



IBM Software Group

# IBM/UMHS Briefing Rational/WebSphere Tools and Servers

***June 3, 2005***

*(Additional presentations, tutorials and technical resources are available at  
<http://JavaDevTools.com>)*



Name

Title

Company

# IBM/UMHS Discovery Session – May 2005

## UMHS Perspectives Gathered

- Productivity for expert and novice developers is an imperative
- Ease-of-Use for development tools is important
- Quality from development to production is challenging
- Support from IBM varies and needs improvement
- Lifecycle development is needed and partially implemented
- Web Services is an important technology moving forward
- Workflow tools and middleware are needed and have potential
- Open Source tools and IBM tools cater to various communities
- Virtualized application server web hosting is needed



# IBM/UMHS Briefing – June 2005

## AGENDA - IBM Recommendations and Recent Product Enhancements

### • Big Picture

- Eclipse platform, WebSphere servers, Rational tools and developer value

### • Productivity and Ease-of-Use Enhancements in V6 Tools

- JavaServer Faces drag-n-drop J2EE development
- Service Data Objects for heterogeneous data access
- Web Services for cross-system integration
- Hot deployment and enhanced server-tools integration

### • Quality and Lifecycle Enhancements in V6 Tools

- Requirements, Design, Construction, Change Mgmt enhanced IDE Integrations
- Quality Assurance and Testing Tools Enhancements

### • Workflow tools and servers heritage and enhancements

### • Virtualized application server profiles enhancements

### • IBM Premium Support enhanced level of service and responsiveness



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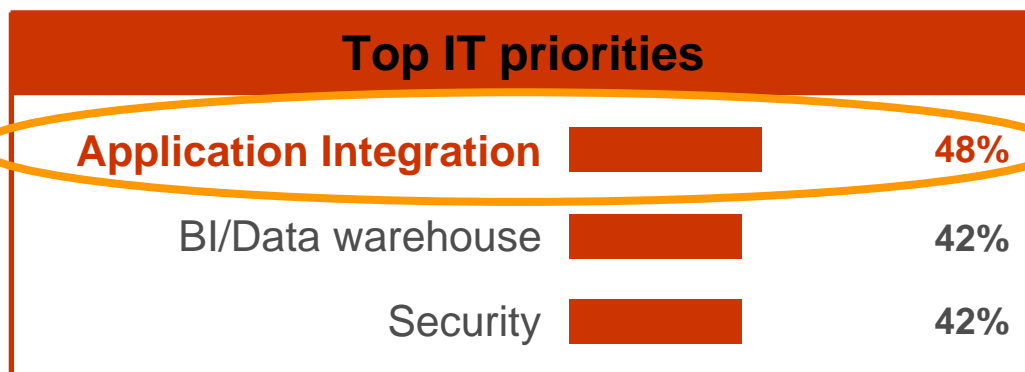
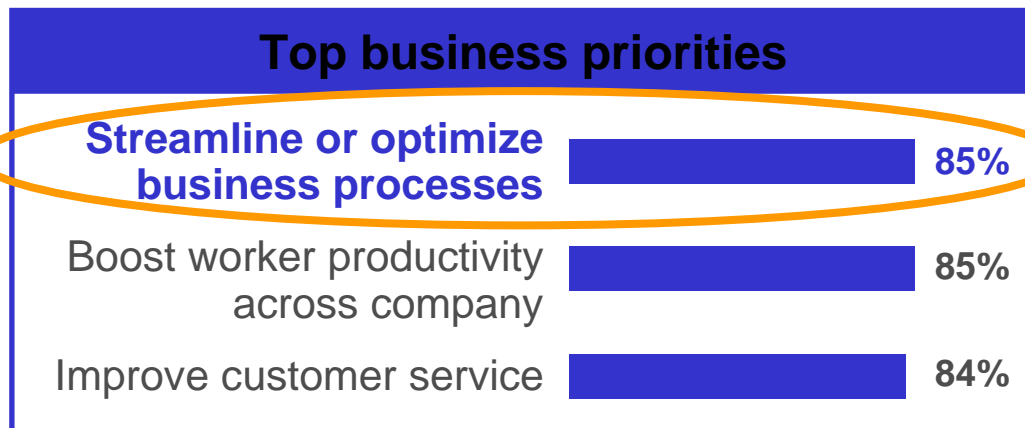


# Changing Market Conditions Drive On Demand Business Needs: Addressing Top Business and IT Priorities

*“More than 80% of CEOs see unpredictable market forces as the key inhibitor to growth.”*

Source: IBM's Global CEO Survey, February 2004

- Economic volatility and globalization
- Increasing consolidation across industries
- Increasing regulations and industry standards
- Technical realities



Sources: *Outlook 2004: Priorities 1Q InformationWeek Research*, January 2004; Merrill Lynch CIO Survey Results, September 2004



# Transform and simplify software development

## Business-driven development

An integrated approach to software development that aligns line-of-business, development and operations teams to improve business performance



### *Development as a business process*

- Align Technology and Business priorities
- Improve efficiency and responsiveness
- Create innovative products

- Higher productivity - 50% + increase in developer productivity
- Improved quality - 80% fewer bugs
- Greater predictability

**Software development becomes a driver of competitive advantage**



# Business-Driven Development

## *Business Drivers that Guide our IBM Software Development Platform*

### Discover



- Find reusable assets within existing transactions, apps, & systems
- Model & design architectures, applications, services, etc.
- Store and catalog assets for reuse

### Develop



- Templates, patterns & asset-based development
- Transform assets into reusable components
- Optimize performance prior to deployment
- Manage teams & the development process
- Optimize interaction & procedures

### Deploy



- Quality Assure: conformance testing, bug tracking, release management
- Systems Testing
- Manage runtimes over lifecycle
- Performance monitoring

*57% of project failures are due to poorly scoped requirements,*

*Only 54% of required features and functions make it to the released product*

*82% of projects run over time, 51% are over budget*



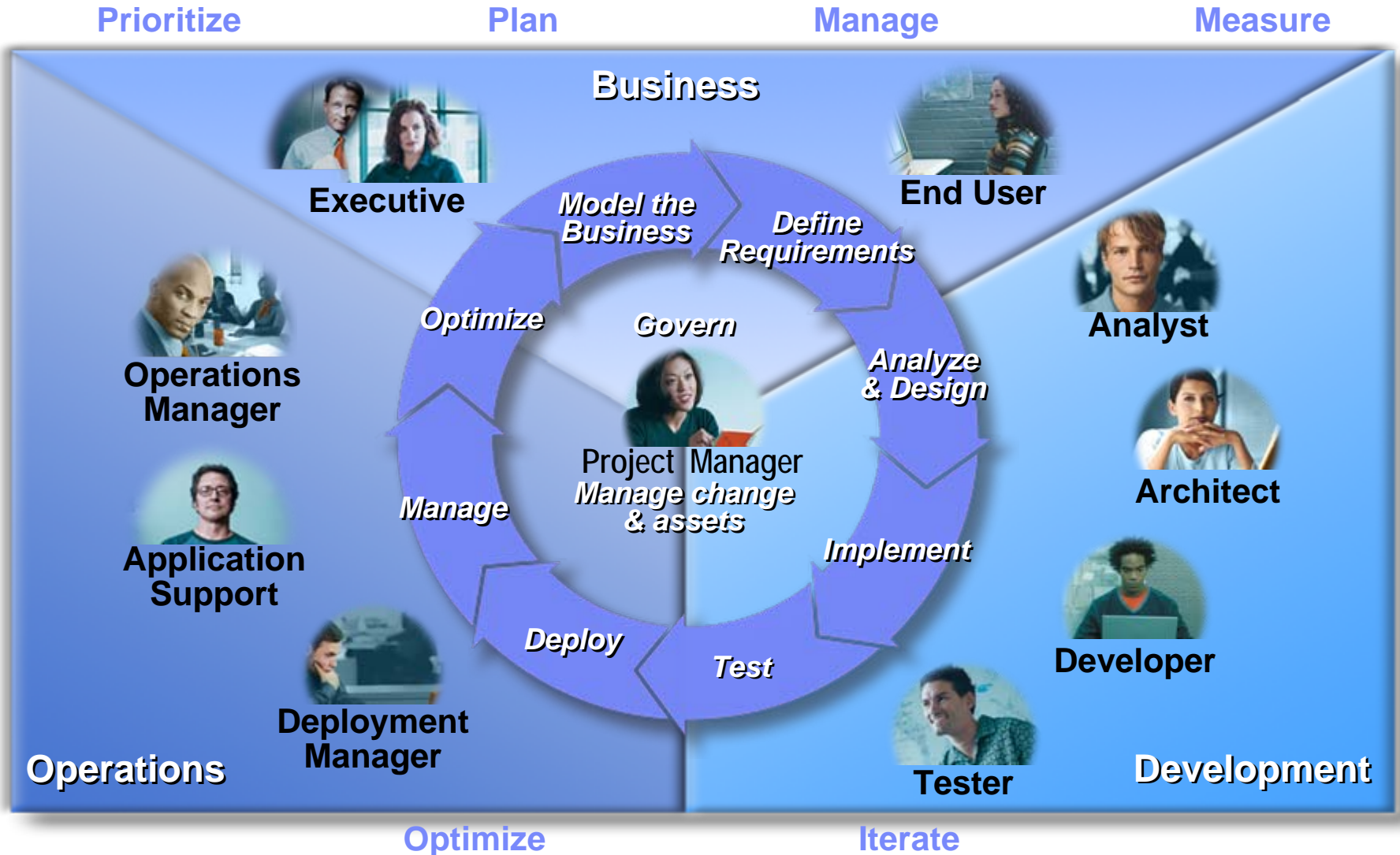
# Discover, develop, and deploy assets



- **Discover business & technology assets**
  - ▶ Business priorities
  - ▶ Requirements
  - ▶ Middleware and software assets
  
- **Develop at the speed of business**
  - ▶ Rapid application development
  - ▶ Model-driven architecture
  - ▶ Asset-based development
  - ▶ Direct-to-middleware productivity
  
- **Deploy to closed-loop environments**
  - ▶ Automated applications deployment
  - ▶ Streamlined composite application management
  - ▶ Direct-to-operations productivity



# The business-driven development lifecycle



# IBM's Eclipse Software Development Platform

Integrating Multiple Roles and Development Tools into a single IDE



Independent tools and poorly connected islands of development

Rational. Software Development Platform



Best-of-breed tools and teams working together in an integrated environment



# WebSphere/Rational Tools Portfolio V6 - Core Roles

Role	Description	Benefits & Skill Requirements
Business Analyst	Models and optimizes business processes to reengineer existing business processes or define new business processes	<ul style="list-style-type: none"> <li>▪ <b>No programming experience required</b></li> <li>▪ Can focus on business performance &amp; process</li> </ul>
Integration Developer /Specialist	Uses visual tools to configure integration logic with existing and new applications and humans in the network	<ul style="list-style-type: none"> <li>▪ Some basic programming experience</li> <li>▪ <b>No J2EE skills required</b></li> <li>▪ Expects tools to simplify and abstract advanced IT implementation details</li> </ul>
J2EE Application Developer	Creates new applications using Java development tools	<ul style="list-style-type: none"> <li>▪ <b>Focused specifically on J2EE implementation</b></li> </ul>
Enterprise Developer	Extend legacy assets to new users and enable those assets to be used in Service Oriented Architectures (SOA) and as Web services	<ul style="list-style-type: none"> <li>▪ <b>Focused on mixed workload of J2EE and COBOL/PL1/RPG environments</b></li> </ul>

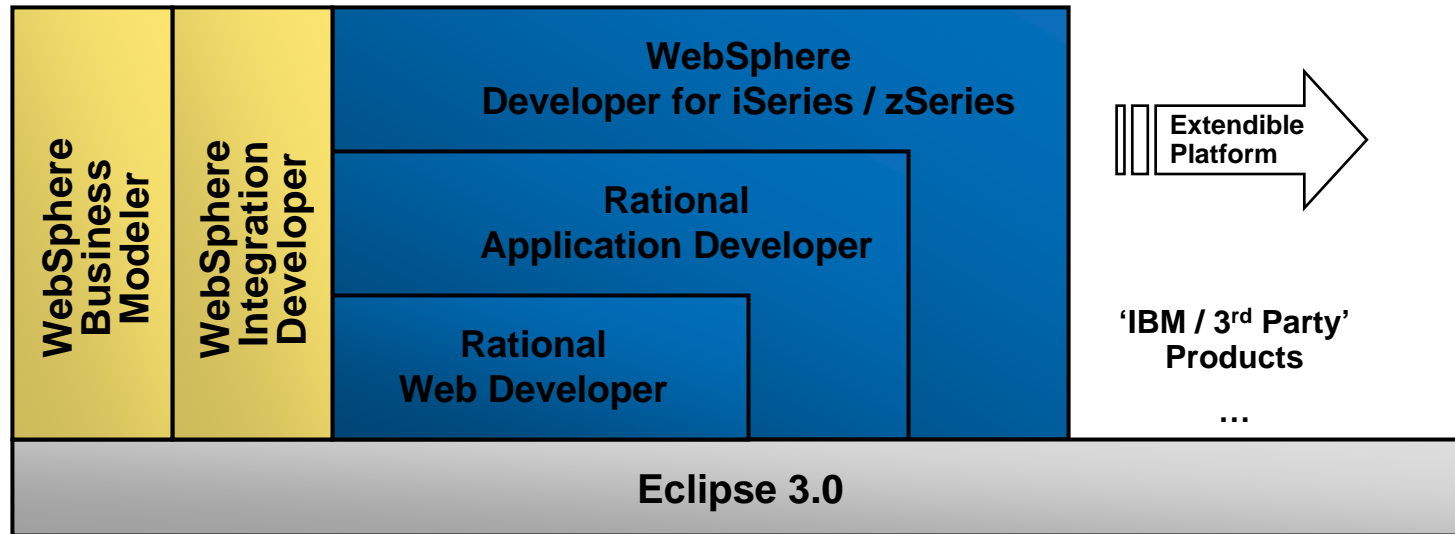


# WebSphere/Rational Tools Portfolio V6 - Core Tools

Practitioner Role	Previous/Current Product	V6 Offering
Business Analyst	<ul style="list-style-type: none"> <li>WebSphere BI Modeler v5.1</li> <li>Entry/Advanced Editions</li> </ul>	<ul style="list-style-type: none"> <li>WebSphere Business Modeler (2H'05)</li> </ul>
Integration Specialist	<ul style="list-style-type: none"> <li><i>WSAD-IE v5.1</i></li> <li>WebSphere BI Server Toolset v4.3</li> </ul>	<ul style="list-style-type: none"> <li>WebSphere Integration Developer (2H'05)</li> </ul>
J2EE Application Developer	<ul style="list-style-type: none"> <li>WebSphere Studio Application Developer v5.1 (WSAD)</li> <li><i>WSAD-IE v5.1 (JCA Tools)</i></li> </ul>	<ul style="list-style-type: none"> <li>Rational Application Developer – RAD (4Q'04)</li> </ul>
	<ul style="list-style-type: none"> <li>WebSphere Site Developer v5.1 (WSSD)</li> </ul>	<ul style="list-style-type: none"> <li>Rational Web Developer – RWD (4Q'04)</li> </ul>
Enterprise Developer	<ul style="list-style-type: none"> <li>WebSphere Studio Enterprise Developer v5.1</li> </ul>	<ul style="list-style-type: none"> <li>WebSphere Developer for zSeries (1H'05)</li> </ul>
	<ul style="list-style-type: none"> <li>WebSphere Development Studio v5.1</li> <li>WebSphere Development Studio Client</li> <li>WebSphere Development Studio Client Advanced Edition</li> </ul>	<ul style="list-style-type: none"> <li>WebSphere Developer for iSeries (2H'05)</li> </ul>



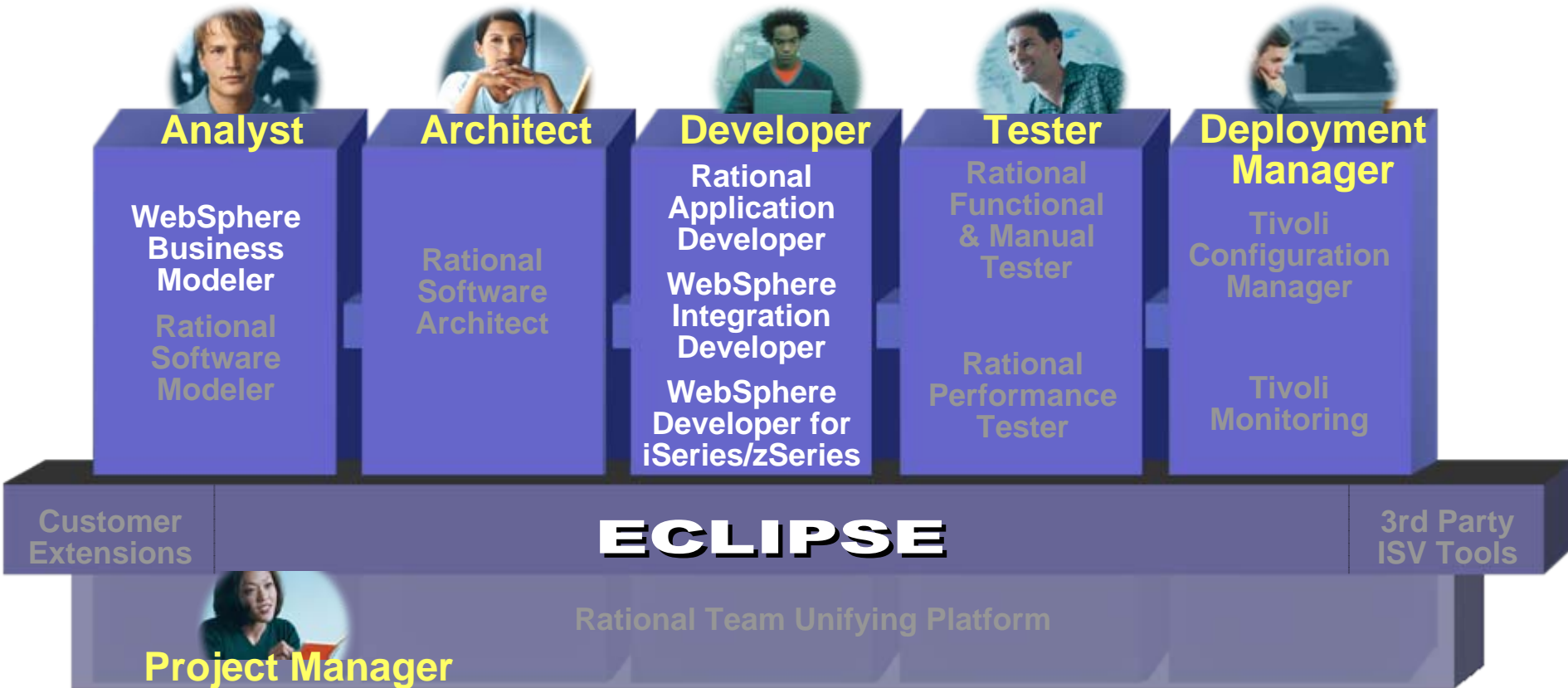
# WebSphere/Rational Tools Portfolio v6 - Eclipse Base



- All Software Development Platform products install in a consistent and extendable way within the 'platform'
  - First Product installs the Eclipse 'platform' as well as it's own product-specific 'installable units'
- User of multiple tools experiences a single integrated "desktop" IDE
- Reuse of RAD and Eclipse components ('installable units') is baked into the design



# WebSphere Tools Portfolio V6 - IBM Rational Software Development Platform



- The WebSphere Tools Portfolio is part of the IBM Software Development Platform providing a complete, open, modular and proven solution



# WebSphere/Rational Tools Portfolio V6 - Summary

## WebSphere Tools Portfolio Summary

- Comprehensive tools optimized for WebSphere
- Role based tools aligned with the IBM Software Development Platform
- Core Products
  - **WebSphere Business Modeler v6**
    - Model and simulate business processes, with direct input to IT tools for implementation
  - **WebSphere Integration Developer v6**
    - Build composite apps (service/process choreography) and mediations based on Web Services standards
  - **WebSphere Developer for zSeries / iSeries v6**
    - Undertake mixed workload development, spanning J2EE and legacy environments
  - **Rational Application Developer v6**
    - Model, build, test and deploy J2EE Applications



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  - JavaServer Faces drag-n-drop J2EE development
  - Service Data Objects for heterogeneous data access
  - Web Services for cross-system integration
  - Hot deployment and enhanced server-tools integration
- **Quality and Lifecycle Enhancements in V6 Tools**
  - Requirements, Design, Construction, Change Mgmt enhanced IDE Integrations
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- **Workflow tools and servers heritage and enhancements**
- **Virtualized application server profiles enhancements**
- **IBM Premium Support enhanced level of service and responsiveness**





# 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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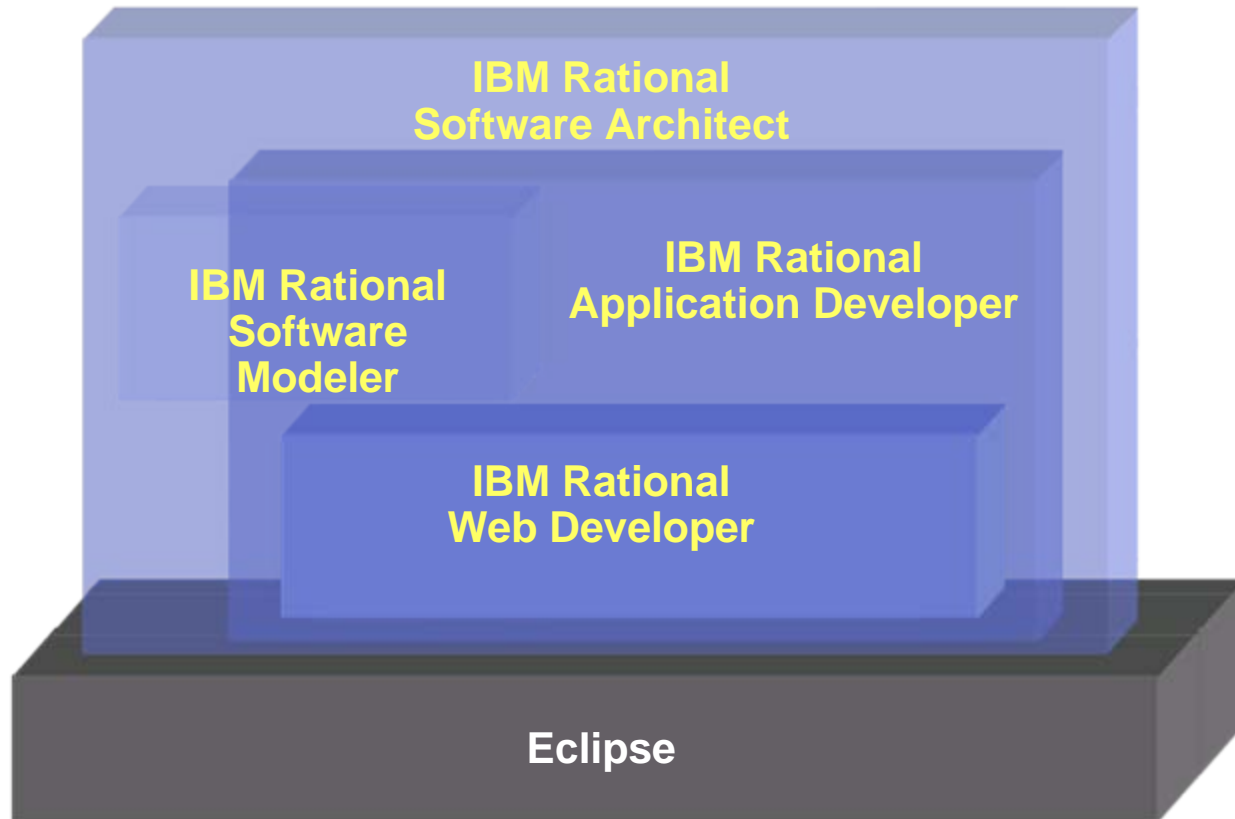
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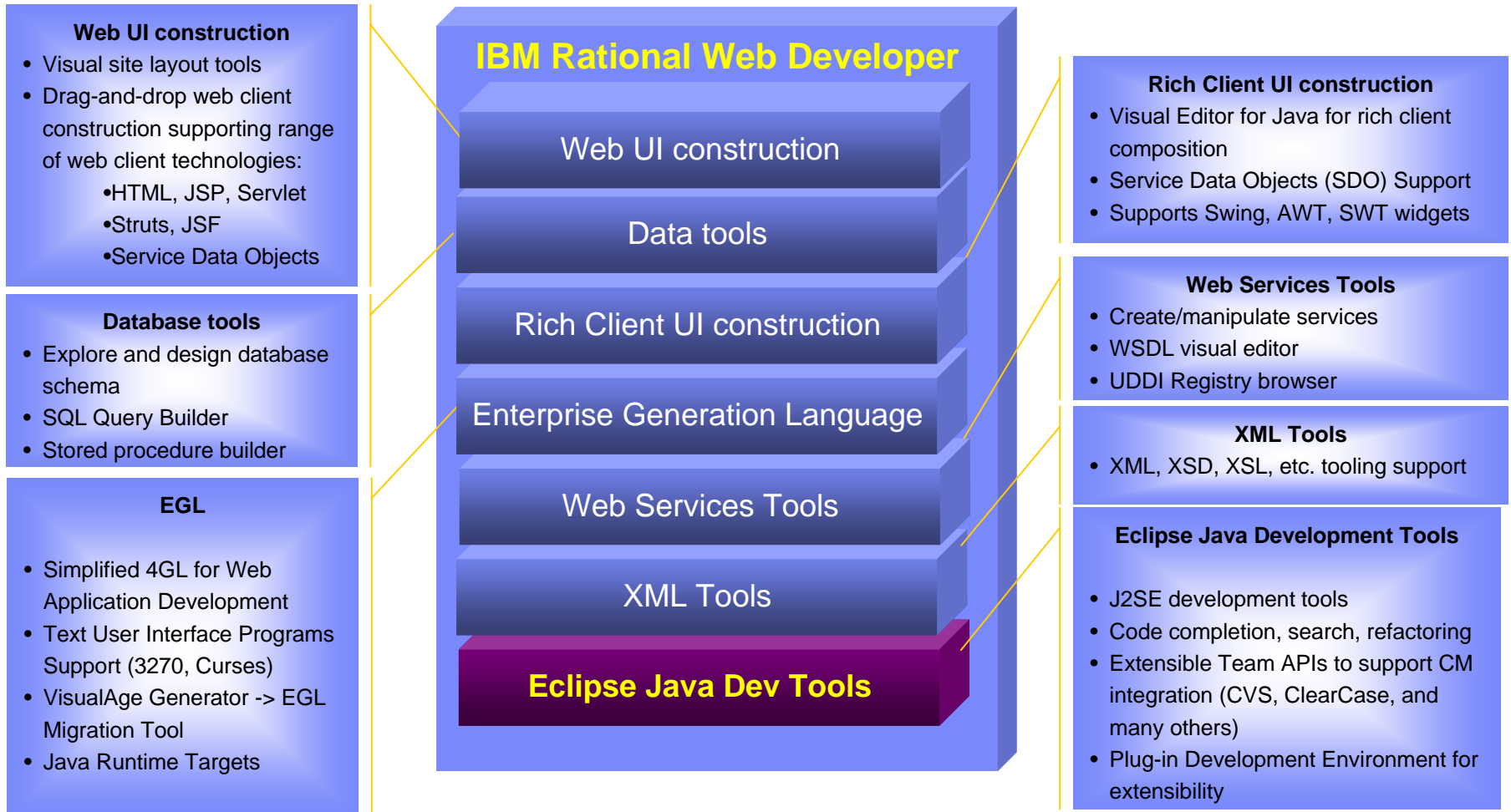
# Design and construction tools



# 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 (JSF)

**#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



# Focusing on Ease of Learning

- **Learning Guide**

- Provides an introduction
- Discusses the value and benefits
- Describes the tools available with suggestions for using them
- Links to other education sources for prerequisite skills

## WEB RESOURCES

In addition to information in the Welcome and the Help, the Web provides you with tips, articles, updates, and references to industry standards.



### Rational Application Developer

Technical resources and best practices for Rational Application Developer



### IBM Publications

Links to IBM Redbooks and other IBM publications



### UML 2.0

OMG's home for Unified Modeling Language for architecting software



### JavaServer Faces

Sun Microsystem's home for advancements in JSF Technology



### Struts

Apache Software Foundation's open-source Java Web application framework



### XML

OASIS's Web portal for XML developers and technologists

# Focusing on Ease of Learning

- **Tutorial Gallery**
  - Easy way to access all tutorials
- **Sample Gallery**
  - Easy one-stop shopping for samples and their documentation
  - Descriptions and purpose identified
  - Setup requirements reduced or eliminated
  - One click – make this a project

## Studio Categories

Showcase  
Samples  
Sample  
Applications  
Technology  
Samples

sub categories  
too...

**Contents**

- [-] Showcase samples
  - [+] Auction Application
    - [+] Construction
      - Portal Application
      - Web Application
- [+] Application samples
  - [+] EJB
  - [+] Portal
  - [+] Web
  - [+] EGL
    - Web Exercises
    - Pizza On The Web
    - Text User Interface
- [+] Technology samples
  - [+] Java
  - [+] Portlet

**Samples Gallery**

The Samples Gallery provides practical samples for application developers.

**Showcase samples** are the most extensive, robust provided. They consist of end-to-end applications that are best practices for application development. They are applications that are developed using a combination for design, development, and testing. These sample need some configuration in order to run on your system. Setup instructions can be accessed from the sample.

**Application samples** are working applications created more than one tool or API. They illustrate how different technologies can be used together.



# 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



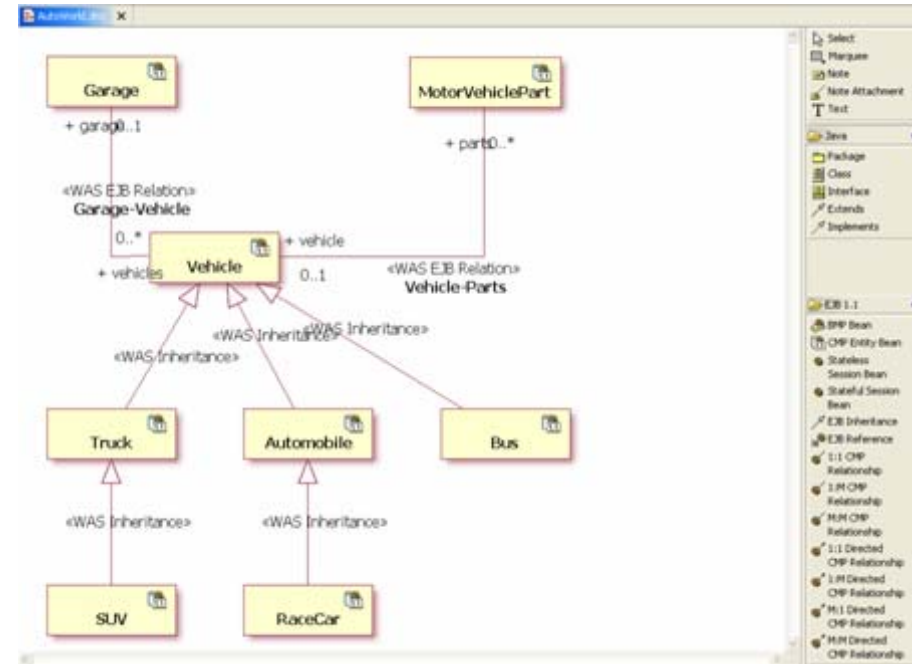
# J2EE 1.4/1.3/1.2

- **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 Diagram Editing – 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

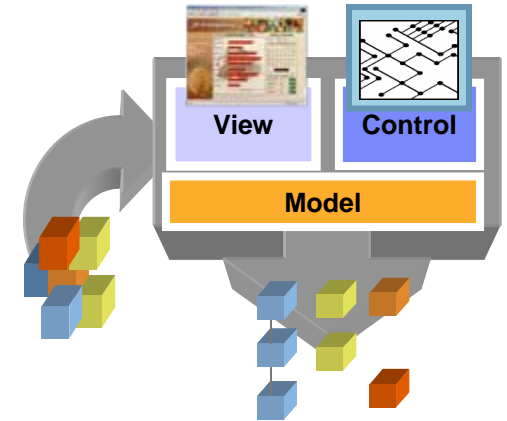
- Constructing web page forms, formatting, validation, etc.
- GUI widget richness
- Calling appropriate "Action" when button pressed, etc.
- Passing data to business logic

## • 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 application. The application is titled "IBM WebSphere Portal - Microsoft Internet Explorer" and shows a navigation menu with tabs for "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 like "Order Checks", "Payment", and "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.
 

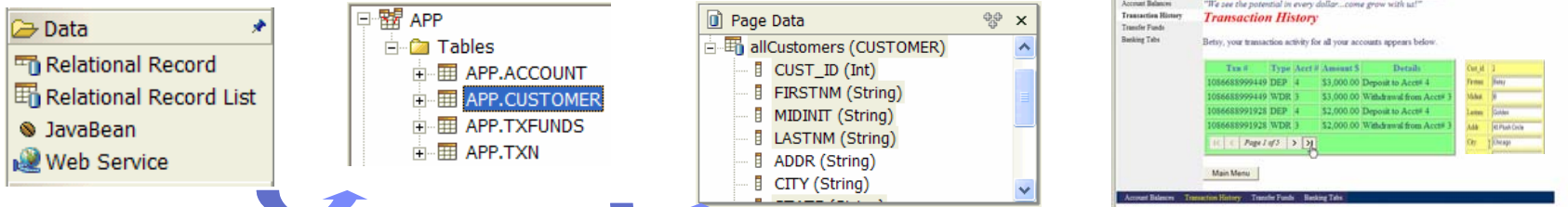
Trans #	Amount	Date	Type	Expense Purpose
355	72.62	2000-11-06	Visa	Taxes
356	31.78	2001-06-16	Visa	Entertainment/Travel
357	61.02	2000-08-25	Visa	Clothing
358	21.75	2000-01-25	Visa	Transportation
359	13.01	2001-03-24	Visa	Telephone
360	24.51	2002-01-20	Visa	Transportation
361	15.87	2001-02-11	Visa	Food
362	13.81	2001-05-23	Visa	Telephone
- Transfer Funds:** A form titled "Make Transfer" with fields for "From:", "To:", and "Amount: \$".
- Expense Allocation:** A pie chart showing the distribution of expenses across various categories.

Callouts highlight the following features:

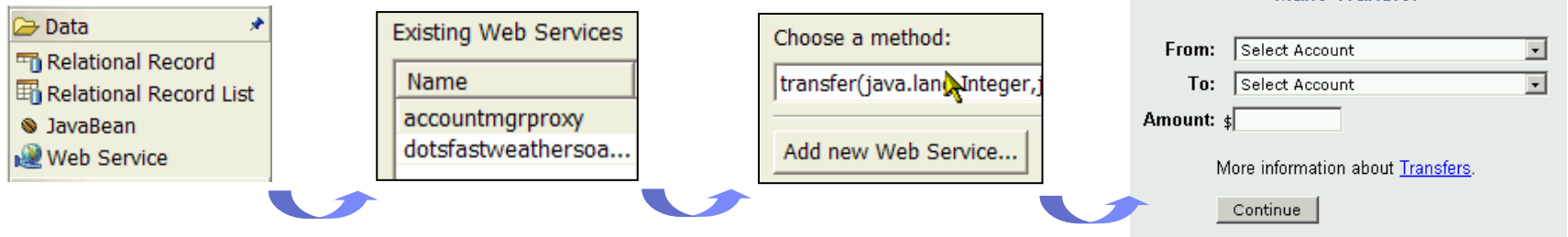
- Database Query:** Points to the Banking Accounts table.
- Web Service:** Points to the Transfer Funds form.
- Graphing Controls:** Points to the Expense Allocation pie chart.
- Tabbed Panels:** Points to the navigation tabs at the top.
- Spreadsheet Control:** Points to the Account Details table.

# Simplifying J2EE Development

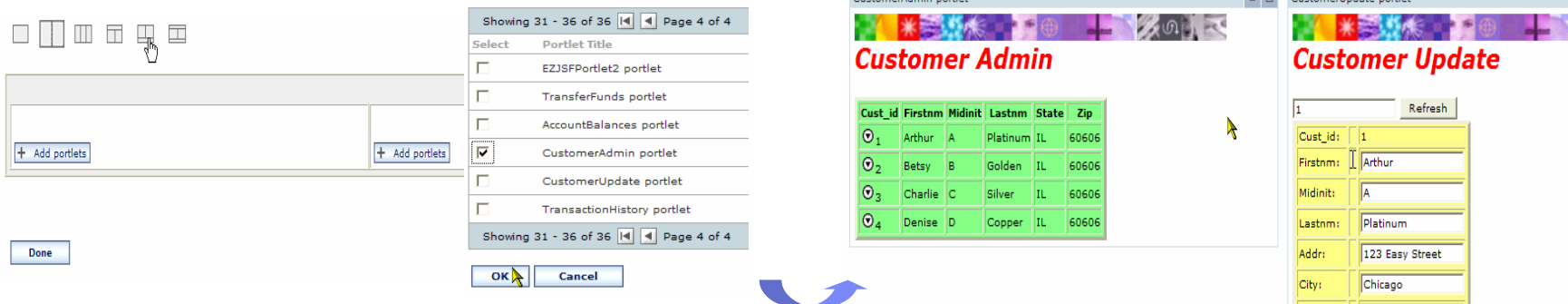
- Database development drag-n-drop ease-of-use <sup>1 2</sup>



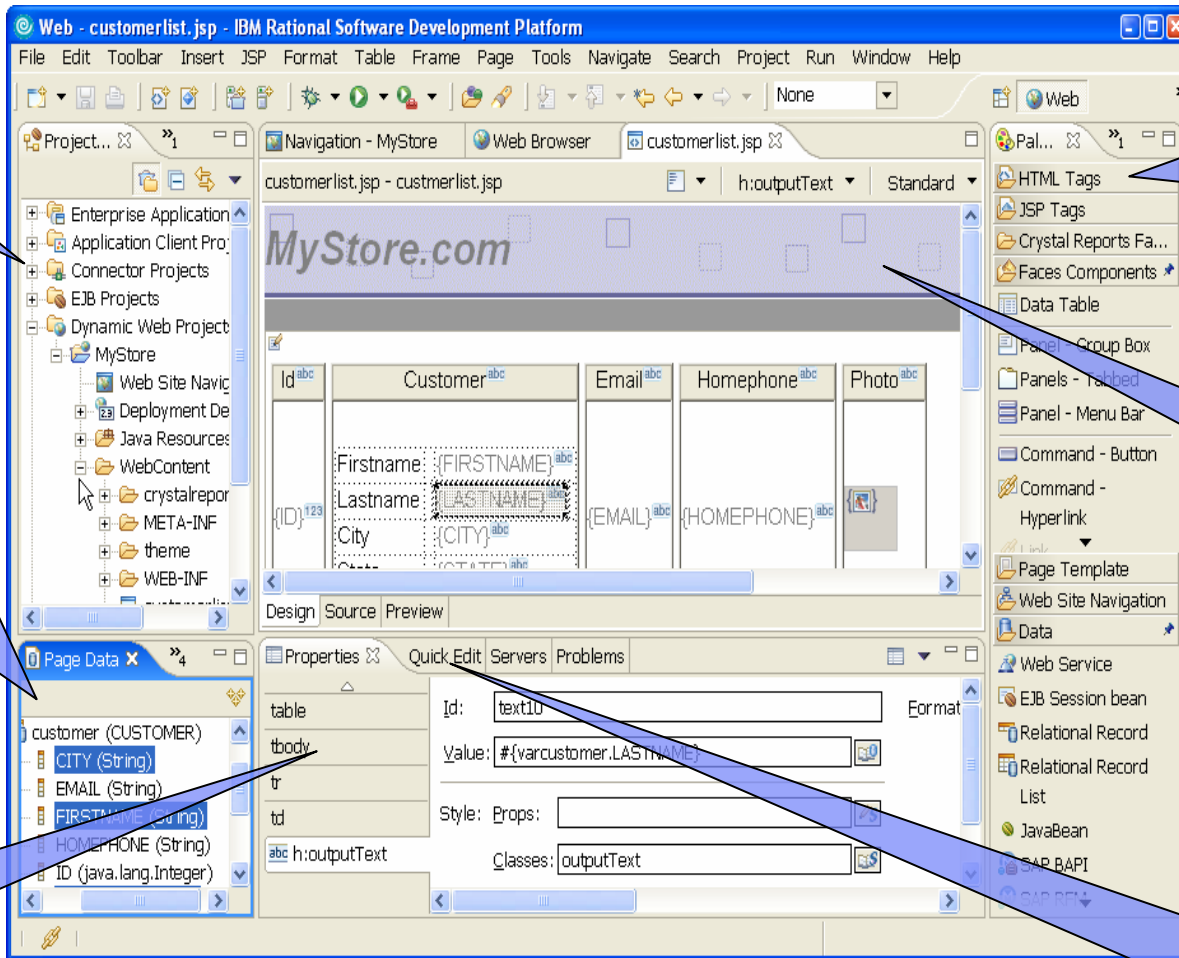
- Web Services development drag-n-drop ease-of-use <sup>1 2</sup>



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



# 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.

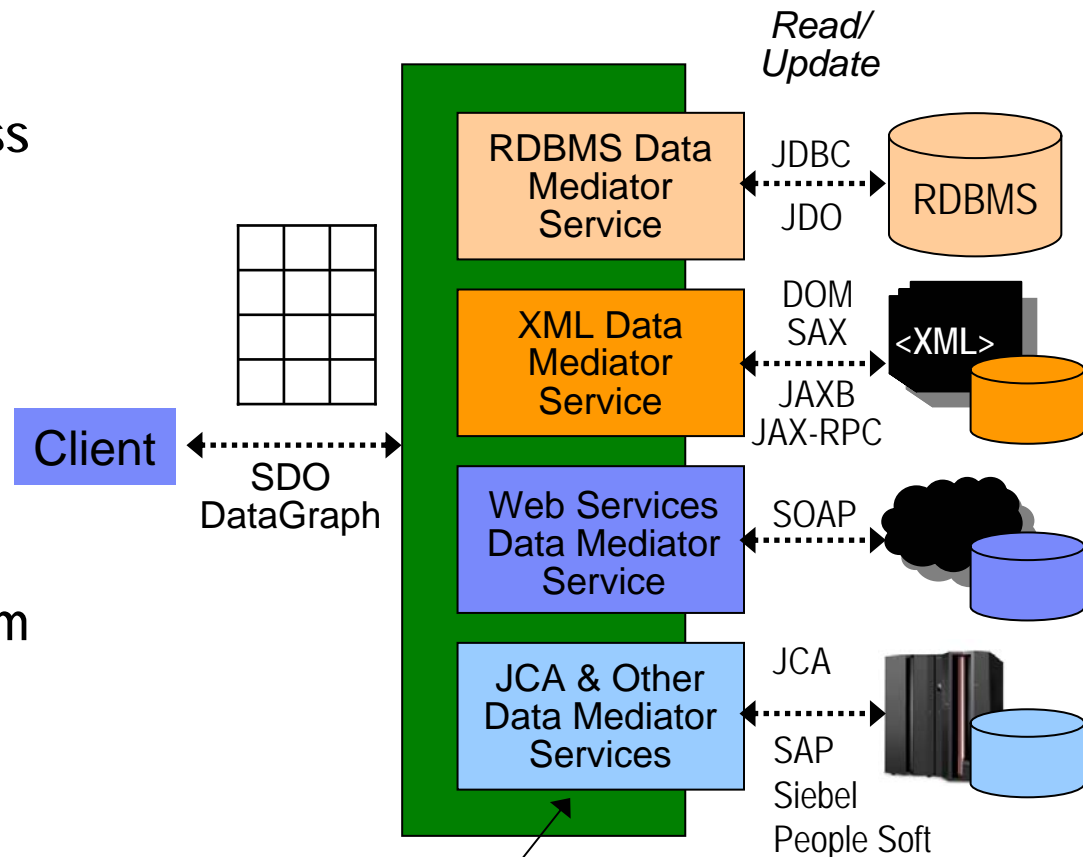
Code assist writes the code for you!

- 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



# 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



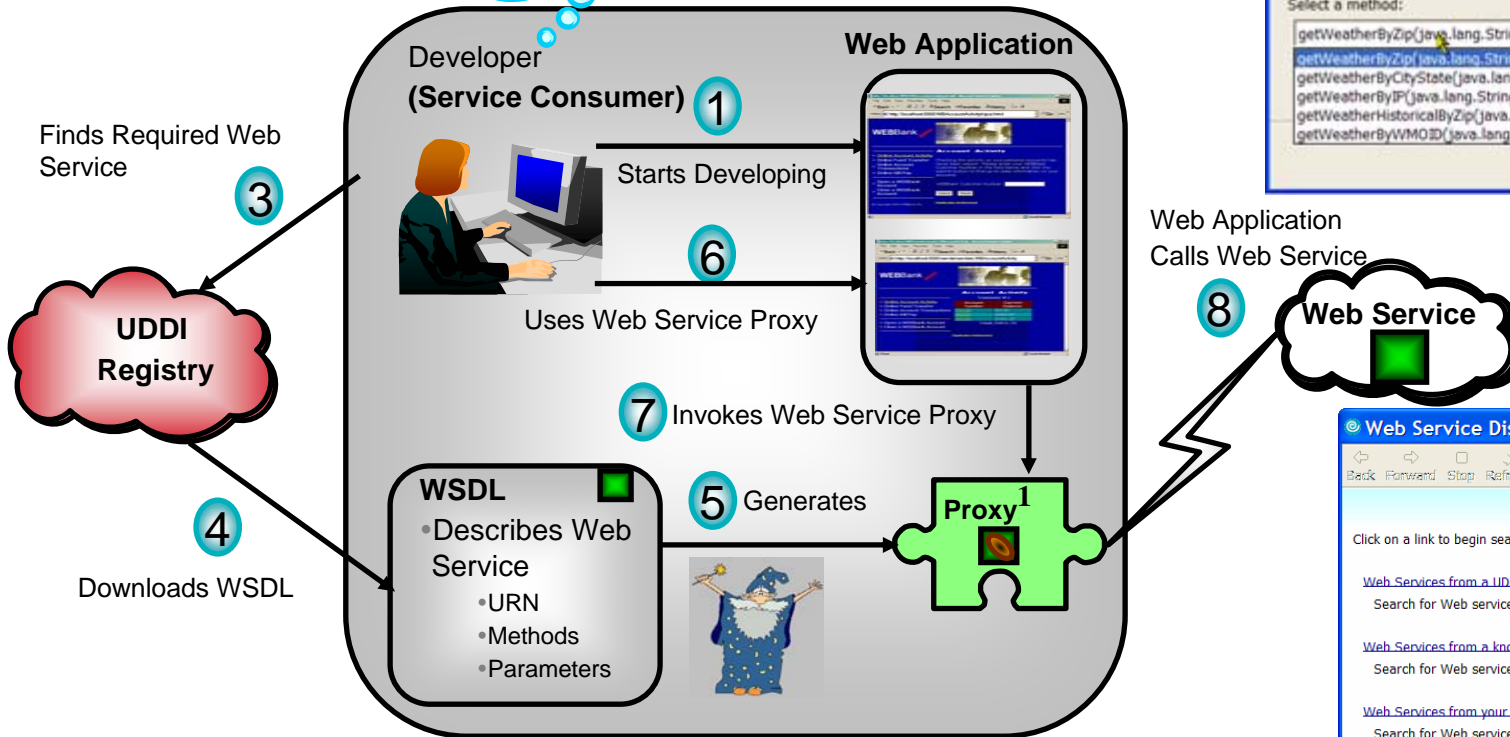
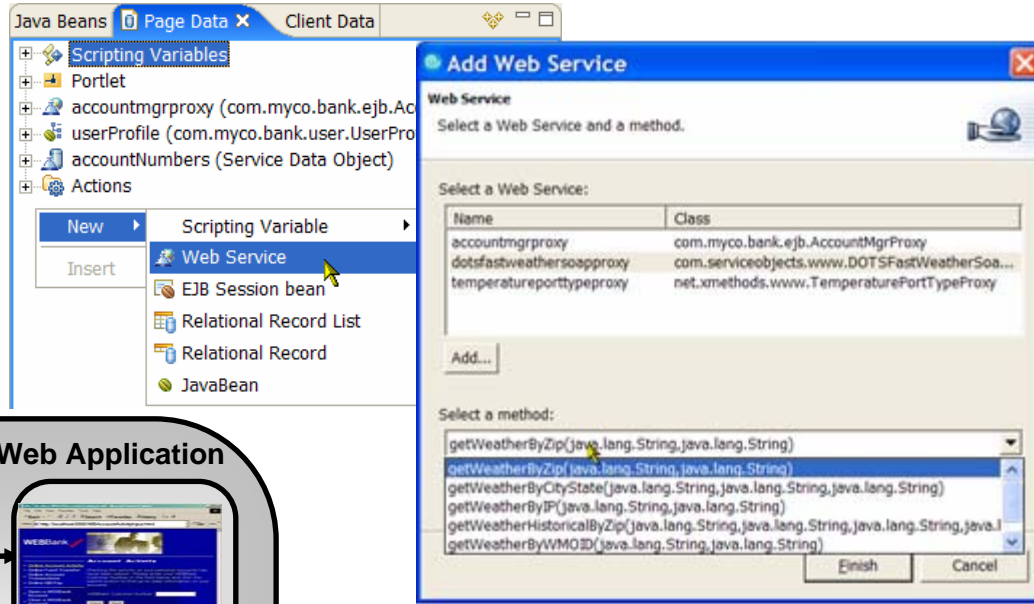
*Query data sources, create data graphs containing data objects, apply changes back to the data source*

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!)

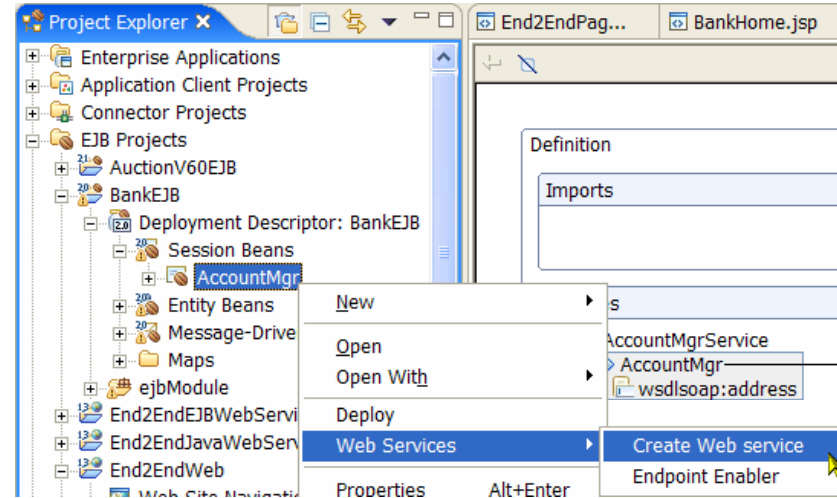
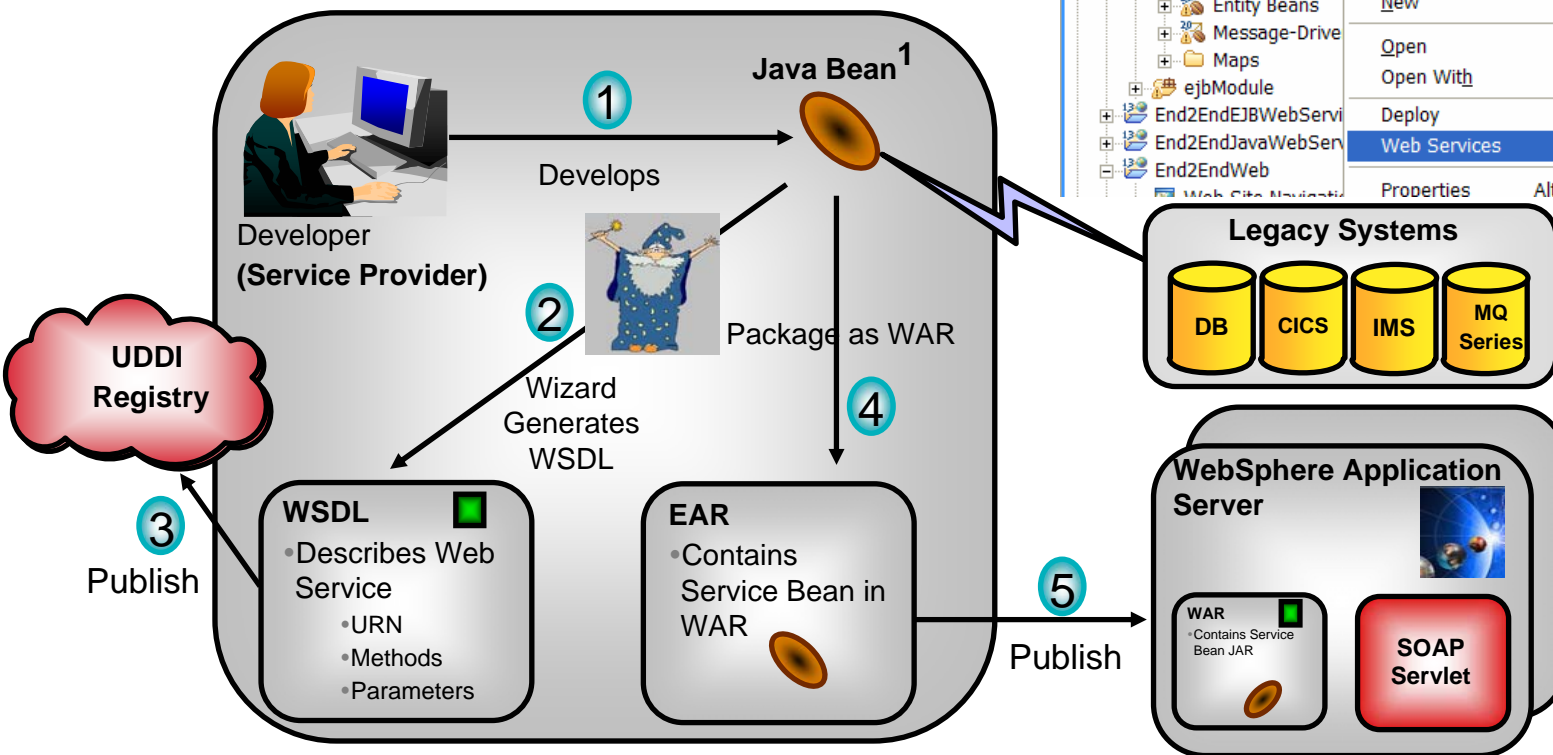
I need 2



<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.



## 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

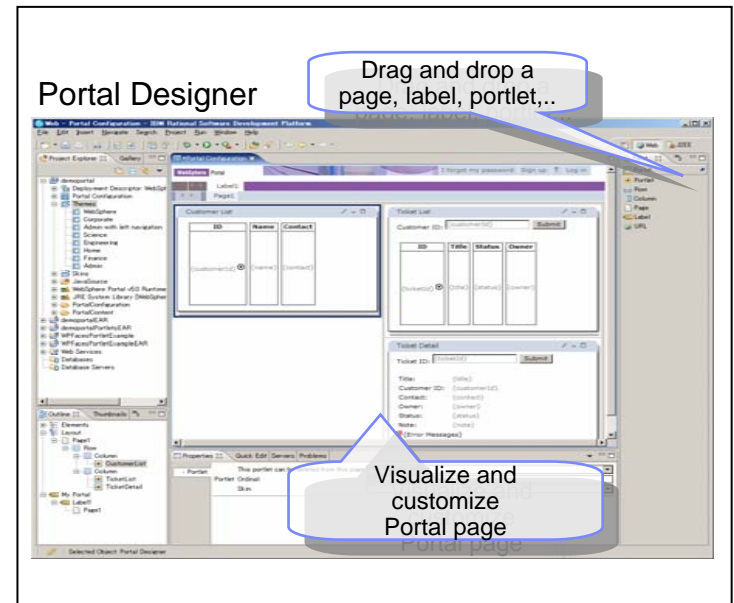
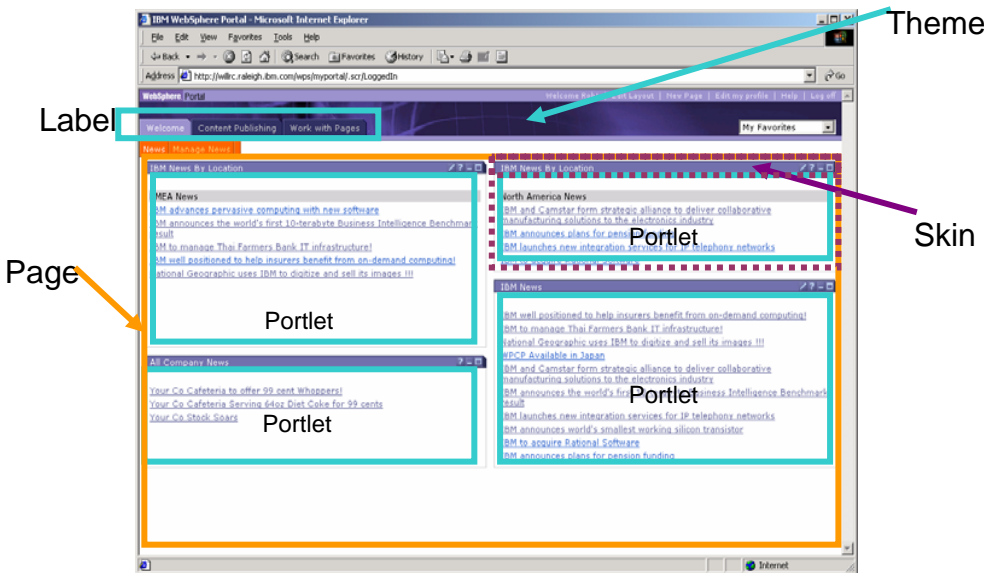
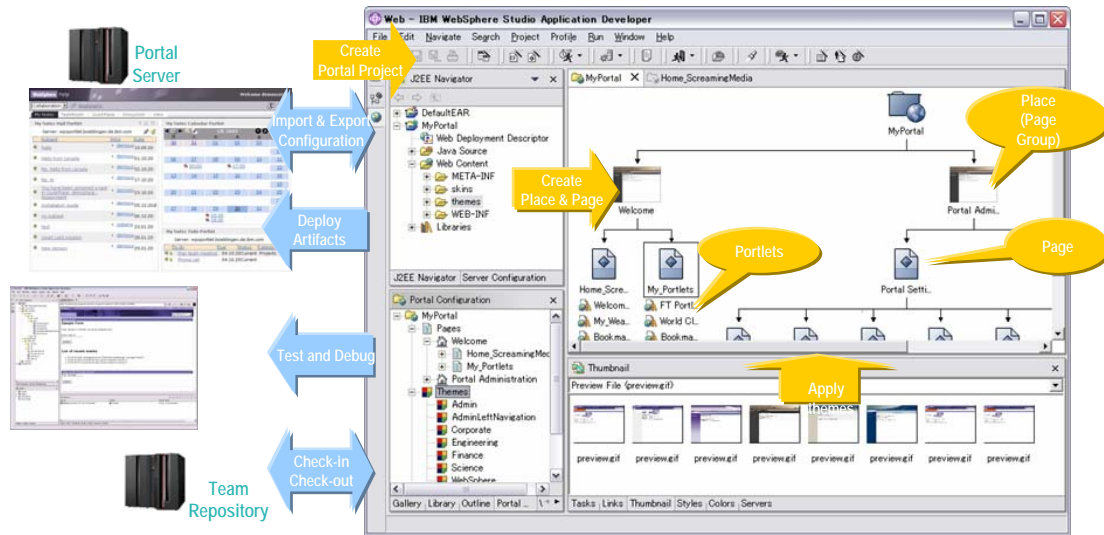


# Code Reviews

- 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)

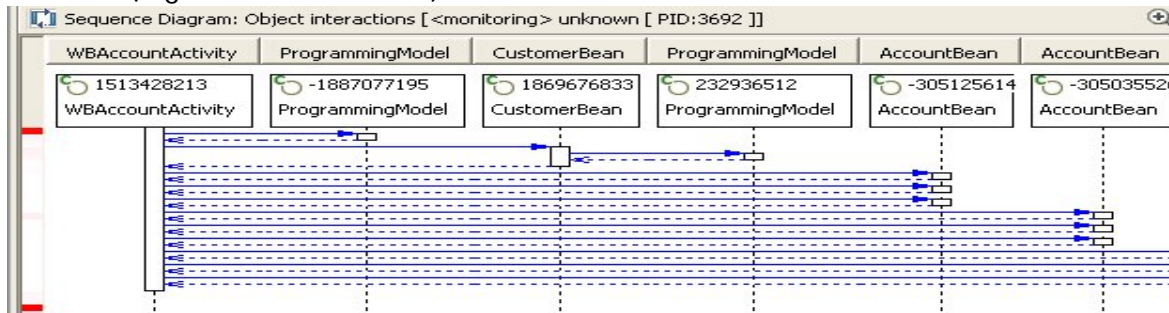
The screenshot displays the IBM Code Review tool interface. At the top right, there are buttons for 'New...', 'Remove', 'Move...', 'Expand All', and 'Collapse All'. Below these is a search bar. The main area shows a tree view of rule categories, including Coding Style (14 rules), Design Principles (5 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...'.

# Portal Designer: Site, Page, Themes, Skins 1234



# Runtime Analysis <sup>12</sup>

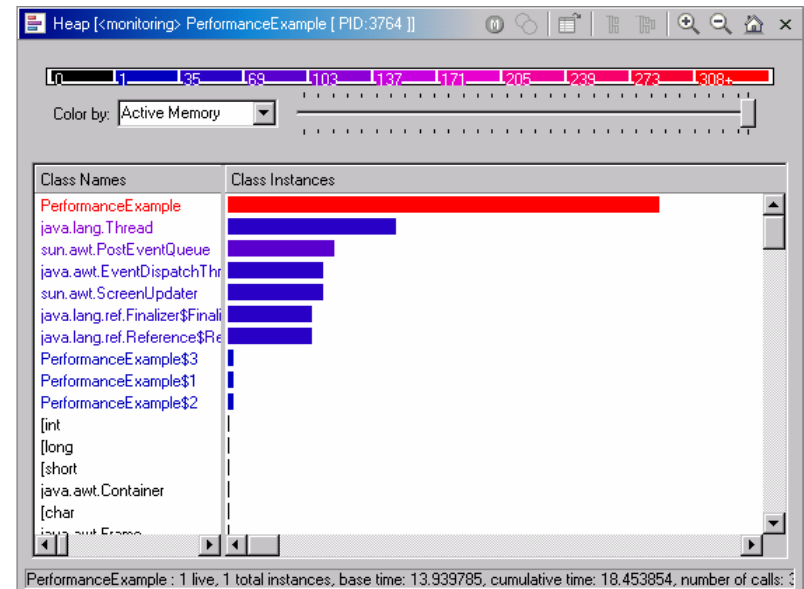
- Sequence Diagram, Method Invocation, heap, etc. views in Profiling Perspective
  - Shows the Execution flow of the application
  - User can drill down from sequence diagram into the application code or launch other Performance Analysis views (e.g. Method Statistics)



Class Method Statistics [ <monitoring> InOut [ PID:1532 ] ]

Filter:   Case sensitive

<Class Names	Package	Base Time	Average Base Time	Cumulative Time	Calls
Thread	java.lang	0.000000	0.000000	0.000000	0
StringBuffer	java.lang	0.364748	0.060791	0.364748	6
String	java.lang	0.000047	0.000047	0.000047	1
Object	java.lang	0.000000	0.000000	0.000000	0
LocalizedPrint...	com.ibm...	0.532924	0.106585	0.532924	5
Launcher\$App...	sun.misc	0.000000	0.000000	0.000000	0
InputStreamR...	java.io	0.009068	0.004534	0.009068	2
InputStrea...	java.io	0.009068	0.004534	0.009068	2
InOut		0.015468	0.003867	23.350155	4
Date	java.util	0.003361	0.000840	0.003361	4
ClassLoader	java.lang	0.001030	0.000258	0.001030	4
BufferedReader	java.io	22.282958	5.570740	22.282958	4
[short		0.000000	0.000000	0.000000	0
[Object		0.000000	0.000000	0.000000	0
[long		0.000000	0.000000	0.000000	0
[int		0.000000	0.000000	0.000000	0
[float		0.000000	0.000000	0.000000	0
[double		0.000000	0.000000	0.000000	0
[char		0.000000	0.000000	0.000000	0
[byte		0.000000	0.000000	0.000000	0
[boolean		0.000000	0.000000	0.000000	0





## 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

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- Crystal Reports
- And much more...

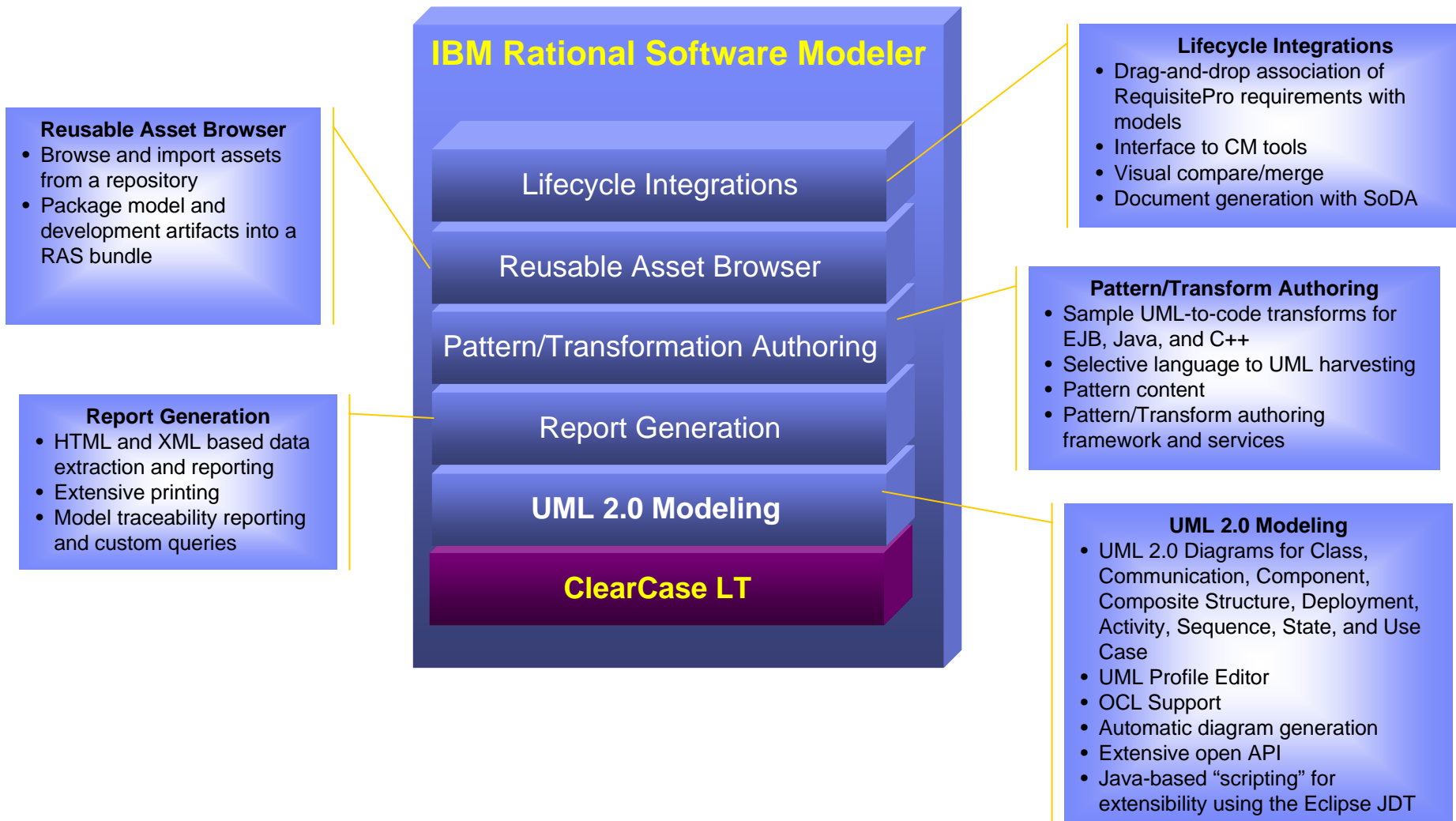
### • New UML2 Engine

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

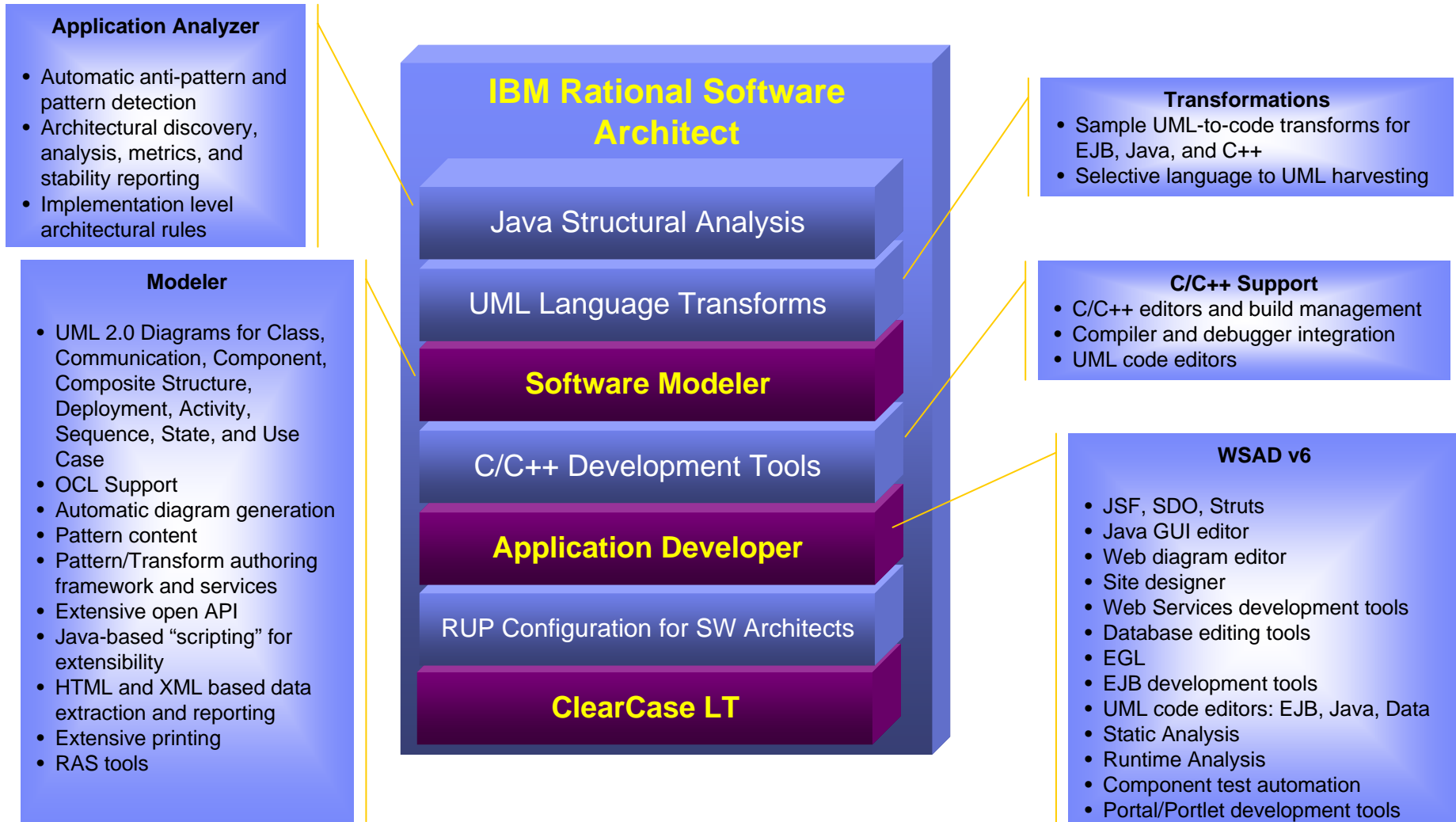
### • Software Quality Testing Tools Enhancements (Manual, Functional and Performance Testing)



# IBM Rational Software Modeler

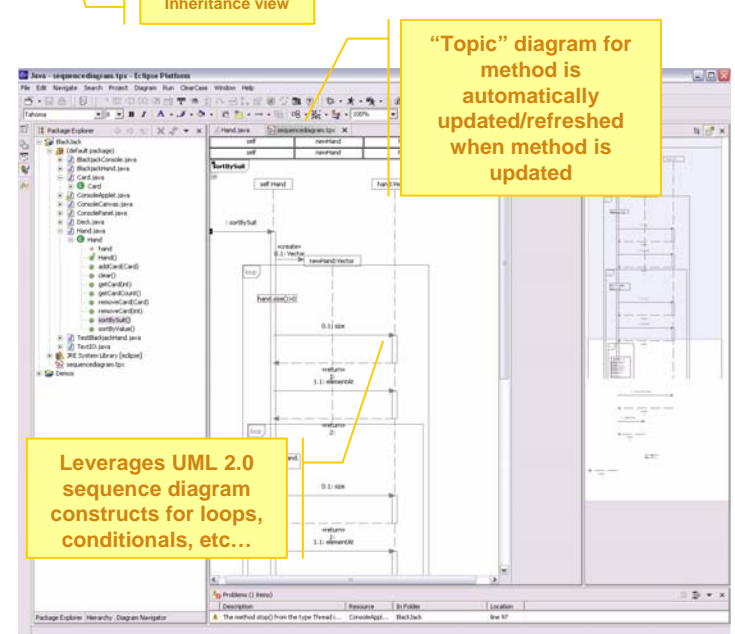
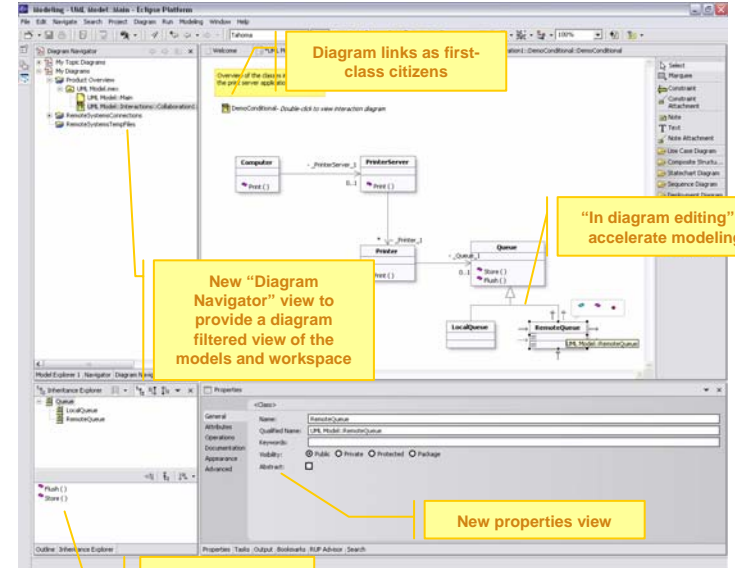
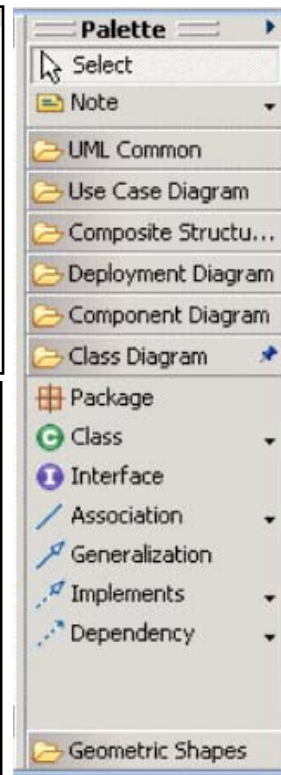
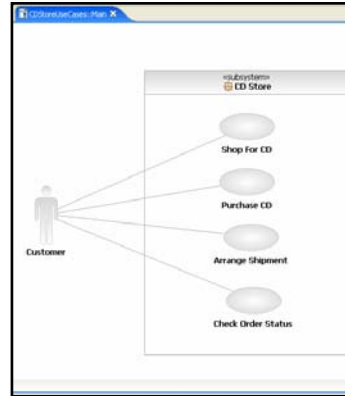
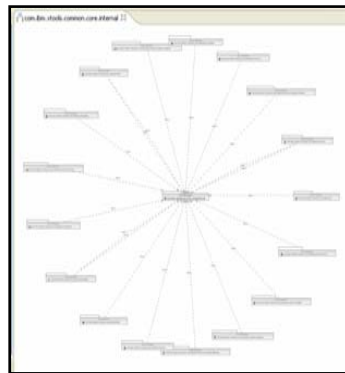
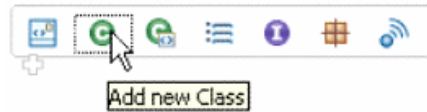


# IBM Rational Software Architect



# New UML Modeling Ease-of-Use

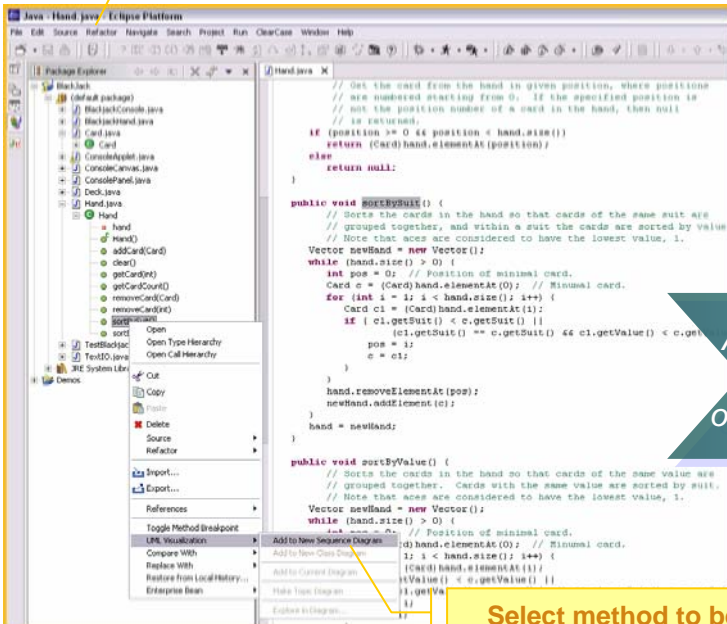
- Simplify creating UML2 diagrams with contextually appropriate UML element creation, via popup toolbars
- Visualize Java code using dynamic code introspection that provides hyperlinked diagrams (Class and Sequence diagrams)
- New custom views to improve the editing experience



# Visualize Java Classes, Relationships and Method Bodies

- 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

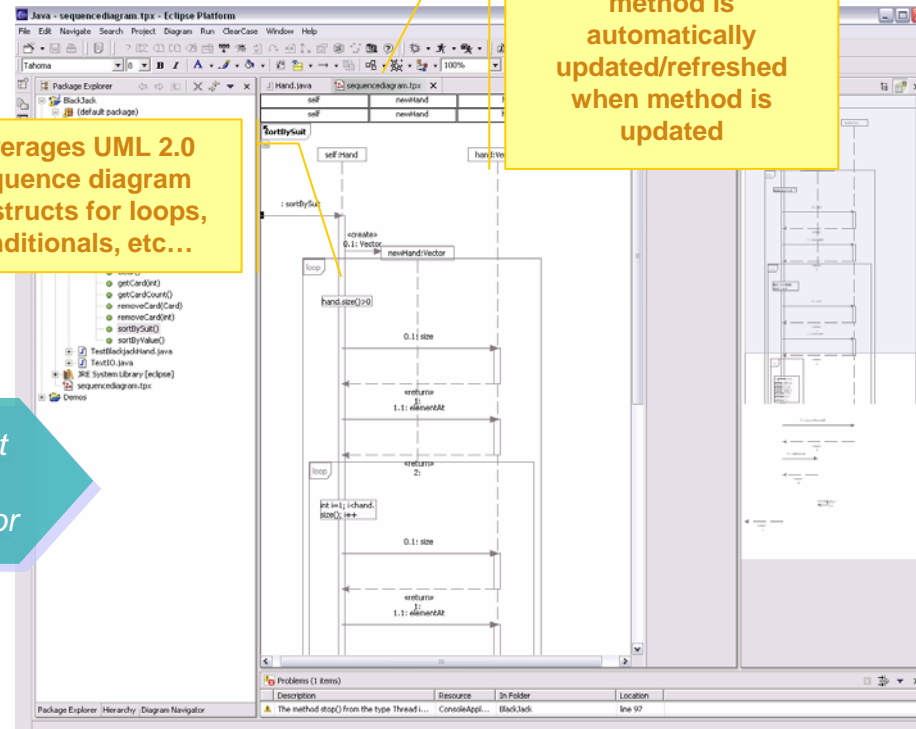


Leverages UML 2.0 sequence diagram constructs for loops, conditionals, etc...

Alternate abstract view of method behavior

Select method to be visualized using UML

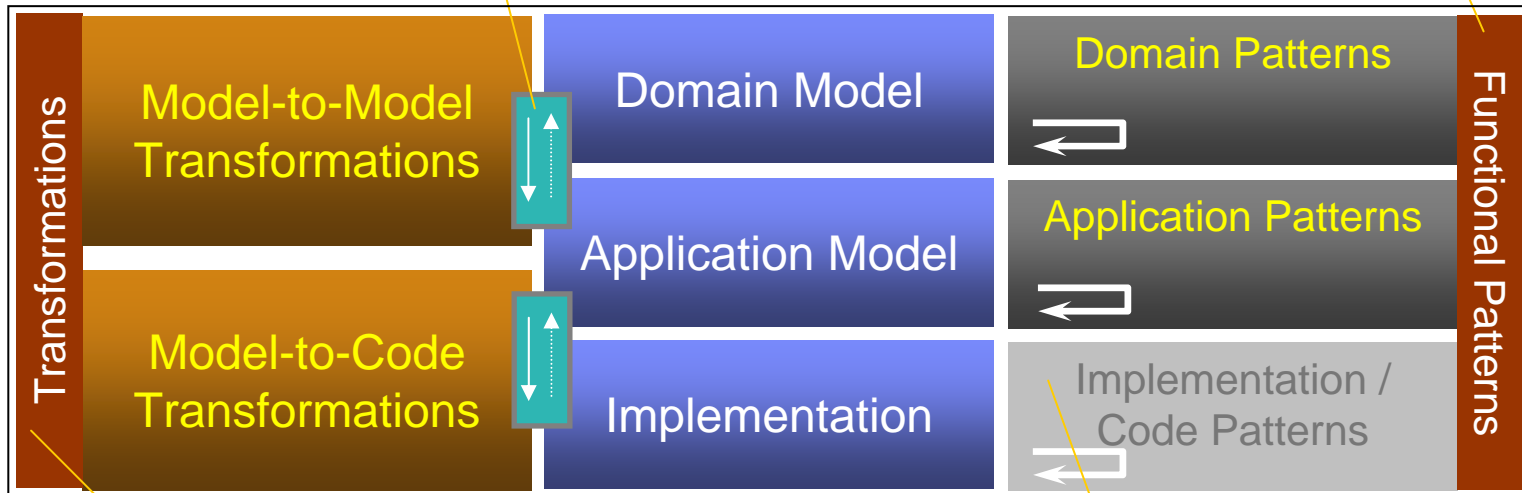
"Topic" diagram for method is automatically updated/refreshed when method is updated



# 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).



# IBM/UMHS Briefing – June 2005

## AGENDA - IBM Recommendations and Recent Product Enhancements

### • Big Picture

- Eclipse platform, WebSphere servers, Rational tools and developer value

### • Productivity and Ease-of-Use Enhancements in V6 Tools

- JavaServer Faces drag-n-drop J2EE development
- Service Data Objects for heterogeneous data access
- Web Services for cross-system integration
- Hot deployment and enhanced server-tools integration

### • Quality and Lifecycle Enhancements in V6 Tools

- Requirements, Design, Construction, Change Mgmt enhanced IDE Integrations
- Quality Assurance and Testing Tools Enhancements

### • Workflow tools and servers heritage and enhancements

### • Virtualized application server profiles enhancements

### • IBM Premium Support enhanced level of service and responsiveness



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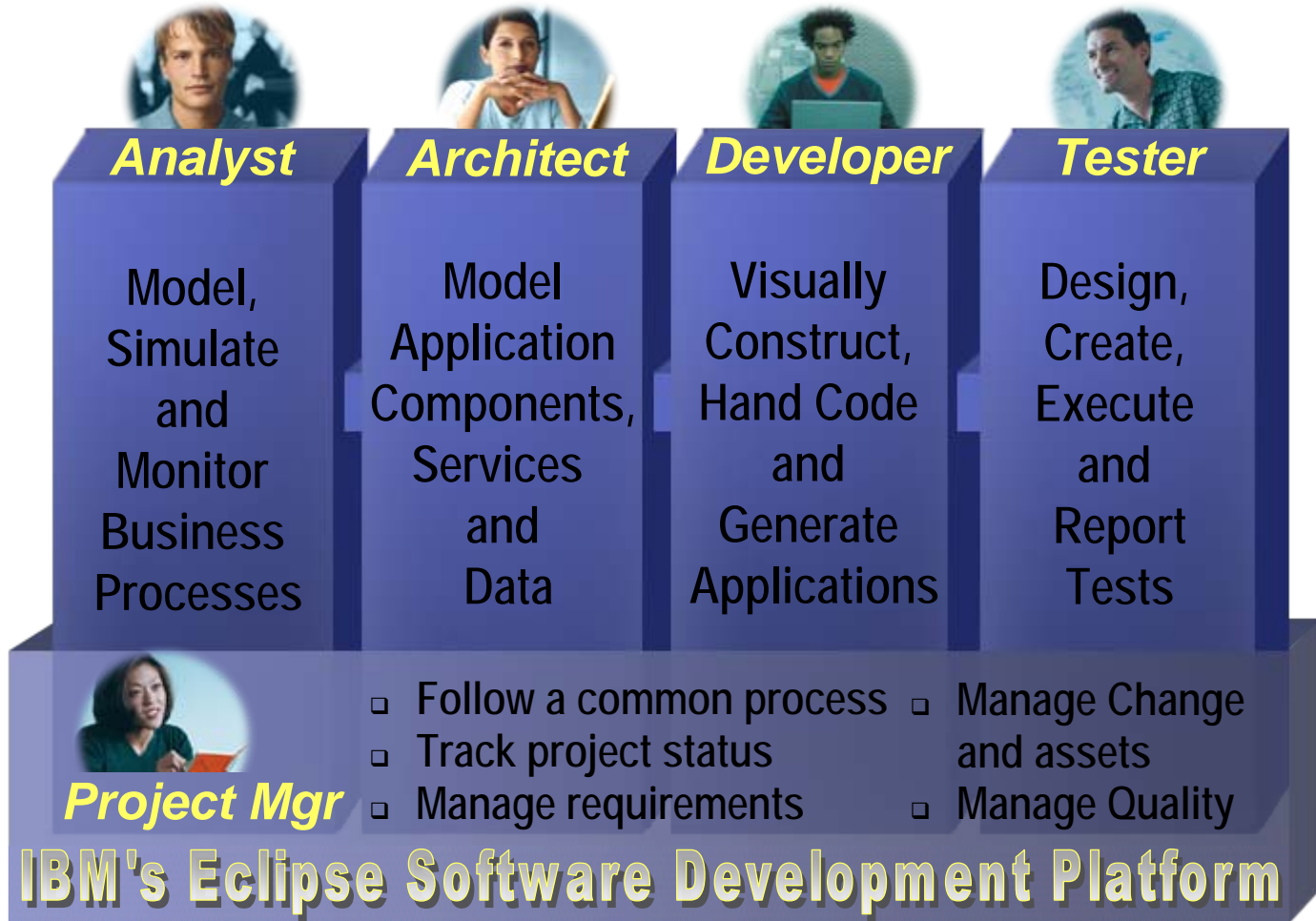
### ▀ Software Quality Testing Tools Enhancements (Manual, Functional and Performance Testing)





# Roles Accelerated By Rational Tools

## IBM Software Development Platform



# Existing Tools In WSAD V5.x and RAD V6

## Disciplines

Business Modeling  
Requirements

*UML 2-way Modeling* Analysis & Design

*J2EE, Web Services, JSF, SDO...* Implementation

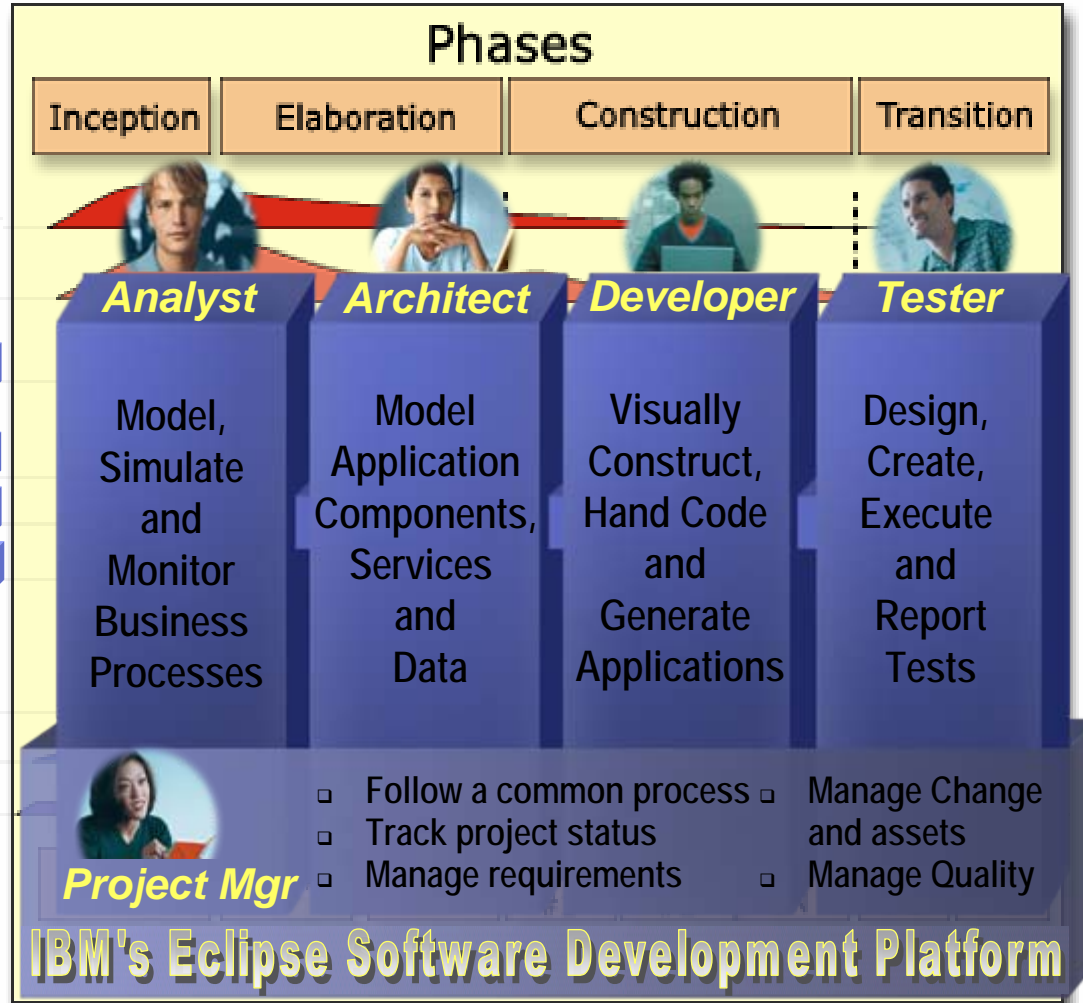
*Unit Testing, etc.* Test

*Automated J2EE Packaging* Deployment

Configuration & Change Mgmt  
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)



# New V6 Integrated Views/Perspectives

## Disciplines

*Process Modeler* Business Modeling

*RequisitePro Explorer Views* Requirements

Analysis & Design

Implementation

*Functional, Manual, Performance* Test

Deployment

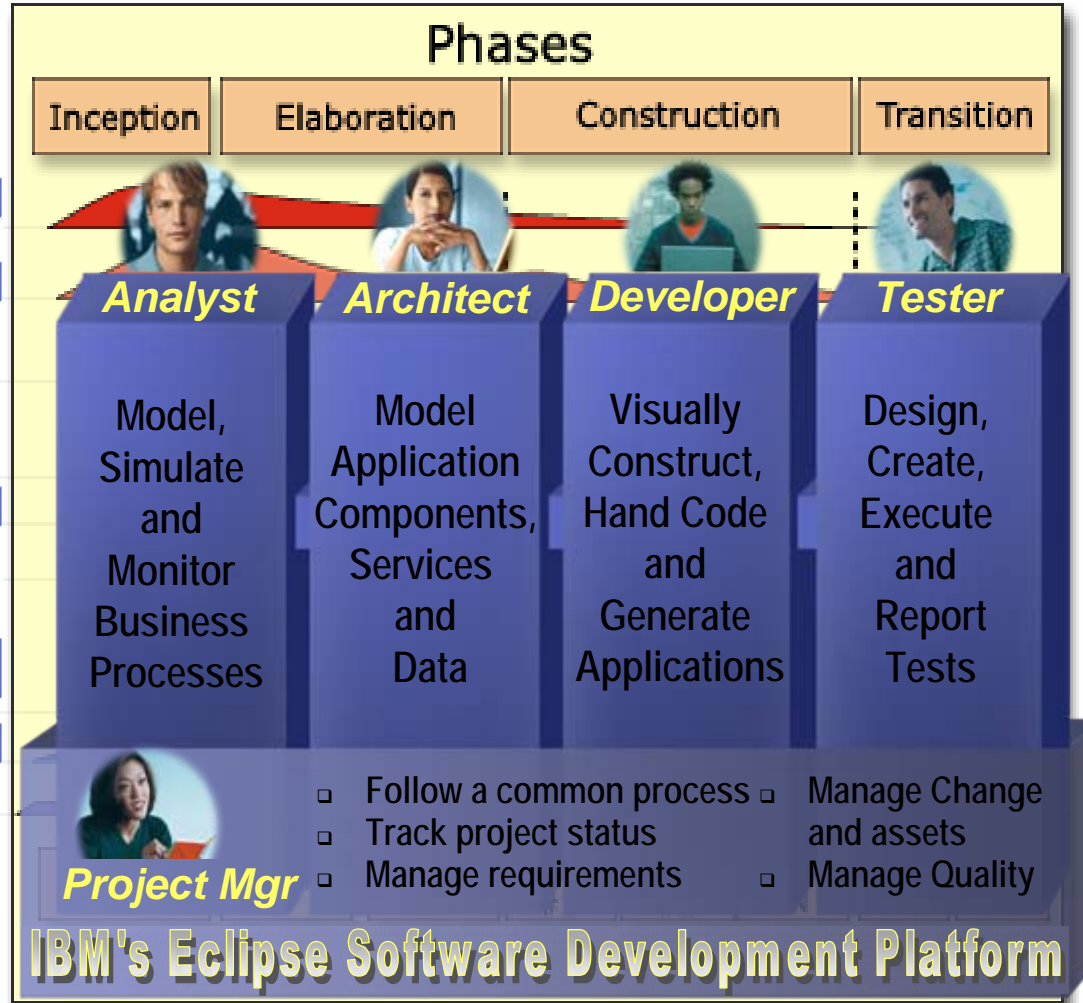
*ClearCase Explorer Views* Configuration & Change Mgmt

*ClearQuest Explorer Views* Project Management

Environment

### Simplified Packaging and Names

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



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

- 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 for 'RSDUC UML Model' with various use cases and realizations. The 'Properties' window at the bottom right shows details for a selected use case, including its name, type, and description. A 'Palette' on the right side of the diagram window contains various UML elements, with 'Association' selected. A tooltip for 'Association' is visible, indicating 'Create an Association Relationship'.



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

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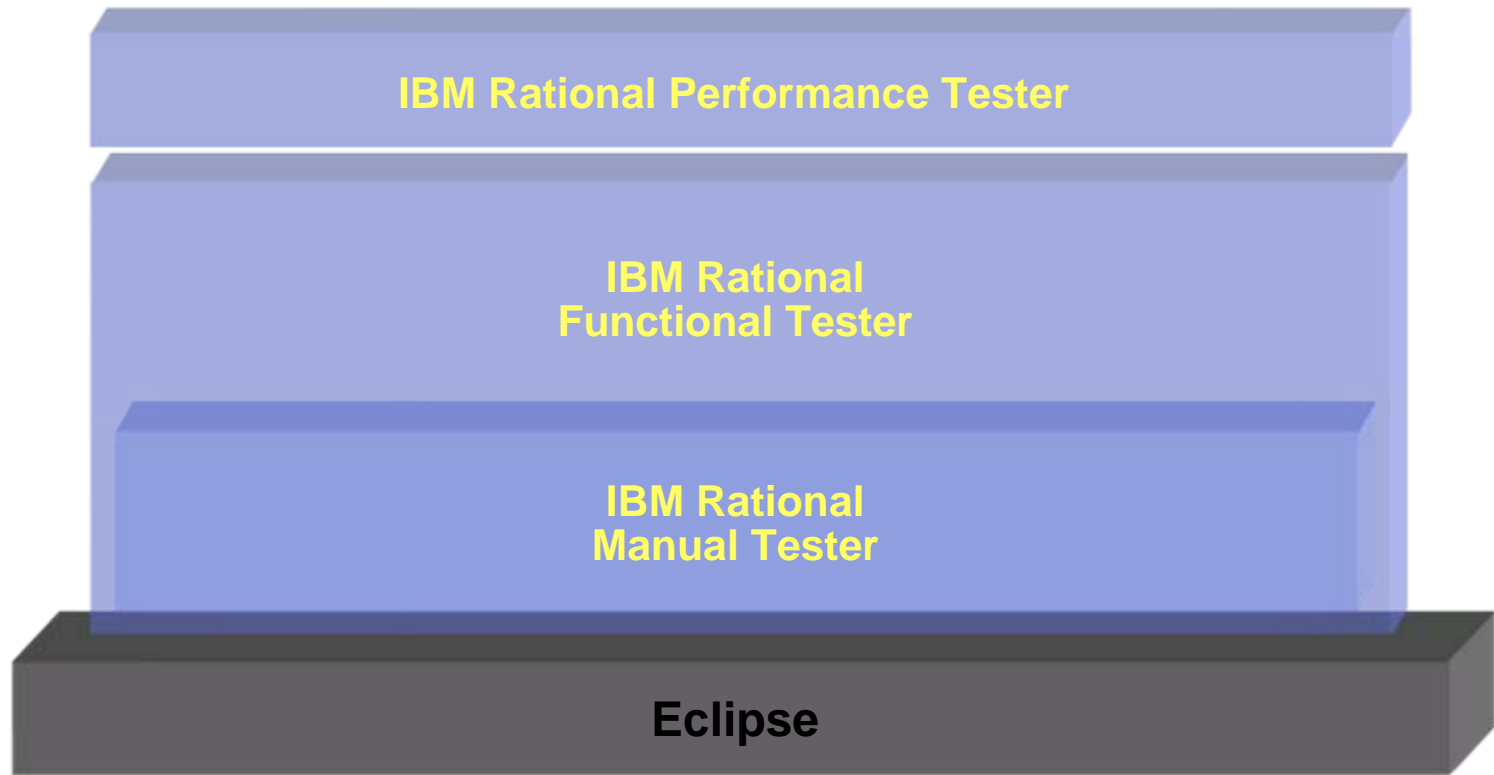
## • New UML2 Engine

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- 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



# 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**

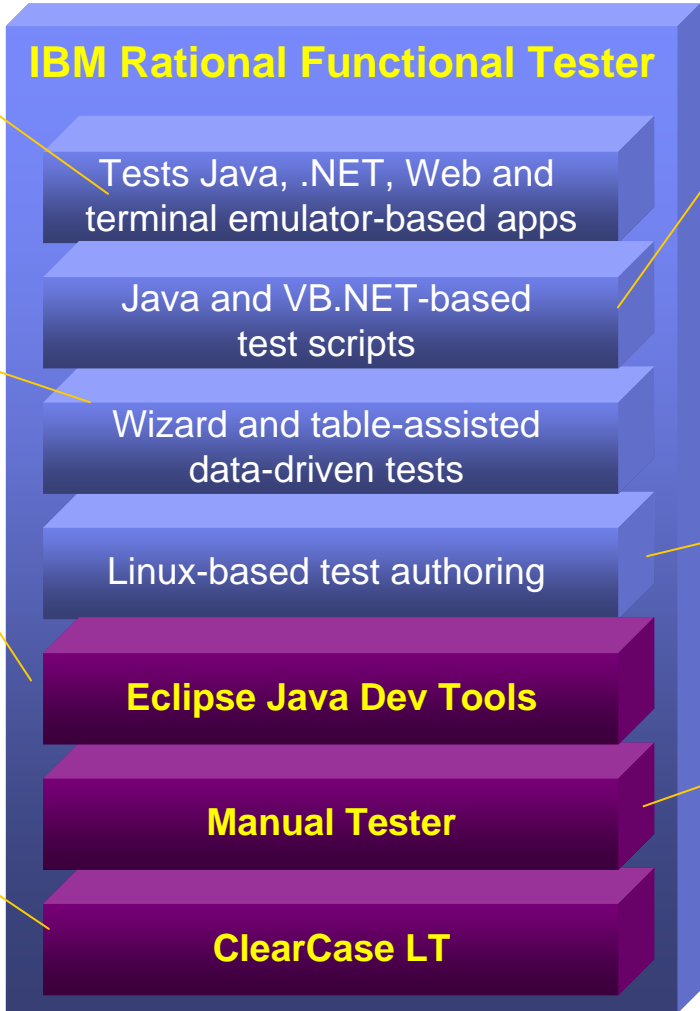
- Simplified data-driven testing enabled by wizards and Excel-like data tables

**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





# IBM Rational Performance Tester

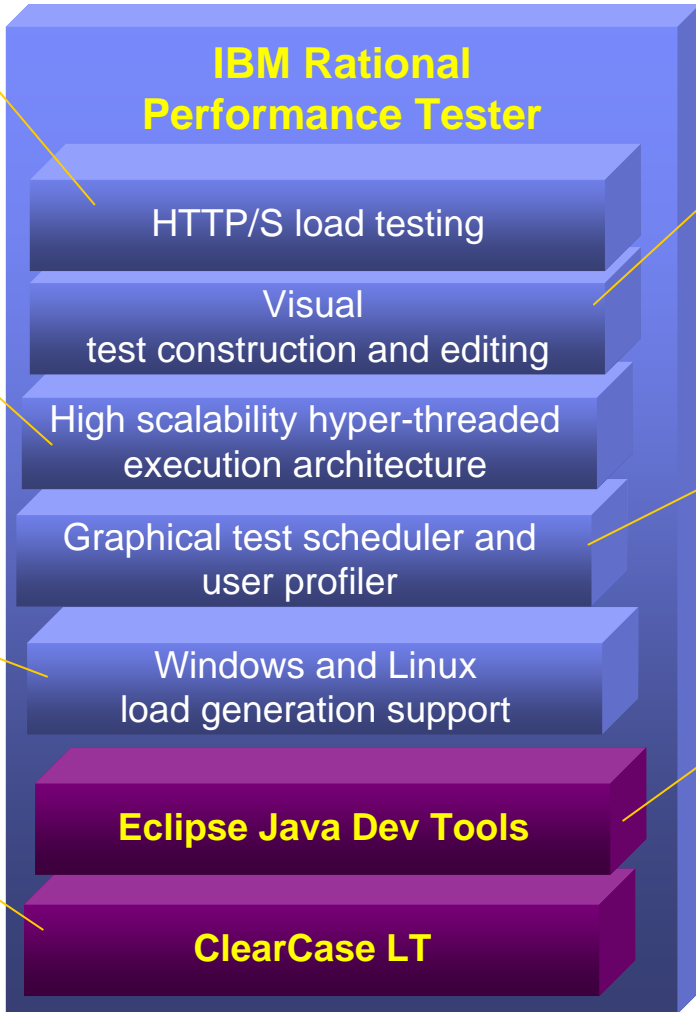
**Load and performance testing**

- 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



# Key software quality activities



**Communication - Integration - Investigation**

**Business process and requirements validation**

**Manual testing**

**Anti-pattern detection**  
**Architectural control**

**Programming rule inspection**  
**Component testing**  
**Reliability analysis**

**Manual testing**  
**Functional and regression testing**  
**Scalability and performance validation**

**Monitoring**



# Test Management: Rational TestManager

- **What**
  - ▶ Test Planning and Execution
  - ▶ Test Asset Management and Reporting
- **For**
  - ▶ QA Team
  - ▶ Project Manager
- **Why**
  - ▶ Single, fact-based source for evaluation of application readiness

The screenshot displays the Rational TestManager interface for 'Classics Online'. It features several panes: 'Test Asset Workspace' with a tree view of Test Plans (Component Tests, Functional Tests, Performance Tests) and Iterations (Alpha, Beta, Component, Final); 'Test Inputs' showing Test Input Sources like 'Classics Web SuperStore' and various test cases (FEAT1-5, TC1); 'Functional Tests' listing test scenarios such as 'Cash Register', 'Inventory Maintenance', and 'Online Catalog'; and 'Configurations' showing system requirements for 'Operating System' (Win 2000 Professional) and 'Memory' (32).

A 'Results' pane is also visible, showing a table of test results:

Type	Note	Description	Expected Result	Expected Result File	Result	Result Details
1		Open the Classics CD Web application at http://localhost/classicsCD_v1a/default.htm	"Welcome to ClassicsCD.com..." page will display		✓	
2		Click on "Explore our Storefront"	Page with Recommended Selection and Catalog and Order		✓	
3		Click on the "Catalog" button	Page with list of CD's available will		✓	
4		In the Search field, select "Composition" then click the Search button	CD's display order will change to new		✓	
5	✓	Verify that the order of CD display is correct	Sort order will reflect the order in the attached		Pass	
6		Verify that "Sort Catalog By" header has changed to	Sort Catalog By: will		None	

At the bottom of the results pane, there are buttons for 'Done', 'Show Only Verification Points', 'All Pass', 'Cancel', and 'Help'.

# Design: Architecture Discovery, Analysis and Control

## What

- ▶ Architecture discovery
- ▶ Anti-pattern detection
- ▶ Anti-pattern control

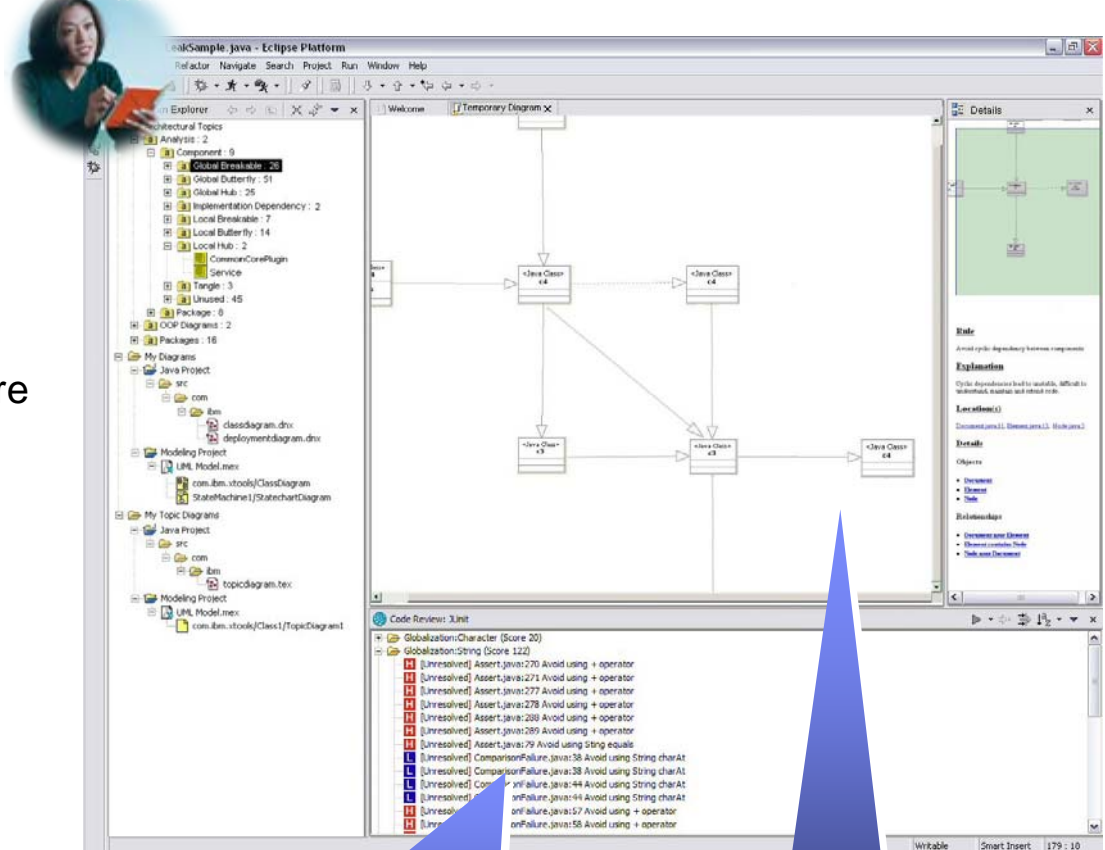
## For

- ▶ Architects using Rational Software Architect

## Why

- ▶ Assurance of structural integrity before evolution of complex, fragile interdependencies

Architect



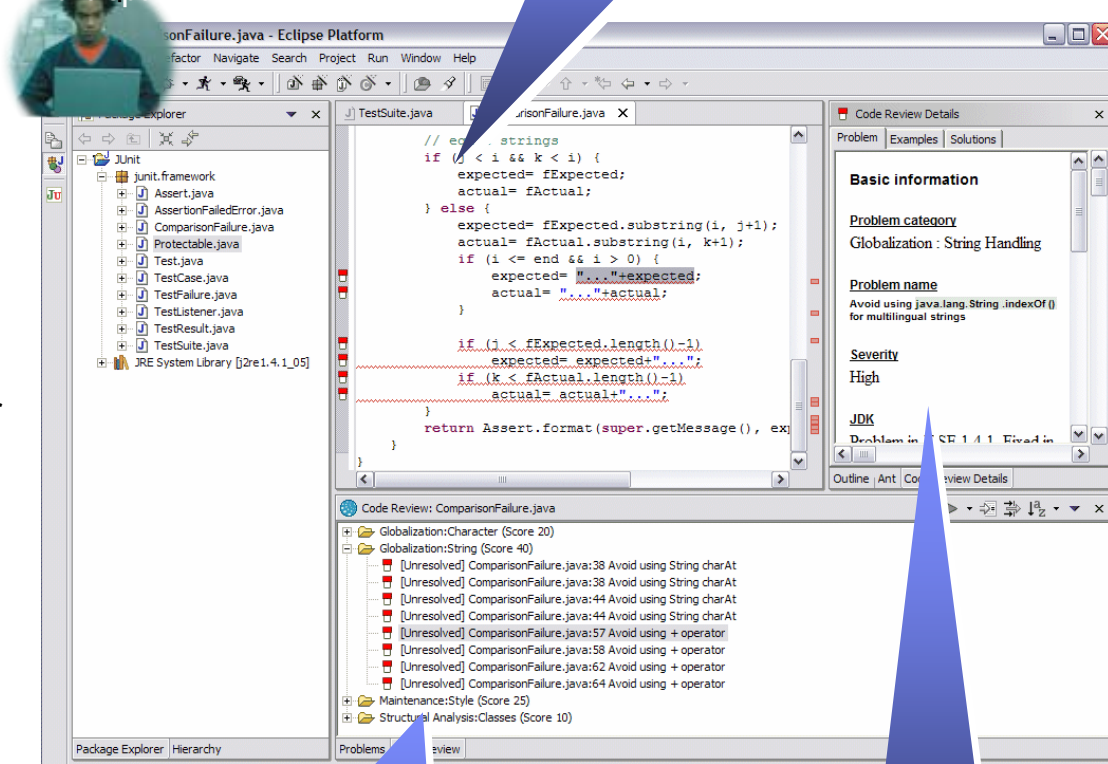
Anti-pattern detection by category/files/severity

Pattern visualization

# Implementation: Code Review

- *What*
  - ▶ Validation of code rule compliance
    - J2SE/J2EE Best Practices
    - Coding style
    - Naming conventions
    - Design Principles
  - ▶ Quick fixes and repair guidance
- *For*
  - ▶ Developers using Rational Software Architect or Rational Application Developer for WebSphere Software
- *Why*
  - ▶ Painless reduction of developer errors before integration efforts cloud defect sources

Developer



Rule violation underlined in the code editor

Rule violations by category/files/severity

Why / Example / How to fix



# Component Test: Verify component functionality

- *What*
  - ▶ Automated unit and API testing with automated data generation
  - ▶ Statistic-based test prioritization guidance
  - ▶ Automated stub generation
- *For*
  - ▶ Developers using Rational Software Architect or Rational Application Developer for WebSphere Software
- *Why*
  - ▶ Early detection and removal of functional deficiencies often masked by system level errors

Developer

The screenshot shows the IBM WebSphere Studio Application Developer interface. The main editor displays a Java test class named `BidHelperTestBehavior.java` with the following code:

```
public void testMethods() throws Throwable {
    BidHelperLocal oneBidHelperLocal_1 = null;
    {
        oneBidHelperLocal_1 = oneBidHelperLocalHome.create();
    }
    {
        Integer itemTypeId = null;
        Long bidAmount = null;
        Integer bidIncrement = null;
        Long maxBid = null;
        Integer userID = null;
        int currency = 0;
        oneBidHelperLocal_1.bidItem(
            itemTypeId,
            bidAmount,
            bidIncrement,
            maxBid,
            userID,
            currency);
    }
}
```

The Test Data Table window is open, showing a table with columns for Action, Type, IN, and OUT. The table contains data for the test methods:

Action	Type	IN	OUT
oneBidHelperLocal_1 = oneBidH...			
oneBidHelperLocal_1.bidItem(it...			
itemTypeId	Integer	100546	
bidAmount	Long	100	
bidIncrement	Integer	{ 1 .. 10 } / 1	
maxBid	Long		
userID	Integer	83201	
currency	int	3	
ExpectedException	Throwable		

A blue arrow points from the text "Test driver and stub datapool" to the Test Data Table window.

**Test driver and  
stub datapool**

# Debug: Understand behavior, performance & memory utilization

Developer



## What

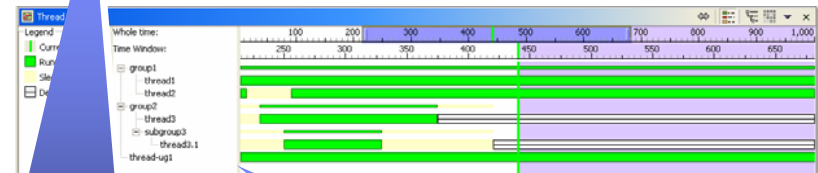
- ▶ Runtime analysis
  - Memory leak detection
  - Performance profiling
  - Code coverage measurement
  - Thread analysis
  - Execution flow visualization
- ▶ RSA/RAD-based support for Java

## For

- ▶ Developers

## Why

- ▶ Optimized reliability independent of deployment-related concerns



**Live UML2 sequence diagram generation**

**Thread Analysis**



# 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 titled 'Launch Browser by clicking the icon shown on your Desktop:' with an image of a 'Launch Inter...' button. Below this, another step 'Enter Address http://www.ibm.com into the region shown' includes an image of a browser window with the address bar set to 'http://www.ibm.com'. A third step 'Logon' includes instructions to 'Dismiss Security Alert by clicking the "Dismiss" button', 'Confirm that the screen appeared and looked like this', and 'Enter UserID'. On the right, a 'Reuse' pane shows a library of 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 a table with columns 'Property' and 'Value'.

Callouts pointing to the interface include:

- Rich test editor**: Points to the central test step editor area.
- Test step reuse library**: Points to the 'Reuse' pane on the right.
- Customizable fields**: Points to the 'Properties' pane at the bottom right.
- Attached images and files**: Points to the browser window image within a test step.
- Central repository for distributed team access**: Points to the overall application window.





# 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**

**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**

**Java in Eclipse or VB.NET in VS.NET**

CardNumberInc...	creditCombo	Expirat...	NameText	StreetText	CityStateZipText	Ph
0	444444444444	Visa	0505	Trent Culpito	75 Wall St 22nd Fl	21
12	123412341234	Amex	0206	Brian Fred	1212 Foo Ln	12



# Performance Testing: Rational Performance Tester



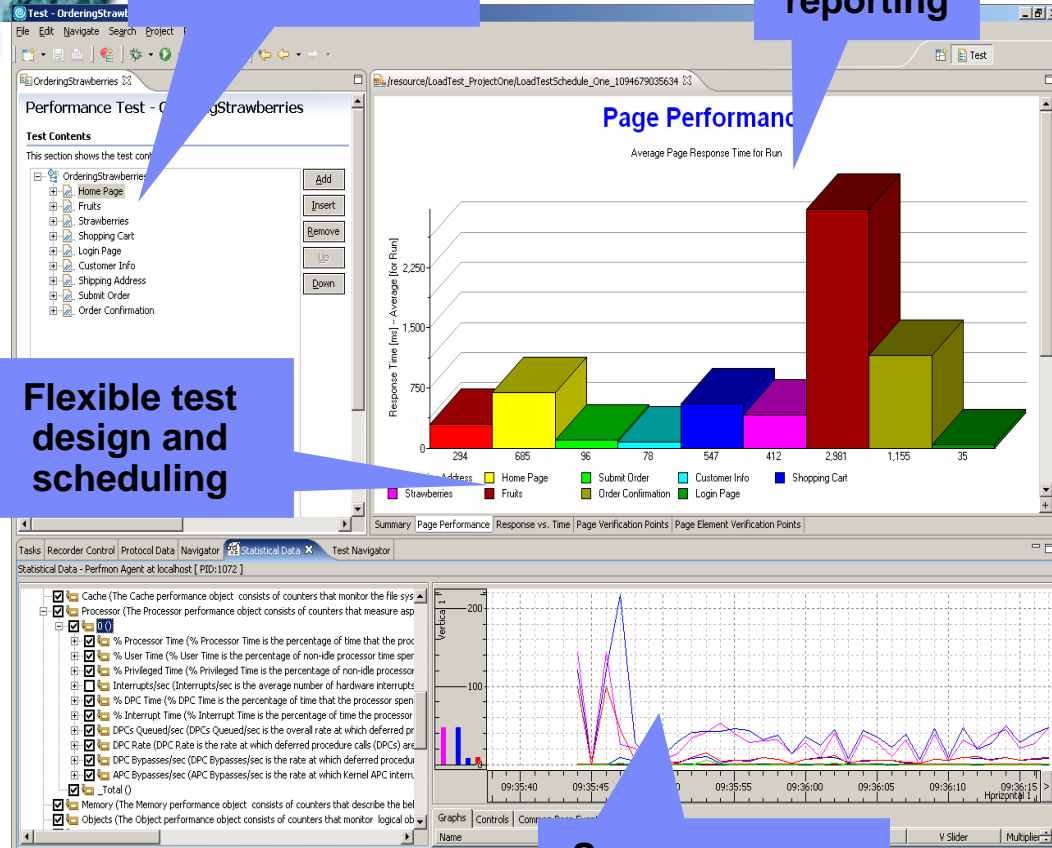
Deployment Manager

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

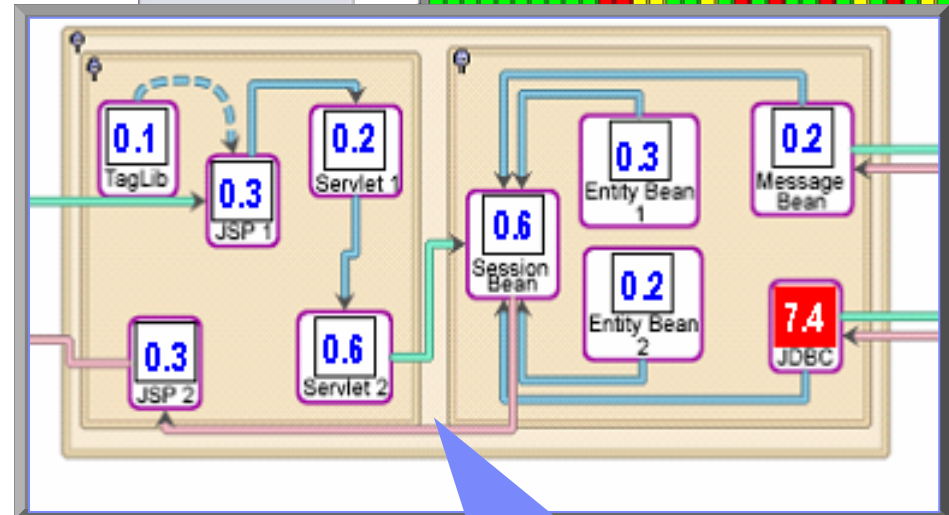
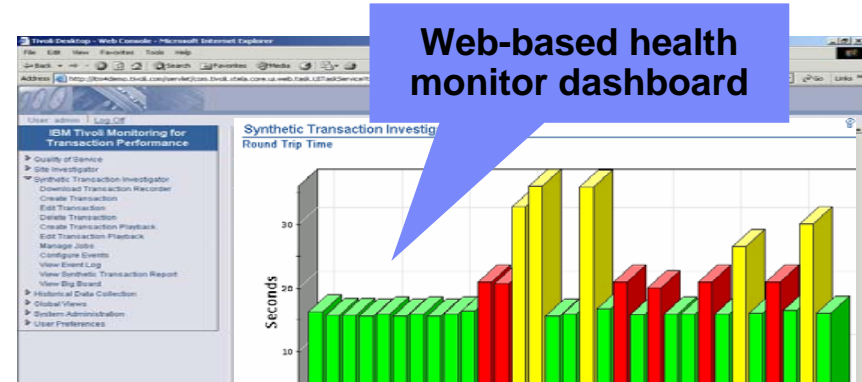


Server resource collection



# Monitoring: Tivoli TMTP and Tivoli Monitoring family

- *What*
  - ▶ Cross-tier post-deployment performance monitor
  - ▶ Performance degradation detection
  - ▶ Transaction decomposition
- *For*
  - ▶ Deployment Managers
  - ▶ IT Operations
- *Why*
  - ▶ Early capture and analysis of performance problems post-deployment



**Analyzes app servers, web servers, databases**



# IBM/UMHS Briefing – June 2005

## AGENDA - IBM Recommendations and Recent Product Enhancements

### • Big Picture

- Eclipse platform, WebSphere servers, Rational tools and developer value

### • Productivity and Ease-of-Use Enhancements in V6 Tools

- JavaServer Faces drag-n-drop J2EE development
- Service Data Objects for heterogeneous data access
- Web Services for cross-system integration
- Hot deployment and enhanced server-tools integration

### • Quality and Lifecycle Enhancements in V6 Tools

- Requirements, Design, Construction, Change Mgmt enhanced IDE Integrations
- Quality Assurance and Testing Tools Enhancements

### • Workflow tools and servers heritage and enhancements

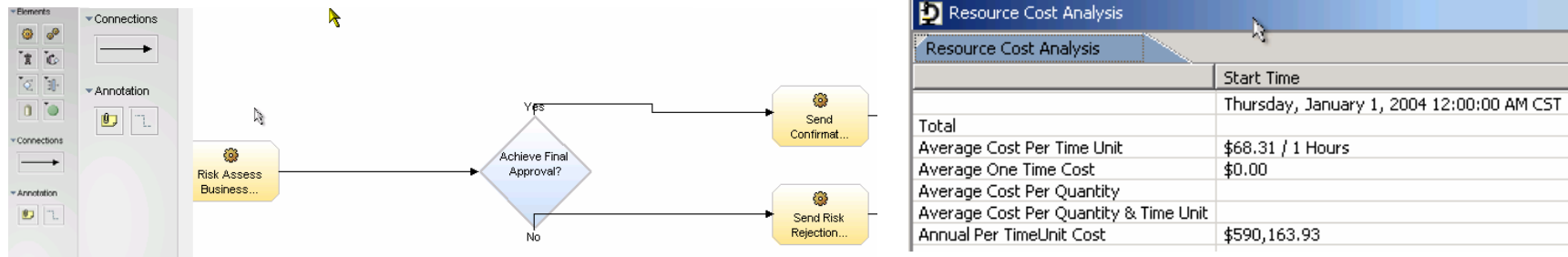
### • Virtualized application server profiles enhancements

### • IBM Premium Support enhanced level of service and responsiveness

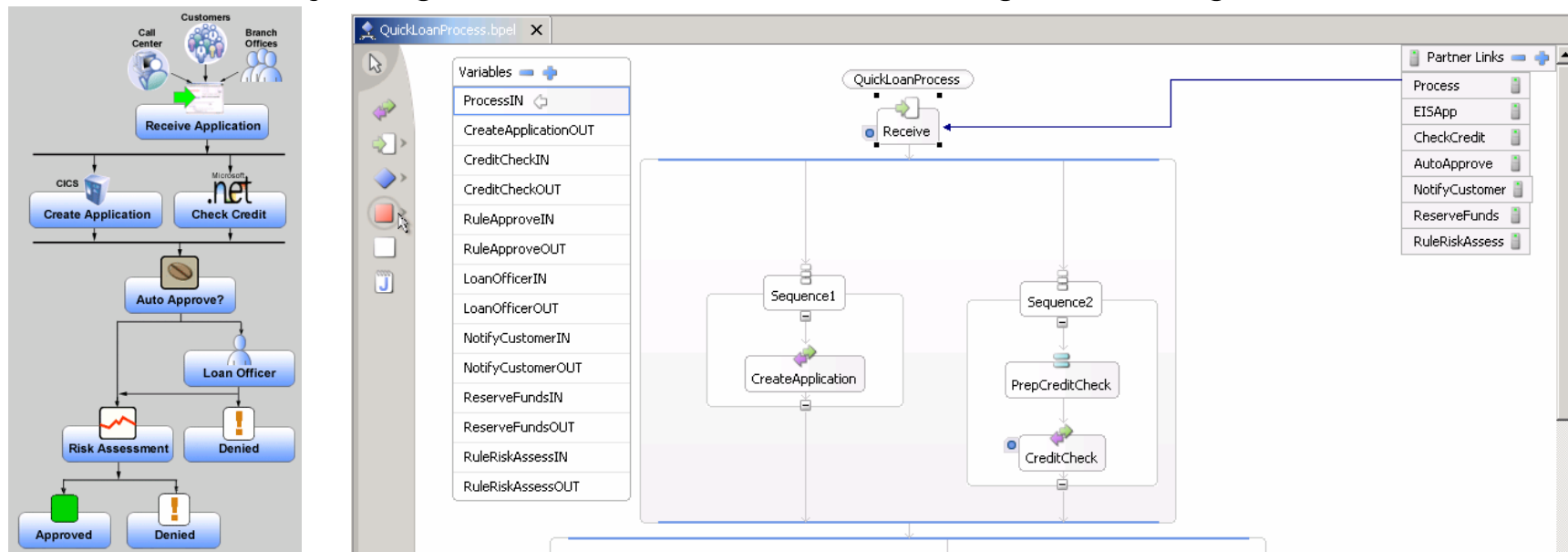


# Integrating People, Processes and Information

- Model your business, simulate a process and assess cost savings



- Describe everything as a web service and integrate using workflow tools



# IBM/UMHS Briefing – June 2005

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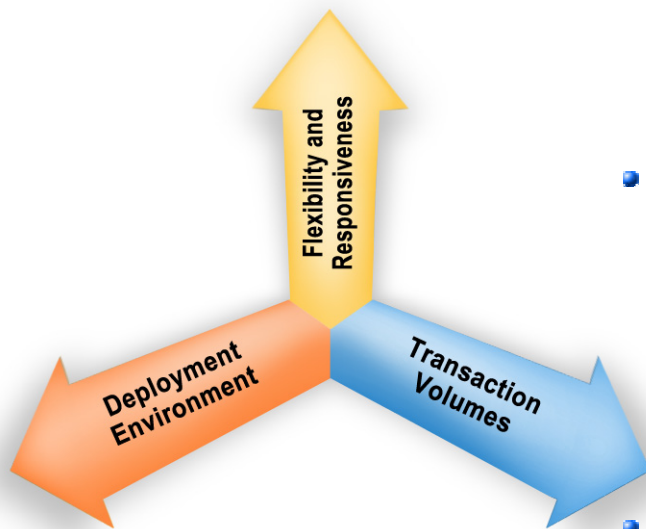
### • Workflow tools and servers heritage and enhancements

### • Virtualized application server profiles enhancements

### • IBM Premium Support enhanced level of service and responsiveness



# WebSphere XD – Supporting On Demand, Mission Critical Applications



- WebSphere Dynamic Operations
  - Virtualized and Automated Environment increase stability and reduces TCO
  - Run more applications on a set of resources than possible with a static configuration
  - Enhanced goals-based policy-driven Workload distribution
  - Allocating resources as needed to meet applications and business goals
- WebSphere Extreme Computing – Application Partitioning
  - New APIs and tools, runtime and admin support for financial, banking, reservations, on-line auctioning and gaming customers
  - Design Patterns for building high volume, scalable and 99.999% available, OLTP applications
- WebSphere Extended Manageability
  - Operations Console
  - Health Monitoring
  - Task Management Service



# Dynamic Operations

*Customer Scenario: Large Financial Company*

## Conventional Distributed Environment

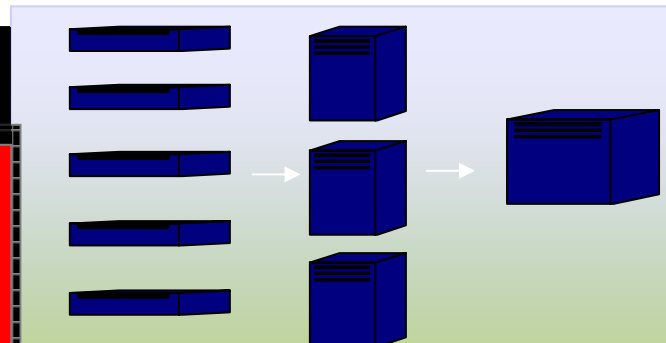
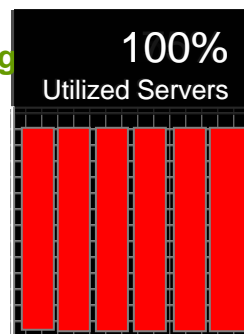
### Environment

- ▶ Multiple business critical applications
- ▶ Hundreds of application servers

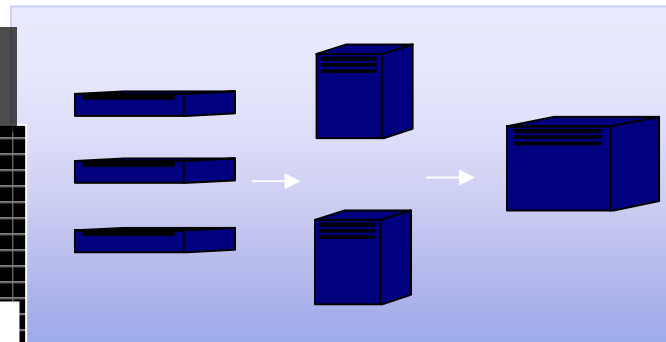
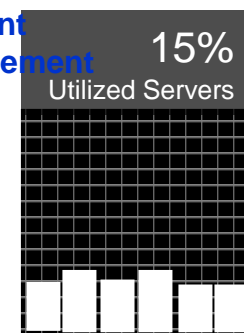
### Challenges

- ▶ Underutilized servers
- ▶ Inability to share resources across server pools – especially during peaks
- ▶ Inconsistent quality of service for business critical applications
- ▶ Human-intensive monitoring and management environment

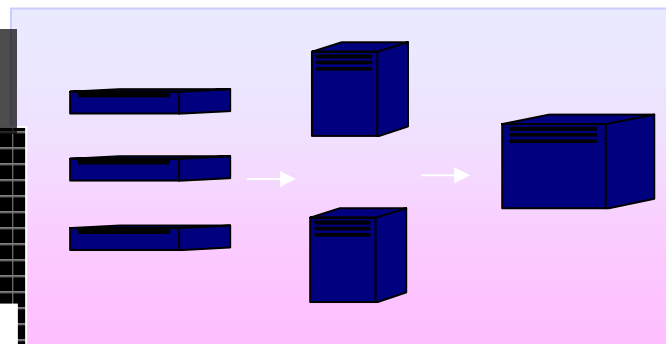
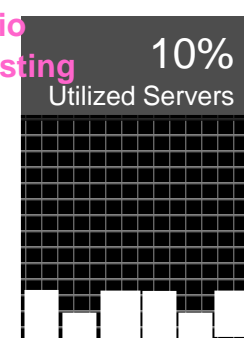
Stock Trading



Account Management



Portfolio Forecasting





# Dynamic Operations

*Customer Scenario: Large Financial Company*

## WebSphere Extended Deployment Environment

- **Virtualized**
  - ▶ Pooled resources
  - ▶ Virtualized applications
  
- **Goals based**
  - ▶ Operational policies are attached to Application to reflect operational goals and importance of application
  - ▶ Autonomic managers designed to monitor environment for maximum utilization using business goals
  
- **Results**
  - ▶ Help reduce total cost of ownership (doing more with same/less)
  - ▶ Increase stability and repeatability of environment

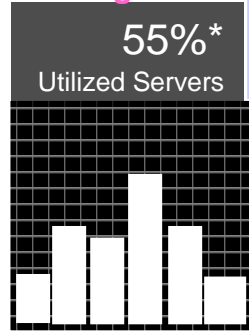
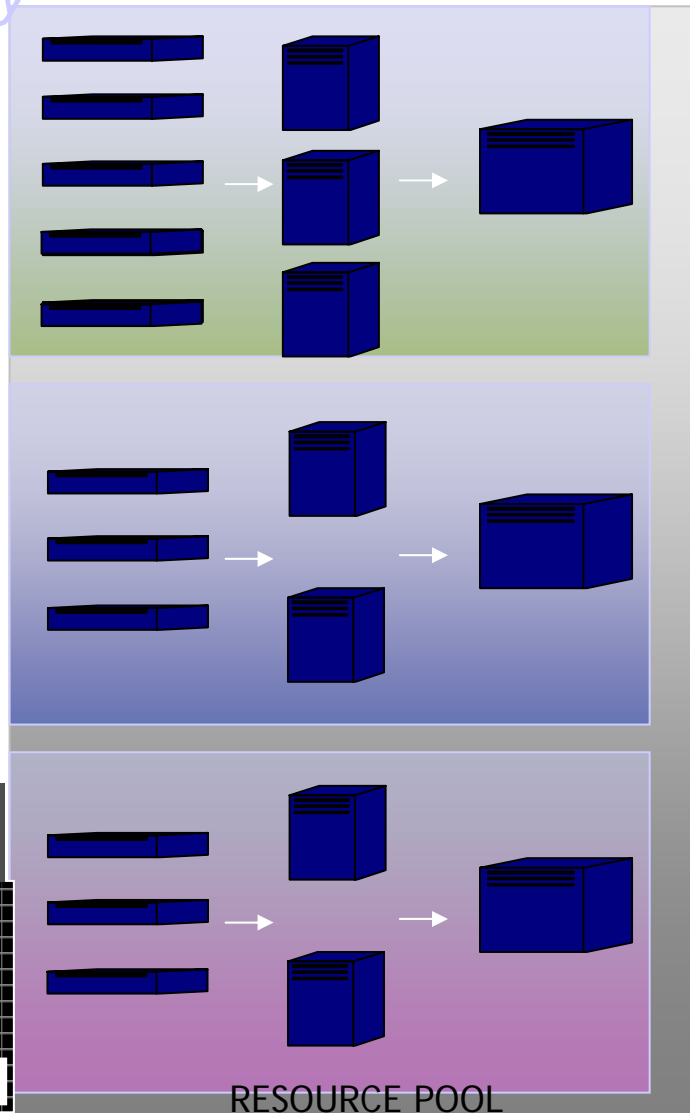
Stock Trading

Customer Support

Account Management

Risk Management

Portfolio Forecasting



\* Hypothetical, for illustrative purposes only



# Policies – Applying Business Goals to Applications

**Stock Trading**  
Stock Trading

**Account Management**

**Portfolio Forecasting**

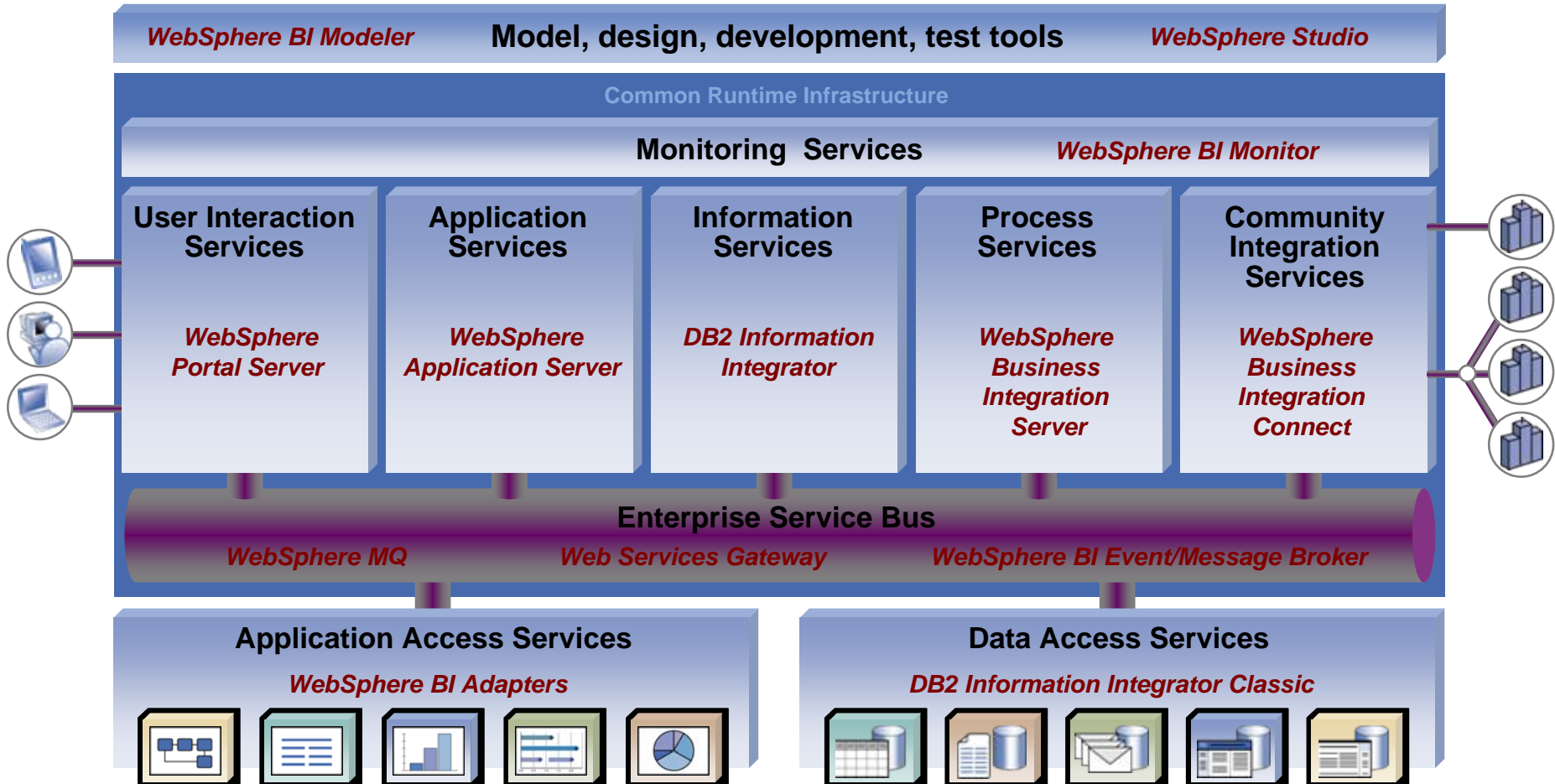
**Customer Support**

**Risk Management**

Gold	RT < 1sec for < 10 TPS	Very High
Bronze	RT < 2sec for < 10 TPS	Medium
Silver	RT < 5sec for < 10 TPS	Medium
Idle	Best Effort	Low



# WebSphere Integration Reference Architecture



# IBM/UMHS Briefing – June 2005

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### • Virtualized application server profiles enhancements

### • **IBM Premium Support enhanced level of service and responsiveness**





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](http://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

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 Refresh 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](#)

# “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

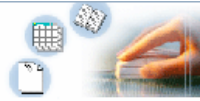
Includes audio

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.

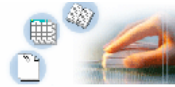
Application development	IBM Rational Application Developer V6
Getting started	<a href="#">Tool overview</a> <a href="#">Eclipse overview</a>
Installation and migration	<a href="#">Installation and migration</a>
J2EE™ application development	<a href="#">Developing Java™ and J2EE applications with Unified 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



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

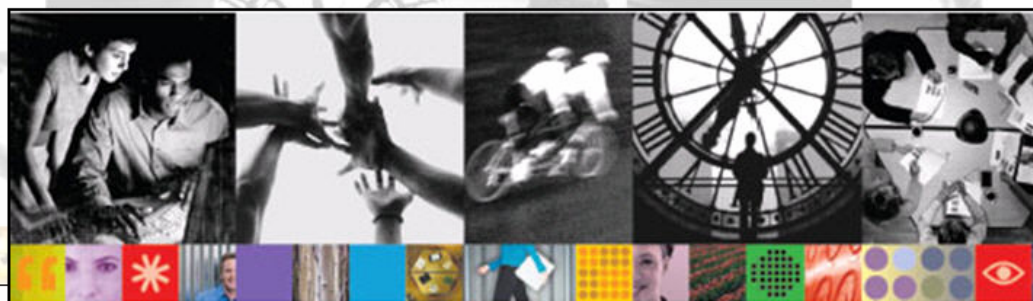
Click on links below to view educational material.

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

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  
WorkplaceDev.com  
JavaDevTools.com  
JavaSOA.com  
Bill-Hahn.com

# RAD V6 Tutorial Demo Series

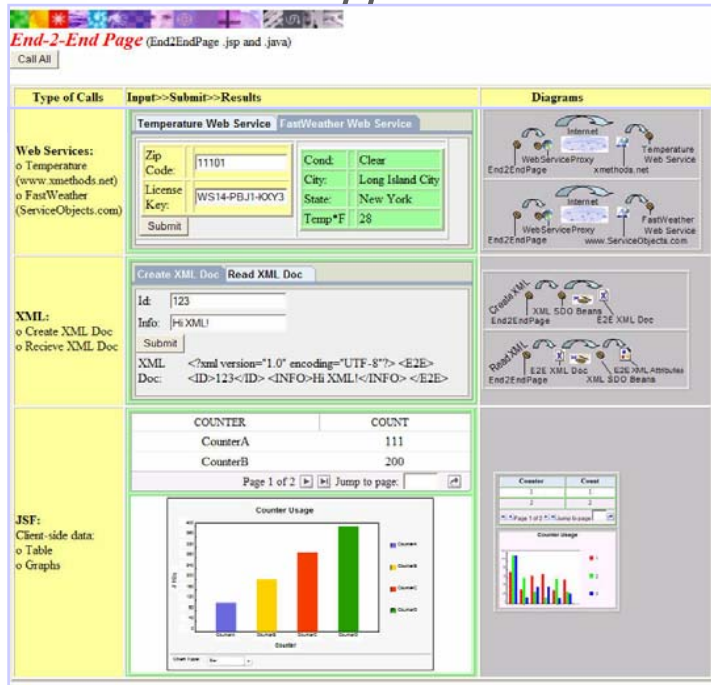
## Executives and Managers

- *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.smthods.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

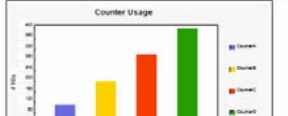
Id: 123  
 Info: Hi XML  
 XML: <?xml version="1.0" encoding="UTF-8"?> <E2E>  
 Doc: <ID>123</ID> <INFO>Hi XML!</INFO> <E2E>

**COUNTER** COUNT

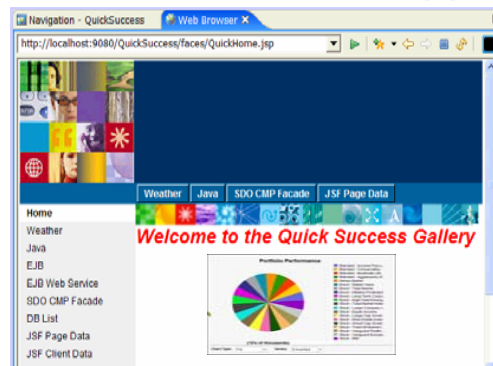
CounterA	111
CounterB	200

Page 1 of 2 | Jump to page: [ ]

**Counter Usage**



### #2 Quick Success Apps

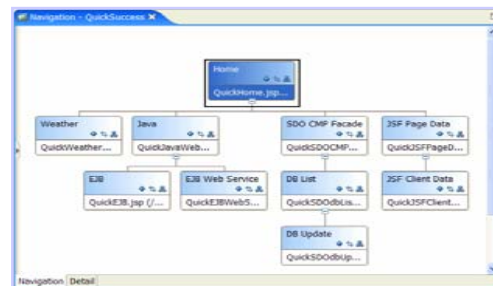


Navigation - QuickSuccess

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

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

Welcome to the Quick Success Gallery

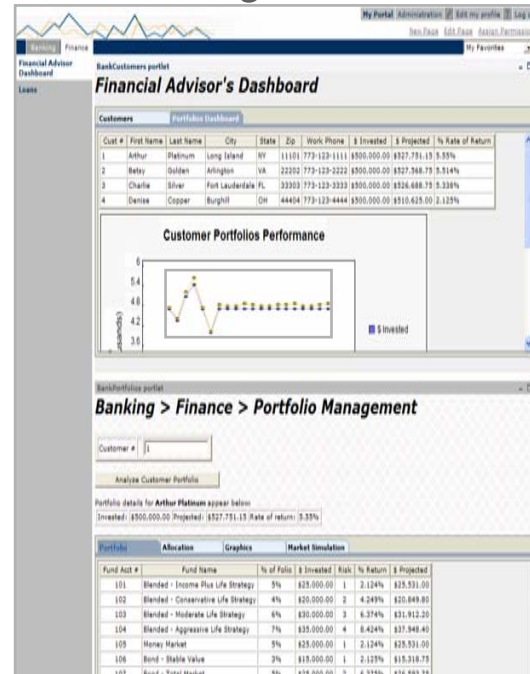


Navigation - QuickSuccess

Home

- Weather
  - QuickWeather...
- Java
  - QuickJavaWeb...
- SDO CMP Facade
  - QuickSDOcmp...
- JSF Page Data
  - QuickJSFPageD...
- EJB
  - QuickEJB.jsp (V...)
  - QuickEJBWebS...
- EJB Web Service
  - QuickEJBWebS...
- DB List
  - QuickSDOtbls...
  - DB Update
  - QuickSDOtbls...
- JSF Client Data
  - QuickJSFClient...

### #3 Banking & Finance



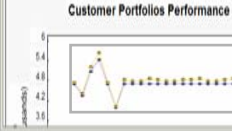
Financial Advisor Dashboard

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	2.13%

Customer Portfolios Performance



Banking > Finance > Portfolio Management

Customer # 1

Portfolio Details for Arthur Platinum appear below

Invested: \$500,000.00 Projected: \$527,751.13 Rate of return: 5.55%

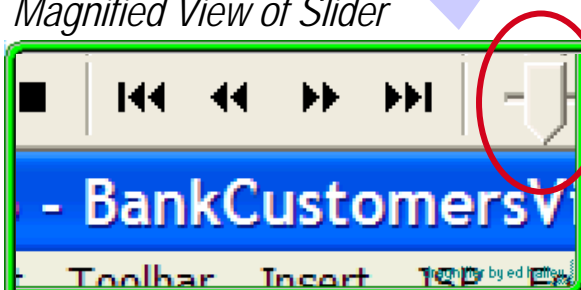
Fund Act #	Fund Name	% of Folio	Invested	Risk	% Return	Projected
101	Blended - Income Plus Life Strategy	5%	\$25,000.00	1	2.124%	\$25,531.00
102	Blended - Conservative Life Strategy	4%	\$20,000.00	2	2.247%	\$20,499.00
103	Blended - Moderate Life Strategy	6%	\$30,000.00	3	6.374%	\$31,912.00
104	Blended - 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



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

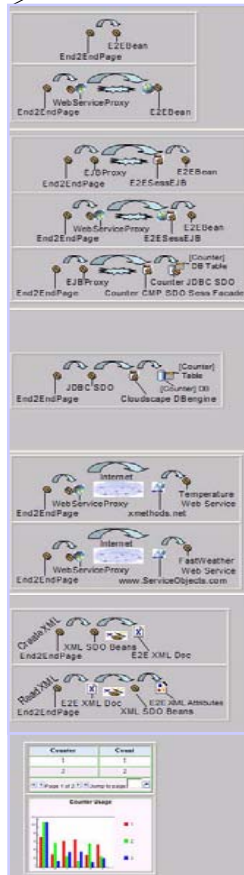
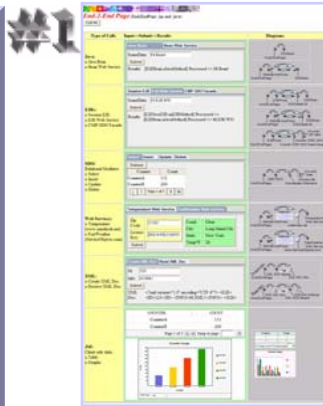
➔ Model, Build, Test, Debug, Deploy

- 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

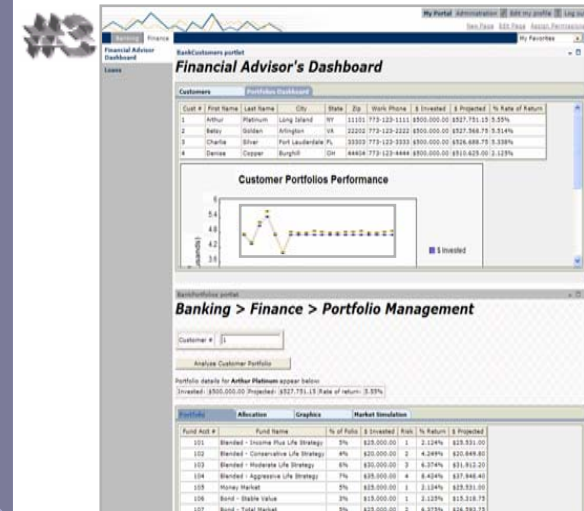
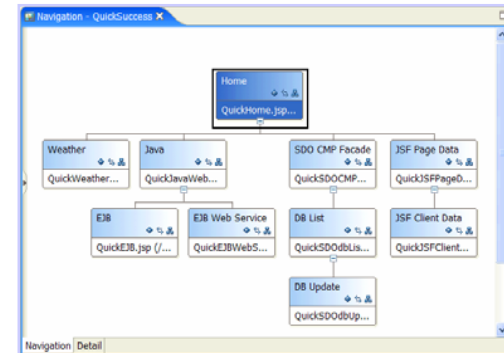
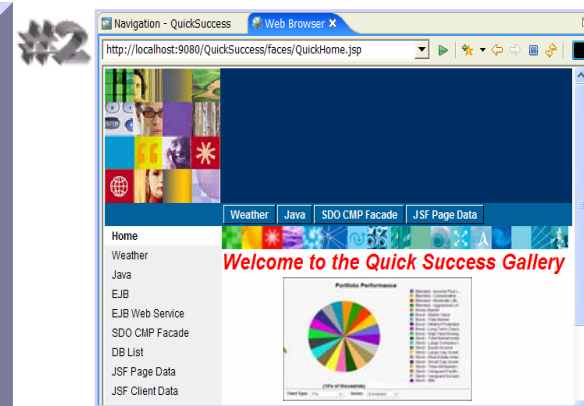
Demo

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

## Banking & Finance Web/Portal Applications

Demo

- Banking Accounts
- Portfolio Management
- Financial Advisor Dashboard



# End-2-End Application

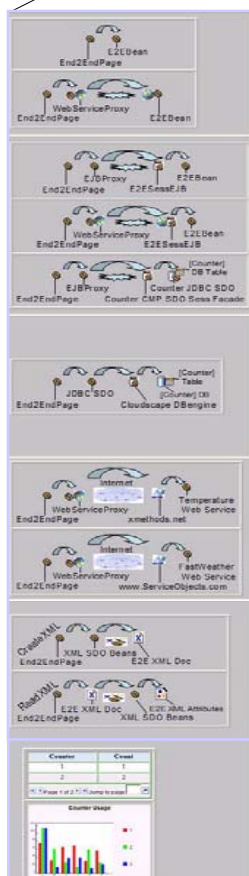
"Accelerate development...  
increase productivity...  
maximize ROI !\$! "

## Iterative Development Demos

- ➔ Model, Build, Test, Debug, Deploy
- UML Visualizations
- Dynamic Development
- On-the-fly code changes
- Incremental build engine
- Testing for Java, EJBs, Web Services, etc...
- Dynamic Interactive Debugger
- Automated Application Packaging and Deployment

## J2EE+ Builder Demos

- ➔ Includes JSF, SDO, Web Services
- Java and EJBs (Session, CMP)
- Service Data Objects (SDO)
- SDO CMP Session Facades
- XML and XSD Schemas
- XML SDO JavaBean Bindings
- JavaServer Faces (JSF)
- Database and SQL
- Web Services Creation and Consumption



## End-2-End Page (End2EndPage.jsp and java)

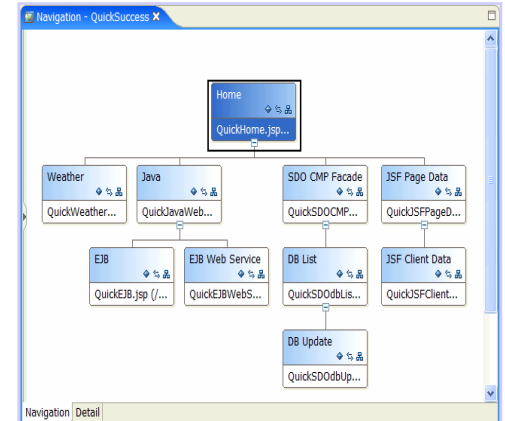
Call All

Type of Calls	Input>>Submit>>Results	Diagrams						
<b>Java:</b> o Java Bean o Bean Web Service	Java Bean    Bean Web Service SomeData:  Hi Bean! Submit Results: [E2EBean.aJavaMethod] Processed >> Hi Bean!	 						
<b>EJBs:</b> o Session EJB o EJB Web Service o CMP SDO Facade	Session EJB    EJB Web Service    CMP SDO Facade SomeData:  Hi EJB WS! Submit Results [E2ESessEJB.aEJBMethod] Processed >> [E2EBean.aJavaMethod] Processed >> Hi EJB WS!	 						
<b>SDO:</b> Relational Mediator: o Select o Insert o Update o Delete	Select    Insert    Update    Delete Refresh <table border="1"> <thead> <tr> <th>Counter</th> <th>Count</th> </tr> </thead> <tbody> <tr> <td>CounterA</td> <td>111</td> </tr> <tr> <td>CounterB</td> <td>200</td> </tr> </tbody> </table> Page 1 of 2	Counter	Count	CounterA	111	CounterB	200	
Counter	Count							
CounterA	111							
CounterB	200							
<b>Web Services:</b> o Temperature (www.xmethods.net) o FastWeather (ServiceObjects.com)	Temperature Web Service    FastWeather Web Service Zip Code:  11101    Cond:  Clear City:  Long Island City License Key:  WS14-PBJ1-KXY3    State:  New York Temp*F  28 Submit	 						
<b>XML:</b> o Create XML Doc o Recieve XML Doc	Create XML Doc    Read XML Doc Id:  123 Info:  Hi XML! Submit XML <?xml version="1.0" encoding="UTF-8"?><E2E> Doc: <ID>123</ID> <INFO>Hi XML!</INFO> </E2E>	 						
<b>JSF:</b> Client-side data: o Table o Graphs	<table border="1"> <thead> <tr> <th>COUNTER</th> <th>COUNT</th> </tr> </thead> <tbody> <tr> <td>CounterA</td> <td>111</td> </tr> <tr> <td>CounterB</td> <td>200</td> </tr> </tbody> </table> Page 1 of 2    Jump to page: 	COUNTER	COUNT	CounterA	111	CounterB	200	 
COUNTER	COUNT							
CounterA	111							
CounterB	200							

## Quick Success Gallery Applications

- Easy J2EE build scenarios
- Internet Weather Web Service
- JavaBean Web Service
- EJB Web Service
- Service Data Objects (SDO)
  - Database Mediator: Select, Insert, Update, Delete
- Java Server Faces (JSF)
  - Rich UI Controls, Charts/Graphs, drag-n-drop
  - Custom coding, Event Driven, MVC Framework

#2



## Banking & Finance Web/Portal Applications

- Transfer Funds
- Transaction History
- Account Management
- Portfolio Management
- Asset Allocation
- Graphical portfolio analysis
- Stock Market Simulation
- Mutual Funds, Stocks, Bonds, Money Mkt

#3

**Financial Advisor's Dashboard**

Cust #	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	\$527,751.15	5.55%
2	Betsy	Golden	Arlington	VA	22202	773-123-2222	\$500,000.00	\$527,568.75	5.514%
3	Charlie	Silver	Fort Lauderdale	FL	33303	773-123-3333	\$500,000.00	\$526,688.75	5.338%
4	Denise	Copper	Burghill	OH	44404	773-123-4444	\$500,000.00	\$510,625.00	2.125%

**Customer Portfolios Performance**

Line chart showing \$ Invested (in thousands) over time. The y-axis ranges from 3.6 to 6.0. The data points show a fluctuating trend, starting around 4.2, peaking at 5.4, and ending at 4.6.

**Banking > Finance > Portfolio Management**

Customer #:

Analyze Customer Portfolio

Portfolio details for **Arthur Platinum** appear below:  
 Invested: \$500,000.00 | Projected: \$527,751.15 | Rate of return: 5.55%

Fund Acct #	Fund Name	% of Folio	\$ Invested	Risk	% Return	\$ Projected
101	Blended - Income Plus Life Strategy	5%	\$25,000.00	1	2.124%	\$25,531.00
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105	Money Market	5%	\$25,000.00	1	2.124%	\$25,531.00
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107	Bond - Total Market	5%	\$25,000.00	2	6.375%	\$26,593.75



# Resources

- [ibm.com/developer](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)  
(WebSphere Developers Domain)
  - [ibm.com/developer/ibm](http://ibm.com/developer/ibm)  
(All other product developer domains)
- [www.redbooks.ibm.com](http://www.redbooks.ibm.com)  
(How To Books)
- [ibm.com/software/ad](http://ibm.com/software/ad)  
(IBM App Dev Tools Homepage)
- [ibm.com/websphere](http://ibm.com/websphere)  
(WebSphere Family Homepage)
- [JavaDevTools.com](http://JavaDevTools.com) (a.k.a. [WebSphereCentral.com](http://WebSphereCentral.com), [RationalCentral.com](http://RationalCentral.com))  
(Presentations, references, tutorials, white papers, articles, links, etc.)

