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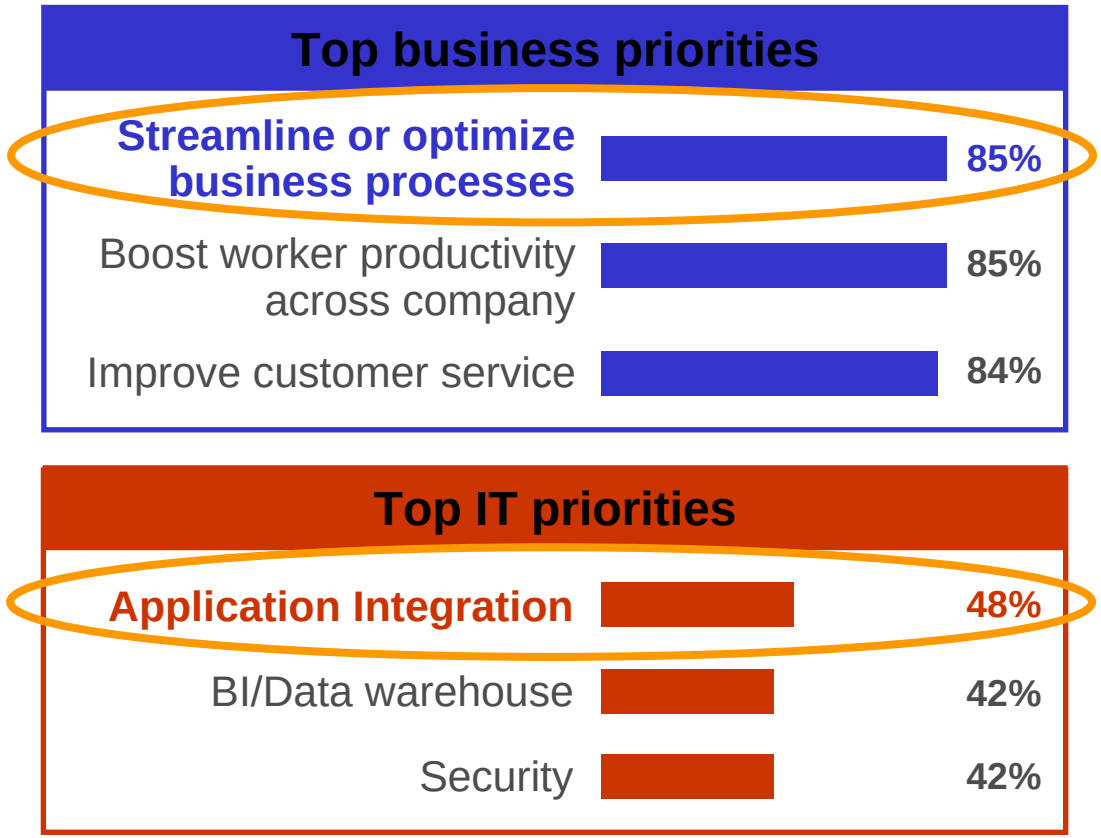
Changing Market Conditions Drive On Demand Business Needs: Addressing Top Business and IT Priorities

"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

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

Develop

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

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

Deploy

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

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

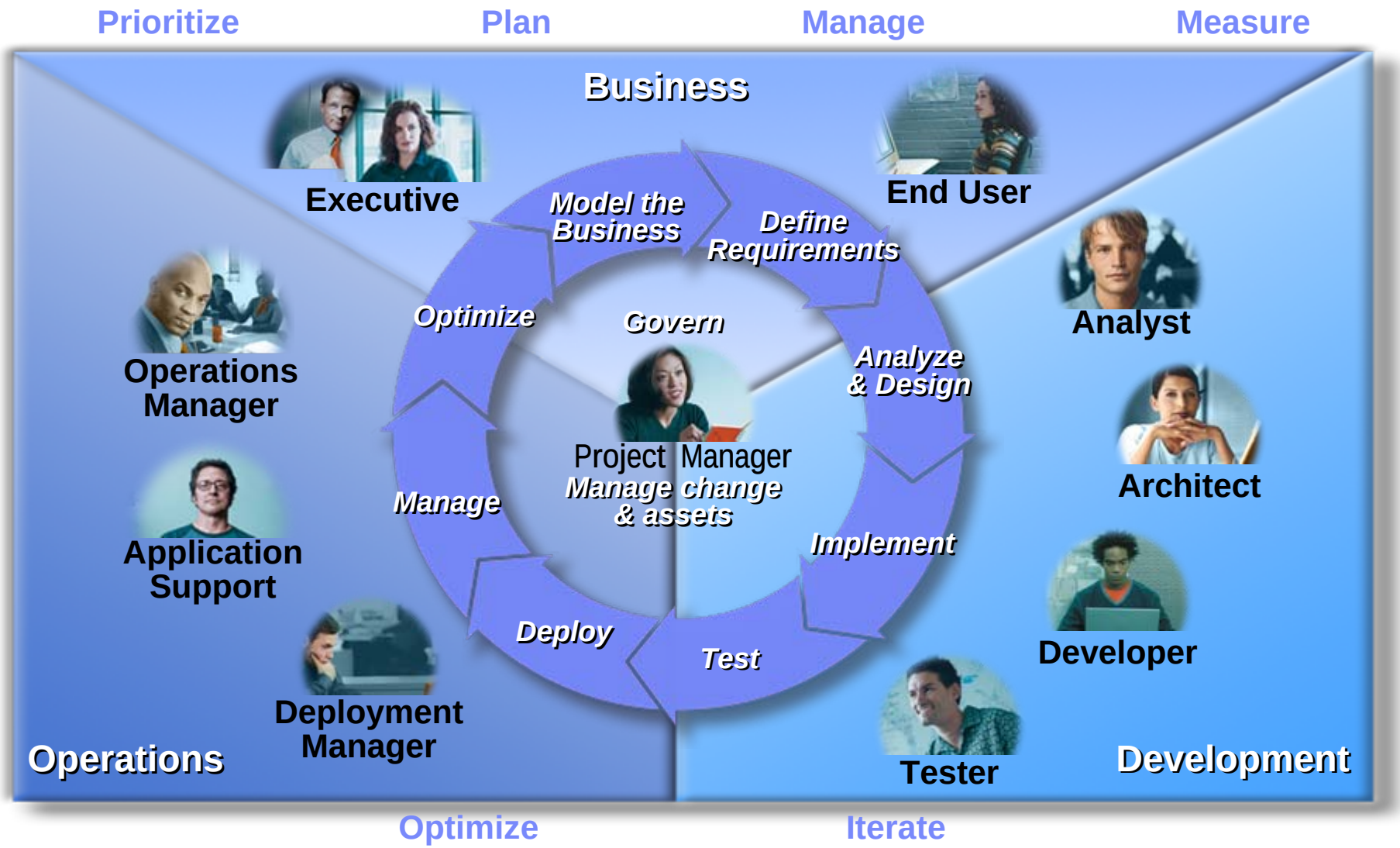
Discover, develop, and deploy assets

Prioritize Plan Manage Measure

Optimize Iterate

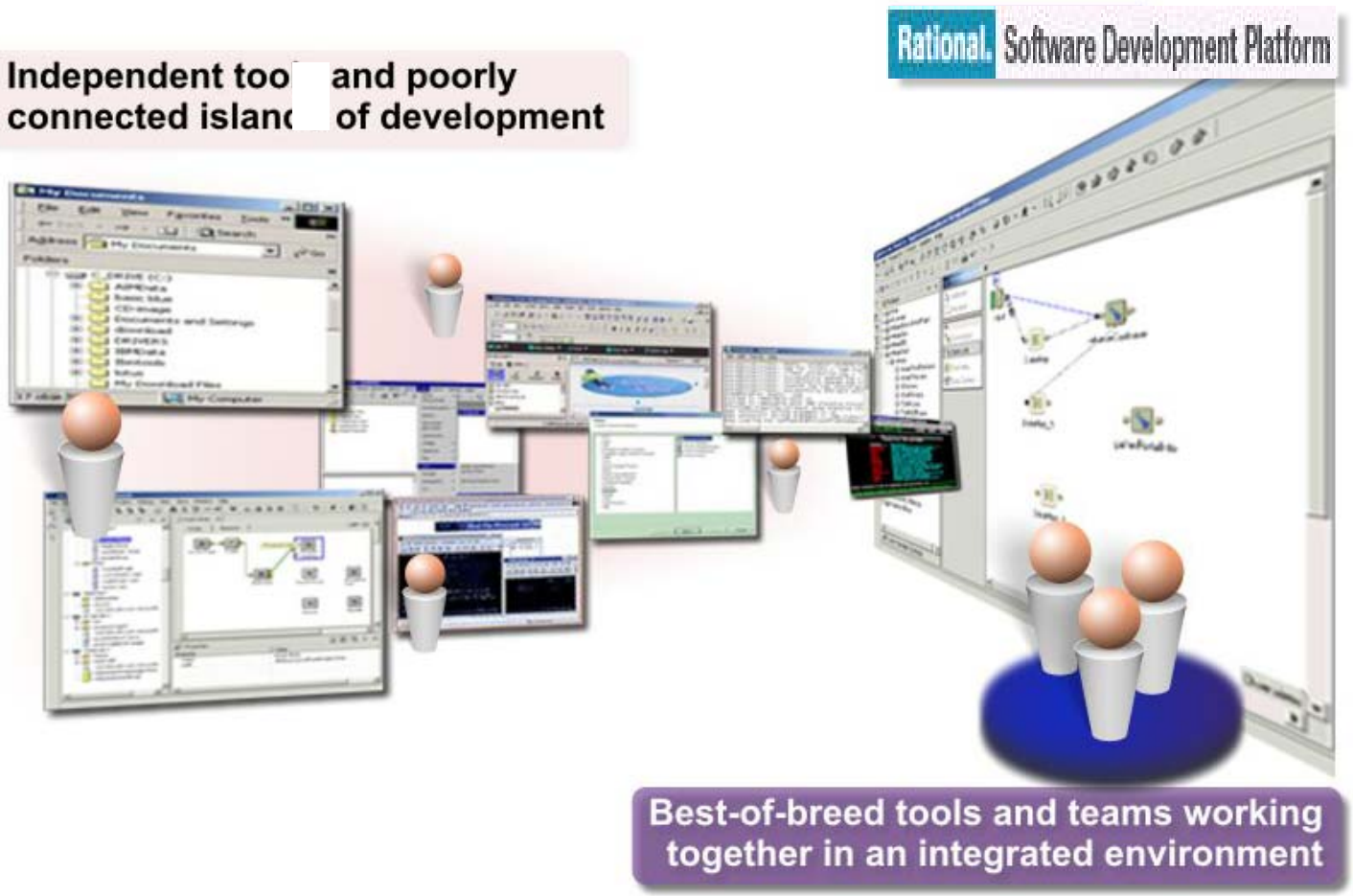
- **Discover business & technology assets**
  - Business priorities
  - Requirements
  - Middleware and software assets
- **Develop at the speed of business**
  - Rapid application development
  - Model-driven architecture
  - Asset-based development
  - Direct-to-middleware productivity
- **Deploy to 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



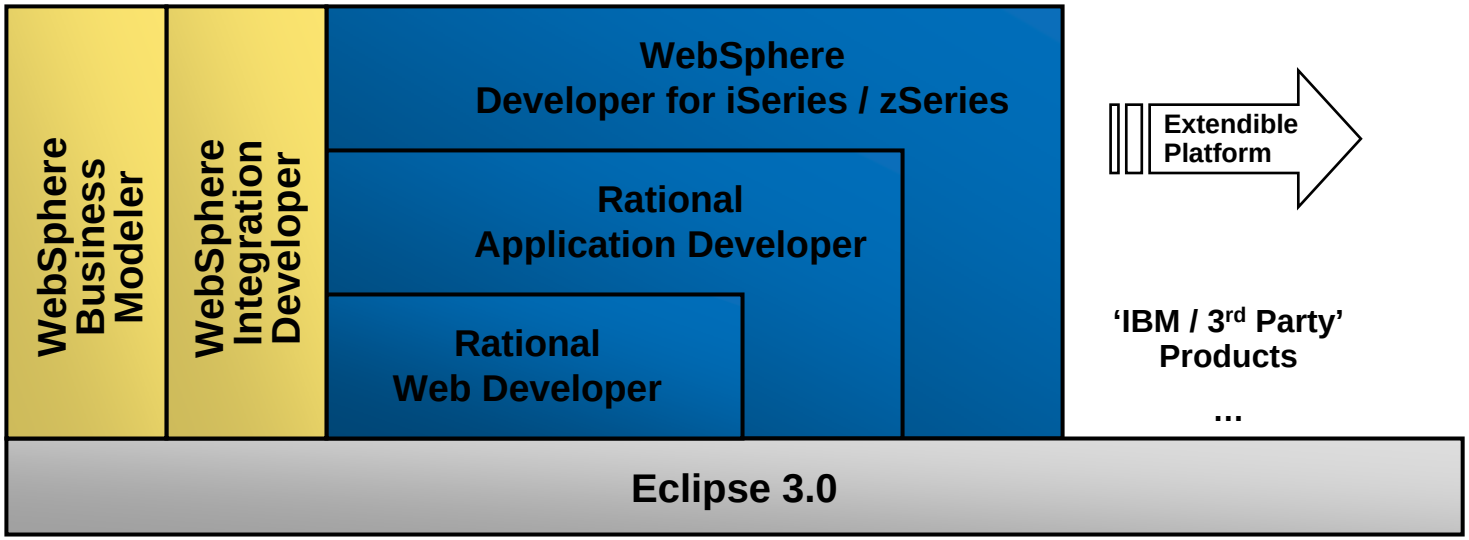
WebSphere/Rational Tools Portfolio V6 - Core Roles

Role	Description	Benefits & Skill Requirements
Business Analyst	Models and optimizes business processes to reengineer existing business processes or define new business processes	▪ ***No programming experience required*** ▪ Can focus on business performance & process
Integration Developer /Specialist	Uses visual tools to configure integration logic with existing and new applications and humans in the network	▪ Some basic programming experience ▪ ***No J2EE skills required*** ▪ Expects tools to simplify and abstract advanced IT implementation details
J2EE Application Developer	Creates new applications using Java development tools	▪ ***Focused specifically on J2EE implementation***
Enterprise Developer	Extend legacy assets to new users and enable those assets to be used in Service Oriented Architectures (SOA) and as Web services	▪ **Focused on mixed workload of J2EE and COBOL/PL1/RPG environments**

WebSphere/Rational Tools Portfolio V6 - Core Tools

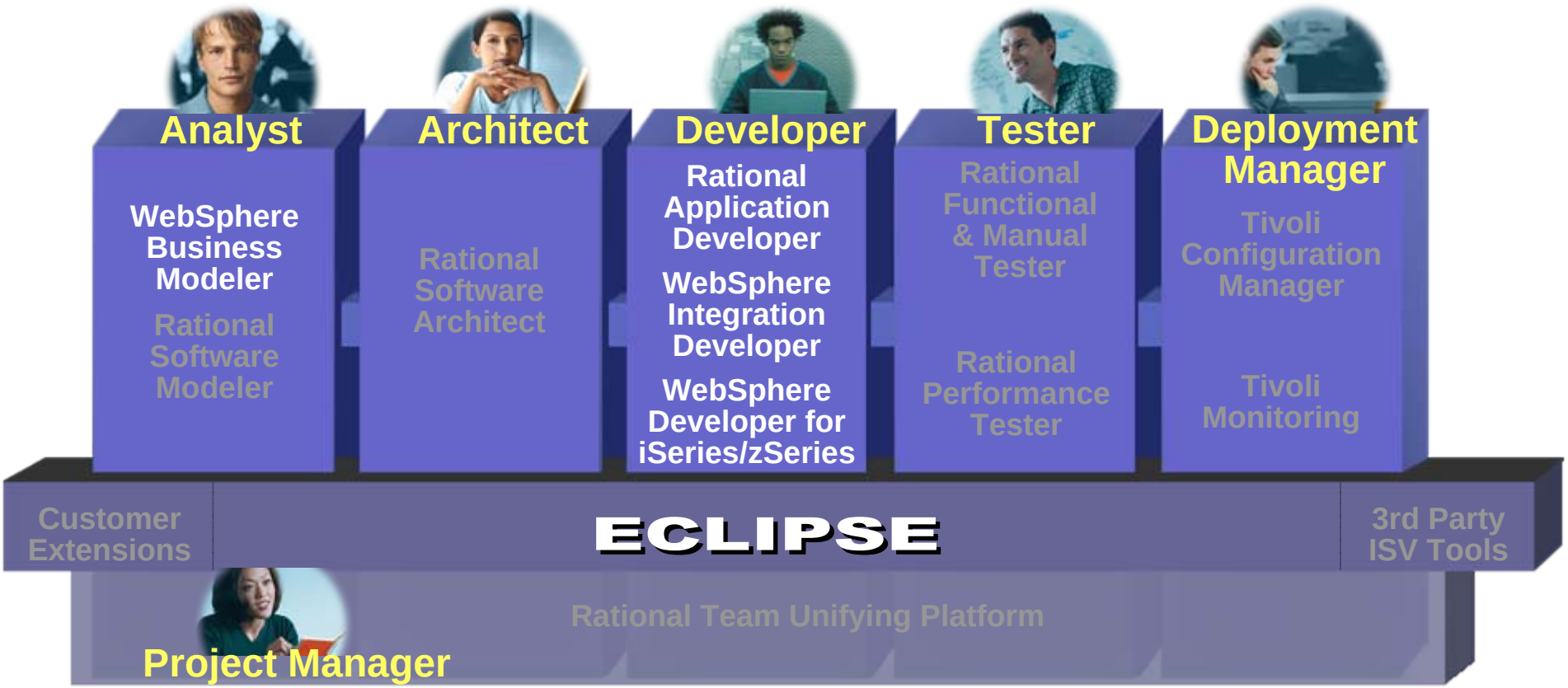
Practitioner Role	Previous/Current Product	V6 Offering
Business Analyst	. WebSphere BI Modeler v5.1 . Entry/Advanced Editions	. WebSphere Business Modeler (2H'05)
Integration Specialist	. *WSAD-IE v5.1* . WebSphere BI Server Toolset v4.3	. WebSphere Integration Developer (2H'05)
J2EE Application Developer	. WebSphere Studio Application Developer v5.1 (WSAD) . *WSAD-IE v5.1 (JCA Tools)*	. Rational Application Developer – RAD (4Q'04)
	. WebSphere Site Developer v5.1 (WSSD)	. Rational Web Developer – RWD (4Q'04)
Enterprise Developer	. WebSphere Studio Enterprise Developer v5.1	. WebSphere Developer for zSeries (1H'05)
	. WebSphere Development Studio v5.1 . WebSphere Development Studio Client . WebSphere Development Studio Client Advanced Edition	. WebSphere Developer for iSeries (2H'05)

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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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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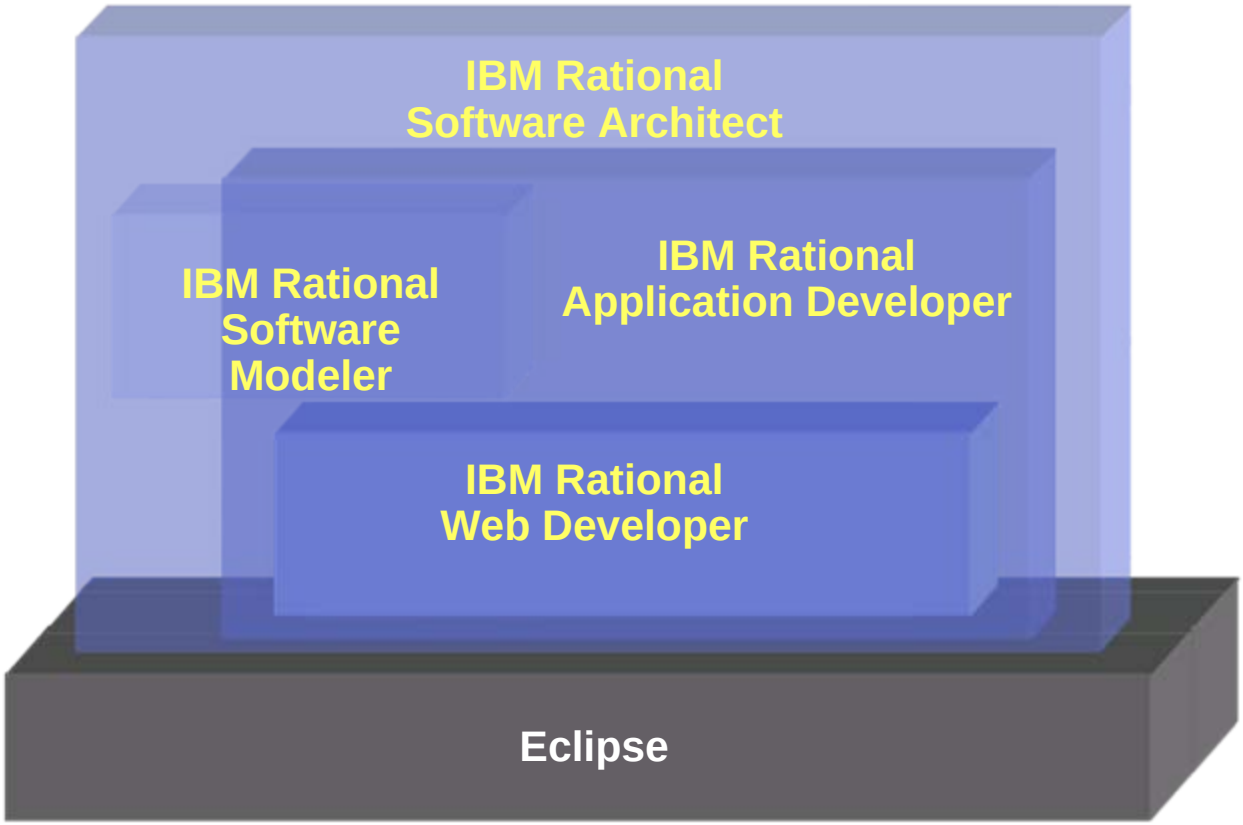
Design and construction tools



IBM Rational Web Developer

Follow on to WebSphere Studio Site Developer
New Rapid Application Development capabilities focused on ease of use

Web UI construction
- Visual site layout tools
- Drag-and-drop web client construction supporting range of web client technologies:
  - •HTML, JSP, Servlet
  - •Struts, JSF
  - •Service Data Objects

Database tools
- Explore and design database schema
- SQL Query Builder
- Stored procedure builder

EGL
- Simplified 4GL for Web Application Development
- Text User Interface Programs Support (3270, Curses)
- VisualAge Generator -> EGL Migration Tool
- Java Runtime Targets

Rich Client UI construction
- Visual Editor for Java for rich client composition
- Service Data Objects (SDO) Support
- Supports Swing, AWT, SWT widgets

Web Services Tools
- Create/manipulate services
- WSDL visual editor
- UDDI Registry browser

XML Tools
- XML, XSD, XSL, etc. tooling support

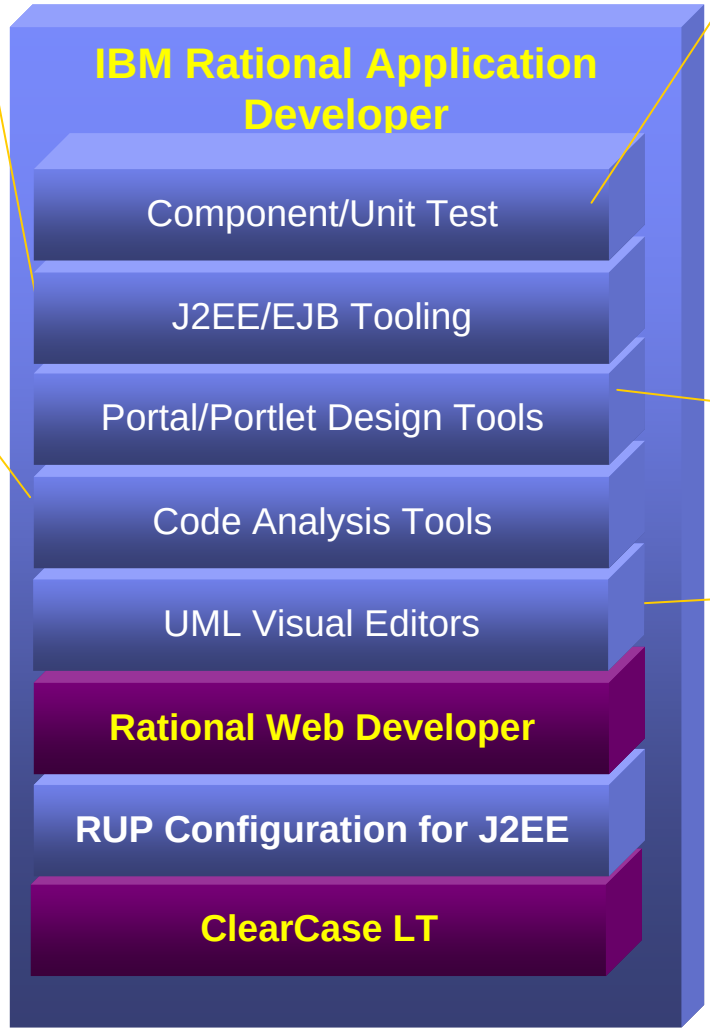
Eclipse Java Development Tools
- J2SE development tools
- Code completion, search, refactoring
- Extensible Team APIs to support CM integration (CVS, ClearCase, and many others)
- Plug-in Development Environment for extensibility

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



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

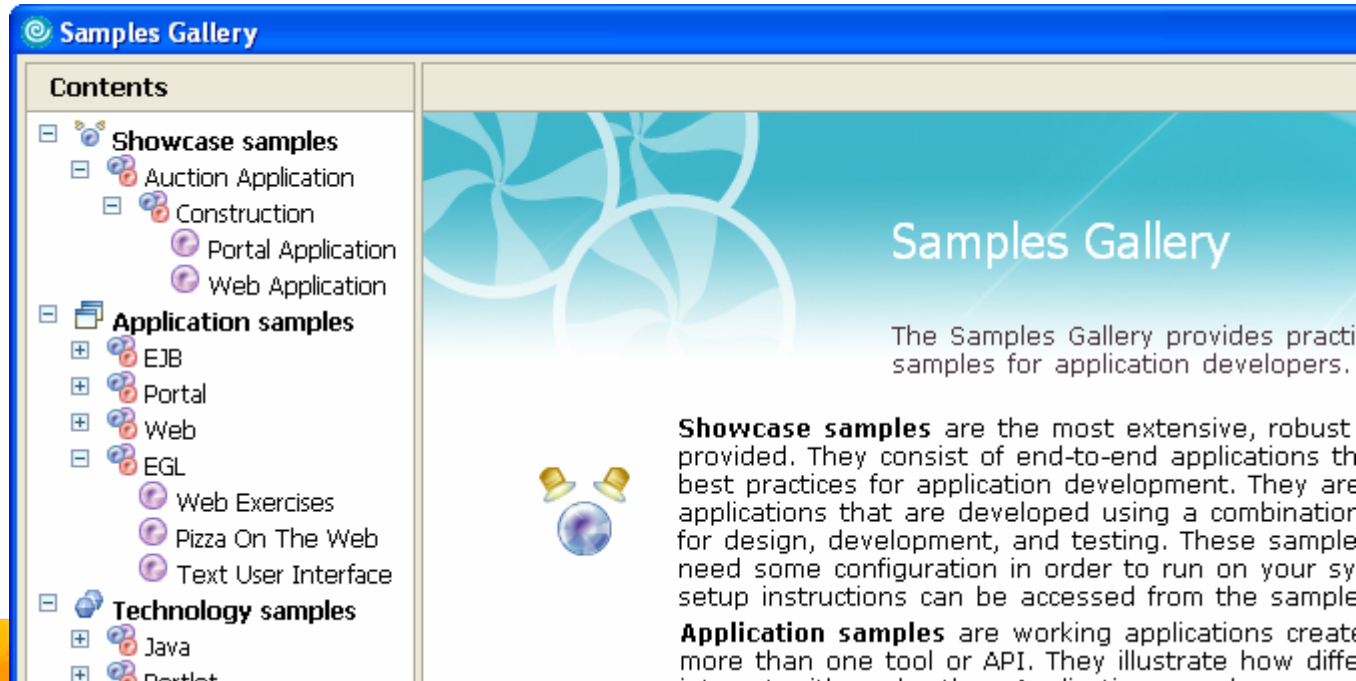
- Learning Guide
  - Provides an introduction
  - Discusses the value and benefits
  - Describes the tools available with suggestions for using them
  - Links to other education sources for prerequisite skills

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…



Eclipse V3 enhancements

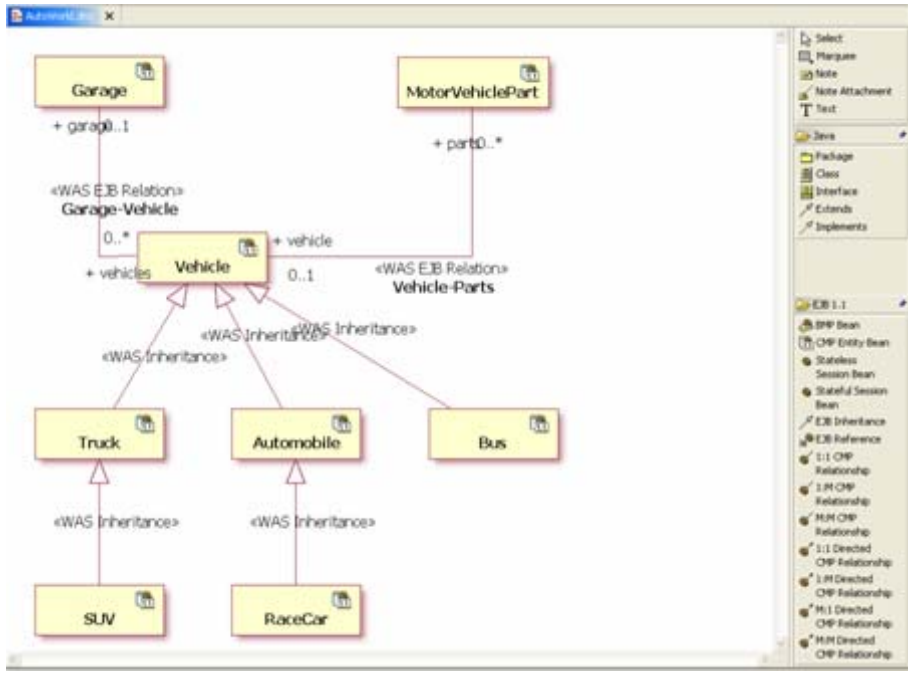
- More responsive User Interface
  - From enhanced concurrency support and asynchronous task management
- New look and feel
  - Based on user feedback
- Reduced User Interface complexity through progressive disclosure
  - Capabilities support enables a tool to filter the views, wizards, actions, etc 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

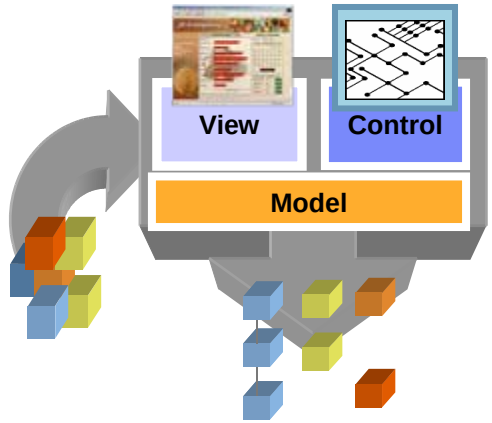
UML 2 Diagram Editing – Visually Browse/Edit

- 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*

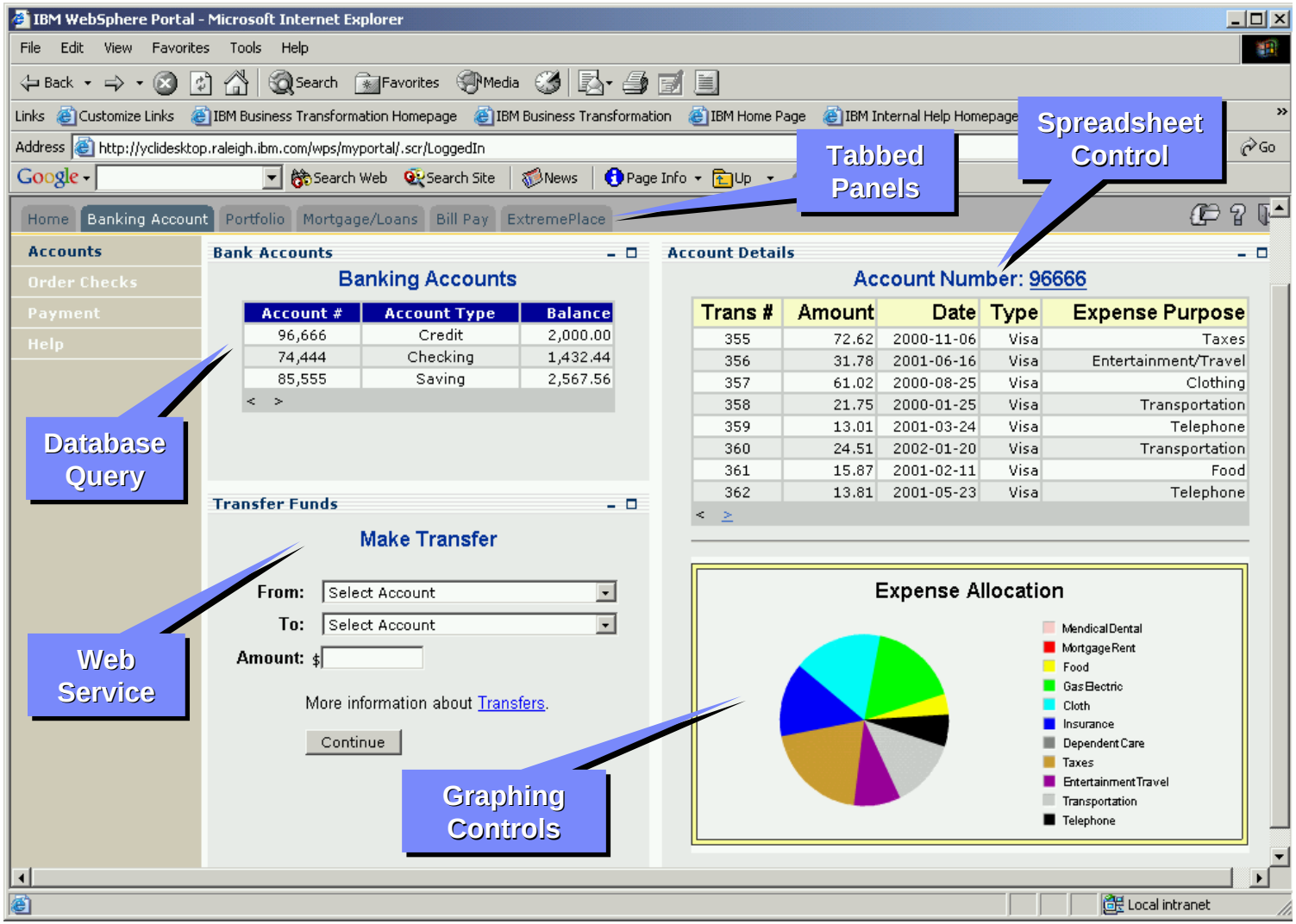
Input ➔ Process ➔ Output



- 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.

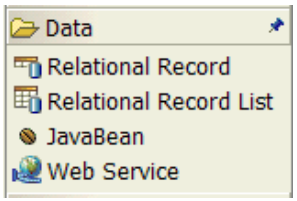
Developing Richer Thin Client Applications, More Quickly

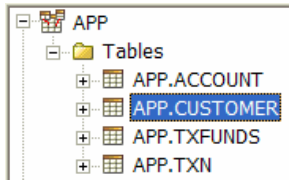
- Drag-n-drop development of J2EE applications *(No Coding Required)*

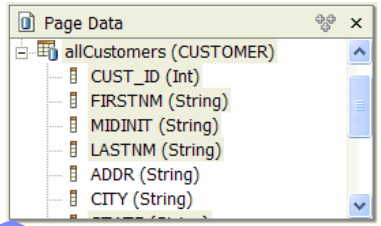


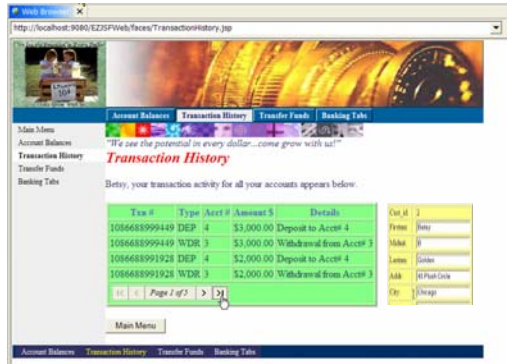
Simplifying J2EE Development

- Database development drag-n-drop ease-of-use [1] [2]

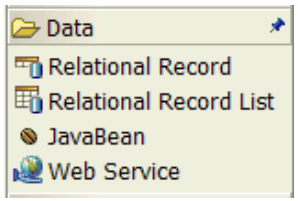


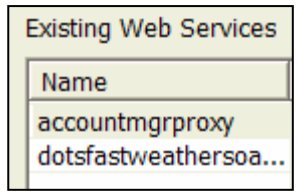


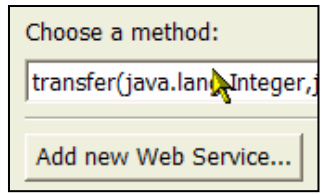


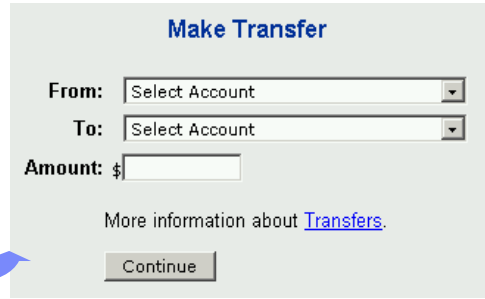


- Web Services development drag-n-drop ease-of-use [1] [2]

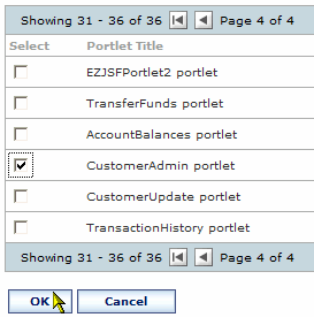


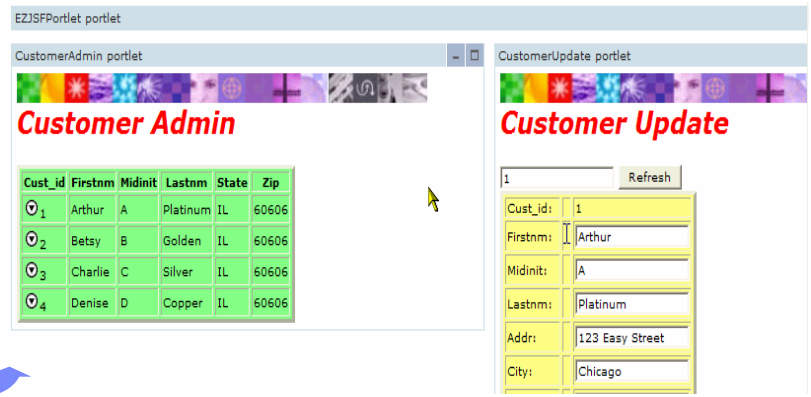






- Portals drag-n-drop ease-of-use [1] [2]





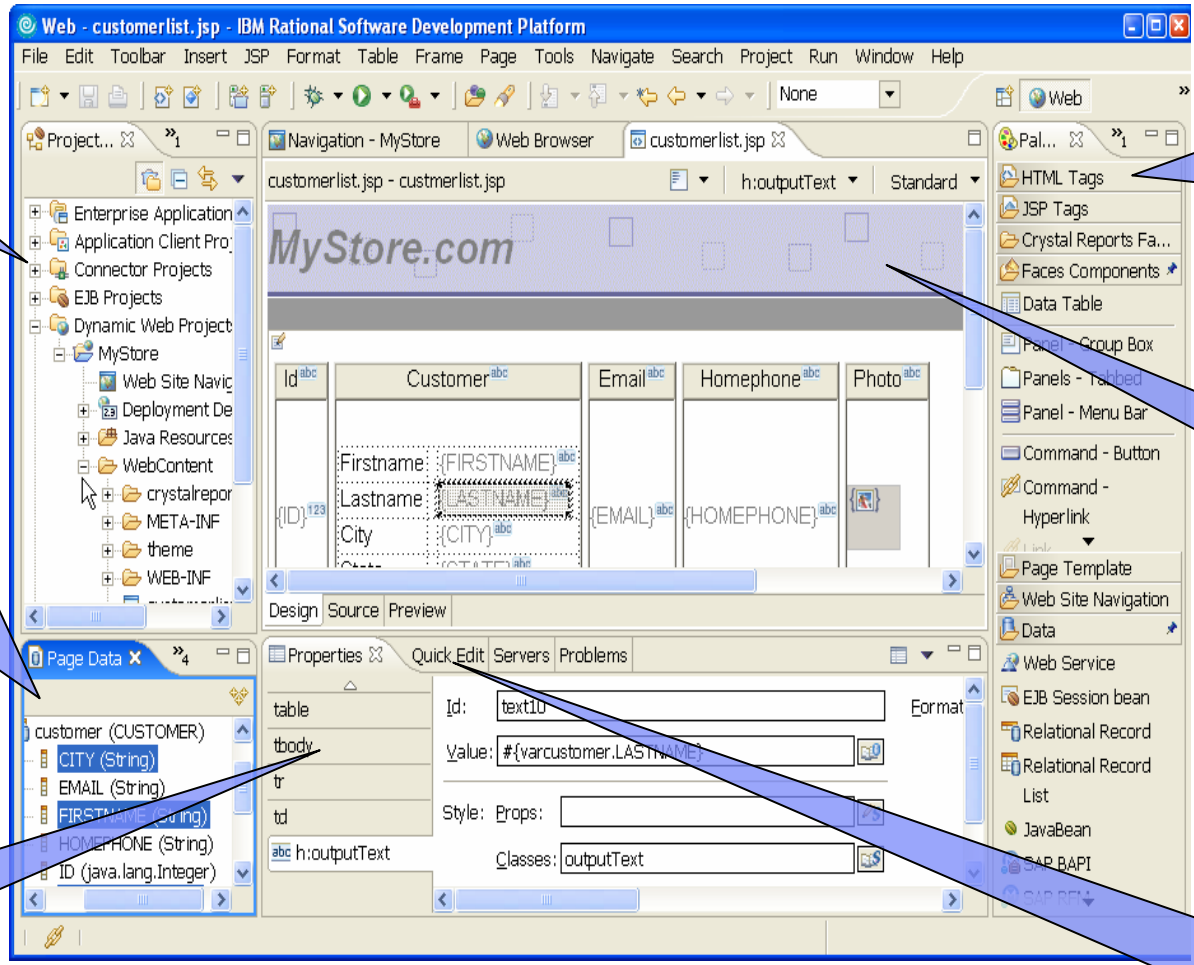
JSF Tool Views in RAD

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

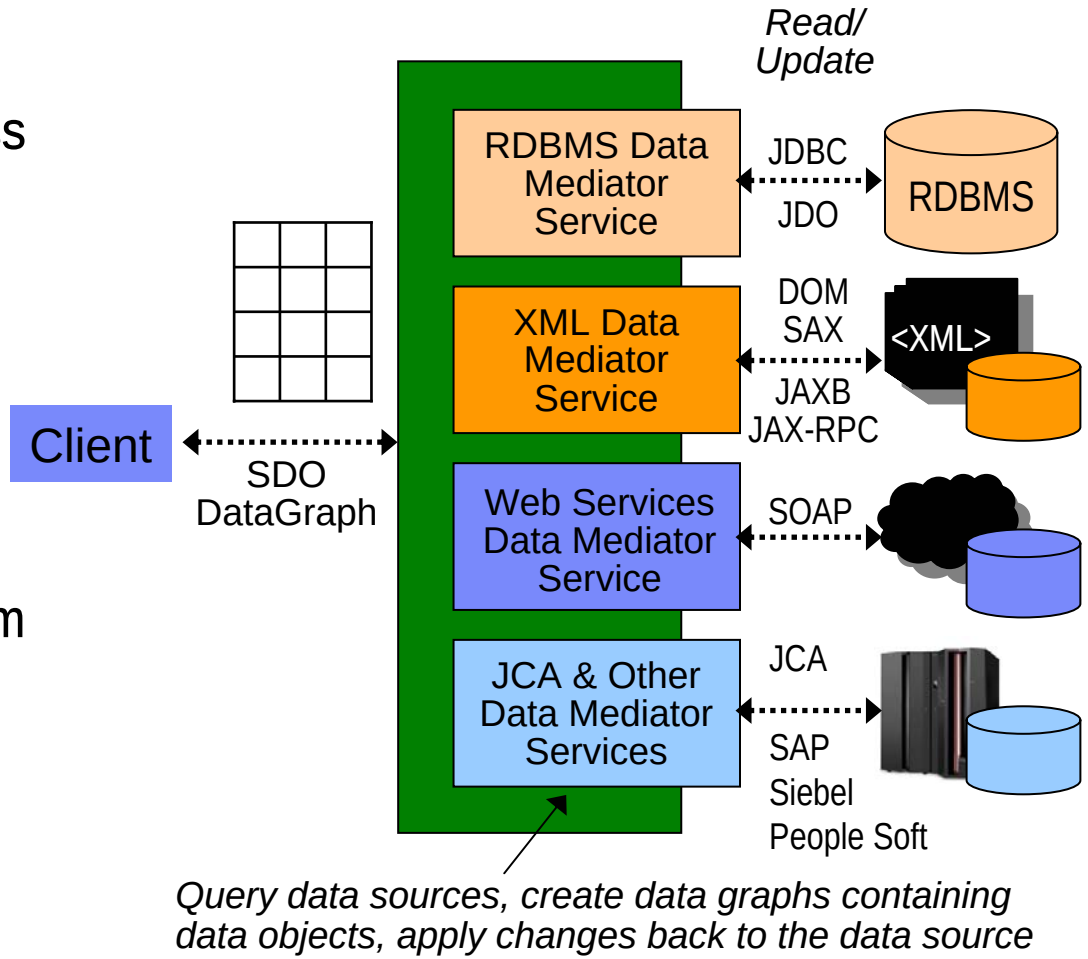
The Quick Edit View allows scripting of client or server side events in Java or Java Script.

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

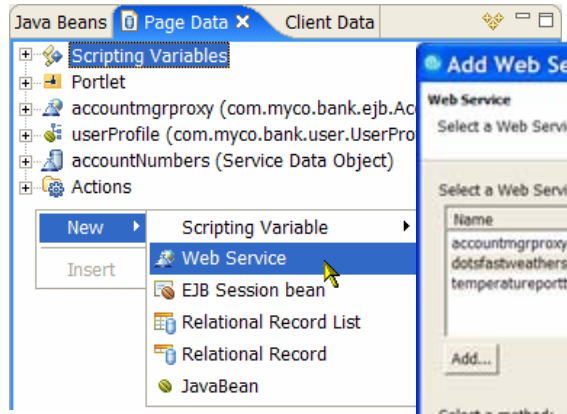
Service Data Objects (SDO): Unified Access to Heterogeneous Data Sources

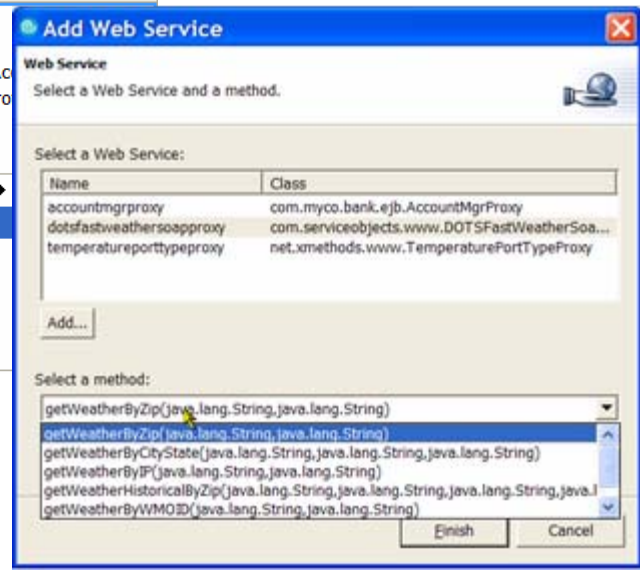
- Provides a common programming interface to access data from multiple heterogeneous sources
- Supports both static and dynamic data APIs
- Supports connected and disconnected operation
- Decouples application code from data access code
- Designed for use with tools to increase programmer productivity

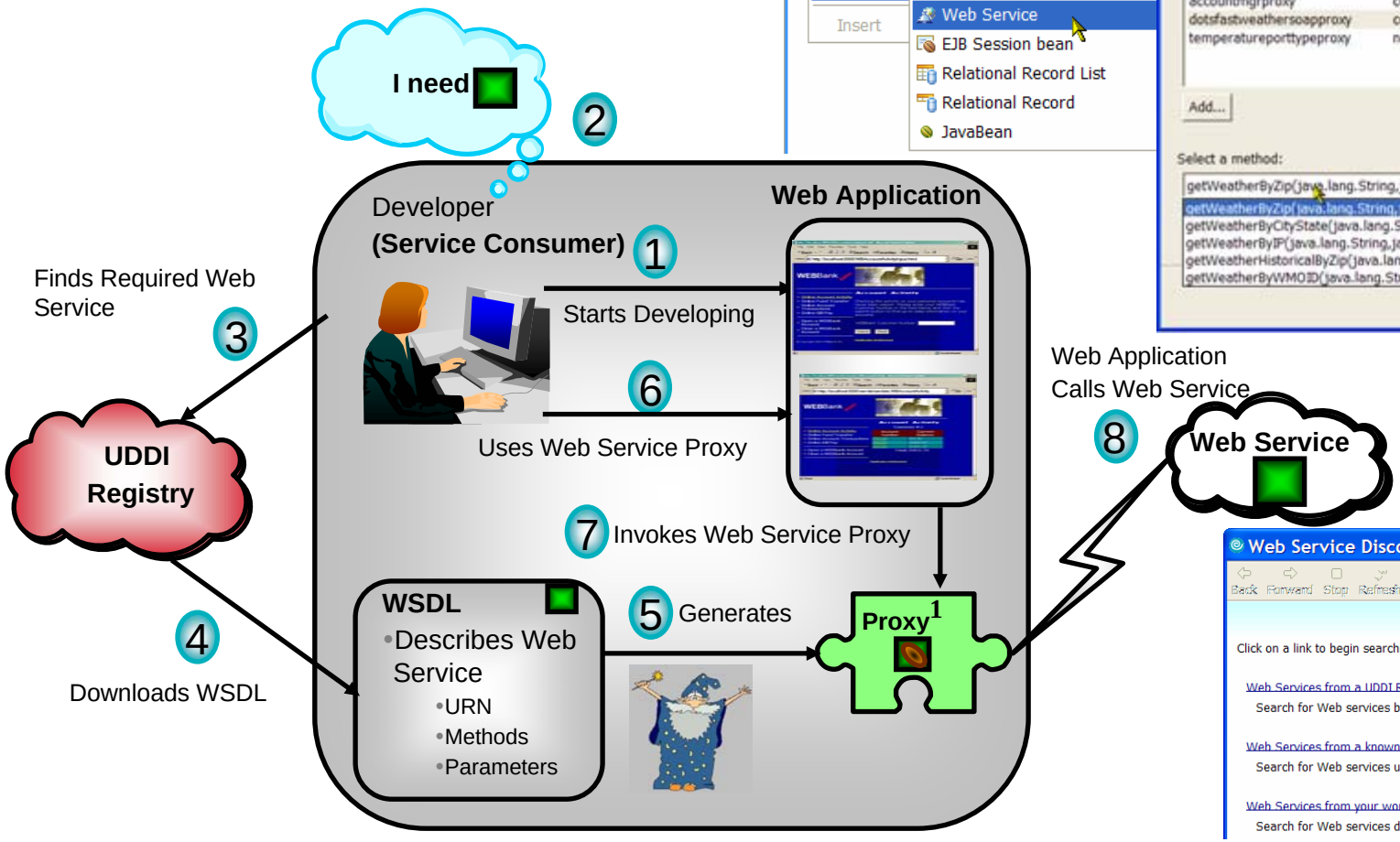


Service Data Objects (SDO) is a specification created by IBM & BEA, submitted to JCP as JSR 235 in December 2003. Expert Group Formation Stage, not part of J2EE yet

Consuming a Web Service (No Coding Required!)

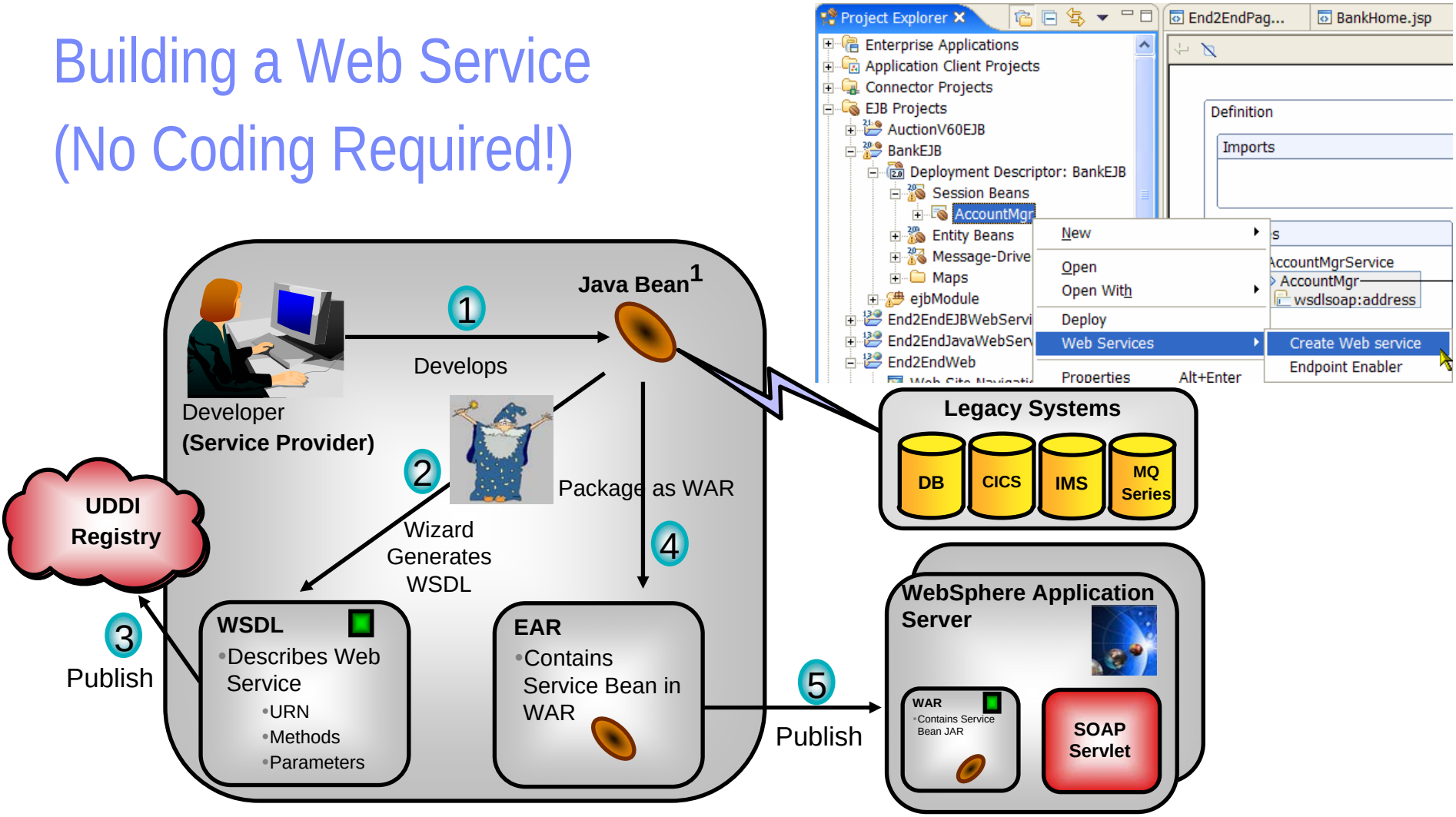






[1]Good Note: A Java app/component can be generated (a.k.a Web Service **Proxy** Bean) that can call existing Web Services, including: web services accessible JavaBeans, EJBs, database queries, URLs, Microsoft .NET web services, any web service on the internet, etc.

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.

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 restartuick app level restart

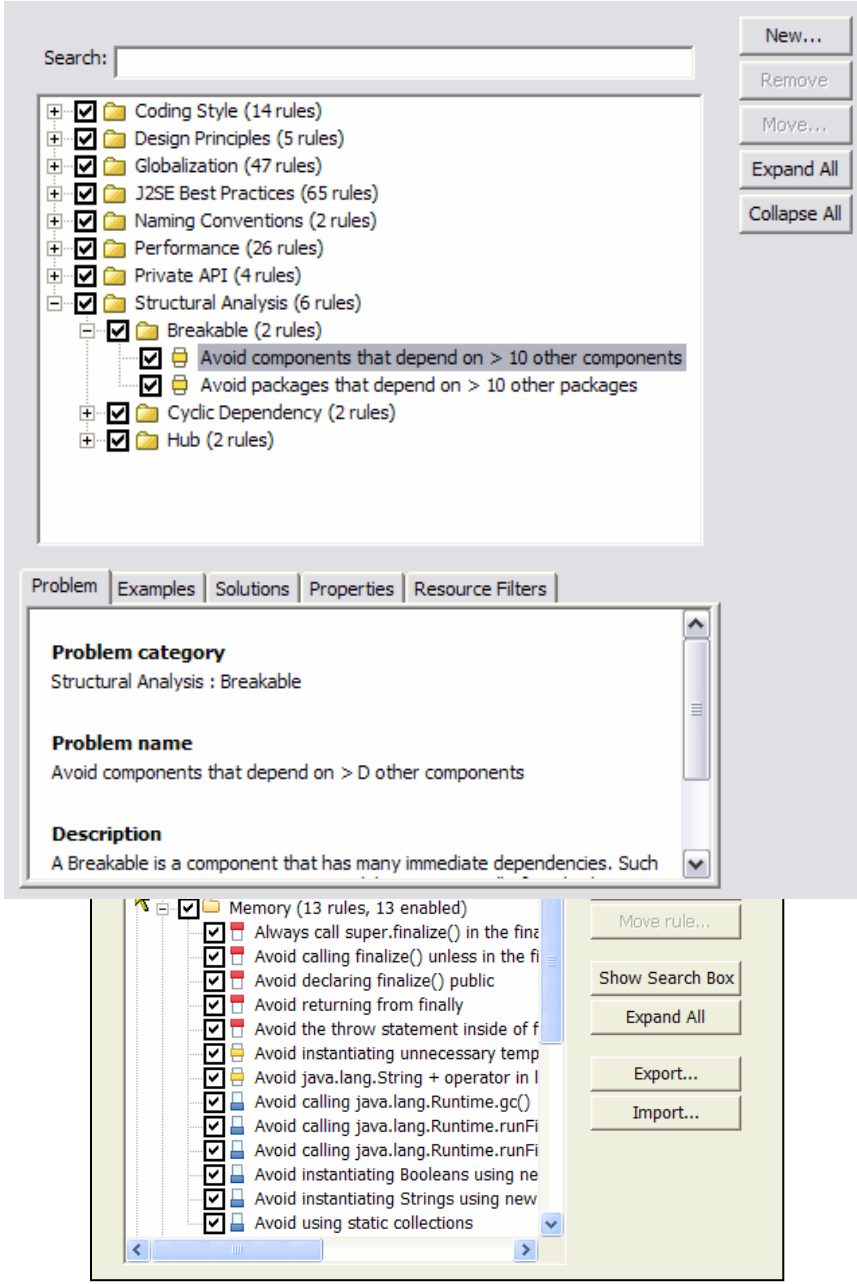
WS Rapid Deploy (WRD) Dynamic Development Scenarios		
Development Activity	**WAS5.1**	**WAS6.0**
Create EAR Project	Plan to Restart Server	Dynamic (WRD)
Create Web Project	Plan to Restart Server	Dynamic (WRD)
Create EJB Project	Plan to Restart Server	Dynamic (WRD)
Create EJB with Logic	Restart Server (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

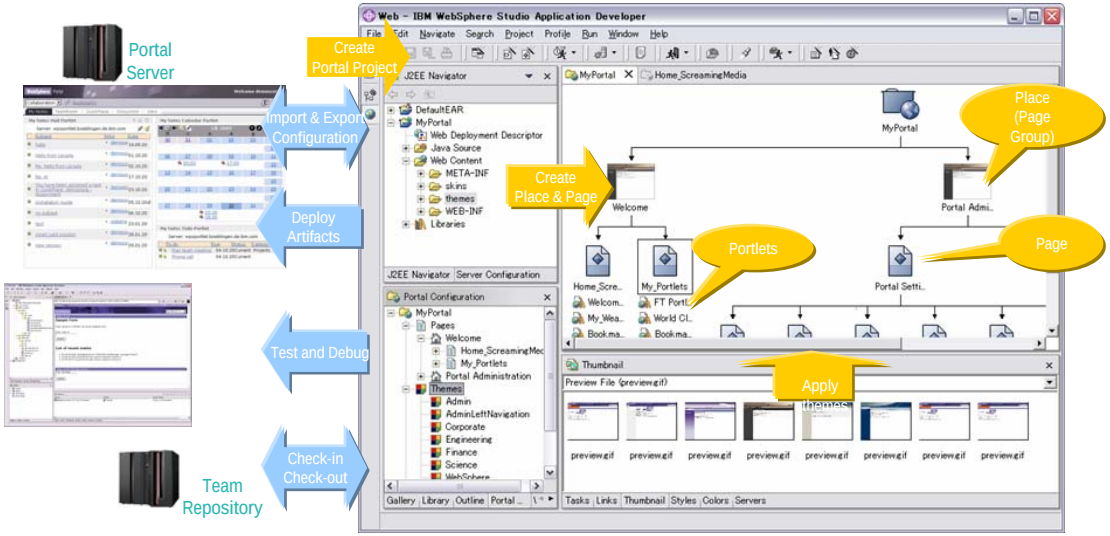
- Enable easy creation, execution, and maintenance of dynamic unit tests of J2EE components including:
  - Java classes (J2SE 1.4)
  - EJBs (1.1, 2.0 and 2.1, supporting both remote and local interfaces)
  - Web Services (J2EE based, and .Net Web Services)
- Based on the JUnit framework
- Provide testing 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

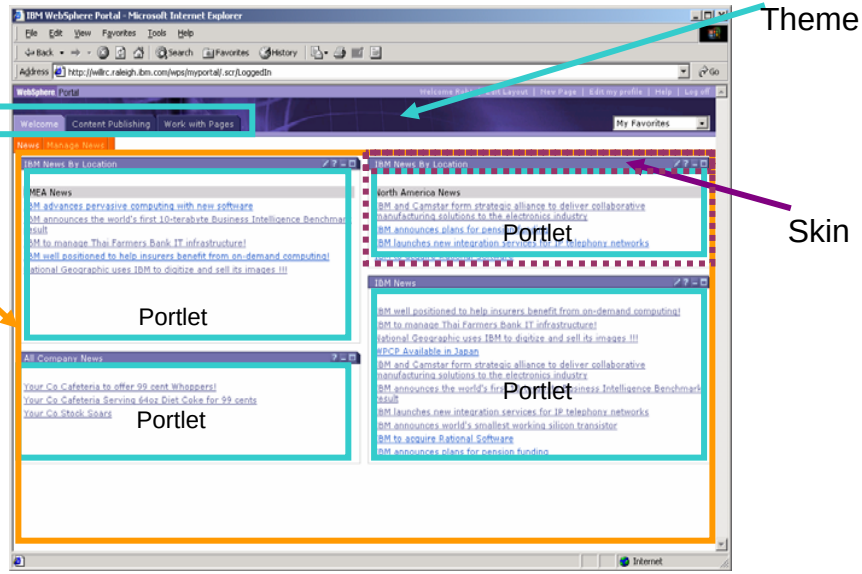
Code Reviews

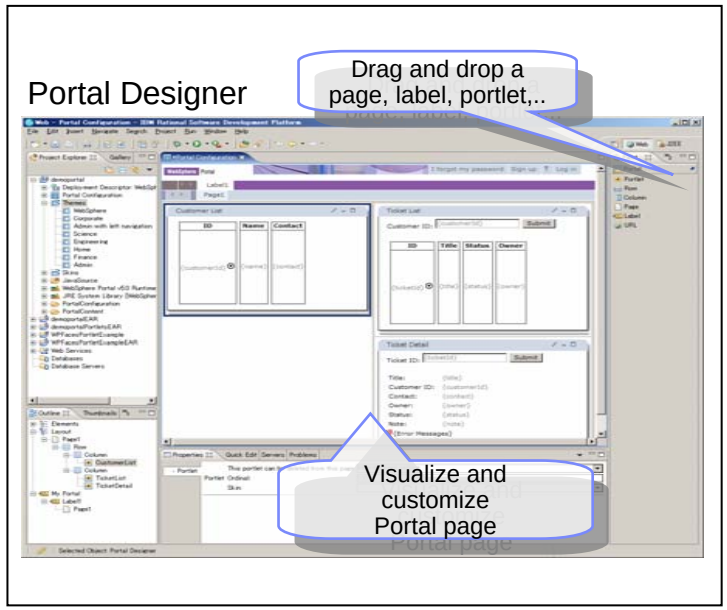
- Analyze Project/Workspace to find problems of various types:
  - Globalization
  - J2EE Best Practices
  - J2SE Best Practices
  - Private API Usage
  - Performance
  - Naming Conventions
- Produce interactive reports with violations and metrics
- Provides explanations, examples, and quick fixes for 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)



Portal Designer: Site, Page, Themes, Skins [1][2][3][4]

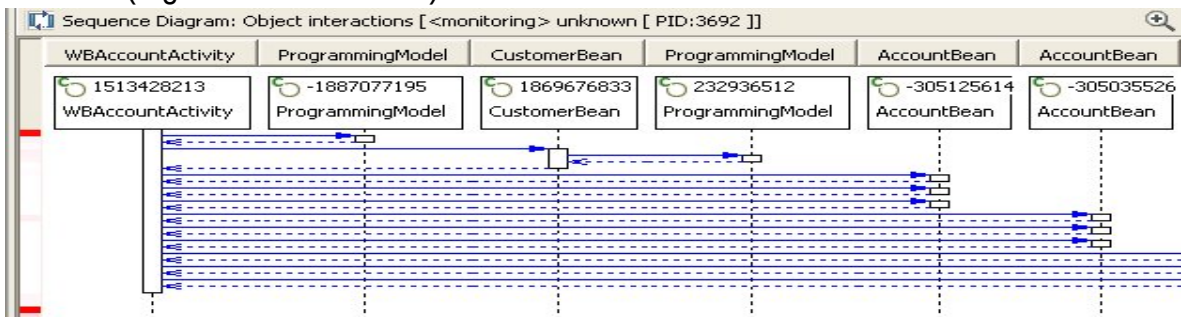


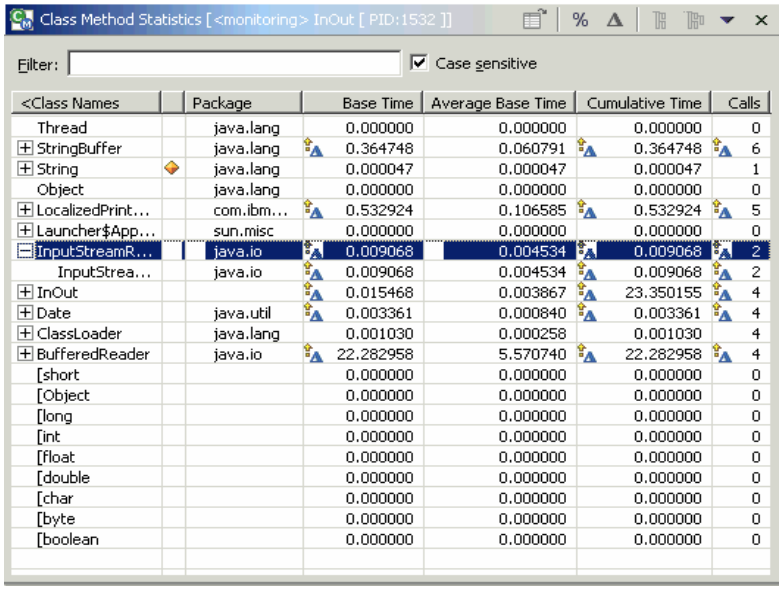


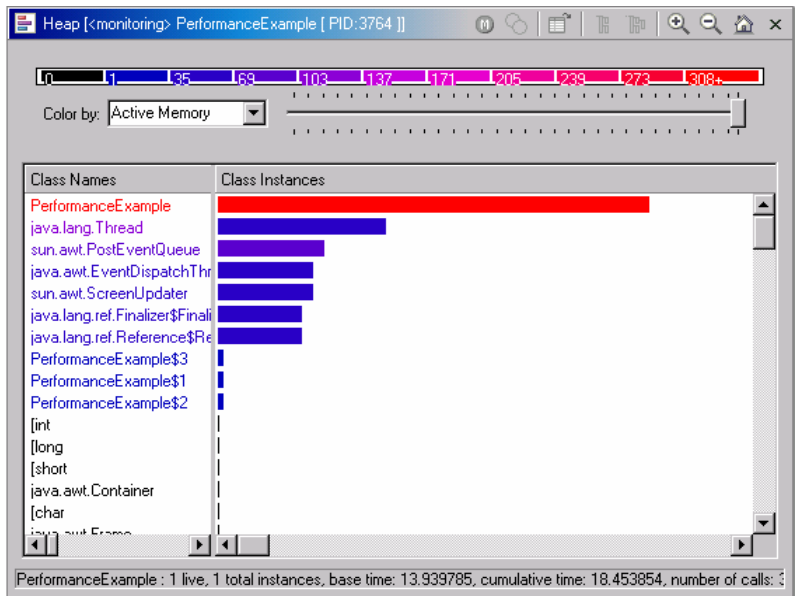


Runtime Analysis [1] [2]

- 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)



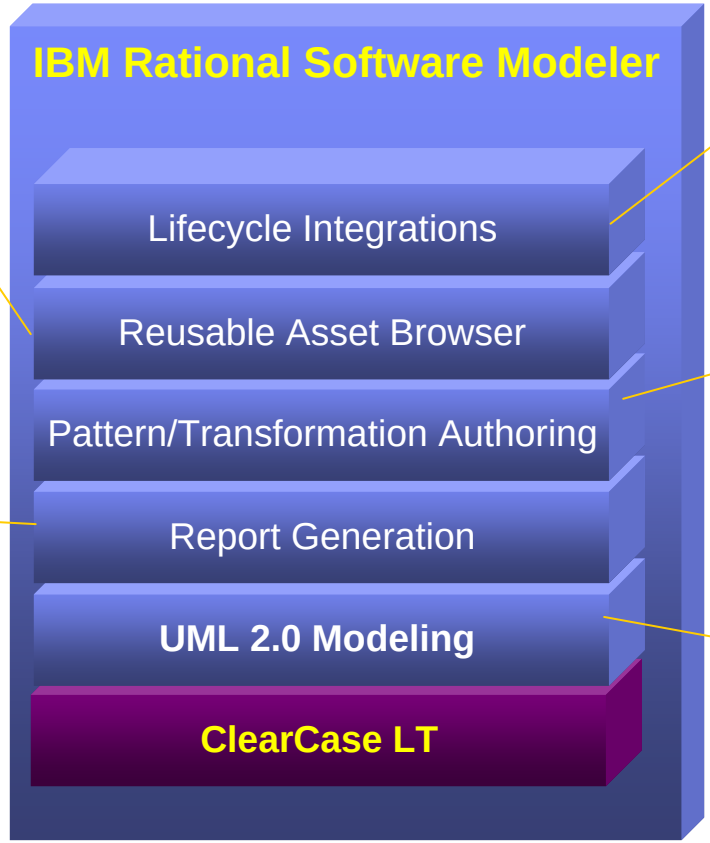




V6 Highlights - Areas of Innovation - Enhancements and New Capabilities

- **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



Reusable Asset Browser
- Browse and import assets from a repository
- Package model and development artifacts into a RAS bundle

Report Generation
- HTML and XML based data extraction and reporting
- Extensive printing
- Model traceability reporting and custom queries

Lifecycle Integrations
- Drag-and-drop association of RequisitePro requirements with models
- Interface to CM tools
- Visual compare/merge
- Document generation with SoDA

Pattern/Transform Authoring
- Sample UML-to-code transforms for EJB, Java, and C++
- Selective language to UML harvesting
- Pattern content
- Pattern/Transform authoring framework and services

UML 2.0 Modeling
- UML 2.0 Diagrams for Class, Communication, Component, Composite Structure, Deployment, Activity, Sequence, State, and Use Case
- UML Profile Editor
- OCL Support
- Automatic diagram generation
- Extensive open API
- Java-based “scripting” for extensibility using the Eclipse JDT

IBM Rational Software Architect

Application Analyzer

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

Modeler

- UML 2.0 Diagrams for Class, Communication, Component, Composite Structure, Deployment, Activity, Sequence, State, and Use Case
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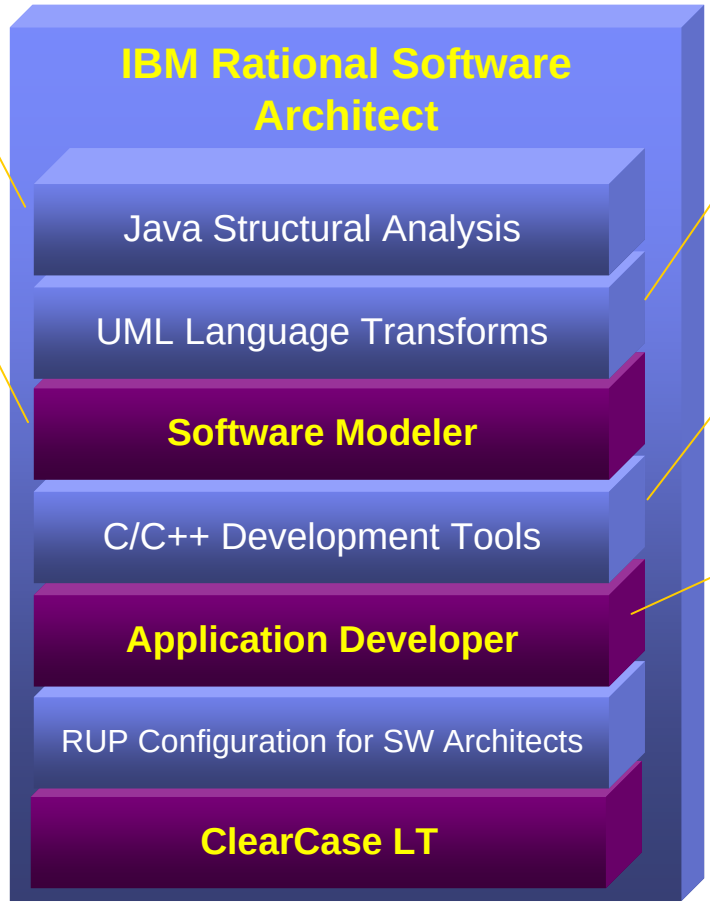
- Extensive printing
- RAS tools



Transformations

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

C/C++ Support

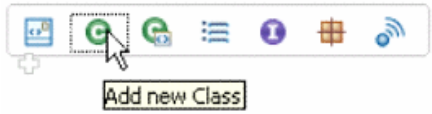
- C/C++ editors and build management
- Compiler and debugger integration
- UML code editors

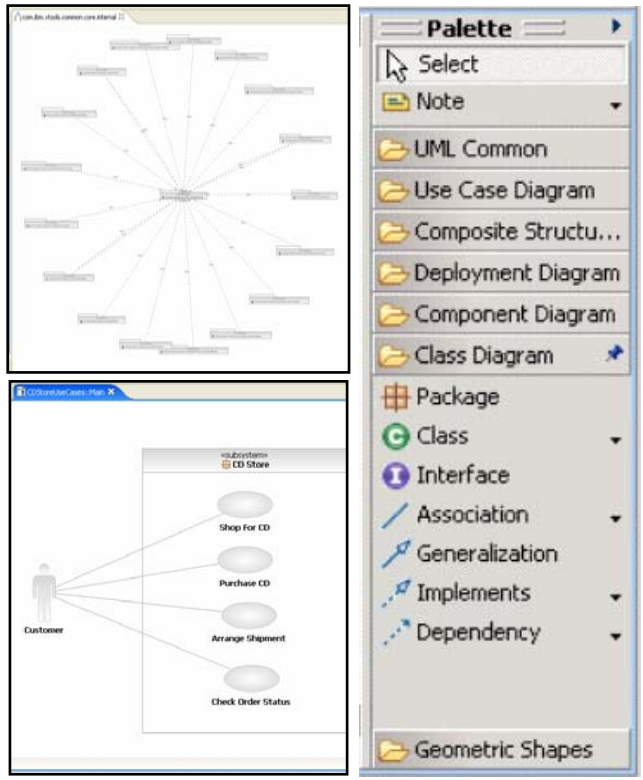
WSAD v6

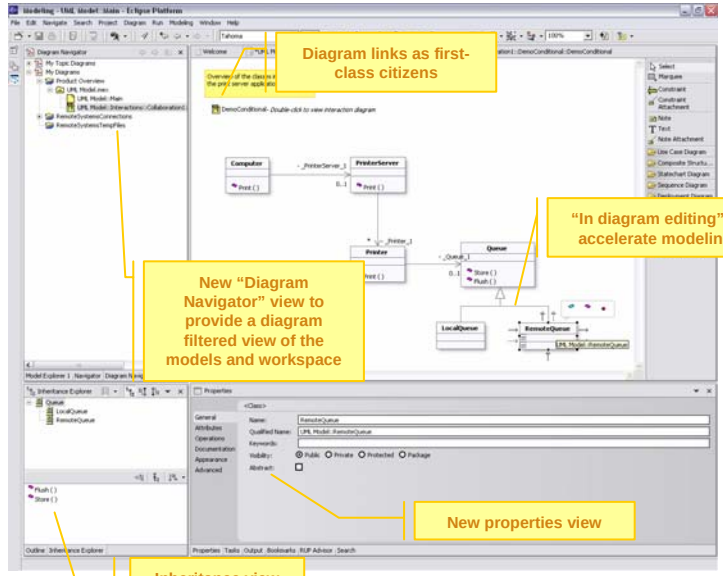
- JSF, SDO, Struts
- Java GUI editor
- Web diagram editor
- Site designer
- Web Services development tools
- Database editing tools
- EGL
- EJB development tools
- UML code editors: EJB, Java, Data
- Static Analysis
- Runtime Analysis
- Component test automation
- Portal/Portlet development tools

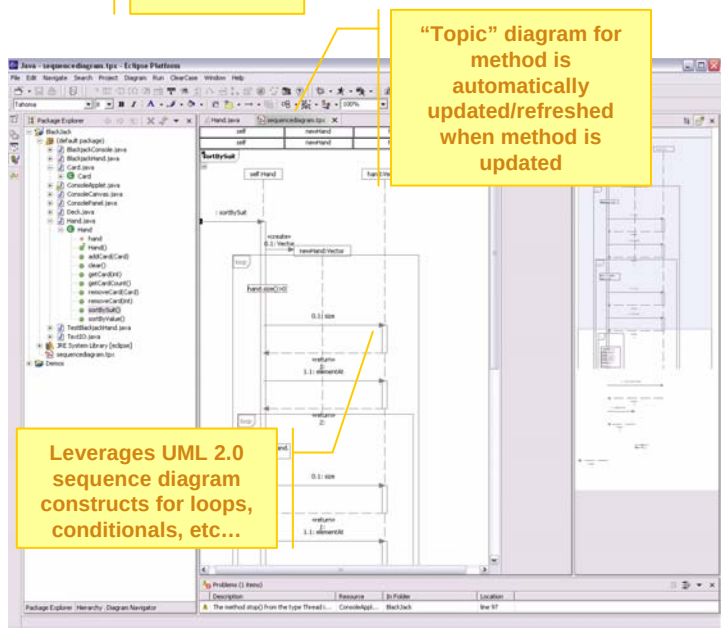
New UML Modeling Ease-of-Use

- 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



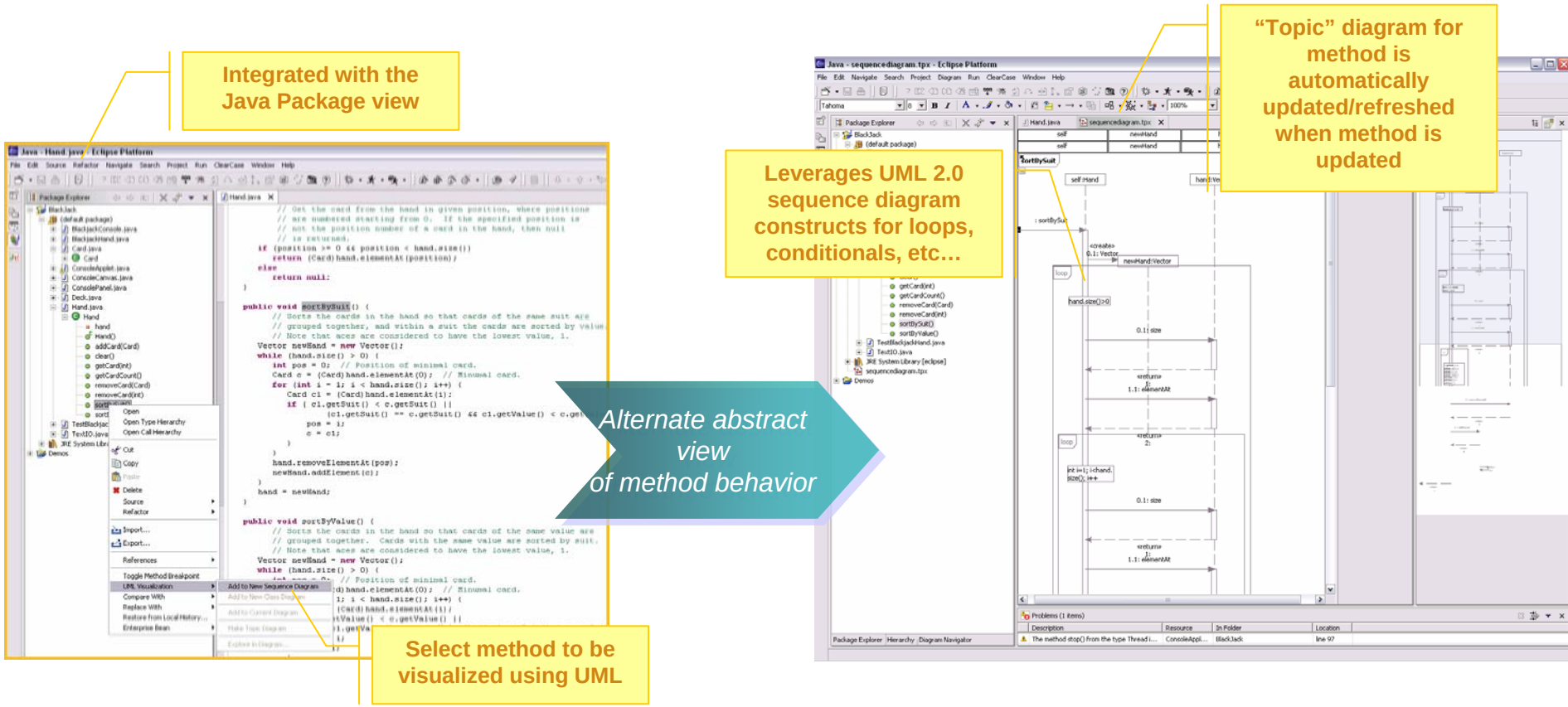






Visualize Java Classes, Relationships and Method Bodies

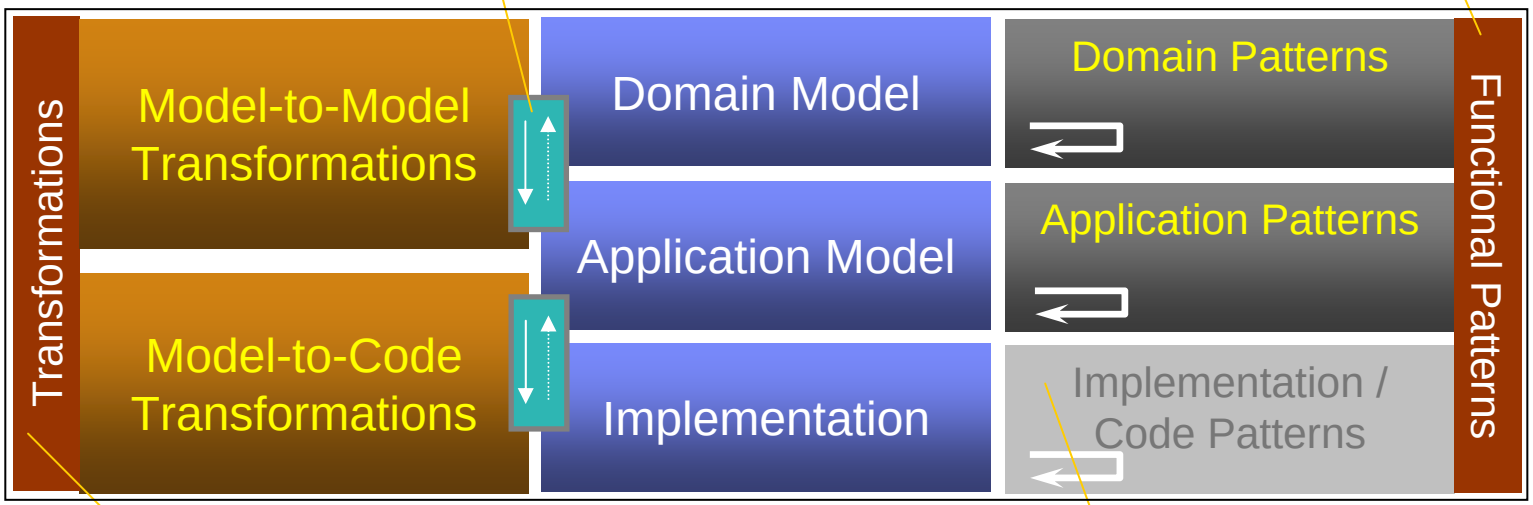
- Facilitates understanding and application's behavior by providing visualization of detailed code
- Diagrams can be integrated in Javadoc reports



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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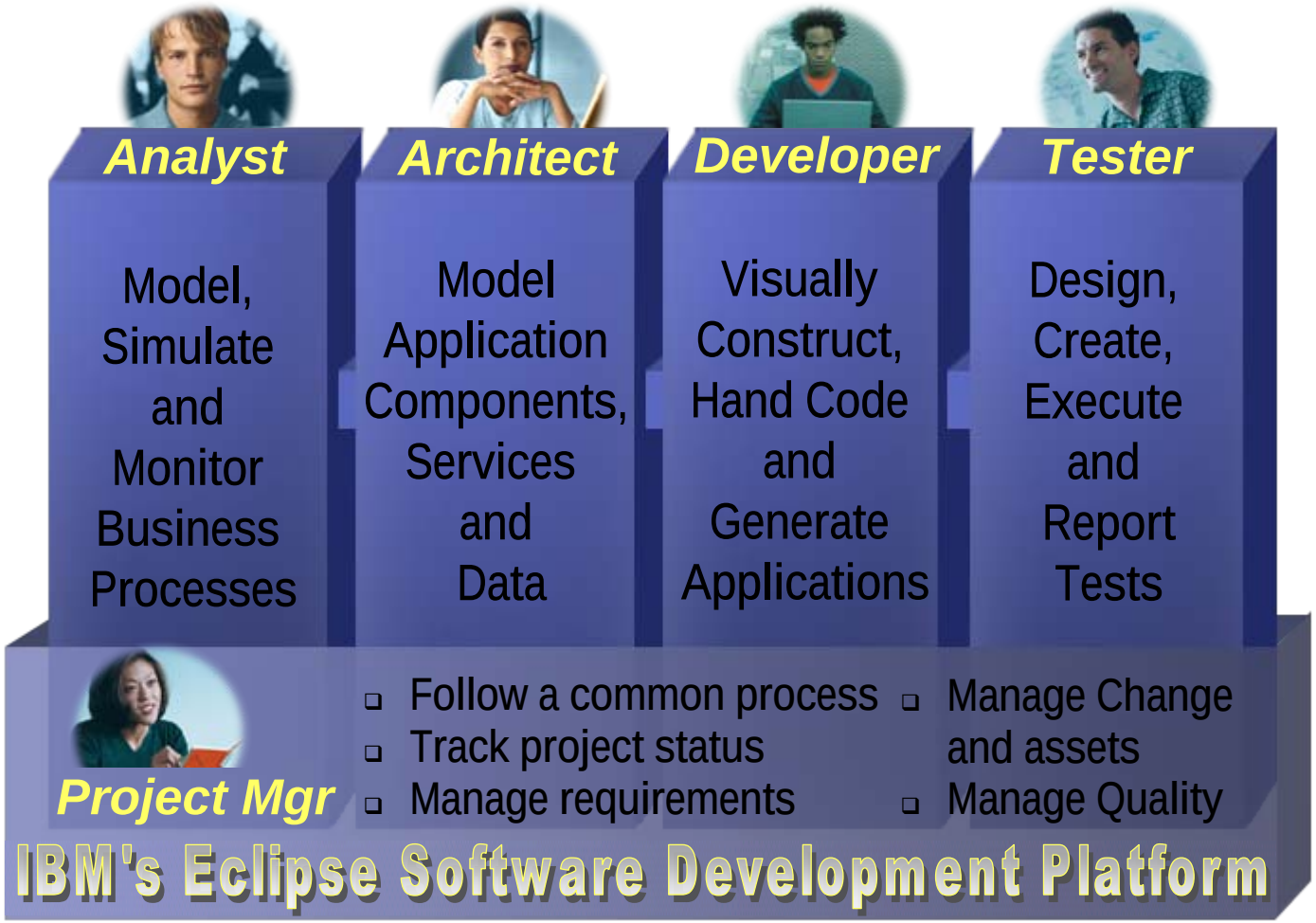
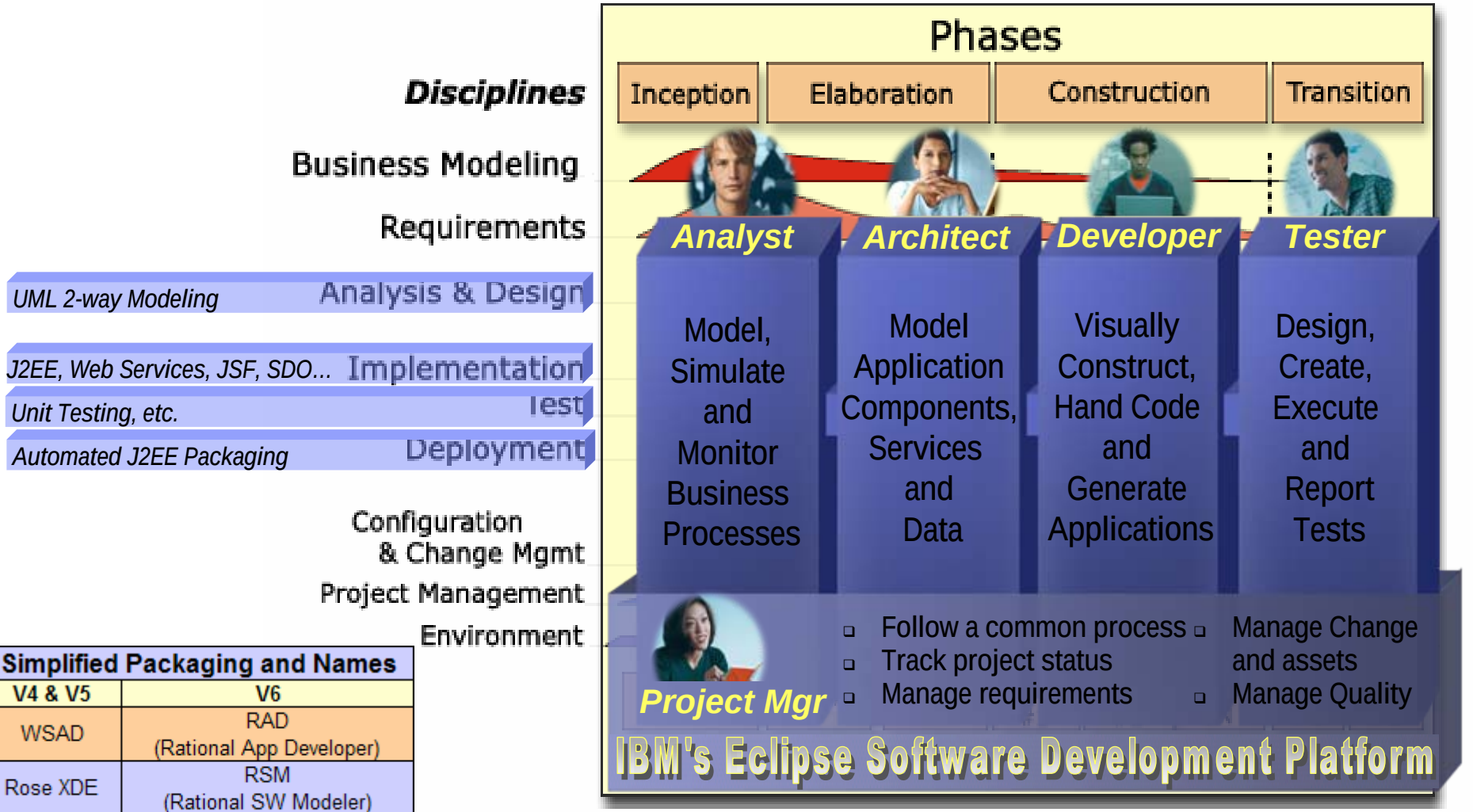
Roles Accelerated By Rational Tools

IBM Software Development Platform

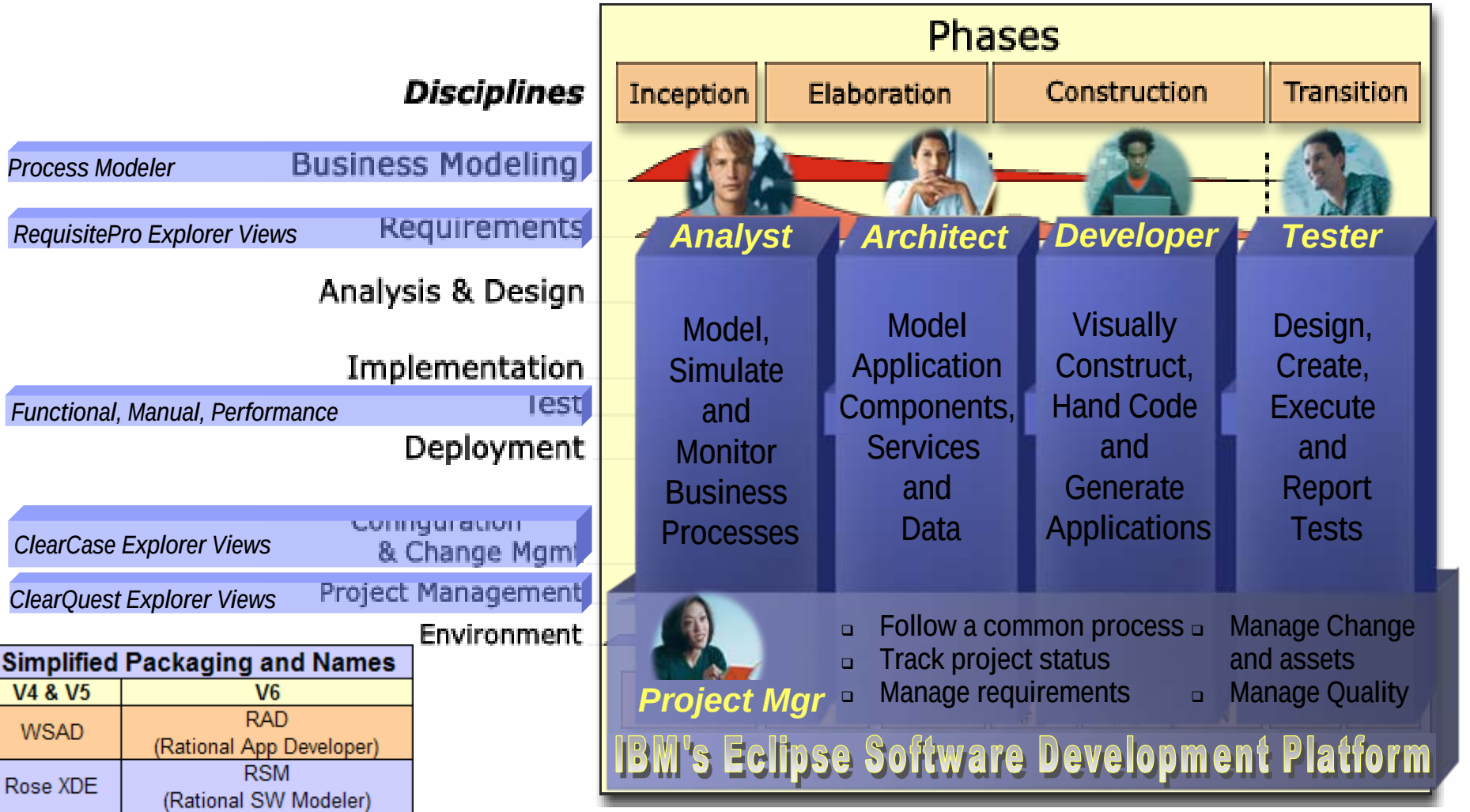


Existing Tools In WSAD V5.x and RAD V6



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



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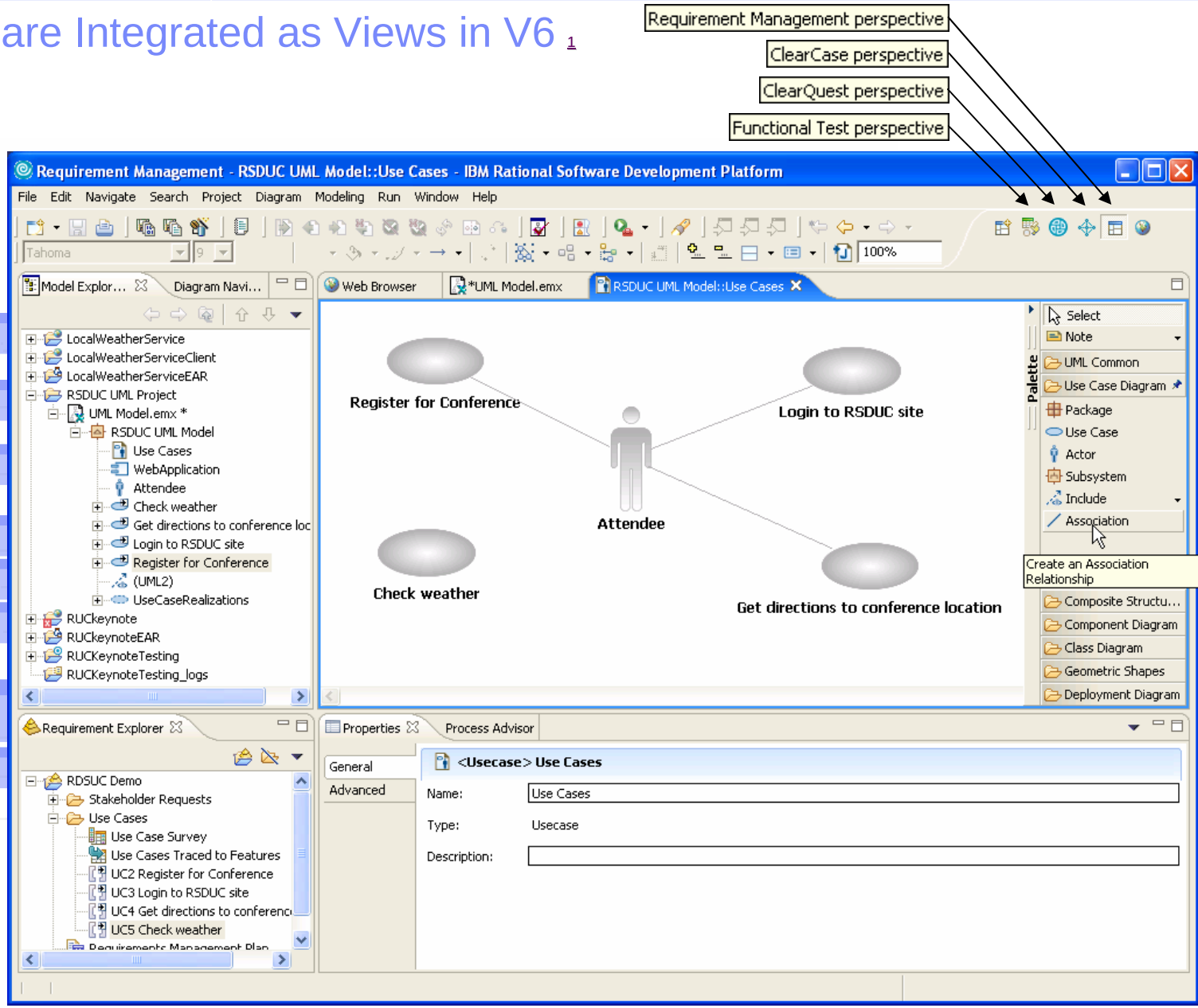
Lifecycle Tools are Integrated as Views in V6 [1]



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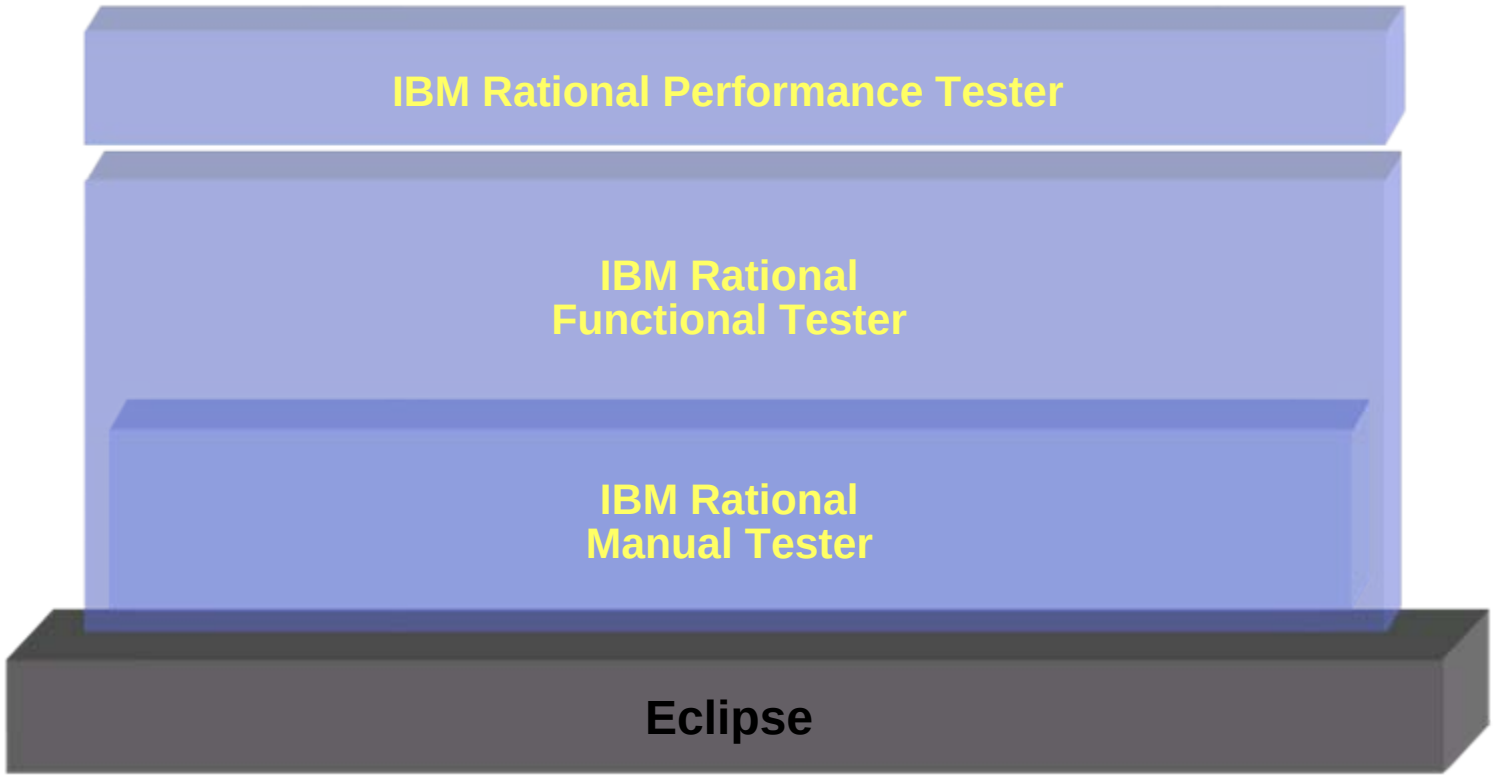
Software quality tools



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

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

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

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

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

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
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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
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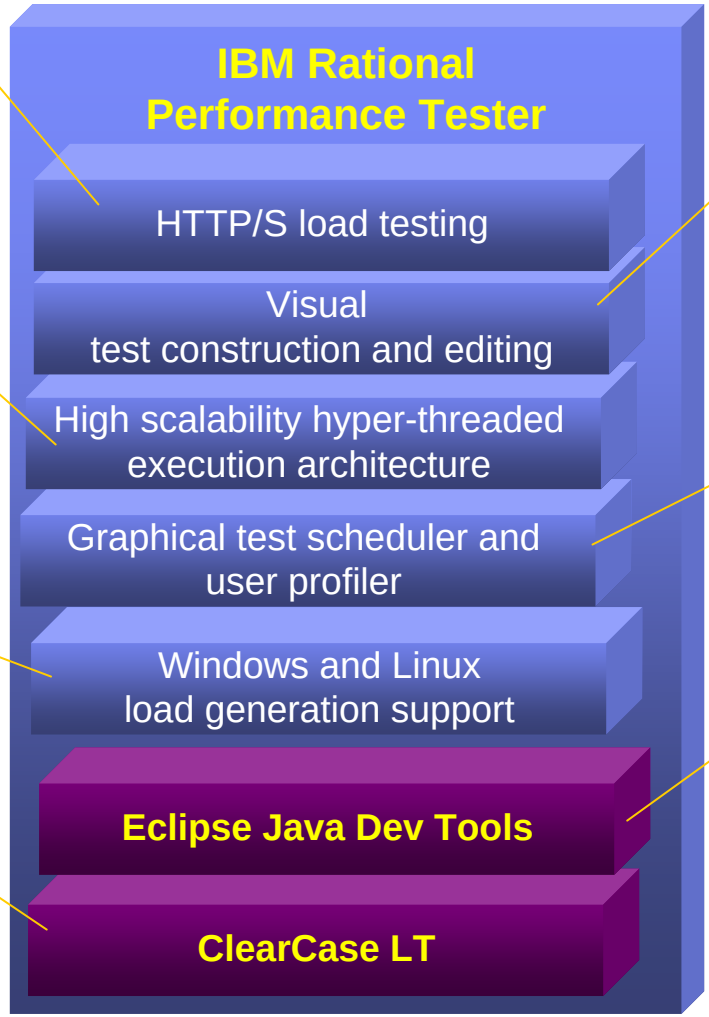


Visual Test Editor

- 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

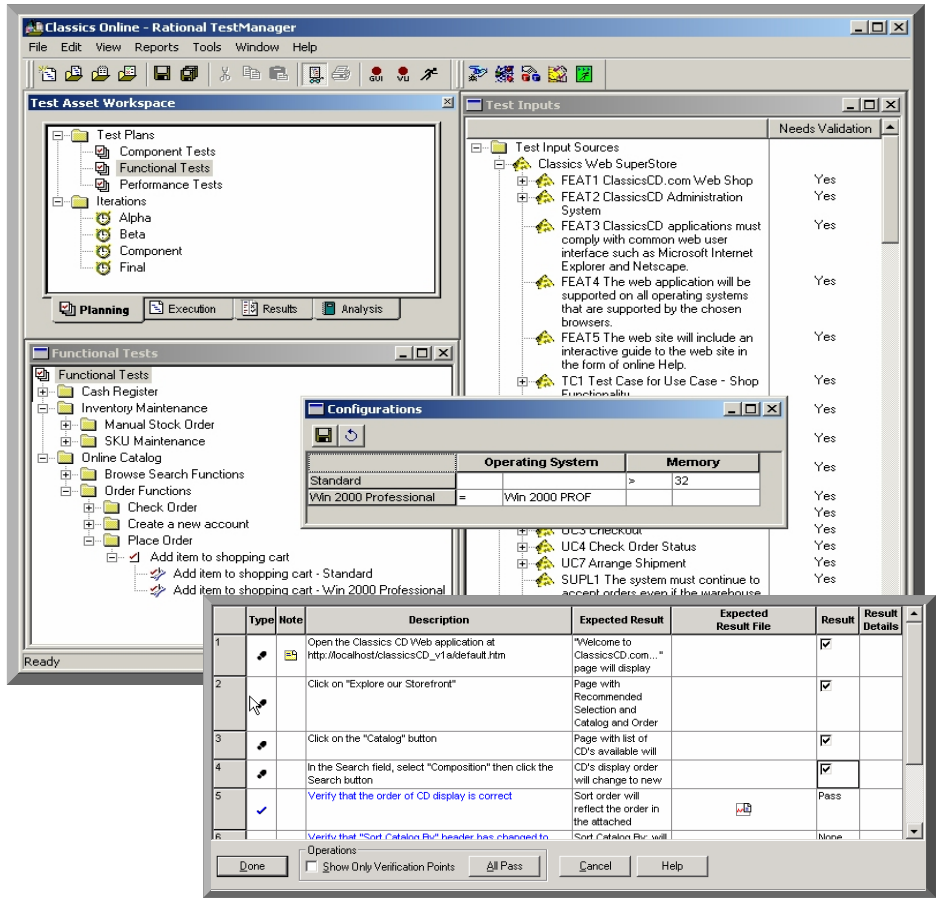
Key software quality activities

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**

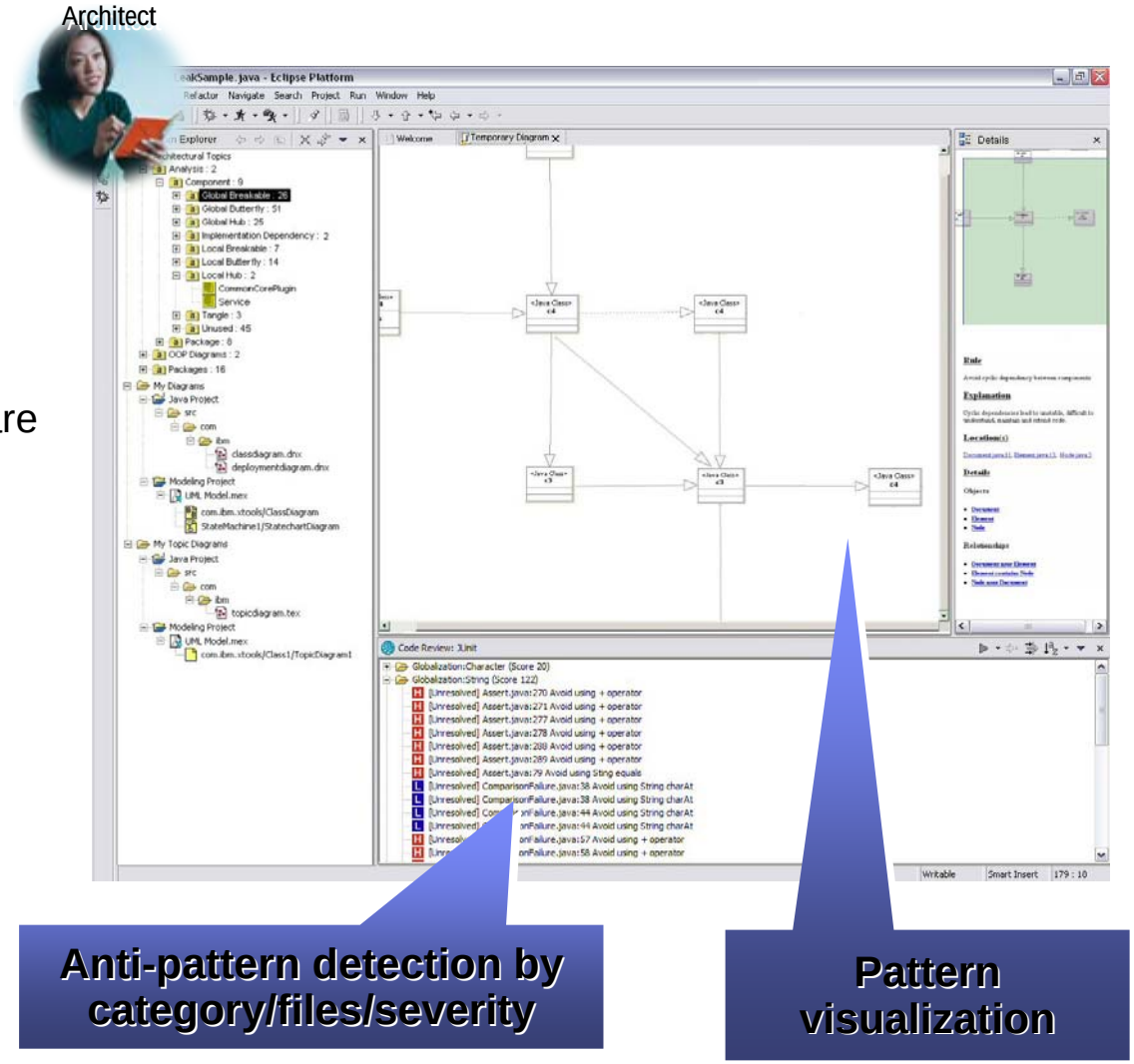
Test Management: Rational TestManager

- *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



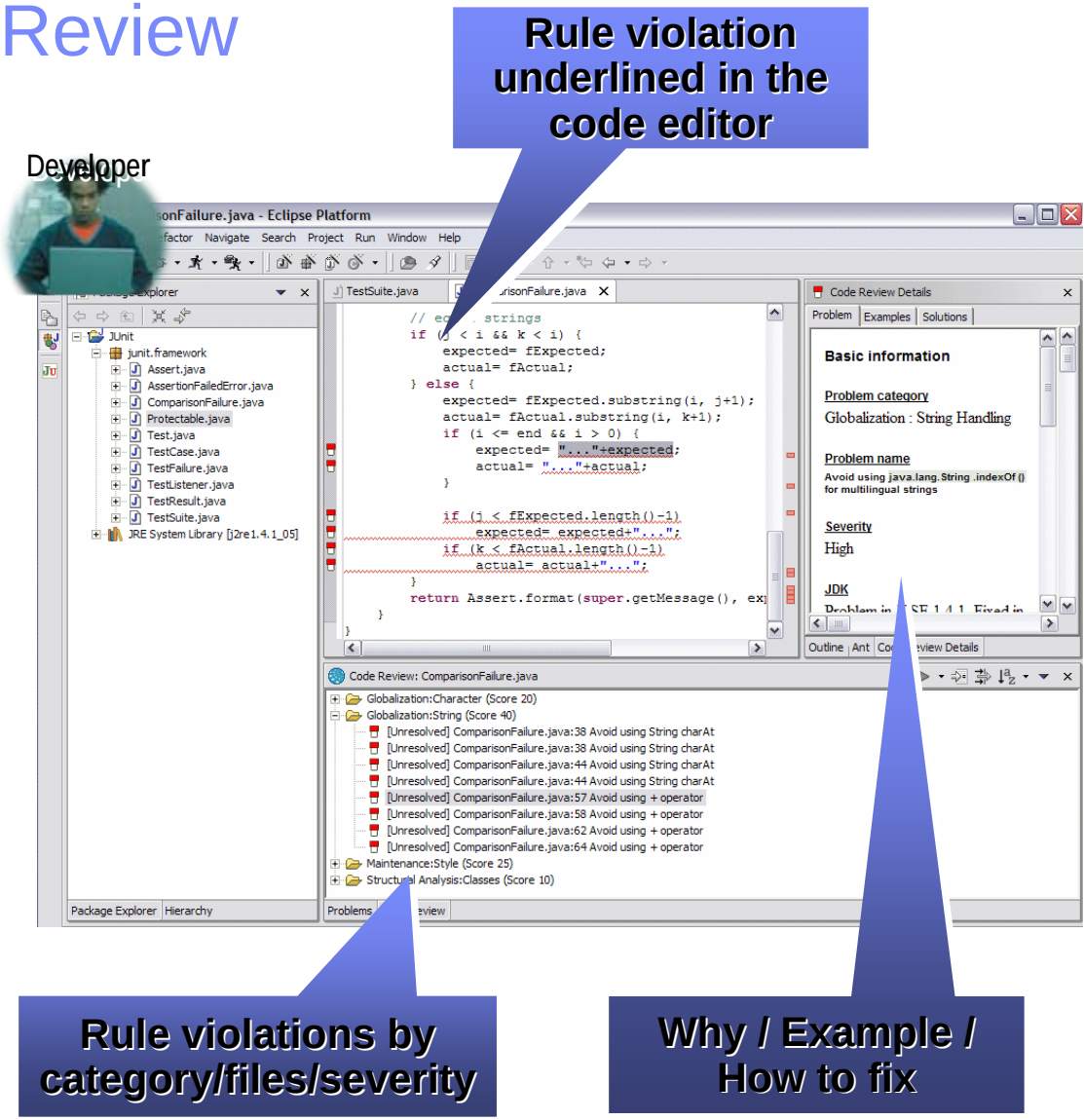
Design: Architecture Discovery, Analysis and Control

- *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



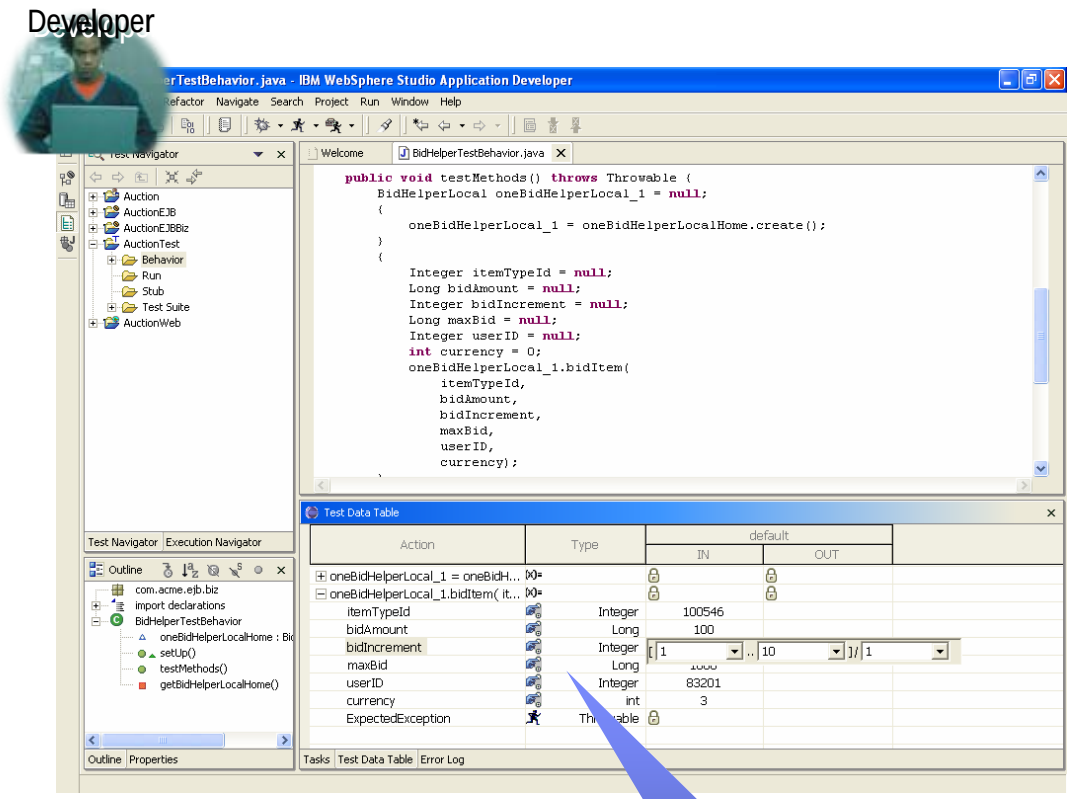
Implementation: Code Review

- *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



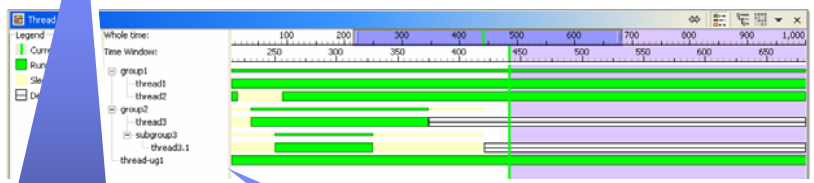
Component Test: Verify component functionality

- *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



Debug: Understand behavior, performance & memory utilization

- *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

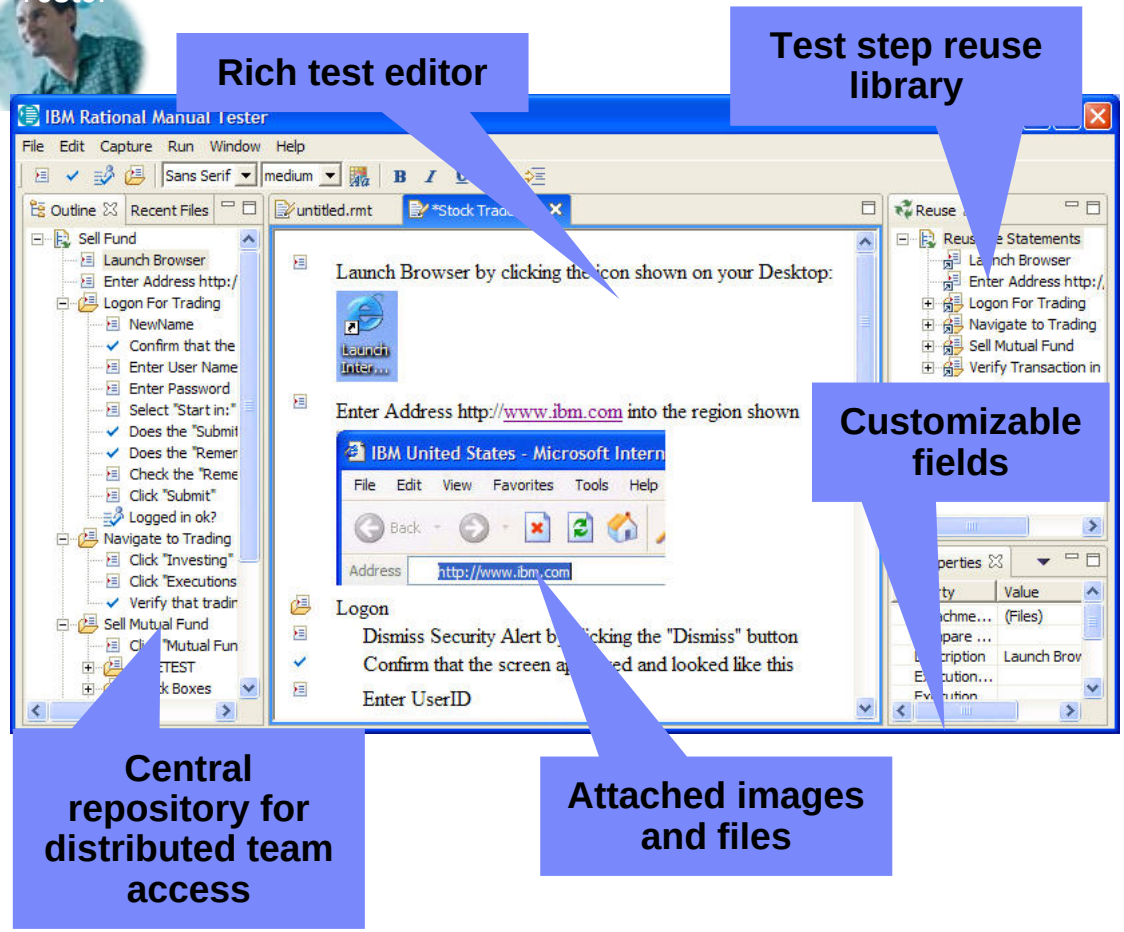


Live UML2 sequence diagram generation

Thread Analysis

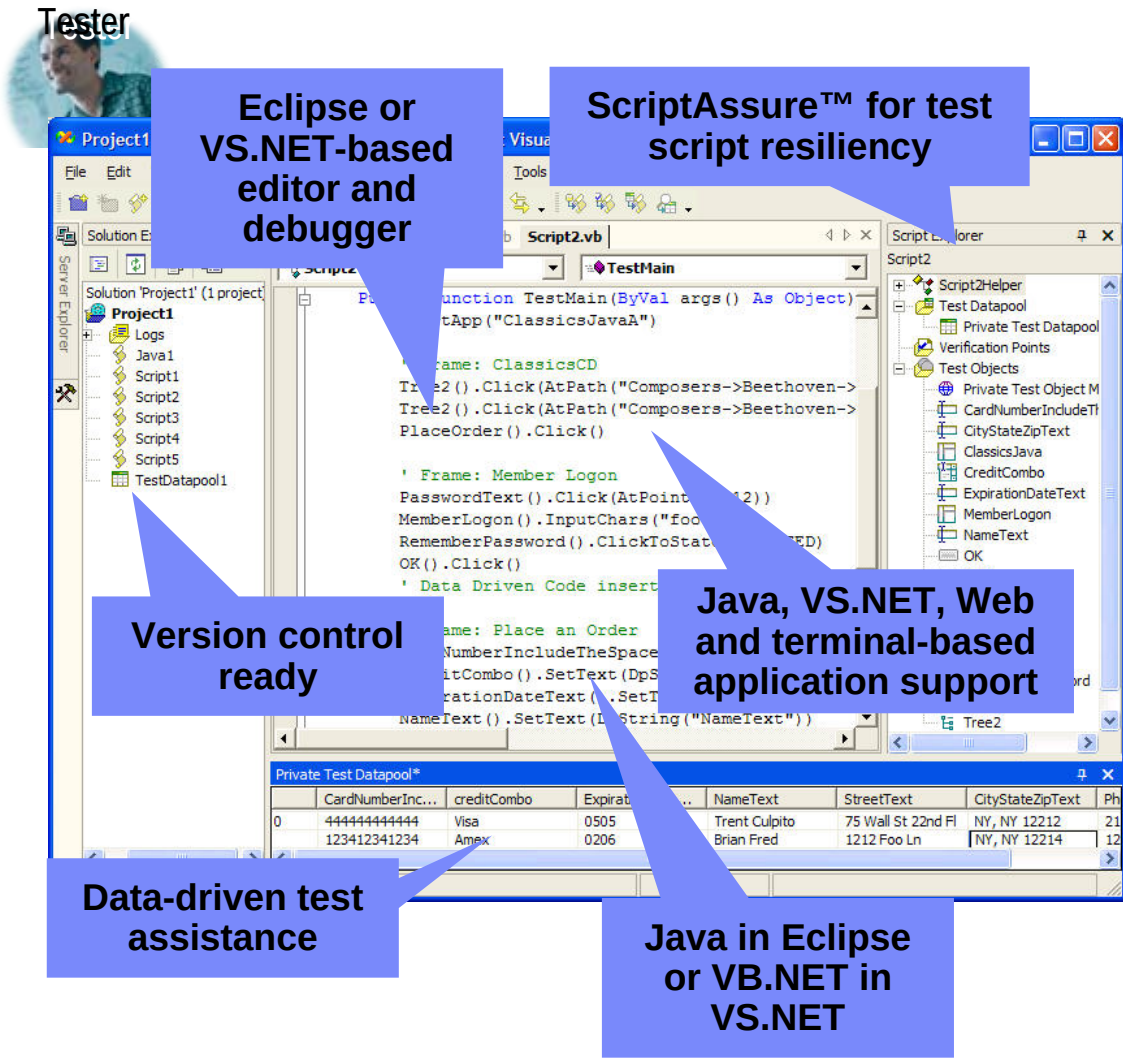
Manual Testing: Rational Manual Tester

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



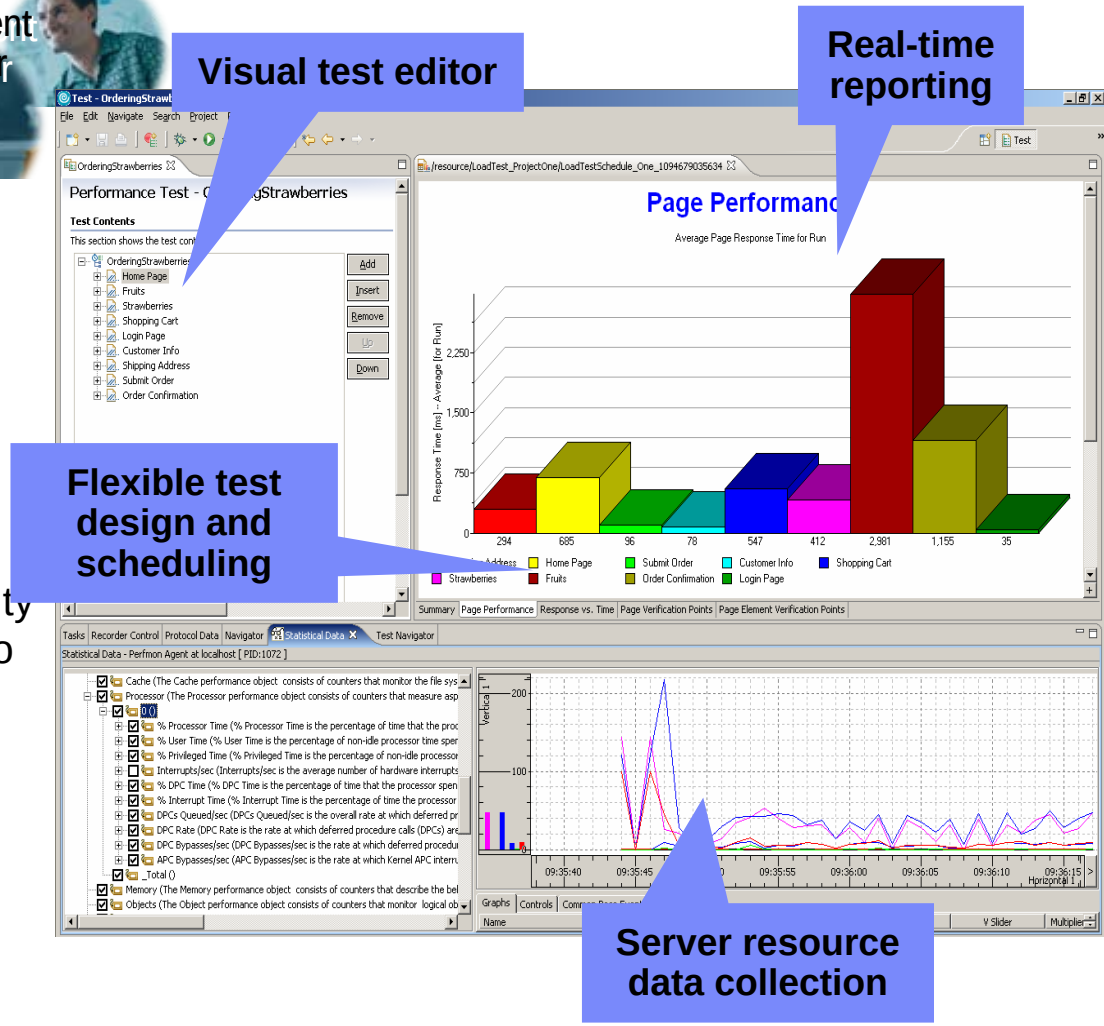
GUI Test Automation: Rational Functional Tester

- *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



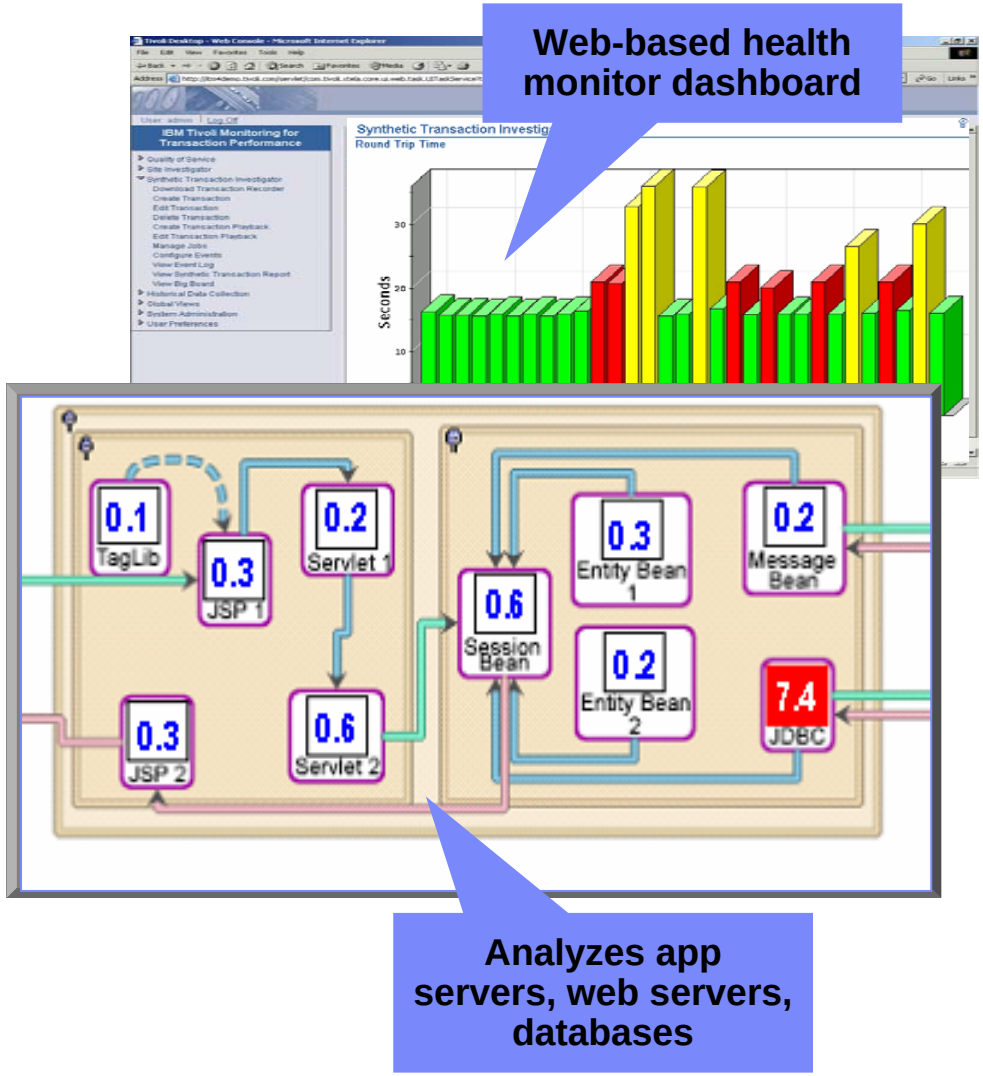
Performance Testing: Rational Performance Tester

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



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



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
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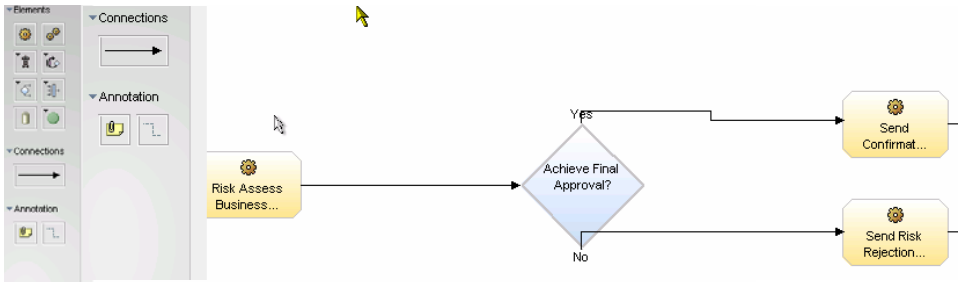
- Workflow tools and servers heritage and enhancements
- Virtualized application server profiles enhancements
- IBM Premium Support enhanced level of service and responsiveness

Integrating People, Processes and Information

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

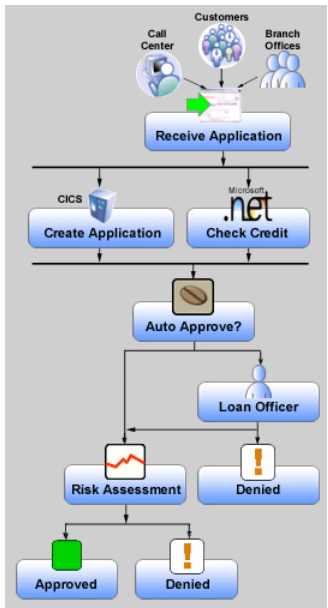


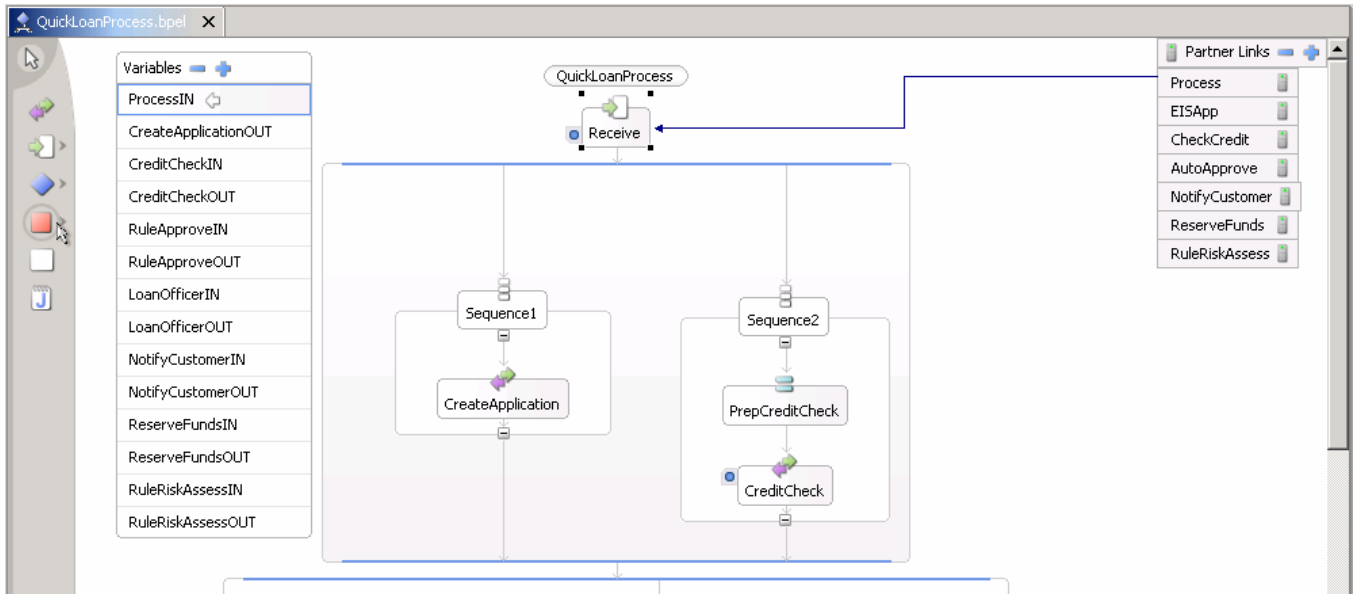
Resource Cost Analysis

Resource Cost Analysis

	Start Time
	Thursday, January 1, 2004 12:00:00 AM CST
Total	
Average Cost Per Time Unit	$68.31 / 1 Hours
Average One Time Cost	$0.00
Average Cost Per Quantity	
Average Cost Per Quantity & Time Unit	
Annual Per TimeUnit Cost	$590,163.93

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





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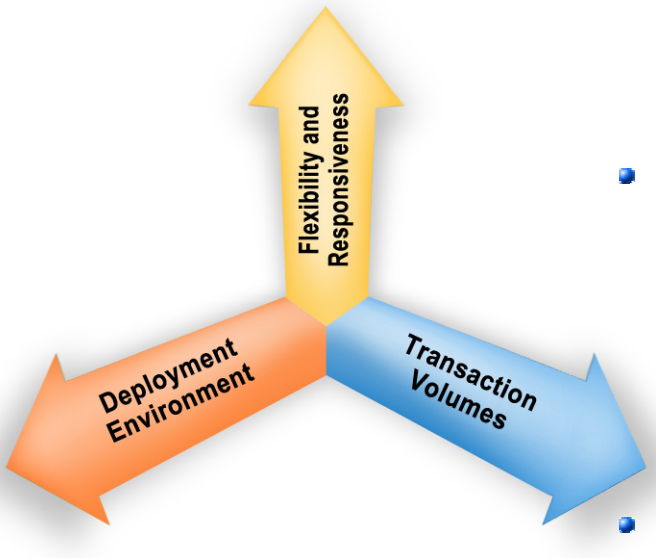
WebSphere XD – Supporting On Demand, Mission Critical Applications



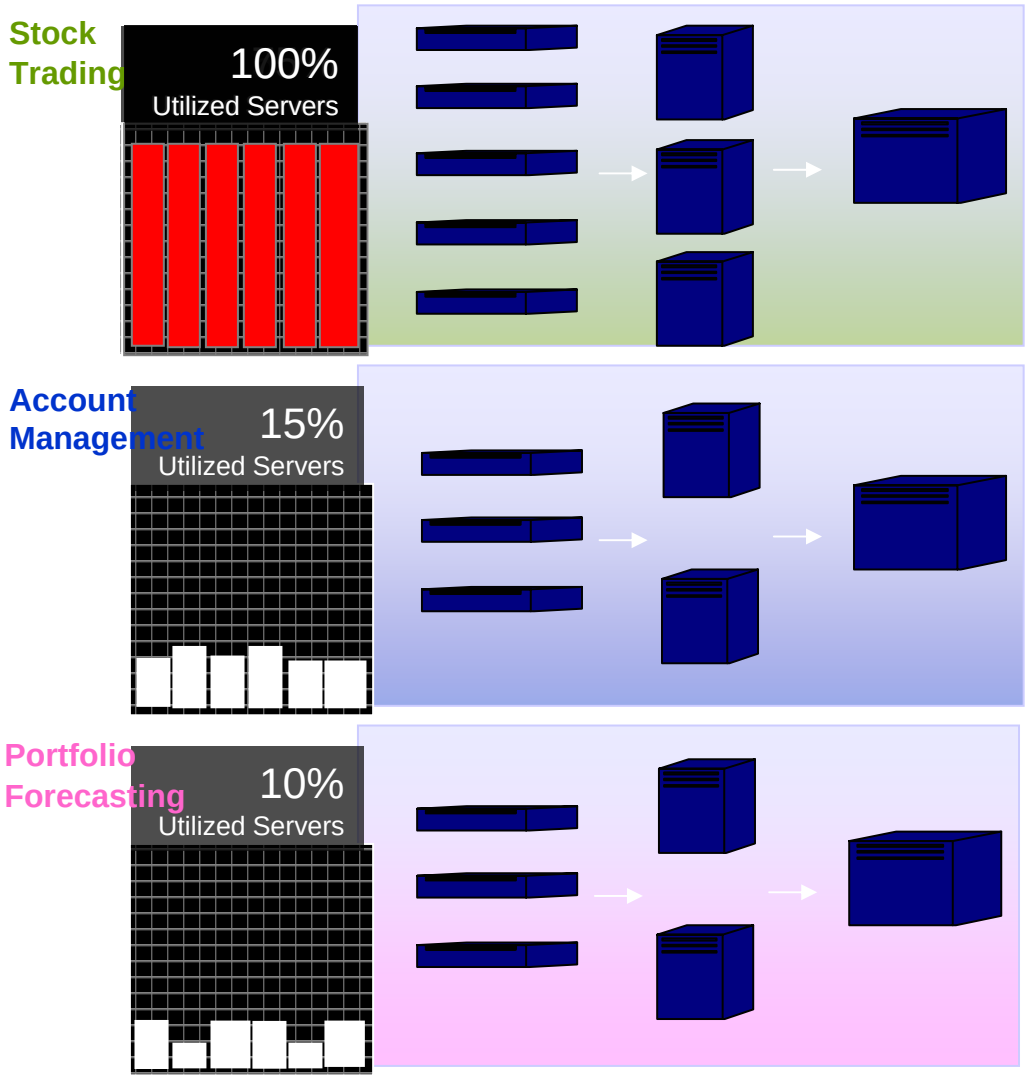
- WebSphere Dynamic Operations
  - Virtualized and Automated Environment increase stability and reduces TCO
  - Run more applications on a set of resources than possible with a static configuration
  - Enhanced goals-based policy-driven Workload distribution
  - Allocating resources as needed to meet 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, scaleable 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

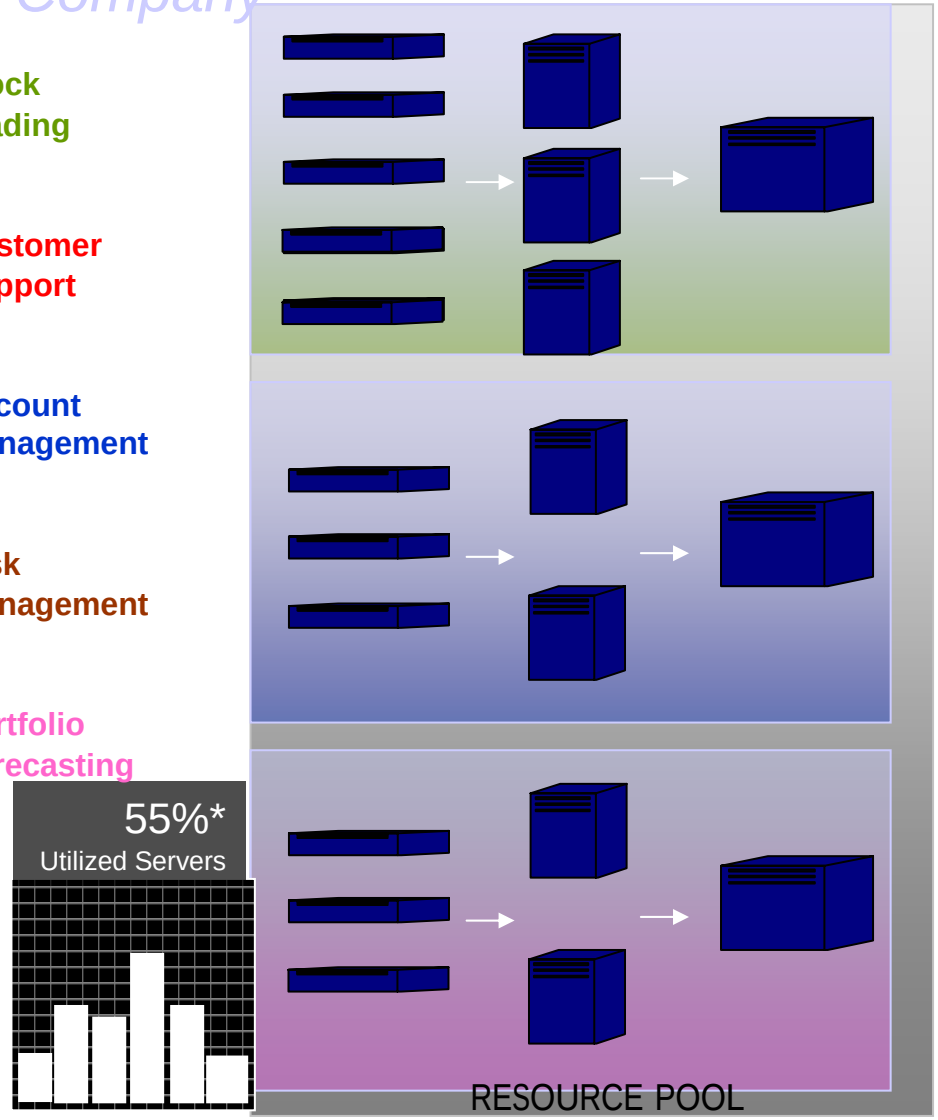


Dynamic Operations

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



* Hypothetical, for illustrative purposes only

Policies – Applying Business Goals to Applications

Stock Trading

Stock Trading

Account Management

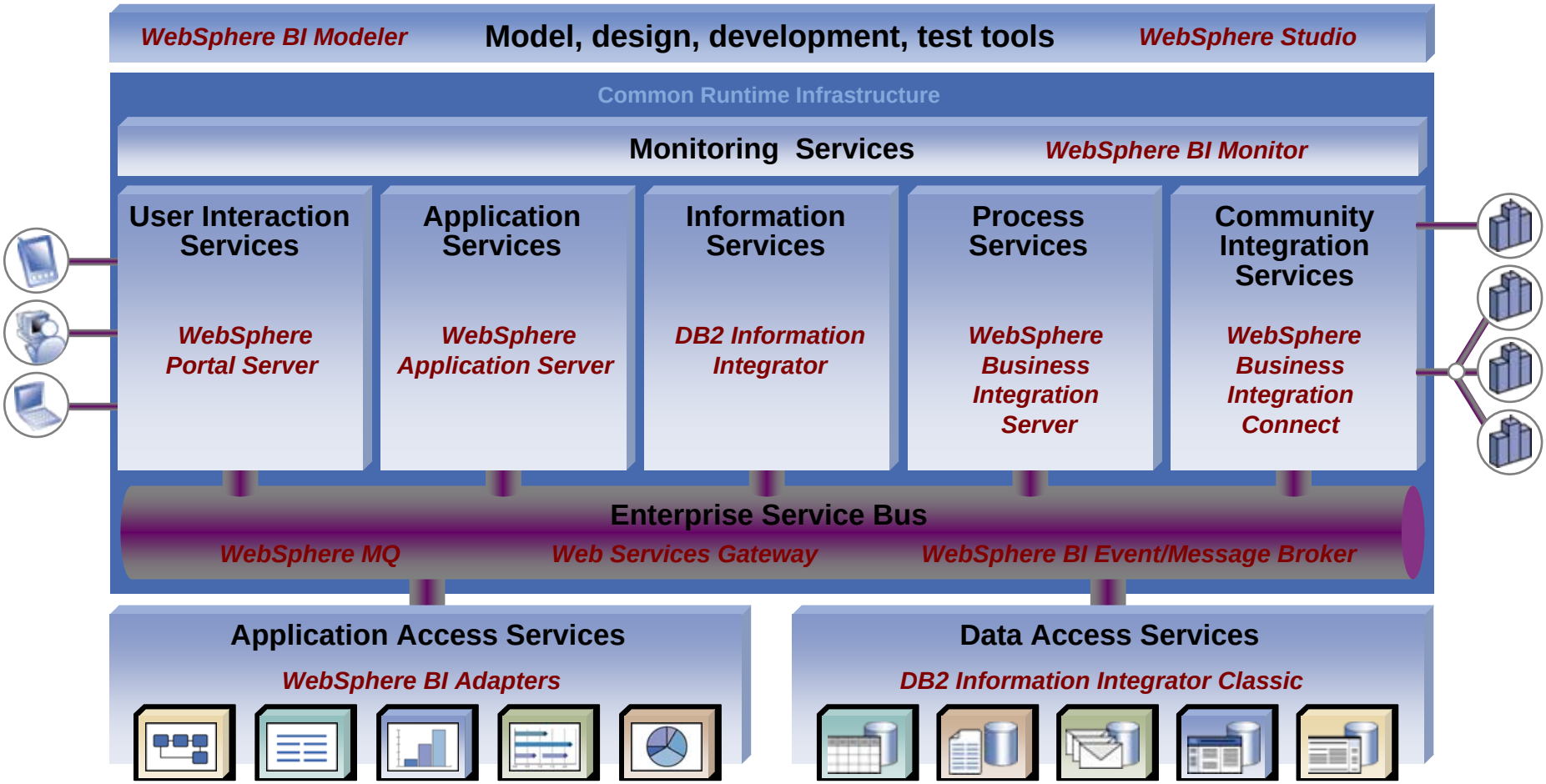
Portfolio Forecasting

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



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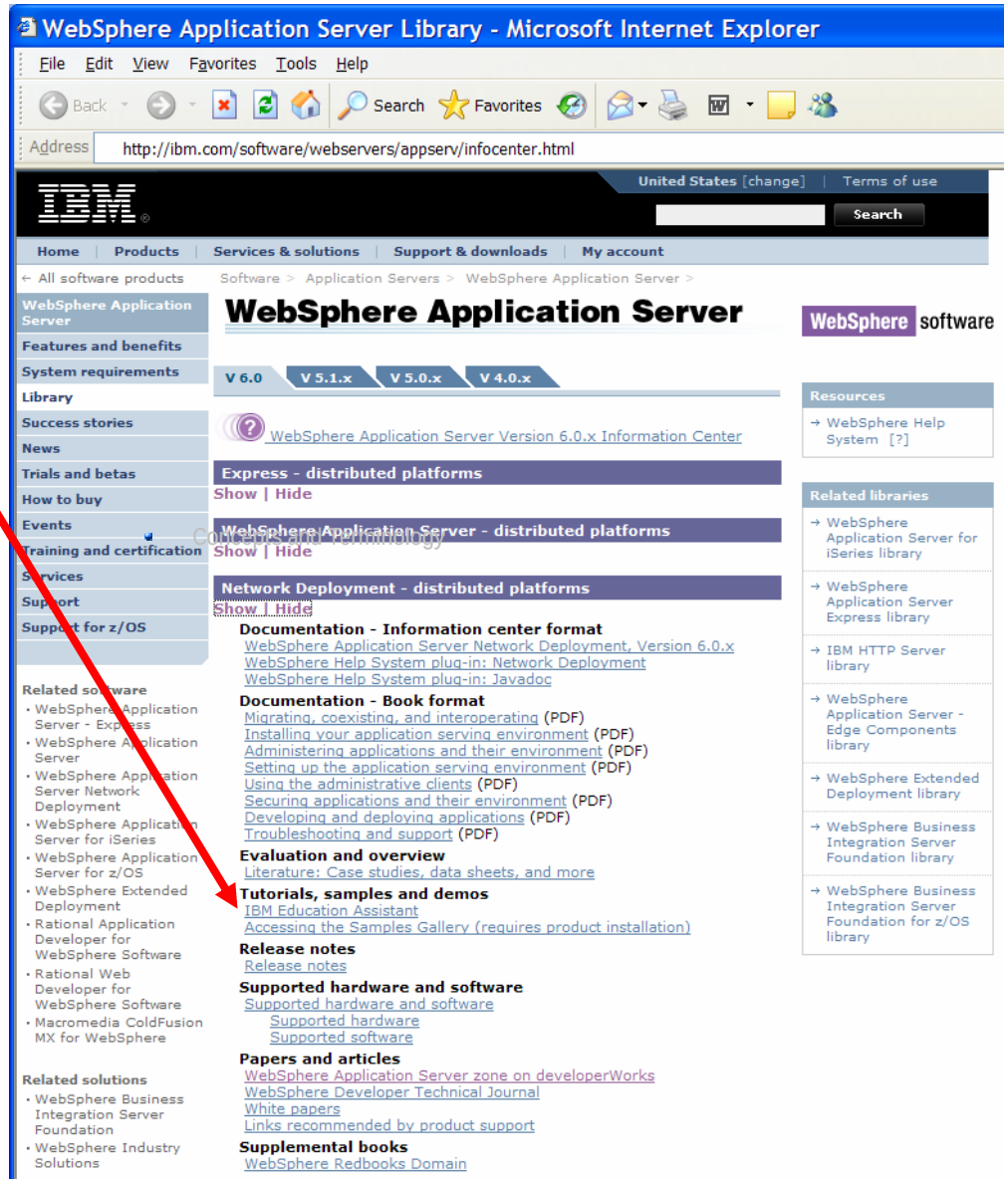
Application Development Tools

➔ V6 Accelerated Learning ➔

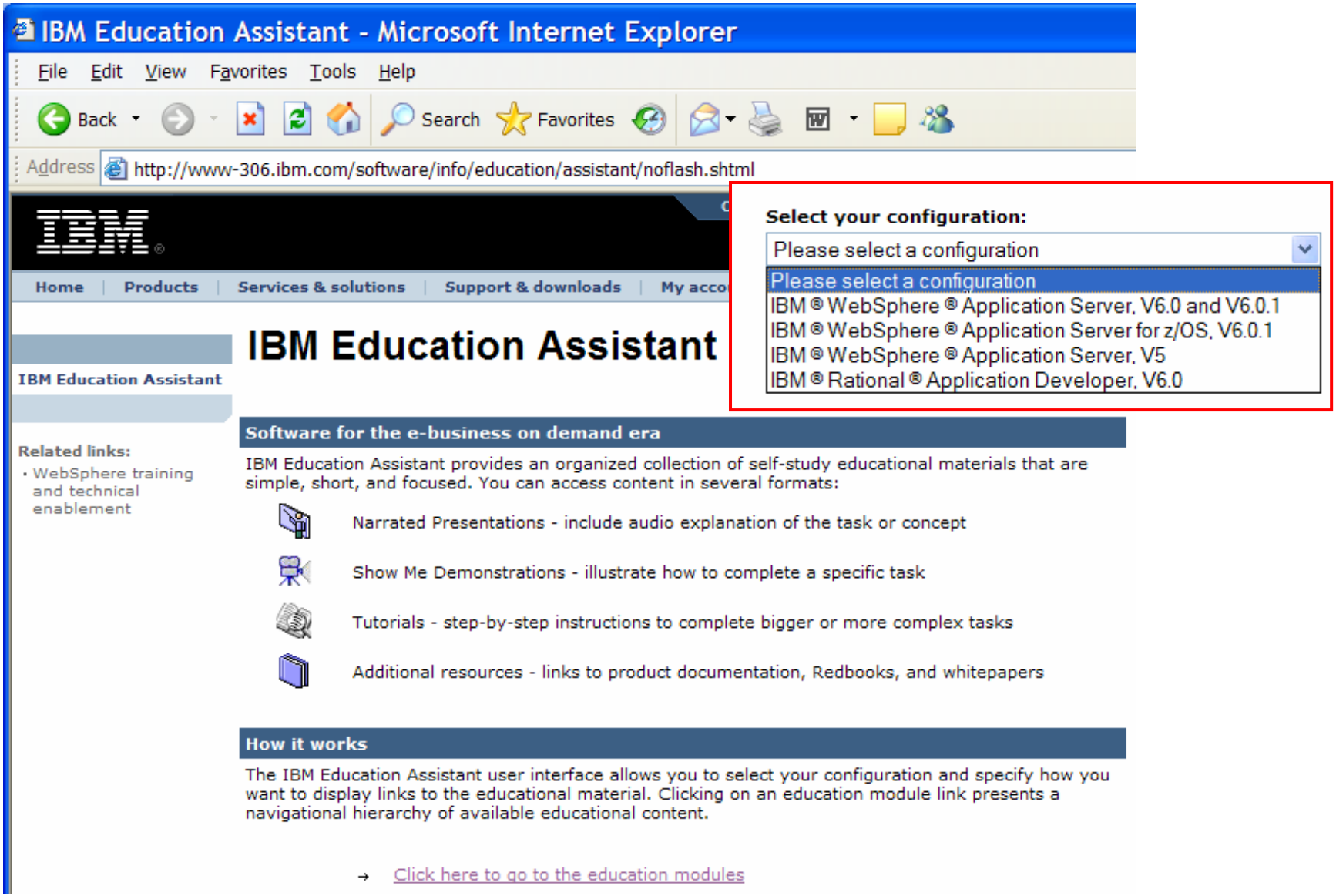
Name
Title
Company

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



“Education Assistant” – RAD V6 and WAS V6



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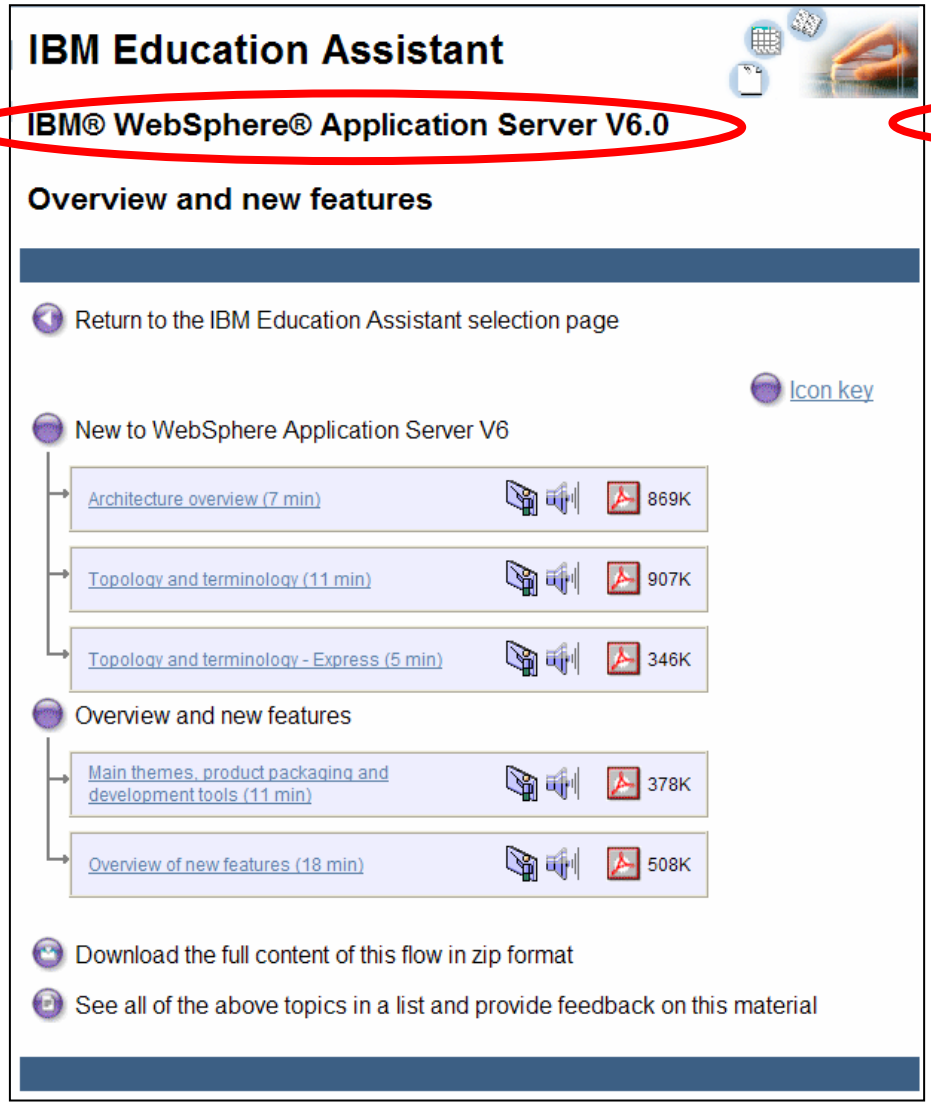


“Education Assistant” – RAD V6 – Modules

IBM Education Assistant

Select your configuration:

IBM ® Rational ® Application Developer V6.0

Select how to display results:

Task based view

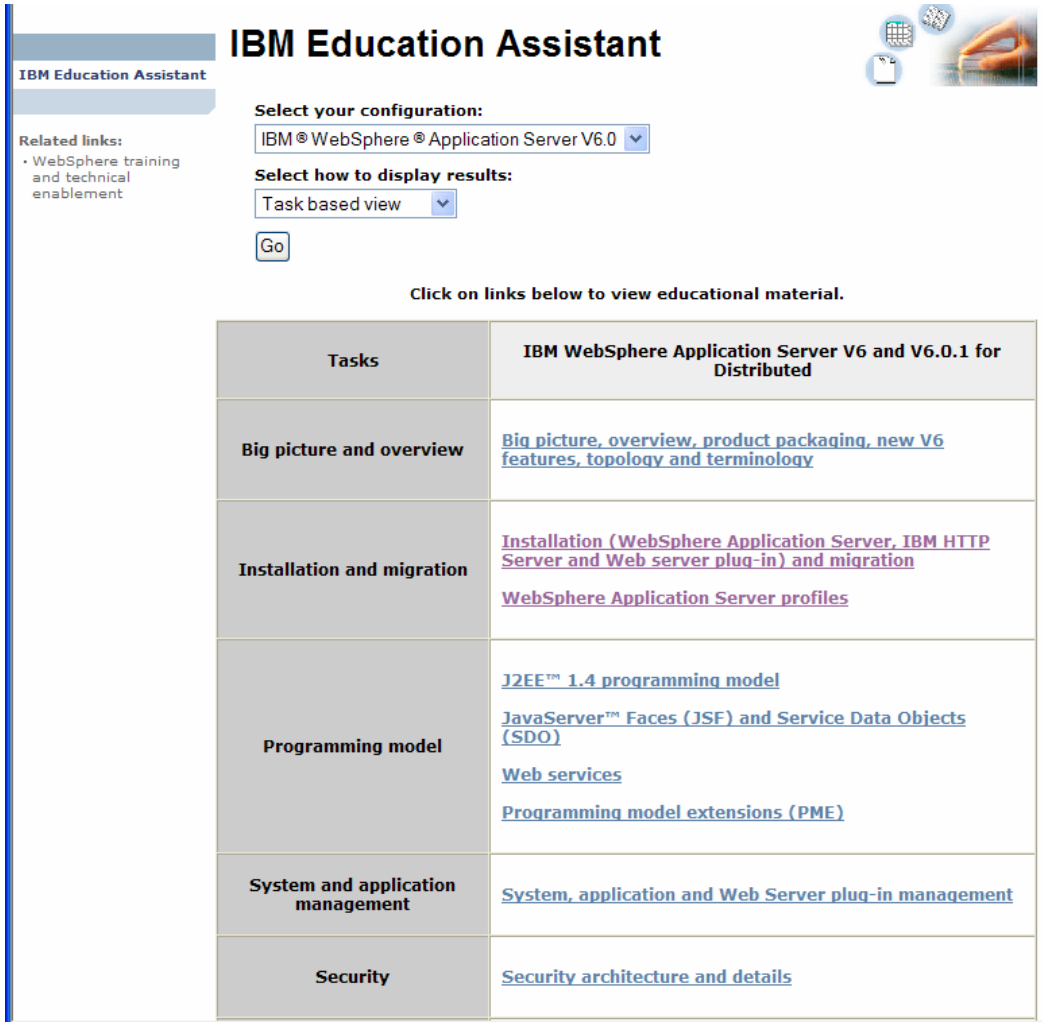
Go

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

Related links:
- WebSphere training and technical enablement

IBM Education Assistant

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	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…

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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 warrantees. 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

- 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

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

2005/03/24 Updates

- RAD V6 Tutorial Demo Series has arrived!

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

- RAD V6 Tutorial Demo Series has arrived!
  (Getting Started Guide, Introduction and Tour)
  Four scenarios with > 75 demos
  1) **End-2-End** (Soup-to-nuts J2EE Build Scenarios)
  2) **Quick Success** (Short Ad-hoc Build Scenarios, < 10 min each)
  3) **Banking and Finance** (Web App/Site Scenario)
  4) **Financial Advisor Dashboard** (Portal/Portlet Scenario)

RAD V6 Tutorial Demo Series

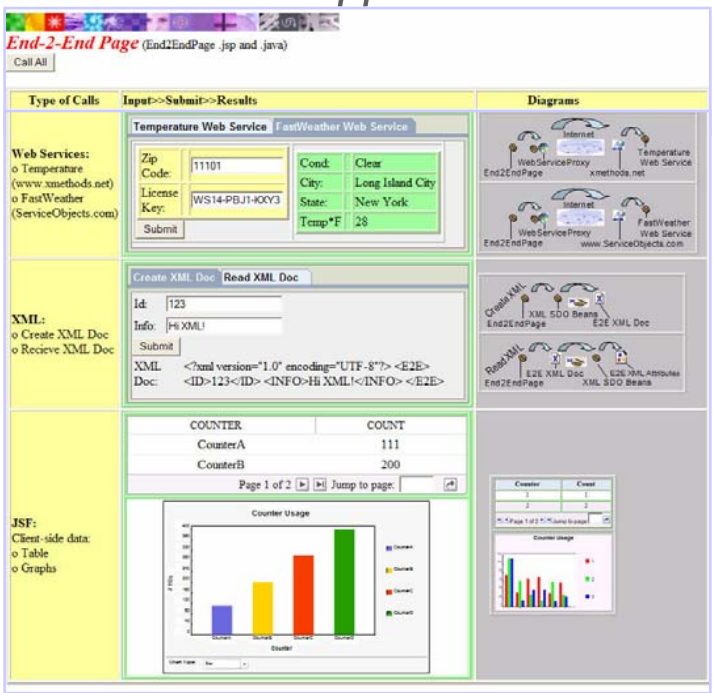
Executives and Managers

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

Architects and Developers

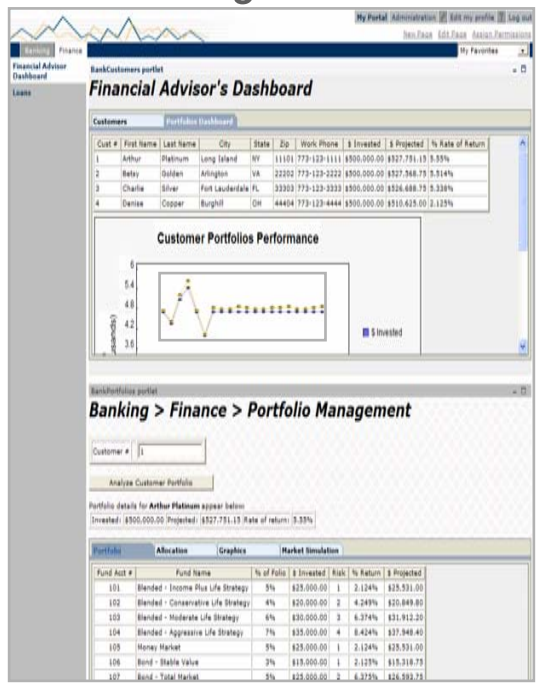
- *Watch and Do*: Use the "Tutorial Demo" movies to build the reference applications from scratch!

#1 End-2-End Application



#2 Quick Success Apps

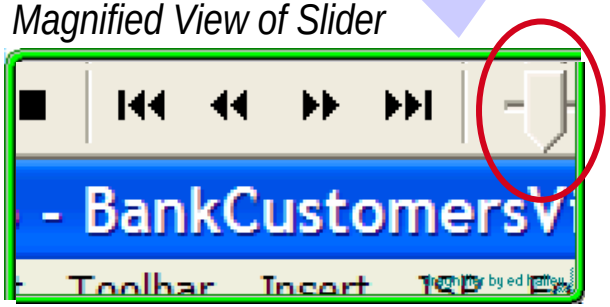
#3 Banking & Finance

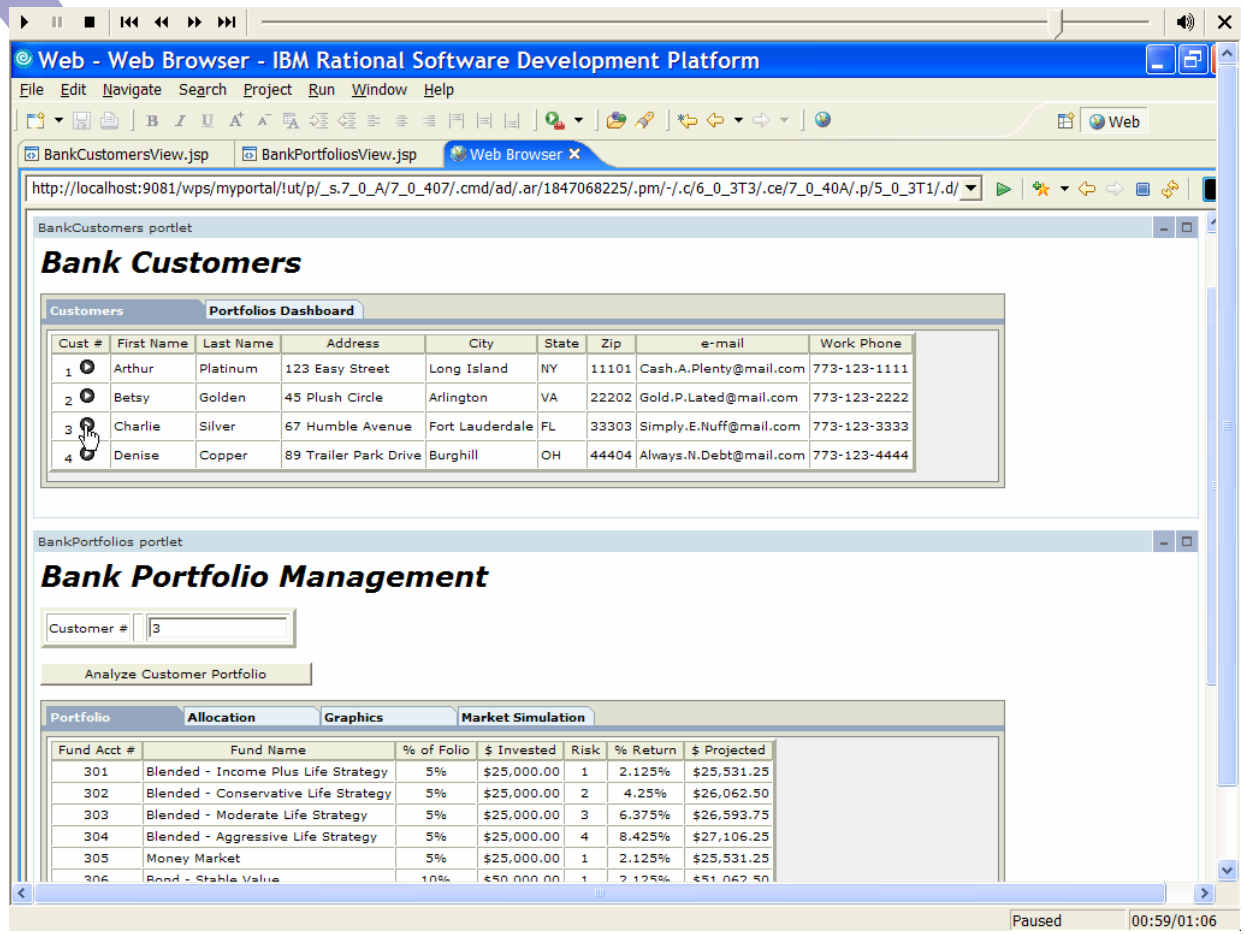


RAD V6 Tutorial Demo Series – How They Work…

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

Magnified View of Slider





End-2-End Application

Demo

"Accelerate development…
increase productivity…
maximize ROI !$! "

Iterative Development Demos

➔ Model, Build, Test, Debug, Deploy

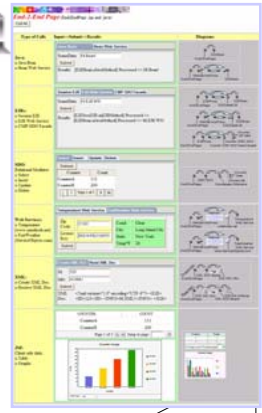
- UML Model Visualizations
- Dynamic Development
- Automated Deployment

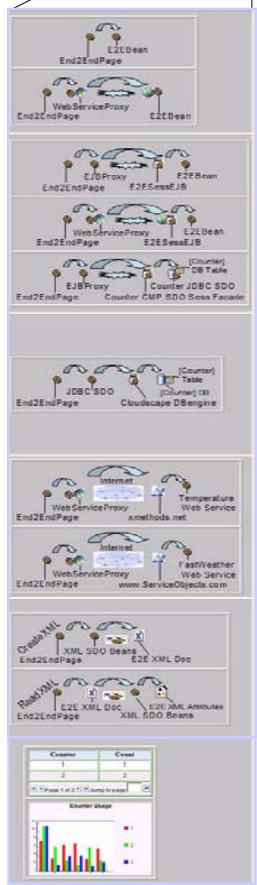
J2EE+ Builder Demos

➔ Includes JSF, SDO, Web Services

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

#1



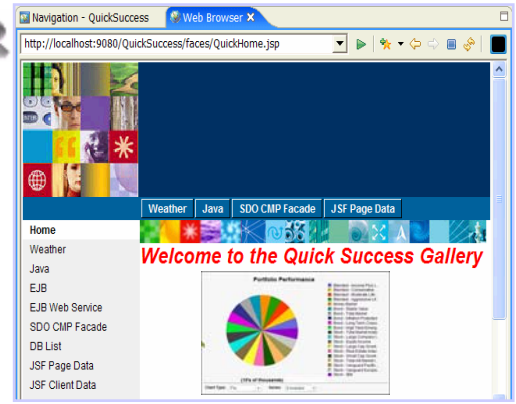


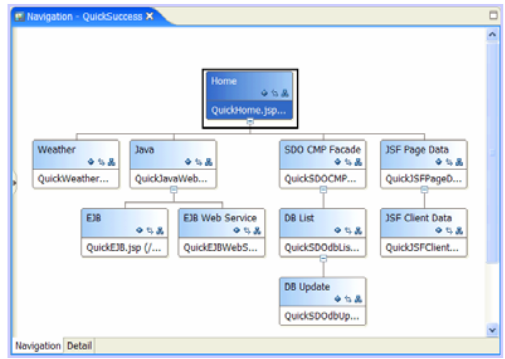
Quick Success Applications

Demo

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

#2



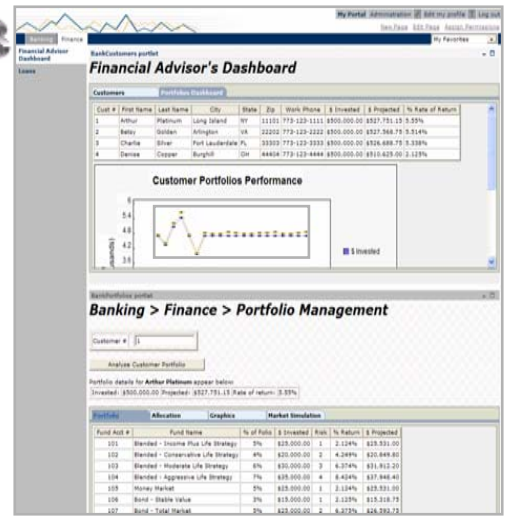


Banking & Finance Web/Portal Applications

Demo

- Banking Accounts
- Portfolio Management
- Financial Advisor Dashboard

#3



End-2-End Application

"Accelerate development…
increase productivity…
maximize ROI !$! "

Iterative Development Demos

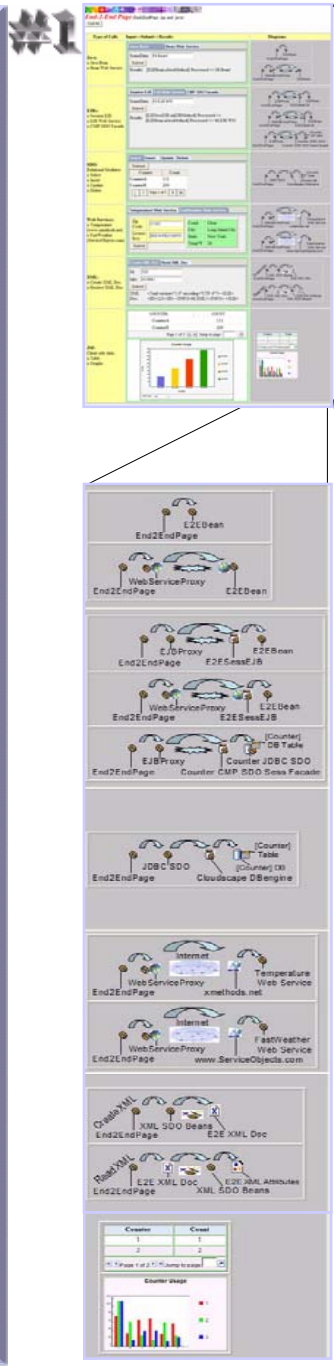
➔ Model, Build, Test, Debug, Deploy

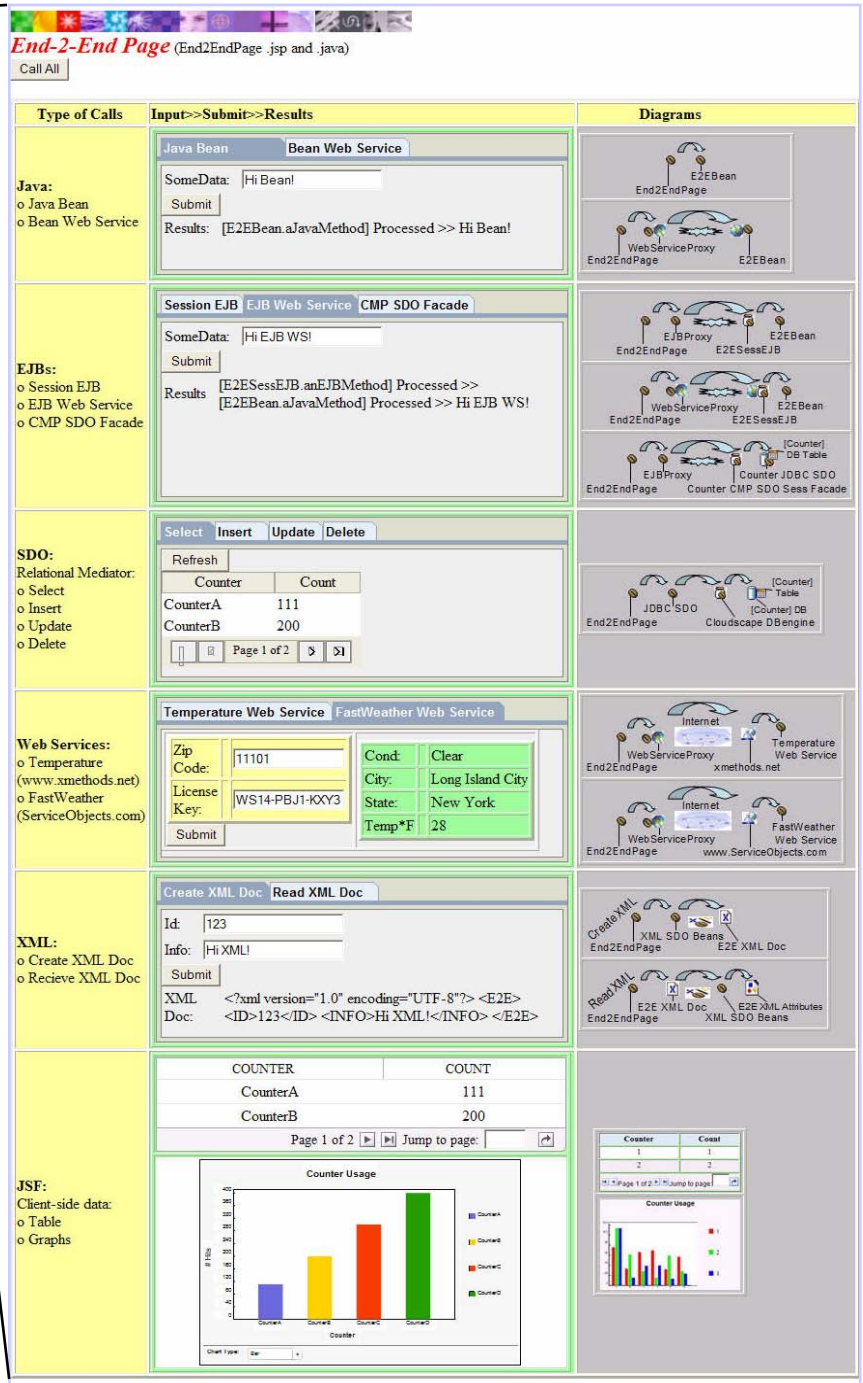
- UML Visualizations
- Dynamic Development
- On-the-fly code changes
- Incremental build engine
- Testing for Java, EJBs, Web Services, etc…
- Dynamic Interactive Debugger
- Automated Application Packaging and Deployment

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





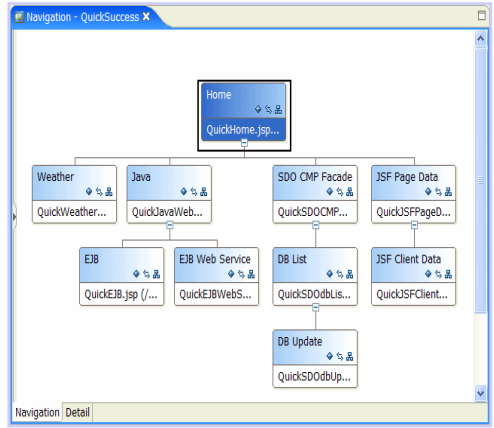
Quick Success Gallery Applications

- 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

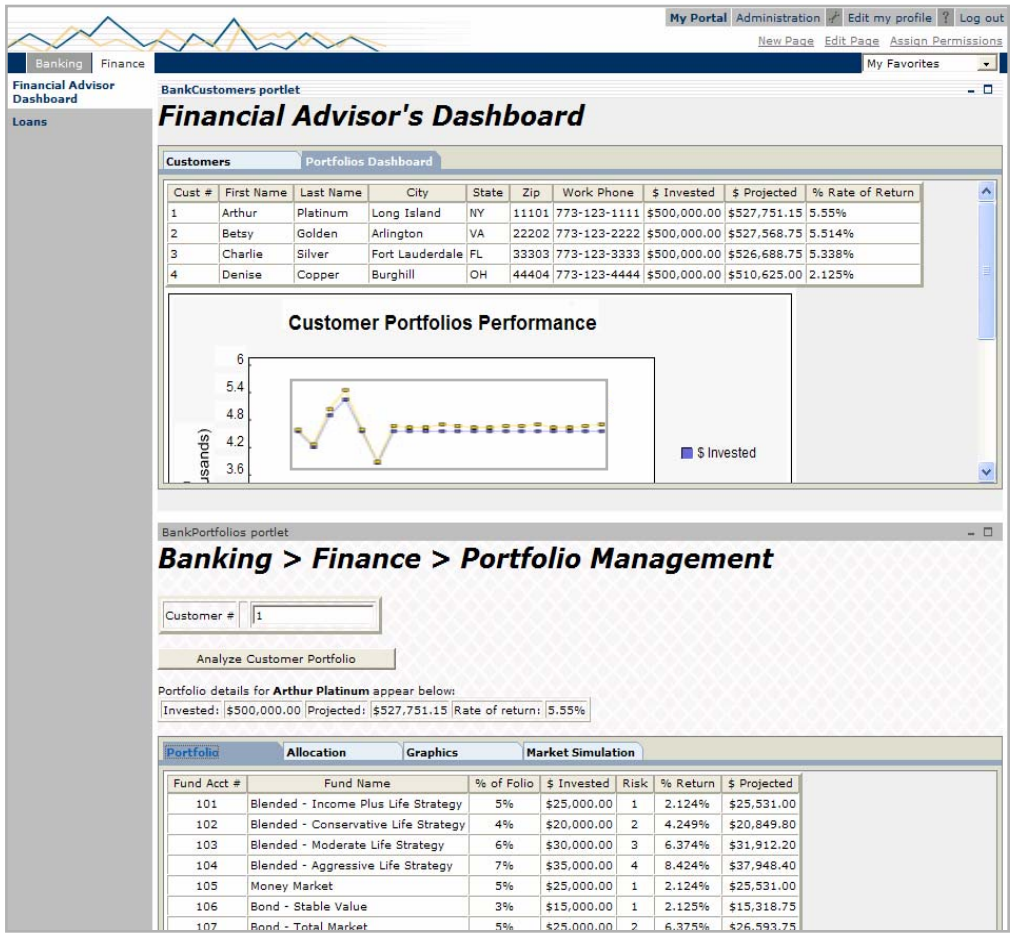
Banking & Finance Web/Portal Applications

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

#2



#3



Resources

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