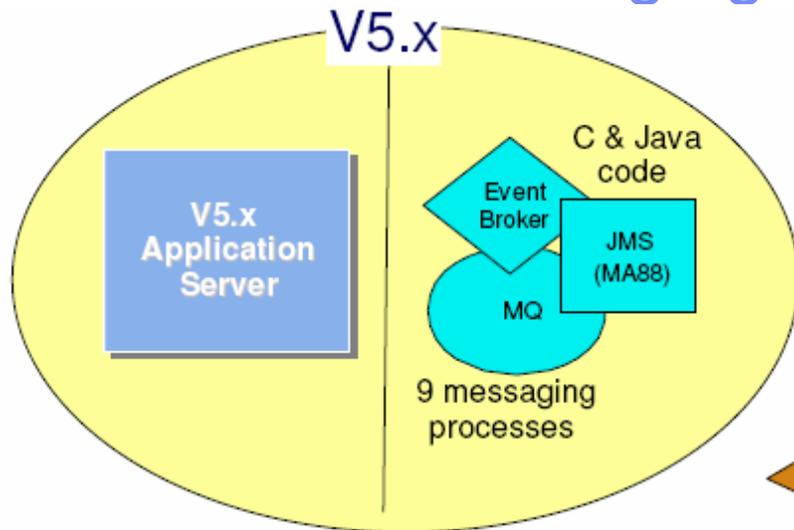


WebSphere Service Integration Technologies

- 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

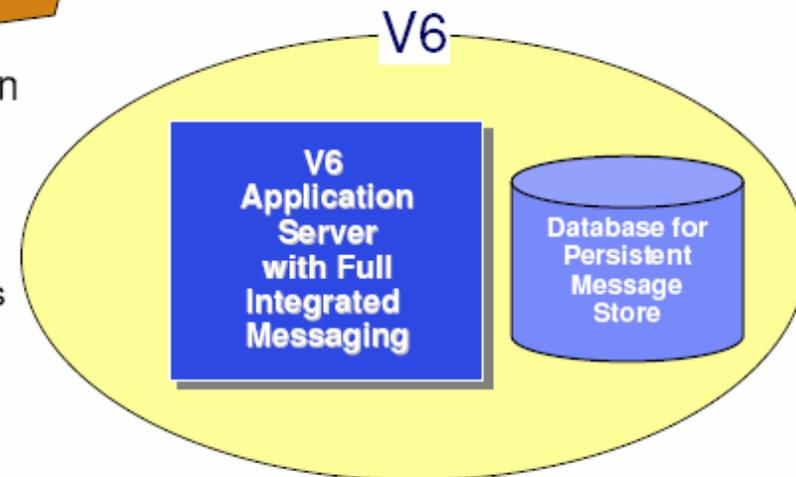


Embedded Messaging Server Support: (V5 → V6)

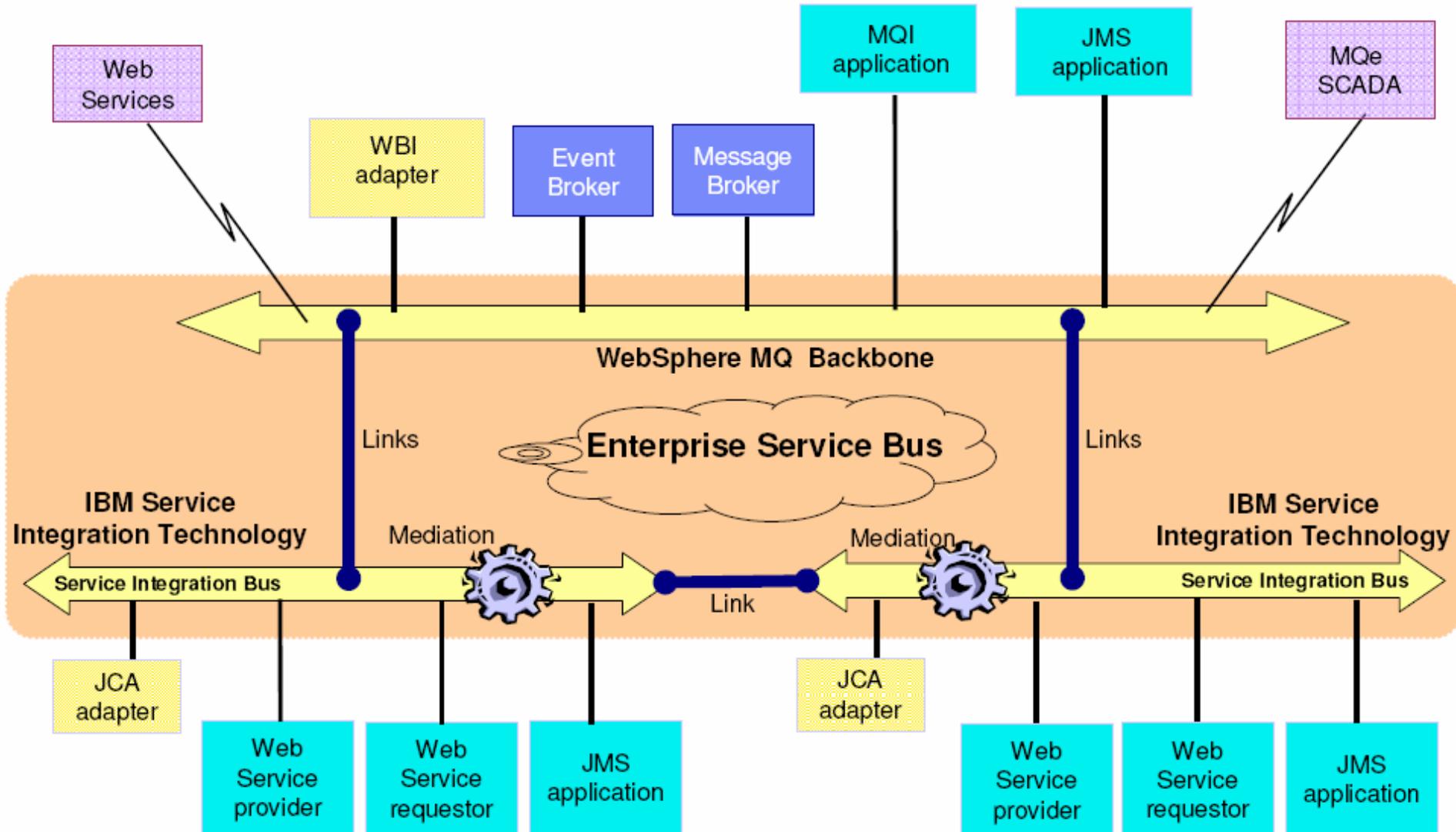


- In V5, the Embedded messaging server was a subset of WebSphere MQ 5.3 and Event Broker – not integrated within the Application Server
- Limitations:
 - ▶ Issues with scalability and single point of failure
 - ▶ No connectivity to external WebSphere MQ
 - ▶ Security not fully integrated

- 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



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



Clustering Enhancements

- Support for failover of Stateful Session EJBs (SFSE)
 - ▶ 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

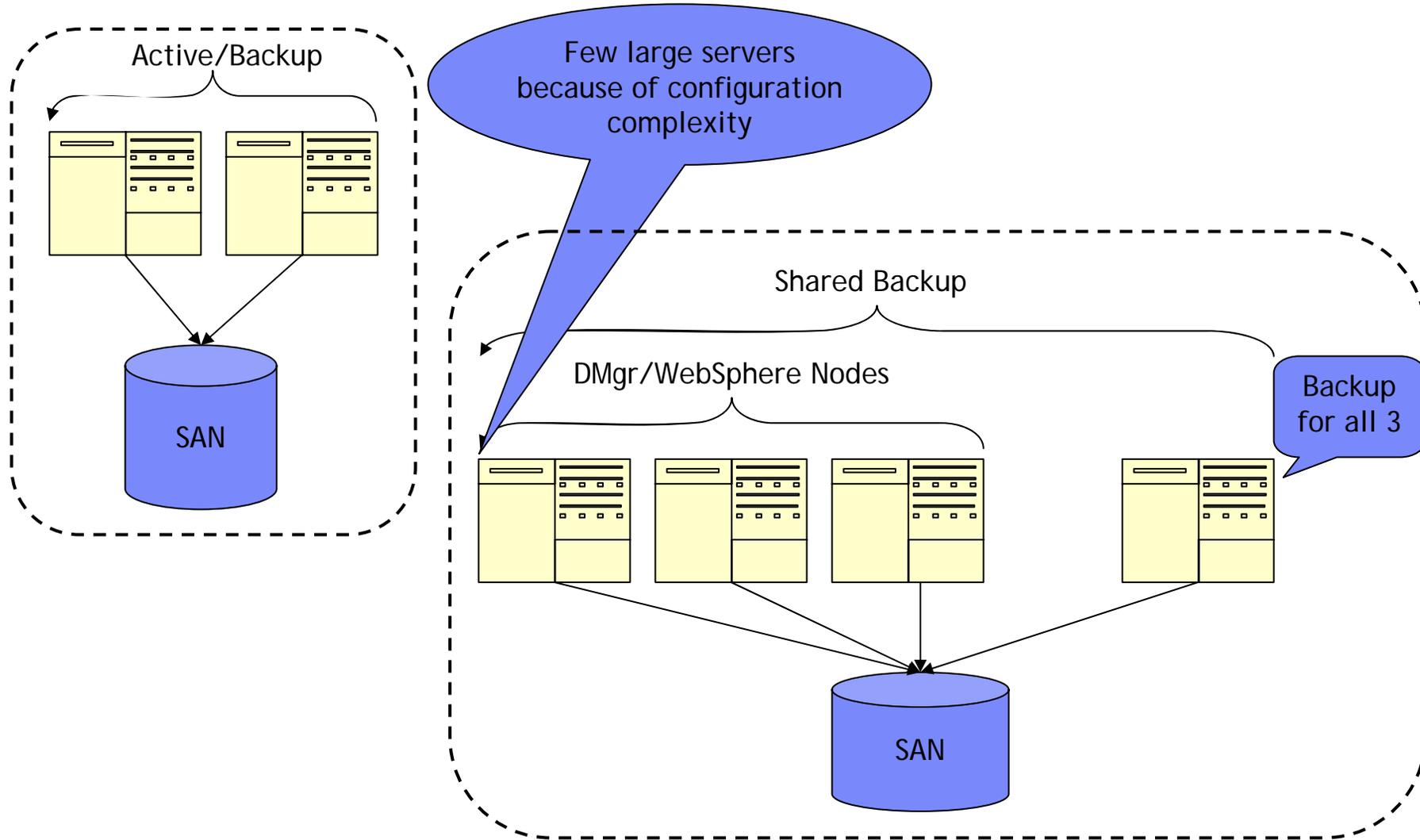


High Availability

- 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
(WebSphere Developers Domain)
 - ibm.com/developer/rational
(WebSphere Developers Domain)
 - ibm.com/developer/ibm
(All other product developer domains)
- <http://www.redbooks.ibm.com>
(How To Books)
- <http://ibm.com/software/ad>
(IBM App Dev Tools Homepage)
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(WebSphere Family Homepage)

